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VOLUME I OF II

RESEARCH IN DRUG DEVELOPMENT AGAINST VIRAL DISEASES OF MILITARY IMPORTANCE (BIOLOGICAL TESTING)

Final Report

W.M. Shannon, G. Arnett, A.D. Brazier,
M.G. Hollingshead, J.J. Kirsi, L. Westbrook, L.J. Wilkoff

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

The purpose of this program is to evaluate the efficacy of candidate antiviral compounds against a spectrum of viruses of military importance. This program involves (a) primary testing of chemical compounds and natural products for antiviral efficacy *in vitro* using standard CPE-inhibition assays, (b) primary testing of compounds for antiviral efficacy *in vivo* in animal model systems, and (c) secondary evaluation of the active candidate antiviral compounds. The target viruses for *in vitro* testing are Vaccinia Virus (VV), Adenovirus (AD2), Vesicular Stomatitis Virus (VSV), Punta Toro Virus (PT), Sandfly Fever Virus (SF), Yellow Fever Virus (YF), Venezuelan Equine Encephalomyelitis Virus (VE), Japanese Encephalitis Virus (JE), Pichinde Virus (PIC), Hantaan Virus (HTN), and Human Immunodeficiency Virus (HIV). The *in vivo* systems are Pichinde Virus infection of hamsters, Venezuelan Equine Encephalomyelitis Virus, Japanese Encephalitis Virus and Vaccinia Virus infections of mice. Approximately 10,000 compounds have been received for *in vitro* evaluation and over 66,000 assays have been performed on this contract. Compounds have been identified in nearly all virus systems that have confirmed antiviral activity equal or exceeding that of the various positive control compounds (Ribavirin, Selenazofurin, Carbocyclic-3-deaza-adenosine, Adenosine dialdehyde, Ara-A, ddC and AZT). Many of these compounds represent potent and selective new antiviral agents.

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During 1989 at the request of Ms. C. Susan Tiffany (Contract Specialist, Ft. Detrick, Frederick, Maryland) the Adenovirus (AD2) and the Vesicular Stomatitis Virus (VSV) were deleted from the primary screen. Also, all *in vivo* work was discontinued due to military budget cuts. During 1989 - 1990, antiviral prescreen testing (*in vitro*) of plant extracts against Punta Toro Virus (PT), Yellow Fever Virus (YF) and Venezuelan Equine Encephalitis Virus (VE) was added to the screening program at the rate-of-testing- of approximately 3,000 extracts per year per virus.

During this contract period, a number of compounds were found to exhibit highly significant activity against VV *in vitro*. Compounds AVS-5569, 5568, 1214, 5219, 0303, 7449 and 6193 demonstrated the greatest *in vitro* promise, having SI's that ranged from 19 - >320. The most effective compounds against the Adenovirus were AVS-2296, 2700, 2980, 2986, 3593, 4070 and 4167. Sixty-two excellent lead compound were found against the Yellow Fever Virus *in vitro* and 45 compounds appeared to have excellent *in vitro* antiviral potential against the Japanese Encephalitis Virus. Fifteen compounds demonstrated excellent *in vitro* antiviral activity against Venezuelan Equine Encephalomyelitis Virus. At least 16 excellent lead compounds were found against the Punta Toro Virus *in vitro* and 24 compounds produced excellent *in vitro* antiviral activity against Sandfly Fever Virus. AVS-6724 demonstrated broad spectrum activity against YF, JE, SF, PT, VV and VE Viruses. Five compounds were found highly active (therapeutic indices of >100 against the Pichinde Virus by the plaque-reduction assay *in vitro*.

The prescreen protocol (YF, JE and VE viruses) has successfully identified potential active materials (~5%) for further confirmatory testing. Confirmatory testing of these potential active compounds were carried out in the primary screen against a broader range of more virulent viruses (VV, YF, JE, VE, PT and SF). Sixty-seven percent of the prescreen compounds showed some degree of activity against one or more of these virulent viruses.

Significant anti-HIV *in vitro* activity was observed with 14 AVS compounds with therapeutic indices that ranged from >1000 to >54. One NCI compound, NSC 614846 demonstrated significant activity comparable to the positive control drug, ddC. Several AVS compounds showed confirmed anti-HIV activity versus the Feline leukemia virus, the Simian and Murine AIDS viruses.

For *in vivo* antiviral compound evaluations, 2 out of 19 compound had significant activity against the Pichinde Virus in hamsters. Seven compounds had demonstrable activity against JE in mice. Of these seven compounds, AVS-5587 may be the most desirable as the window between the toxicity and efficacy is broader than that seen with the other compounds. Further studies of this compound and its analogs are strongly recommended. AVS-1752 (Ara-A) had demonstrable activity against the Vaccinia Virus in the intracranial challenge model in mice. Nine compounds had some degree of activity against Vaccinia Virus-induced tailpox lesions. The compound with the greatest activity other than the positive control drug (Ara-A) was AVS-3679.

FOREWORD

Citations of commercial organizations and trade names in this report do not constitute an official Department of the Army endorsement or approval of the products or services of these organizations.

In conducting the research described in this report, the investigators adhered to all safety, security, and biocontainment requirements specified in the contract, including all U.S. Public Health Service biosafety guidelines contained in "Biosafety in Microbiological and Biomedical Laboratories", DHHS Publication No. (CDC) 86-23 (March 1985).

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TABLE OF CONTENTS

Page

1. INTRODUCTION 10

2. CURRENT SCOPE OF WORK 14

2.1 Task 1: *In Vitro* Primary Antiviral Evaluations 14
2.2 Task 2: *In Vivo* Antiviral Evaluations 14
2.3 Task 3: Secondary Evaluations 15

3. EXPERIMENTAL METHODS 15

3.1 Cell Culture 15
3.2 Test Compounds 16
3.2.1 Receipt, Cataloging and Storage 16
3.2.2 Determination of Drug Solubility 16
3.2.3 Compound Preparation for Testing 16
3.3 *In Vitro* Antiviral Evaluations: DNA, Exotic RNA and Retro- Viruses 18
3.3.1 Vaccinia Virus (VV) 23
3.3.2 Adenovirus Type 2 (AD2) 23
3.3.3 Yellow Fever (YF) 24
3.3.4 Japanese Encephalitis Virus (JE) 25
3.3.5 Venezuelan Equine Encephalomyelitis Virus (VE) 25
3.3.6 Punta Toro Virus (PT) 26
3.3.7 Sandfly Virus (SF) 27
3.3.8 Hantaan Virus (HTN) 28
3.3.9 Pichinde Virus (PIC) 28
3.3.10 Vesicular Stomatitis Virus (VSV) 29
3.3.11 *In Vitro* Antiviral Screening: Retroviruses 30
3.4 Prescreen Assays (YF, VE, PT) 35
3.5 Antiviral Evaluation *In Vivo* 38
3.5.1 Pichinde Virus (PIC) in MHA Hamster 38
3.5.2 Venezuelan Equine Encephalomyelitis Virus (VE) 38
3.5.3 Japanese Encephalitis Virus (JE) 39
3.5.4 Vaccinia Virus (VV) 39

4. RESULTS 41

4.1 *In Vitro* Antiviral Evaluations: DNA, RNA and Retroviruses Viruses 41
4.1.1 Vaccinia Virus (VV) 45
4.1.2 Adenovirus Type 2 (AD2) 73
4.1.3 Yellow Fever Virus (YF) 79
4.1.4 Japanese Encephalitis Virus (JE) 115
4.1.5 Venezuelan Equine Encephalomyelitis Virus (VE) 144
4.1.6 Punta Toro Virus (PT) 173
4.1.7 Sandfly Virus (SF) 221
4.1.8 Hantaan Virus (HTN) 267
4.1.9 Pichinde Virus (PIC) 268
4.1.10 Vesicular Stomatitis Virus (VSV) 276
4.1.11 *In Vitro* Screening: Retroviruses 280

TABLE OF CONTENTS (CONT'D)

		Page
4.2	*In Vitro* Prescreen Antiviral Evaluation	294
4.2.1	Yellow Fever Virus (YF)	296
4.2.2	Venezuelan Equine Encephalomyelitis Virus (VE)	309
4.2.3	Punta Toro Virus (PT)	321
4.3	Antiviral Evaluation *In Vivo*	384
4.3.1	Pichinde Virus in MHA Hamster	384
4.3.2	Venezuelan Equine Encephalomyelitis (VE)	390
4.3.3	Japanese Encephalitis Virus (JE)	394
4.3.4	Vaccinia Virus (VV)	403
5.	DISCUSSION	406
6.	ACKNOWLEDGMENTS	408
7.	LITERATURE CITED	409
8.	ABSTRACTS/PUBLICATIONS	410
9.	LIST OF PERSONNEL RECEIVING CONTRACT SUPPORT	411
APPENDICES (See Volume II)		412

LIST OF TABLES

		Page
Table 1	*In Vitro* Antiviral Screening Models	19
Table 2	Number of Compounds Received through January 31, 1991	42
Table 3	AVS Compounds Active Against VV Virus at AI_{95} Level	53
Table 4	AVS Compounds Active Against VV Virus at AI_{50} Level	55
Table 5	Confirmatory Assays for Compounds Active Against Vaccinia Virus	59
Table 6	Confirmatory Assays for Compounds Active Against Adenovirus Type 2	75
Table 7	AVS Compounds Active Against YF Virus at AI_{95} Level	91
Table 8	AVS Compounds Active Against YF Virus at AI_{50} Level	94
Table 9	Confirmatory Assays for Compounds Active Against Yellow Fever Virus	99
Table 10	AVS Compounds Active Against JE Virus at AI_{95} Level	127
Table 11	AVS Compounds Active Against JE Virus at AI_{50} Level	129
Table 12	Confirmatory Assays for Compounds Active Against Japanese Encephalitis Virus	133
Table 13	AVS Compounds Active Against VE Virus at AI_{95} Level	156
Table 14	AVS Compounds Active Against VE Virus at AI_{50} Level	158
Table 15	Confirmatory Assays for Compounds Active Against Venezuelan Equine Encephalomyelitis	163
Table 16	AVS Compounds Active Against PT Virus at AI_{95} Level	184
Table 17	AVS Compounds Active Against PT Virus at AI_{50} Level	187
Table 18	Confirmatory Assays for Compounds Active Against Punta Toro	195
Table 19	AVS Compounds Active Against SF Virus at AI_{95} Level	233
Table 20	AVS Compounds Active Against SF Virus at AI_{50} Level	236
Table 21	Confirmatory Assays for Compounds Active Against Sandfly Fever Virus	243
Table 22	Compounds Active Against Hantaan Virus	267
Table 23	Compounds Active Against Pichinde Virus	269
Table 24	Confirmatory Assays for Compounds Found Active Against Pichinde Virus	275
Table 25	Confirmatory Assays for Compounds Active Against Vesicular Stomatitis Virus	278
Table 26	Compounds Active Against Human Immunodeficiency Virus	281
Table 27	Confirmatory Assays for Compounds Active Against Human Immunodeficiency Virus	282
Table 28	Retesting of AVS-999 Samples	285
Table 29	Compounds Active Against Feline Leukemia Virus FAIDS Variant	289
Table 30	Secondary Testing of AVS Compounds Showing Confirmed Activity Against HIV in ATH8 Cells Assays	293
Table 31	New Prescreen Drugs that Produced 50% Antiviral Reduction Against YF Virus	307
Table 32	New Prescreen Drugs that Produced 50% Antiviral Reduction Against VE Virus	320
Table 33	New Prescreen Drugs that Produced 50% Antiviral Reduction Against PT Virus	332
Table 34	Confirmatory Testing of Compounds Selected From Prescreen Testing	339
Table 35	Compounds Assessed Against Pichinde Virus *In Vivo*	385
Table 36	Antiviral Efficacy of AVS-206	386
Table 37	Results of Retesting of AVS-206	387
Table 38	Antiviral Efficacy of AVS-206 and Ribavirin (AVS-01)	388
Table 39	Antiviral Efficacy of AVS-1046	389

LIST OF TABLES (CONT'D)

		Page
Table 40	Compounds Received for Testing Against Venezuelan Equine Encephalomyelitis Virus	391
Table 41	Cumulative Results of Intracranial Challenge with Venezuelan Equine Encephalomyelitis Virus in Mice	392
Table 42	Mortality in VEE Challenged Mice Receiving a Single Dose of 3N-3DU	393
Table 43	Compounds Received for Testing Against Japanese Encephalitis Virus *In Vivo*	396
Table 44	Antiviral Evaluation of AVS-360 (JE Virus)	397
Table 45	*In Vivo* Antiviral Efficacy of AVS-360 and AVS-2563 Against JE Virus	398
Table 46	Antiviral Efficacy of AVS-361, 2811 and 2812 Against JE Virus	399
Table 47	Antiviral Efficacy of Selected AVS Compounds Against JE Virus	400
Table 48	*In Vivo* Testing of AVS-2979 Against JE Virus Challenge	401
Table 49	Results of Testing of AVS-5587 Against Japanese Encephalitis Virus Challenge	402
Table 50	Compounds Received for Testing Against *In Vivo* Vaccinia Virus	404
Table 51	Activity of Selected AVS Compounds vs Vaccinia Virus (Tailpox Counts)	405

LIST OF FIGURES

		Page
Figure 1	Primary-Screen Data Sheet	20
Figure 2	Prescreen Data Sheet	37
Figure 3	Total Number of *In Vitro* Antiviral Assays Performed per Year (November 16, 1985 - January 31, 1991)	43
Figure 4	Number of Compounds Tested *In Vitro* Per Year During the Contract Period	44
Figure 5	In Vitro Primary Screen: Number of Compounds Found Active Against Vaccinia Virus During the Contract Period	45
Figure 6-A	Ara-A - vs - Vaccinia Virus; Values for 89 Positive Control Assays	47
Figure 6-B	Selenazofurin - vs - Vaccinia Virus; Values for 83 Positive Control Assays	49
Figure 7	Variation of the Maximum Antiviral Effect of Vaccinia Virus - vs - Ara-A/Selenazofurin	50
Figure 8	Variation of the Cell (Load) Controls; Vaccinia Virus - vs - Ara-A/Selenazofurin	51
Figure 9	Variation of the Virus (Load) Controls; Vaccinia Virus - vs - Ara-A/Selenazofurin	51
Figure 10	Variation of the Test Differential; Vaccinia Virus - vs - Ara-A/Selenazofurin	51
Figure 11	In Vitro Primary Screen: Number of Compounds Found Active Against Adenovirus During the Contract Period	73
Figure 12	In Vitro Primary Screen: Number of Compounds Found Active Against Yellow Fever Virus During the Contract Period	79
Figure 13-A	Selenazofurin - vs - Yellow Fever Virus; Values for 211 Positive Control Assays	81
Figure 13-B	2-Thio-6-Azauridine - vs - Yellow Fever Virus; Values 42 Positive Control Compound Tests	86
Figure 14-A	Variation of Maximum Antiviral Effect; Yellow Fever Virus - vs - Selenazofurin	82
Figure 14-B	Variation of Maximum Antiviral Effect; Yellow Fever Virus - vs - 2-Thio-6-Azauridine	87
Figure 15-A	Variation of Cell (Load) Controls; Yellow Fever Virus - vs - Selenazofurin	84
Figure 15-B	Variation of Cell (Load) Controls; Yellow Fever Virus - vs - 2-Thio-6-Azauridine	89
Figure 16-A	Variation of Virus (Load) Controls; Yellow Fever Virus - vs - Selenazofurin	84
Figure 16-B	Variation of Virus (Load) Controls; Yellow Fever Virus - vs - 2-Thio-6-Azauridine	89
Figure 17-A	Variation of Test Differential; Yellow Fever Virus - vs - Selenazofurin	84
Figure 17-B	Variation of Test Differential; Yellow Fever Virus - vs - 2-Thio-6-Azauridine	89
Figure 18	In Vitro Primary Screen: Number of Compounds Found Active Against Japanese Encephalitis Virus During the Contract Period	115
Figure 19-A	Selenazofurin - vs - Japanese Encephalitis Virus; Values for 191 Positive Control Compound Tests	117
Figure 19-B	2-Thio-6-Azauridine - vs - Japanese Encephalitis Virus; Values for 46 Positive Control Compound Tests	122
Figure 20-A	Variation of Maximum Antiviral Effect; Japanese Encephalitis Virus - vs - Selenazofurin	118
Figure 20-B	Variation of Maximum Antiviral Effect: Japanese Encephalitis Virus - vs - 2-Thio-6-Azauridine	123

LIST OF FIGURES (CONT'D)

Page

Figure 21-A Variation of Cell (Load) Controls; Japanese Encephalitis Virus - vs - Selenazofurin 120
Figure 21-B Variation of Cell (Load) Controls: Japanese Encephalitis Virus - vs - 2-Thio-6-Azauridine 125
Figure 22-A Variation of Virus (Load) Controls; Japanese Encephalitis Virus - vs - Selenazofurin 120
Figure 22-B Variation of Virus (Load) Controls; Japanese Encephalitis Virus - vs - 2-Thio-6-Azauridine 125
Figure 23-A Variation of Test Differential; Japanese Encephalitis Virus - vs - Selenazofurin 120
Figure 23-B Variation of Test Differential; Japanese Encephalitis Virus - vs - 2-Thio-6-Azauridine 125
Figure 24 In Vitro Primary Screen: Number of Compounds Found Active Against Venezuelan Equine Encephalomyelitis Virus During the Contract Period . . 144
Figure 25-A Selenazofurin - vs - Venezuelan Equine Encephalomyelitis Virus; Values for 220 Positive Control Compound Tests 146
Figure 25-B 2-Thio-6-Azauridine - vs - Venezuelan Equine Encephalomyelitis Virus; Values for 42 Positive Control Compound Tests 151
Figure 26-A Variation of Maximum Antiviral Effect; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin 147
Figure 26-B Variation of Maximum Antiviral Effect; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6-Azauridine 152
Figure 27-A Variation of Cell (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin 149
Figure 27-B Variation of Cell (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6-Azauridine 154
Figure 28-A Variation of Virus (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin 149
Figure 28-B Variation of Virus (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6-Azauridine 154
Figure 29-A Variation of Test Differential; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin 149
Figure 29-B Variation of Test Differential; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6-Azauridine 154
Figure 30 In Vitro Primary Screen: Number of Compounds Found Active Against Punta Toro Virus During the Contract Period 173
Figure 31-A Ribavirin - vs - Punta Toro Virus; Values for 242 Positive Control Compound Tests 175
Figure 31-B 2-Thio-6-Azauridine - vs - Punta Toro Virus; Values for 44 Positive Control Compound Tests 180
Figure 32-A Variation of Maximum Antiviral Effect; Punta Toro Virus - vs - Ribavirin 176
Figure 32-B Variation of Maximum Antiviral Effect; Punta Toro Virus - vs - 2-Thio-6-Azauridine 181
Figure 33-A Variation of Cell (Load) Controls; Punta Toro Virus - vs - Ribavirin 178
Figure 33-B Variation of Cell (Load) Controls; Punta Toro Virus - vs - 2-Thio-6-Azauridine . . 183
Figure 34-A Variation of Virus (Load) Controls; Punta Toro Virus - vs - Ribavirin 178
Figure 34-B Variation of Virus (Load) Controls; Punta Toro Virus - vs - 2-Thio-6-Azauridine . 183
Figure 35-A Variation of Test Differential; Punta Toro Virus - vs - Ribavirin 178

LIST OF FIGURES (CONT'D)

		Page
Figure 35-B	Variation of Test Differential; Punta Toro Virus - vs - 2-Thio-6-Azauridine	183
Figure 36	In Vitro Primary Screen: Number of Compounds Found Active Against Sandfly Fever Virus During the Contract Period	221
Figure 37-A	Ribavirin - vs - Sandfly Virus; Values for 226 Positive Control Compound Tests	223
Figure 37-B	2-Thio-6-Azauridine - vs - Sandfly Virus; Values for 42 Positive Control Compound Tests	228
Figure 38-A	Variation of Maximum Antiviral Effect; Sandfly - vs - Ribavirin	224
Figure 38-B	Variation of Maximum Antiviral Effect; Sandfly - vs - 2-Thio-6-Azauridine	229
Figure 39-A	Variation of Cell (Load) Controls; Sandfly - vs - Ribavirin	226
Figure 39-B	Variation of Cell (Load) Controls; Sandfly - vs - 2-Thio-6-Azauridine	231
Figure 40-A	Variation of Virus (Load) Controls; Sandfly - vs - Ribavirin	226
Figure 40-B	Variation of Virus (Load) Controls; Sandfly - vs - 2-Thio-6-Azauridine	231
Figure 41-A	Variation of Test Differential; Sandfly - vs - Ribavirin	226
Figure 41-B	Variation of Test Differential; Sandfly - vs - 2-Thio-6-Azauridine	231
Figure 42	In Vitro Primary Screen: Number of Compounds Found Active Against Pichinde Virus During the Contract Period	268
Figure 43	In Vitro Primary Screen: Number of Compounds Found Active Against Vesicular Stomatitis Virus During the Contract Period	276
Figure 44	Results from an XTT Assay of the Antiviral Activity of 2′-3′-dideoxycytidine Against HIV in ATH8 Cells	286
Figure 45	Results from an XTT Assay of the Antiviral Activity of NSC-614846 Against HIV in MT-2 Cells	287
Figure 46	Example Data Sheet from an XTT Assay	288
Figure 47	Antiviral Activity of 2′,3′-dideoxycytidine in the *In Vitro* Murine Retrovirus Assay	291
Figure 48	Antiviral Activity of Ribavirin in the *In Vitro* Murine Retrovirus Assay	292
Figure 49	Active Compounds From the Prescreen Assay	295
Figure 50	*In Vitro* Prescreen: Number of Compounds Found Active Against Yellow Fever Virus During the Contract Period	296
Figure 51-A	Selenazofurin - vs - Yellow Fever Virus; Values for 120 Positive Control Compound Assays	298
Figure 51-B	2-Thio-6-Azauridine - vs - Yellow Fever Virus; Values for 52 Positive Control Compound Assays	303
Figure 52-A	Variation of Maximum Antiviral Effect; Yellow Fever Virus - vs - Selenazofurin (Prescreen Protocol)	299
Figure 52-B	Variation of Maximum Antiviral Effect; Yellow Fever Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	304
Figure 53-A	Variation of Cell (Load) Controls; Yellow Fever Virus - vs - Selenazofurin (Prescreen Protocol)	301
Figure 53-B	Variation of Cell (Load) Controls; Yellow Fever Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	306
Figure 54-A	Variation of Virus (Load) Controls; Yellow Fever Virus - vs - Selenazofurin (Prescreen Protocol)	301
Figure 54-B	Variation of Virus (Load) Controls; Yellow Fever Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	306
Figure 55-A	Variation of Test Differential; Yellow Fever Virus - vs - Selenazofurin (Prescreen Protocol)	301
Figure 55-B	Variation of Test Differential; Yellow Fever Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	306

LIST OF FIGURES (CONT'D)

		Page
Figure 56	In Vitro Prescreen: Number of Compounds Found Active Against Venezuelan Equine Encephalomyelitis Virus During the Contract Period	309
Figure 57-A	Selenazofurin - vs - Venezuelan Equine Encephalomyelitis Virus (Prescreen Protocol)	311
Figure 57-B	2-Thio-6-Azauridine - vs - Venezuelan Equine Encephalomyelitis Virus (Prescreen Protocol)	316
Figure 58-A	Variation of Maximum Antiviral Effect; Venezuelan Equine Encephalomyelitis Virus (Prescreen Protocol)	312
Figure 58-B	Variation of Maximum Antiviral Effect; Venezuelan Equine Encephalomyelitis Virus (Prescreen Protocol)	317
Figure 59-A	Variation of Cell (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin (Prescreen Protocol)	314
Figure 59-B	Variation of Cell (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6- Azauridine (Prescreen Protocol)	319
Figure 60-A	Variation of Virus (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin (Prescreen Protocol)	314
Figure 60-B	Variation of Virus (Load) Controls; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	319
Figure 61-A	Variation of Test Differential; Venezuelan Equine Encephalomyelitis Virus - vs - Selenazofurin (Prescreen Protocol)	314
Figure 61-B	Variation of Test Differential; Venezuelan Equine Encephalomyelitis Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	319
Figure 62	*In Vitro* Prescreen: Number of Compounds Found Active Against Punta Toro Virus During this Contract Period	321
Figure 63-A	Ribavirin - vs - Punta Toro Virus; Values for 142 Positive Control Compounds Assays	323
Figure 63-B	2-Thio-6-Azauridine - vs - Punta Toro Virus; Values for 60 Positive Control Compounds Assays	328
Figure 64-A	Variation of Maximum Antiviral Effect; Punta Toro Virus - vs - Ribavirin (Prescreen Protocol)	324
Figure 64-B	Variation of Maximum Antiviral Effect; Punta Toro Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	329
Figure 65-A	Variation of Cell (Load) Controls; Punta Toro Virus - vs - Ribavirin (Prescreen Protocol)	326
Figure 65-B	Variation of Cell (Load) Controls; Punta Toro Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	331
Figure 66-A	Variation of Virus (Load) Controls; Punta Toro Virus - vs - Ribavirin (Prescreen Protocol)	326
Figure 66-B	Variation of Virus (Load) Controls; Punta Toro Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	331
Figure 67-A	Variation of Test Differential; Punta Toro Virus - vs - Ribavirin (Prescreen Protocol)	326
Figure 67-B	Variation of Test Differential; Punta Toro Virus - vs - 2-Thio-6-Azauridine (Prescreen Protocol)	331

1. INTRODUCTION

This is the Final Progress Report on SRI Project No. 5975, Contract No. DAMD17-86-C-6013. It covers the progress of the research program during the report period from November 16, 1985 to January 31, 1991.

The goal of this program was to implement testing systems in which to evaluate the efficacy of candidate antiviral compounds against a spectrum of viruses of military importance. The program consists of three major task areas: a) primary testing of chemical compounds and natural products for antiviral efficacy *in vitro*, b) primary testing of chemical compounds and immunopotentiators for antiviral efficacy *in vivo*, and c) secondary evaluation of compounds found active in the primary *in vitro* and *in vivo* screens.

One of the primary missions of the U.S. Army Medical Research and Development Command is to perform studies on the pathogenesis, diagnosis, epidemiology, prophylaxis, and treatment of infectious diseases of military importance. The Army's infectious disease research program, conducted by the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) at Fort Detrick, is primarily concerned with medical defense against (a) naturally-occurring infectious diseases that could seriously interrupt U.S. military operations such as troop mobilization and deployment and (b) the threat of infectious diseases or toxic effects caused by the potential field use of biological warfare (BW) agents, either conventional BW agents or altered agents, by an unfriendly force.

The U.S. Army has a recognized need for new chemical compounds that will be useful as prophylactic or therapeutic antiviral drugs to treat U.S. military personnel who are at risk of exposure to, or who might become infected with, naturally-occurring viruses or altered viruses for which there exists no effective protection or therapy at the present time. The development of selective antiviral drugs for use in the successful treatment of infections with certain exotic RNA viruses (togaviruses, bunyaviruses, arenaviruses, rhabdoviruses, and other, unclassified RNA viruses) is of particular importance to the Army because there are no other research efforts being conducted, either by the government or by the private sector, which are directed toward the control of these virus diseases of military relevance.

In 1973, USAMRIID initiated a research and development program to identify and to pursue new compounds with activity against these exotic RNA viruses. Approximately 1500 compounds have already been screened *in vitro* for selective antiviral effects against these target viruses and a number of the compounds which were found active in cell culture have been evaluated for antiviral efficacy *in vivo*. Several of these compounds (e.g., Ribavirin, Selenazole, and Pyrazofurin) have been extensively tested for efficacy against lethal RNA virus infections in various animal model systems at USAMRIID. To date, the most promising antiviral drug with demonstrated, broad-spectrum activity against these viruses of military importance, both *in vitro* and *in vivo*, appears to be Ribavirin, its prodrug derivatives, and its carboxamidine derivative (AVS-206). Ribavirin has been evaluated in humans infected with Sandfly Fever (SF) Virus, Lassa Fever Virus, and Korean Hemorrhagic Fever (KHF) Virus and has demonstrated marked clinical efficacy against these particular virus infections. This drug will be further developed for general use in military personnel. There is a real need, however, for more potent and more selective antiviral drugs to combat these virus diseases which represent serious threats throughout the world.

Troops in the field are threatened not only by infectious diseases of natural origin, but also by the possibility of BW attack. The commercial development of antiviral drugs for the treatment of the

more common respiratory virus, enteric virus, and herpesvirus infections may not solve the problems which are unique to the Armed Forces. These potential problems of encountering exotic viruses and BW agents will not be sufficiently addressed by depending solely on the possibility that antiviral drugs originally developed for the treatment of acute respiratory diseases, enterovirus infections, and herpesvirus infections might also be useful in the treatment of these virus diseases of military relevance. A more direct approach, and one which is clearly indicated, is to focus on antiviral drug development efforts designed to attack these particular virus disease threats that are unique to the Armed Forces.

The U.S. Army Medical Research Institute of Infectious Diseases has, for a number of years, been involved in conducting a unique and ambitious antiviral drug research and development program, primarily directed toward the chemical control of exotic RNA virus infections of military importance. Potential antiviral agents have been synthesized and evaluated against a number of target viruses both *in vitro* and *in vivo*. Program emphasis is currently on the development of antivirals for use in the treatment of infections with alphaviruses, flaviviruses, bunyaviruses, arenaviruses, and other viruses which are capable of eroding combat strength in troops deployed in overseas areas. In addition, current efforts are also being directed toward the development of antivirals for use in the treatment of AIDS through an Inter-Agency Agreement with the National Institutes of Health (NIH).

Members of the *Togaviridae* and *Flaviviridae* families (alphaviruses and flaviviruses) are capable of producing serious hemorrhagic or encephalitic diseases in humans. Infections with alphaviruses [Eastern equine encephalomyelitis (EEE), Western equine encephalitis (WEE), and Venezuelan equine encephalitis (VEE)] have occurred in epidemic proportions in the Americas. Chikungunya and O'nyong-nyong viruses also continue to cause epidemic disease on the African continent. The flaviviruses include several members which cause significant disease in humans. Dengue viruses types 1-4 are prevalent causes of acute illness in the tropics and subtropics of the world. Available vaccines are inadequate to control these infections effectively. Other members such as St. Louis encephalitis virus, Japanese B Encephalitis (JE) virus, and West Nile encephalitis virus cause mild to severe encephalitis diseases in humans. The tick-borne encephalitis virus group, represented by Russian Spring-Summer Encephalitis Virus, has caused widespread encephalitic disease in the U.S.S.R. and Northern Europe with high mortality rates. Yellow Fever (YF), in either the urban or jungle form, continues to be a threat, although the use of the 17-D vaccine is quite effective as a prophylactic measure against this disease. The Army's program is interested in controlling infections caused by the dengue viruses, Japanese encephalitis virus, Russian Spring-Summer encephalitis virus, Yellow Fever virus, and West Nile encephalitis virus.

A number of bunyaviruses have caused epidemic disease in many areas of the world: Rift Valley Fever virus was responsible for a major epizootic in Egypt in 1977-79 with considerable losses in domestic animals (sheep and cattle) and significant mortality among those humans infected with the virus. Sandfly fever virus has also been recognized as an important cause of epidemics in the Mediterranean area, in the Middle East, and in Central Europe. Oropouche, La Crosse, and California encephalitis viruses have all caused significant disease in the Americas. Oropouche virus, for example, has been associated with a number of large human epidemics in Brazil over the past twenty years. Hantaan virus, the causative agent of Korean hemorrhagic fever, causes appreciable mortality and is widely distributed in Asia. It has only recently been shown to belong to the *Bunyaviridae* family. Of the *Bunyaviridae* family, the USAMRIID program has initiated studies with Sandfly fever virus, Rift Valley fever virus, Korean hemorrhagic fever virus, and Punta Toro virus.

Of the *Arenaviridae* family, current interest includes Lassa fever virus, an agent which causes significant lethal disease among infected humans in Africa, especially in Sierra Leone. Other arenaviruses

under current investigation include Junin and Machupo viruses, the causative agents of Argentine hemorrhagic fever and Bolivian hemorrhagic fever, respectively. These agents are found endemic in wide areas of South America. Pichinde (PIC) virus has been used in antiviral studies as a representative of this important family of viruses. Vesicular stomatitis virus is currently employed as a representative of the *Rhabdoviridae* family. Vaccinia Virus is currently employed as a representation of the DNA Virus (Poxviridae). This agent poses a threat to the military personnel as well as the general population because of the lack of antibody protection since no World Health Vaccination Program are now required. VV Virus is also commonly used as a carrier virus for genetic engineering technology, therefore posing an ever-present threat to a laboratory modification of any genetically engineered virulent agent.

Other viruses which cause sporadic but severe hemorrhagic fever in Africa are Marburg and Ebola viruses. These two closely-related agents have been placed in a new family (*Filoviridae*).

The above viruses are those which might be encountered in exotic troop locations and against which troops would not be expected to have any pre-existing immunity. With few exceptions, specific vaccines do not exist for these agents and some of the agents encountered may be poorly classified or may even be unclassified viruses which have not been seen previously. The antiviral chemoprophylaxis/chemotherapy approach may be the best modality to defend against this threat at the present time.

Another recurring problem with naturally-occurring virus infections exists in military boot camps where new recruits are assembled. These troops often develop infections with adenoviruses, influenza viruses, and parainfluenza viruses, sometimes in epidemic proportions. Infections with the adenoviruses have been a distinct military problem for years and multivalent vaccines have been prepared for use in new recruits. Nevertheless, an effective antiviral drug for treatment of adenovirus infections would be quite useful and therefore this virus group is also a target for antiviral chemotherapy in the Army's program.

A number of naturally-occurring viruses could be developed by an adversary into potent biological weapons for use in the field against U.S. forces. Many of the exotic RNA viruses are also potential BW agents, since their dissemination in an area where they are already indigenous could be employed as a means of disguising the source of the infection. In addition, other agents such as smallpox virus could be used very effectively against a susceptible civilian population prior to and during military operations to disrupt logistics and support activities and to create panic and chaos. The threat of BW attack poses some of the same problems as those to be addressed in the defense against naturally-occurring virus infections. Again, a broad-spectrum antiviral drug with selective activity against the RNA viruses could be the only real line of defense against such attach with those particular type of agents. The vaccine approach will only be effective in affording protection against a very limited group of these agents which number in the hundreds of different antigenic types.

With the advances made in the field of molecular genetics, it is now technically possible to genetically engineer altered viruses with enhanced virulence, communicability, drug resistance, and overall threat potential. An example of such misuse of advanced biotechnology would be the insertion of genes for highly toxic peptides such as snake venom toxins, potent bacterial toxins, or other low molecular weight toxins of military importance into the genome of a highly communicable virus such as influenza. The feasibility of inserting foreign genes into vaccinia virus and obtaining expression of those genes in the host cell has already been demonstrated. Recombinant DNA technology has made it possible to insert and express heterologous genes in a variety of different viruses. Effective defense against

possible altered viruses used as BW agents may well depend upon the development of antiviral drugs active against the vector viruses.

The Department of Antiviral Studies at USAMRIID is responsible for the acquisition, identification, and development of potential new antiviral drugs which are effective against viruses of military relevance and which might be useful in the treatment of AIDS. The program is therefore, broad-based and involves the synthesis, primary and secondary testing, and further characterization of novel antiviral compounds with regard to their possible biochemical mechanisms of action, pharmacokinetics, metabolism, optimal formulation, optimal combination with other drugs, and safety in animal model systems. The Department also directs studies in support of IND applications to the FDA for clinical testing of active antiviral agents for use in man.

Since the establishment of its antiviral testing program, the Department of Antiviral Studies, USAMRIID, has evaluated approximately 3,000 compounds in its primary *in vitro* screen. Fewer compounds have been evaluated *in vivo*. Selenazole was reported to have broad-spectrum activity against the exotic RNA viruses *in vitro* and is significantly more potent than Ribavirin against the togaviruses (VEE, YF, JE), bunyaviruses (RVF, SF, KHF), and arenaviruses (PIC) *in vitro*. The activity of this compound against YF virus is most impressive with an ED_{50} of 0.005 mg/ml in cell culture. The evaluation of Selenazole for therapeutic antiviral efficacy *in vivo*, however, yielded disappointing results and pharmacological problems may be responsible for the lack of efficacy in animal model systems. Ribavirin, on the other hand, has been shown in laboratory animal models to have significant antiviral efficacy against the bunyaviruses (RFV, Punta Toro and KHF) and the arenaviruses (PIC, Junin, Machupo, and Lassa Fever). Clinical trials with Ribavirin in patients with Lassa Fever virus or Hantavirus infections have yielded good results.

Ribavirin has also been shown to be effective in the treatment of Sandfly fever virus in human volunteers. Good progress has been made toward developing this particular antiviral drug for general clinical use by the Army, but new agents with higher potency and selectivity against the exotic RNA viruses will hopefully be identified in the expanded USAMRIID antiviral program. Because of the lag time in diagnosing viral disease, treatment with broad-spectrum antiviral agents offers the best hope to successfully defend against both naturally-occurring disease and against possible BW agents in the field. It is unlikely, however, that a single drug will be found that is effective against all of these exotic RNA virus infections, so additional antiviral agents must be developed. There is also a need to explore the efficacy of immunopotentiators, biological response modifiers, interferons, combination chemotherapy, and new approaches to drug delivery to enhance the antiviral efficacy of these agents.

The basic contract at Southern Research Institute was established to enable USAMRIID to evaluate approximately 1,500 compounds per year for efficacy against 10 different target viruses in a primary *in vitro* screen, 96 compounds per year for *in vivo* efficacy against a representative togavirus and arenavirus in appropriate animal model systems, and approximately 5 compounds per year in detailed *in vivo* studies. The basic contract also includes secondary testing studies with candidate antiviral agents that demonstrate promising activity both *in vitro* and *in vivo*. In July, 1986, the HIV virus was added as an additional virus to be tested under the *in vitro* primary screen. During 1989, at the request of Ms. C. Susan Tiffany (Contract Specialist, Ft. Detrick, Frederick, Maryland) the Adenovirus (AD2) and the Vesicular Stomatitis Virus (VSV) were deleted from the primary screen. Also, all *in vivo* work was discontinued. During 1989 - 1990, antiviral prescreen testing (*in vitro*) of plant extracts against Punta Toro, Yellow Fever Virus and Venezuelan Equine Encephalitis was added to this screening program at the rate of approximately 3000 extracts per year. This report summarizes our progress in implementing the research program and includes summaries of antiviral test data collected from November 16, 1985, through January 31, 1991.

2. CURRENT SCOPE OF WORK

This section describes the research objectives and the scope of work for each of the main tasks being performed by Southern Research Institute (SRI) on this contract during this reporting period. These tasks are: (a) Primary testing of compounds and plant extracts for antiviral efficacy *in vitro*, (b) Primary testing of chemical compounds and immunopotentiators for antiviral efficacy *in vivo*, (c) Secondary evaluation of compounds found active in the primary *in vitro* and *in vivo* screens.

2.1 Task 1: *In Vitro* Antiviral Evaluations

SRI conducted the primary screening of chemical compounds which were furnished by the Department of Antiviral Studies, USAMRIID, through its repository contractor (Biological Research Faculty and Facility, Inc.,[BRFF,Inc.] Ijamsville, MD) for antiviral efficacy in cell culture against representative viruses from the Togaviridae, Flaviviridae, Bunyaviridae, Arenaviridae, Rhabdoviridae, Poxviridae, Adenoviridae and Retroviridae families. The test viruses consist of the following: (1) Vaccinia (VV) Virus, (2) Adenovirus Type 2 (AD2), (3) Yellow Fever (YF) Virus, (4) Japanese Encephalitis (JE) Virus, (5) Venezuelan Equine Encephalomyelitis (VE) Virus, (6) Punta Toro (PT) Virus, (7) Sandfly (SF) Virus, (8) Hantaan (HTN) Virus, (9) Pichinde (PIC) Virus, (10) Vesicular Stomatitis (VSV) Virus, (11) Human Immunodeficiency (HIV) Virus. SRI was scheduled to evaluate approximately 1500 compounds per year against each of these eleven viruses *in vitro*, using CPE-inhibition assays, to determine the 50% minimal inhibitory concentration (MIC_{50}), or median inhibition dose (ID_{50}) of active compounds, respectively. Determinations was also made of the cytotoxicity of each candidate compound for the host cells, expressed in terms of the minimum (~25%) cytotoxic concentration of the compound. We calculated an *in vitro* selectivity index for each active compound against each susceptible test virus. Compounds that showed antiviral activity in the initial CPE-inhibition were retested in confirmatory CPE-inhibition assays.

Our program was changed during the latter part of 1989 to implement the Antiviral Prescreen Assay to evaluate plant extracts on a large scale against PT, YF and VE viruses. We were scheduled to test approximately 2000 - 3000 extracts per year using the prescreen assay protocol. A prescreen procedure was developed which uses MTT and evaluates five compounds (at four-$\log_{10}$-dose levels) per virus per 96-well plate. Compounds deemed active from the prescreen program were tested further in the primary screening program against the six Exotic Viruses listed above. Screening data was reported to BRFF, Inc. and to USAMRIID essentially as it was obtained in hardcopy form and/or on floppy diskettes.

2.2 Task 2: *In Vivo* Antiviral Evaluations

SRI conducted the primary testing of chemical compounds and immunopotentiators, being furnished by the Department of Antiviral Studies, USAMRIID, for antiviral efficacy in rodent models and conducted a preliminary assessment of acute toxicity with each material submitted. SRI evaluated the compounds and immunopotentiators against representative viruses from the Togaviridae and Arenaviridae families in rodents. These challenge viruses consist of the following agents: (1) Venezuelan Equine Encephalomyelitis Virus in the mouse, and (2) Pichinde Virus in the hamster. It was later decided to expand the *in vivo* evaluations to include representative viruses from the Flaviviridae, Poxviridae, and Retroviridae families. This expanded our list of challenge viruses to include the following agents: (3) Japanese Encephalitis Virus and (4) Vaccinia Virus. Compounds are evaluated at the primary level against each of these viruses using parenteral routes of administration. Antiviral efficacy was expressed in terms of the observed increase in the number of survivors, or in the mean survival time, in the treated group compared with that of the control untreated group. An *in vivo* virus rating was determined.

2.3 Task 3: Secondary Evaluations

SRI also conducted the secondary testing and further evaluation of compounds found active in the primary antiviral screen (Confirmatory Assays). Secondary testing includes an estimation of the *in vivo* therapeutic index of the candidate compound, the optimal dosage regimen, the optimal route of administration, the optimal treatment schedule, schedule dependency, the duration of antiviral effect, a determination of the utility of the candidate compound in combination with other drugs, and the influence of formulation on activity. SRI is expecting to evaluate approximately 5 compounds per year in extensive secondary *in vivo* testing to include determinations of dose-response relationships and antiviral efficacy. Data was reported to USAMRIID essentially as it was obtained.

Secondary *in vitro* evaluations of compounds active against Human Immunodeficiency Virus in the primary screen were also performed. These compounds were examined for their ability to inhibit HIV-induced p24 *gag* protein expression in permissive target cells by means of an indirect immunofluorescence assay, and for their ability to inhibit the production of HIV-induced reverse transcriptase activity in infected target cells (see section 4 of the **Second Annual Report** dated December 12, 1987). Active compounds are also being tested for possible cytotoxic effects in various immune function assays. In addition, active compounds were tested *in vitro* for efficacy against related murine, feline, and simian retroviruses.

3. EXPERIMENTAL METHODS

3.1 Cell Culture

A centralized cell culture facility for provision of high-quality cell culture for all of the virus screening laboratories on this project is located at SRI home-site. This centralized cell culture facility consists of two laboratories (one laboratory is approximately 225 sq. ft. and the other approximately 250 sq. ft.). Each laboratory has a laminar flow hood and each laboratory is fully equipped for the maintenance and propagation of cell cultures. Each laminar flow hood has been inspected and certified by the University of Alabama Occupational Health and Safety Department and these inspections and certifications will be done on a yearly basis. One laboratory has been in operation since February 1988 and the other laboratory was completed and came on line in June, 1988.

The centralized cell culture facility is currently propagated and maintained the following cell culture lines for this project: Vero (ATCC) and LLC-MK2.

Vero (ATCC) cells are used for seeding 96-well plates for the RNA virus assays and delivered to the BL-3 facility on the following schedules. Cell culture plates for the other virus laboratories are supplied as requested. Vero cells in T75 or T150 cell culture flasks for virus production are supplied as requested. In addition, Vero cells seeded in 96-well plates are supplied as requested for special studies, and developmental procedures.

The Centralized Cell Culture Facility supplied the media and solutions to the BL-3 facility as was needed.

For quality control, cell culture lines are routinely monitored for any change in their growth parameters. The cells seeded in 96-well plates are microscopically inspected before delivery to the laboratories to ensure proper cell distribution in the wells and cell integrity.

Sterility cultures are performed on all media and solutions used in the cell culture laboratory. At the time each reagent is made, 0.5 ml from each bottle or flask of reagent is added to an individual tube of thioglycollate medium and Sabouraud medium and the sterility culture tubes are incubated at 37°C for 48 hours before the solutions are released for use. The culture tubes are held 14 days before being discarded as negative.

At approximately 3-month intervals, samples from cell culture lines that are maintained in the Centralized Cell Culture Facility are sent to the ATCC for mycoplasma testing. These samples are monitored by use of the bisbenzamide DNA-fluorochrome stain and also by cultivating in mycoplasma broth and agar media under aerobic and anaerobic culture conditions.

Cell culture stocks are stored in liquid nitrogen.

3.2 Test Compounds

3.2.1 Receipt, Cataloging, and Storage

The drug samples submitted for testing were shipped to the centralized drug preparation laboratory by Biological Research Faculty and Facility, Inc. (BRFF). The drugs were checked against the enclosed shipping list, and stored in numerical order in the drug repository facility under the appropriate conditions, according to the information supplied by BRFF, Inc.

Requests for drug preparation are required to be delivered to the centralized drug preparation laboratory five working days prior to (Drug Request Form) the testing date. The drugs are solubilized and delivered to the designated laboratory on the day of testing.

3.2.2 Determination of Drug Solubility

If no drug solubility or stability information is provided by the supplier, the following procedure is used to determine drug solubility:

Weigh a 1 mg sample into a homogenizer vessel and add 1 ml of H_2O, which is the first solvent on the priority list. If the drug is not immediately soluble in H_2O, heat in a H_2O bath to 40°C. If the drug is not in solution after heating, homogenize with a hand homogenizer. Repeat the procedure with a freshly weighed 1 mg sample for each solvent in order of priority, until a suitable solvent is found. The priority list of solvents is as follows:

	Solvent	Volume (ml)		Solvent	Volume (ml)
1)	H_2O	1	4)	DMSO	0.1
2)	MeOH	0.1	5)	Acetone	0.1
3)	EtOH	0.1			

If the drug is insoluble in all of the above listed solvents, it is to be tested as a suspension in cell culture assay medium with the aid of a hand homogenizer or a vortex mixer. The final concentration of solvent in the starting drug concentration should not exceed 1% (preferably < 1%).

3.2.3 Compound Preparation for Testing

The following procedure is employed for the drug preparation:

1. Drugs for Primary Testing

All drugs are weighed in specified amounts, and the pre-determined solvent is added as required for the starting drug concentration.

Polystyrene snap-cap tubes are used for the weighed samples except for acetone-soluble drugs, then polypropylene tubes must be used. Polypropylene cryotubes are also used.

2. Pre-screen Drugs (Plant Extracts)

Plant extracts are received in the repository preweighed in amounts of 200 mg (± 10%) in 2 ml cryovials with an o-ring seal.

On Day 0 (24 hours prior to testing) 200 µl of a specified solvent is added to each sample. Each sample is homogenized and placed in an ultrasonic bath for 10 - 12 minutes. The samples are extracted for 18 hours at 22 - 24° C.

On Day 1 (day of testing), 800 µl of sterile-deionized water is added to each sample and thoroughly mixed. If a drug is insoluble, it is further homogenized with a tissue tearer until a homogenous suspension is obtained. An additional 1 ml of sterile-deionized water is added to each sample, bringing the total volume in each cryovial to 2 ml.

3. NCI Compounds for HIV Testing

Compounds supplied to us from the NCI storage contractor for retrovirus screening were received and prepared for testing in a separate drug preparation laboratory at SRI under the direction of Ms. Patricia Holum.

Tasks, such as acknowledgement of drug receipt, internal data-base management of all drugs, initialization of the *In-vitro* Screening System (IVSS), drug evaluation and data reporting were accomplished with an integrated computer system consisting of local and foreign hardware and software.

Local hardware consisted of 4 micro-computers, 5 Ampex terminals, 2 bar-code printers, 2 dot-matrix printers, 1 laser printer, and 2 96-well plate readers. Local software included public domain communications programs as well as commercial programs for relational data base management and word-processing.

Foreign hardware included two NIH main-frame computers located in Bethesda, Maryland, a DEC 10 and an IBM-370. Access and use of these computers was under the auspices of the Division of Computer Research and Technology (DCRT). Software, the IVSS (*In vitro* screening system), was provided by Value Systems Engineering (VSE) under contract to DCRT.

Initialization of the IVSS was through the AVAIL module of that program on the IBM-370 after drug solubilizations had been performed. Solubility determinations were made using vehicles in the following order; distilled water, DMSO, methyl alcohol, ethyl alcohol, or any other vehicle requested by DTP. When a vehicle was found in which the test agent was per ml. Using the vehicle found in the solubility determination, the test agent was prepared at the highest soluble concentration (maximum 100 mg/ml), labeled with a bar-code label produced in the AVAIL module of the IVSS, and stored at -20°C until delivered to the HIV screening laboratory.

3.3 *In Vitro* Antiviral Screening: DNA, Exotic RNA Viruses and Retroviruses

The viruses and host cell lines used in our *in vitro* assays are listed in **Table 1**. The antiviral activity of a compound was defined as a measure of its ability to inhibit the cytopathogenic effect (CPE) of the virus on its host cell. During the first three years of the contract, compounds were evaluated in a standard CPE-inhibition assay (virus rating). The last two years of the program, we moved to a MTT based antiviral assay format. Positive control drugs (**Table 1**) were included in each antiviral assay to validate the test conditions used in the antiviral assays.

The MTT Assay System, measures the degree of cell viability (and therefore CPE and drug cytotoxicity) as determined by MTT uptake. This procedure is based upon the reduction of the tetrazolium salt, 3-(4,5-dimethyl-thiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) by mitochondrial enzymes of viable host cells to MTT formazan. The blue color of the MTT formazan is measured spectrophotometrically. It was felt that this new system was more efficient and suitable for a large-scale screening program. Plate layout and data printout are included in **Figure 1**.

The details of the assay procedures for each virus are described on the following pages.

Table 1

In Vitro Antiviral Screening Models

Virus	Strain	Classification	Cell Line	Positive Control Compound
Vaccinia Virus	Lederle Chorio-allantoic	Poxviridae	Vero	Selenazole (AVS-0253) and Arabinofuranosyladenine (AVS-1752)
Adenovirus Type 2	Adenoid 6	Adenoviridae	HEp-2	Ribavirin (AVS-0001), Selenazole (AVS-0253)
Yellow Fever Virus	Asibi	Flaviviridae	Vero	Selenazole (AVS-0253)
	17D (Prescreen)	Flaviviridae	Vero	Selenazole (AVS-0253)
Japanese Encephalitis Virus	Nakayama	Flaviviridae	Vero	Selenazole (AVS-0253)
Venezuelan Equine Encephalomyelitis Virus	Trinidad Donkey	Togaviridae	Vero	Selenazole (AVS-0253)
Punta Toro Virus	Adames	Bunyaviridae	Vero	Ribavirin (AVS-0001)
Sandfly Fever Virus	Sicilian	Bunyaviridae	Vero	Ribavirin (AVS-0001)
Hantaan Virus	76-118	Bunyaviridae	Vero (VSC-6)	Ribavirin (AVS-0001)
Pichinde Virus	4763	Arenaviridae	Vero	Ribavirin (AVS-0001)
Vesicular Stomatitis Virus	Indiana	Rhabdoviridae	L929	Carbocyclic-3-deaza-adenosine (AVS-0303)
Human Immunodeficiency Virus	IIIB	Retrovirus	ATH8,MT-2 CEM	3′-Azido-3′-deoxythymidine (AZT) (AVS-1603) 2′,3′-Dideoxycytidine (ddC) (AVS-2639)

EXAMPLE OF A REPORT OF MTT ASSAY

PLATE PUJ — **IN VITRO ANTIVIRAL RESULTS** — **DRUG: AVS 0001**

DRUG 0001 — **MTT ASSAY** — **TAI: >30.31 SI: >8.53**

Section I

	1	2	3	4	5	6	7	8	9	10	11	12
	reagent background						plastic background					
A	0.126	0.122	0.138	0.122	0.114	0.116	0.039	0.039	0.039	0.039	0.040	0.040
	tox	cc/vc	drug 0001 experimental			tox					cc/vc	
B	1.603	1.575	0.494	0.305	0.276	1.514					2.407	
C	1.581	1.554	0.452	0.406	0.274	1.514					1.537	
D	1.622	1.578	0.634	0.654	0.525	1.555					1.520	
E	1.578	0.502	1.017	0.999	1.021	1.616					0.523	
F	1.626	0.468	1.554	1.539	1.542	1.592					0.500	
G	1.496	0.456	1.403	1.403	1.403	1.392					0.566	
	drug 0001 colorimetric background											
H	0.119	0.113	0.112	0.131	0.115	0.116						

tox=cell toxicity cc=cell control vc=virus control BOLD = highest drug conc values shown are optical densities

Section II

VIRUS	SF	PROJECT #	5975-1
CELLS	VERO P193	SPONSOR	USAMRIID
SHIPMENT NUMBER	01	TEST DATE	04/20/89
		DATE READ	05/01/89

REAGENT	0.123
VIRUS CONTROL	0.380
CELL CONTROL	1.572
DIFFERENTIAL	1.193

DRUG 0001	25%	50%	95%
TC (ug/mL)	> 100.00	> 100.00	> 100.00
IC (ug/mL)	5.48	11.70	———
ANTIVIRAL INDEX (AI)	> 18.20	> 8.53	———

DRUG 0001		ANTIVIRAL TEST VALUES		CYTOTOXICITY TEST VALUES		
ROW ON PLATE	CONC. (ug/mL)	MEAN O.D.	% VIRAL CPE	MEAN O.D.	% CELL VIABILITY	COLORIMETRIC CONTROL
low B	0.32	-.137	100%	1.443	92%	-.007
C	1	-.117	100%	1.433	91%	-.008
D	3.2	0.094	92%	1.458	93%	0.008
E	10	0.521	56%	1.485	94%	-.011
F	32	1.053	12%	1.496	95%	-.010
high G *	100	0.905	24%	1.326	84%	-.004

* highest drug concentration tested — values shown are final adjusted numbers

Section III

SUMMARY GRAPH

AVS 0001 vs. SF (04/20/89)

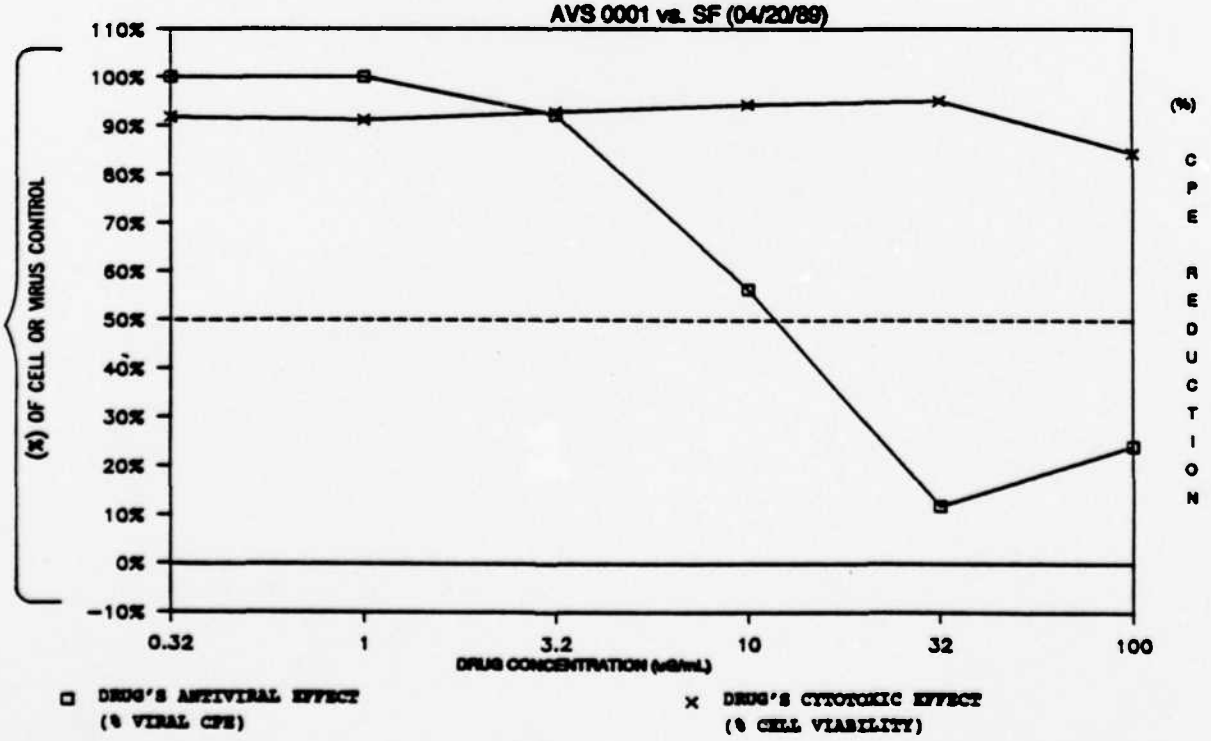


Figure 1

EXPLANATION OF *IN VITRO* ANTIVIRAL RESULTS FORM (MTT ASSAY)

The *In Vitro* Antiviral Results form (Figure 1) has three sections:

Section I. Sample and Test Identification and the actual raw data (optical density readings) collected for each 96-well plate.

The Test Identification and Raw Data Section specifies the compound that was tested, a unique plate number (assigned by the computer) and the actual optical density readings for the virus control (vc), cell control (cc), drug alone (tox) and the drug plus virus (drug experimental). Background readings are also taken for the container (plastic), reagent (culture medium) and drug colorimetric.

Section II. Printouts of pertinent Control and Test Results computed from the raw data are in this section.

Tabular Dose Response Test Results are calculated as follows:

a. Mean Medium O.D. is subtracted from means of virus and cell control O.D.s.

b. Drug colorimetric O.D. is subtracted from each infected and uninfected value at the corresponding drug dilution.

c. The Differential is the mean O.D. attributable to virus kill (CPE).

Differential = (mean O.D. cell control) - (mean O.D. Virus control).

d. For infected cells at each drug concentration,

% CPE = the reciprocal of:
[(mean O.D. infected wells - mean O.D. drug colorimetric wells) -(mean O.D. virus control - mean reagent O.D.)]/Differential; expressed in percent.

e. For uninfected cells at each drug dilution,

% Cell Viability = [(mean O.D. uninfected drug-treated wells) - (mean drug colorimetric wells)]/(mean O.D. cell control).

Quantitation of Viral Cytopathic Effect (CPE) and Drug Activity are displayed in the shaded area of Section II. These values are defined below:

$TC_{25,50,95}$ = The drug concentration (μg/ml) that reduced cell viability by 25%, 50% or 95%.

$IC_{25,50,95}$ = The drug concentration (μg/ml) that inhibited CPE by 25%, 50% or 95% calculated by using a regression analysis program for semilog curve fitting.

$AI_{25,50,95}$ = Antiviral Index, calculated by dividing $TC_{25,50}$ or $_{95}$ by $IC_{25,50}$ or $_{95}$.

TAI = Total Antiviral Index - the area between the cytotoxicity and the antiviral curves.

SI = Selectivity Index, calculated by dividing the TC_{25} by the IC_{50}.

Figure 1 (Cont'd)

Section III. The Graphic Results Summary Section displays a plot or graphic illustration from computed values in Section II.

The line connecting the square symbols depicts the percentage of viral CPE in virus-infected cells treated with the test compound (at the indicated concentrations) relative to the Differential. This line expresses the *in vitro* anti-viral activity of the sample.

The line connecting the X symbols depicts the percentage of surviving uninfected cells treated with the test compound relative to the uninfected, untreated control (cell control). This line expresses the cytotoxicity of the drug at the various concentrations, or percent cell viability. The dotted line is just a reference line at 50%.

Figure 1 (Cont'd)

3.3.1 Vaccinia Virus (VV)

Vaccinia virus, strain Lederle CA, was obtained from Dr. Wilton Rightsel, formerly with Parke, Davis and Company, Detroit, Michigan. We have serially passed VV in HEp-2 (continuous-passage human carcinoma of the larynx) and Vero (continuous-passage African green monkey kidney) cell monolayer cultures. The VV used to screen compounds for USAMRIID was propagated and assayed in Vero cell monolayer cultures in Eagle's Minimal Essential Medium (MEM) supplemented with 2% heat-inactivated fetal bovine serum (Δfbs) and 50 μg/ml of gentamicin. Virus stocks were titrated according to the procedure of Reed and Muench (1938) and diluted in culture medium to 100 $CCID_{50}$ per 0.1 ml.

During the time period covered by this report, compounds were screened for activity against VV in Vero cell monolayer cultures in 96-well plates, employing a CPE-inhibition assay procedure.

Subsequent to 12/15/88 and beginning with Shipment 42, all compounds have been screened for activity against VV by the MTT assay procedure, in which the degree of cell viability (and therefore CPE and drug cytotoxicity) is determined by MTT uptake. This procedure is based on the reduction of the tetrazolium salt, 3-(4,5-dimethyl-thiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) by mitochondrial enzymes of viable host cells to MTT formazan. The blue color of the MTT formazan is measured spectrophotometrically. Vero cells are seeded into 96-well plates at a density of 4×10^4 cells in 0.2 ml per well in MEM + 5% bovine calf serum. The plates are incubated at 37°C overnight. The next day our CPE-inhibition assay is set up according to the format shown in Appendix A. MEM + 2% heat-inactivated fetal bovine serum (Δfbs) serves as experiment medium. To each of triplicate test wells containing replicate cell monolayers, 100 μl of each test drug solution (or suspension) and 100 μl of experiment virus are dispensed. Six 0.5 $\log_{10}$ concentrations of each drug beginning with 320 μg/ml are routinely used. Compounds are solubilized or suspended and diluted in culture medium the day of use. Cell controls containing 200 μl of medium, virus controls containing cells, medium and virus, and duplicate drug cytotoxicity controls containing cells, medium and each drug concentration are included on each plate. Blank wells, medium (Reagent) control wells, and drug colorimetric controls (drug + medium + MTT + SDS - no cells) accompany each test. The covered plates are incubated at 37°C in a humidified atmosphere containing 2% CO_2.

When CPE reach 100%, 5 days postvirus infection (p.i.), 20 μl of MTT (a 5 mg/ml solution in PBS) are added to each well. The plates are incubated at 37°C for six to seven hours to allow reduction of the MTT to the formazan form. Then 40 μl aliquots of a 30% solution of SDS in 0.02*N* HCl are added to the plate wells. The plates are incubated overnight to allow the SDS to lyse the cells and dissolve the MTT formazan crystals. The absorbance of the contents of each well is determined by a plate reader employing dual filters of 570 and 650 nm. The plate reader is interfaced with a computer programmed to capture the optical density (O.D.) measurements from the reader and calculate indices such as the $IC_{25, 50, 95}$, $TC_{25, 50, 95}$ and to plot the percents of viral CPE and cell viability of drug-treated cultures.

3.3.2 Adenovirus Type 2 (AD2)

We obtained the Adenoid-6 strain of Adenovirus Type 2 from the American Type Culture Collection. In our laboratories, the virus was passaged in HEp-2 cell monolayer cultures in MEM supplemented with 0.4% lactalbumin hydrolysate and 2% heat-inactivated fbs. An early "cytotoxicity" is frequently observed in adenovirus-infected cell cultures. This "cytotoxicity", the result of penton toxin following an accumulation of unassembled viral components within the cell, can mask the later-appearing CPE. To prevent the appearance of this early cytotoxicity, virus stocks were treated as follows: Adenovirus-infected HEp-2 cell cultures were subjected to three cycles of freeze-thawing to disrupt the cell membranes. The material from the cultures was centrifuged, and the pooled supernatant fluid was treated with 100 μg/ml of purified trypsin (Worthington, TRL) for one hour at 37 °C. The enzyme

action was then stopped by adding soybean trypsin inhibitor (Worthington; titrated for specific activity against trypsin) to the supernatant viral fluid. The trypsin-treated virus preparation, along with the untreated supernatant viral fluid was titrated for infectivity in HEp-2 cell cultures to make sure that the viral infectivity of the treated preparation was not diminished. Before the trypsin-treated stock adenovirus was used for antiviral screening, it was evaluated as the challenge virus against our positive control compounds Selenazole and Ribavirin.

During the period covered by this report, test compounds were screened for antiviral activity against adenovirus using a CPE-inhibition assay procedure as described above for vaccinia virus in Section 3.3.1. Stock AD2 was diluted in medium to 100 $CCID_{50}$ per 0.1 ml. We have found that a 32-$CCID_{50}$ challenge of AD2 per plate well resulted in only 50-70% CPE in four days. Because HEp-2 cells grow rapidly, the host cell cultures in the plate wells deteriorated significantly after four days post-virus infection. Therefore the stronger virus challenge allowed 100% CPE to develop in four days. Six 0.5 log_{10} concentrations of each compound were evaluated in triplicate HEp-2 cell culture wells. To each culture well was added 0.1 ml of the test drug solution, followed immediately by 0.1 ml of the challenge virus dilution. The 96-well plates were incubated for four days at 37°C in a humidified atmosphere containing 2% CO_2. The CPE were examined microscopically and graded 0-4.

As we discussed in our Sixth Semiannual Progress Report (SRI-89-BIO-109-5975, December 15, 1988) an MTT CPE-inhibition assay was developed for use with AD2 using A549 cells or 293 cells. The MTT assay in either cell line was dose-responsive and reproducible, but would be a more stringent screening assay than the present CPE-inhibition assay which is read microscopically. Therefore we continued using the CPE-inhibition (microscopic) assay in HEp-2.

As a result of contract modifications by USAMRIID in November, 1989, AD2 was deleted from the virus spectrum utilized for primary screening.

3.3.3 Yellow Fever Virus (YF)

We obtained our original stock of Yellow Fever Virus, Asibi strain, from Dr. Andrew J. Main, Jr., of the Yale Arbovirus Research Unit, New Haven, Connecticut.

To grow virus stocks, Vero cells (ATCC) were infected at an moi of about 0.1 PFU/cell in MEM containing 10% inactivated fbs. Virus was allowed to adsorb for 1 hour, after which a minimal volume of growth medium was added and the cells were incubated at 37°C. The culture fluid was collected at 5 days post infection and the clarified by centrifugation (5000 rpm, 15 minutes, 4°C) in a Sorvall SA-600 rotor. The supernate was dispensed into 0.5 ml aliquots and then frozen and stored at -84°C. One aliquot was used to determine the $TCID_{50}$ and PFU titers for the stock.

The standard operating procedure is an MTT-based assay as follows:

Vero cells are seeded in 96-well tissue culture plates at a density of 1.8×10^4 cells/well in 100 μl complete EMEM and incubated overnight at 37°C/5% CO_2.

The following day, the medium is aspirated out of the wells and 50 μl of virus (diluted to a virus load of 32 $TCID_{50}$/well) are added to the test and virus control wells. The toxicity and cell control wells receive 50 μl of complete EMEM. The plates are incubated for 30 minutes at 37°C/5% CO_2 to allow virus to adsorb.

After virus adsorption, the test wells receive an additional 50 μl of a 2X concentration of drug and the control wells receive an additional 50 μl of complete EMEM. The total volume per well = 100 μl. Generally, the standard drug test concentration range is from 1 μg/ml to 320 μg/ml.

The plates are incubated at 37°C/5% CO_2 until the virus control wells exhibit maximum CPE (+4 = 100%) by visual scoring under the microscope (40X). Generally, the YF virus (with 32 $TCID_{50}$ virus load) requires 6-7 days of incubation to achieve maximum CPE. At this time, all wells (excluding plastic control wells) receive 50 µl of MTT solution (1.50) mg/ml, prepared in complete EMEM).

The plates are incubated 7 hours at 37°C/5% CO_2 (in the dark) to allow reduction of the tetrazolium salt to the formazan product, after which the cells are lysed and the formazan is solubilized by the addition of 100 µl of a lysing solution (10% SDS-0.01N HCl) to all wells generally. If the MTT solution is added in the morning, the lysing agent is added at the end of the day, and lysis occurs overnight (14 - 15 hours in the dark).

3.3.4 Japanese Encephalitis Virus (JE)

We obtained our original stock of Japanese Encephalitis Virus, Nakayama strain, from Dr. George R. French of the Salk Institute, Swiftwater, Pennsylvania.

To grow virus stocks, Vero cells (ATCC) were infected at an moi of about 0.1 PFU/cell in MEM containing 5% fbs. Virus was allowed to adsorb for 1 hour, then a minimal volume of growth medium was added and the cells were incubated at 37°C. The culture fluid was collected at 4-5 days post infection and clarified by centrifugation (5000 rpm, 15 minutes, 4°C) in a Sorvall SA-600 rotor. The supernate was dispensed into 0.5 ml aliquots and then frozen and stored at -84°C. One aliquot was used to determine $TCID_{50}$ and PFU titers of the stock.

The standard operating procedure is an MTT-based assay as follows:

Vero cells are seeded in 96-well tissue culture plates at a density of 1.8×10^4 cells/well in 100 µl complete EMEM and incubated overnight at 37°C/5% CO_2.

The following day, the medium is aspirated out of the wells and 50 µl of virus (diluted to a virus load of 32 $TCID_{50}$/well) are added to the test and virus control wells. The toxicity and cell control wells receive 50 µl of complete EMEM. The plates are incubated for 30 minutes at 37°C/5% CO_2 to allow virus to adsorb.

After virus adsorption, the test wells receive an additional 50 µl of a 2X concentration of drug and the control wells receive an additional 50 µl of complete EMEM. The total volume per well = 100 µl. Generally the standard drug test concentration range is from 1.0 µg/ml to 520 µg/ml.

The plates are incubated at 37°C/5% CO_2 until the virus control wells exhibit maximum CPE (+4 = 100%) by visual scoring under the microscope (40X). Generally, the JE virus (with 32 $TCID_{50}$ virus load) requires 6-7 days of incubation to achieve maximum CPE. At this time, all wells (excluding plastic control wells) receive 50 µl of MTT solution (1.50) mg/ml, prepared in complete EMEM).

The plates are incubated 7 hours at 37°C/5% CO_2 (in the dark) to allow reduction of the tetrazolium salt to the formazan product, after which the cells are lysed and the formazan is solubilized by the addition of 100 µl of a lysing solution (10% SDS-0.01N HCl) to all wells. If the MTT solution is added in the morning, the lysing agent is added at the end of the day, and lysis occurs overnight (14 - 15 hours in the dark).

3.3.5 Venezuelan Equine Encephalomyelitis Virus (VE)

We obtained our original stock of Venezuelan Equine Encephalomyelitis Virus, Trinidad Donkey strain, from Dr. George R. French of The Salk Institute, Swiftwater, Pennsylvania.

The virus was propagated in Vero cells (ATCC) by infection at a moi of <0.1 PFU/cell. Fluids from infected cultures were collected three days post-infection and clarified by centrifugation (5000 rpm, 15 min, 4°C) in a Sorvall SA-600 rotor. The supernatant fluid was dispensed into 0.5-ml aliquots, quick frozen in a dry ice-ethanol bath and stored at -84°C. One aliquot was used to determine $TCID_{50}$ and PFU titers of the stock.

The standard operating procedure is an MTT-based assay as follows:

Vero cells are seeded in 96-well tissue culture plates at a density of 1.8×10^4 cells/well in 100 µl complete EMEM and incubated overnight at 37°C/5% CO_2.

The following day, the medium is aspirated out of the wells and 50 µl of virus (diluted to a virus load of 32 $TCID_{50}$/well) are added to the test and virus control wells. The toxicity and cell control wells receive 50 µl of complete EMEM. The plates are incubated for 30 minutes at 37°C/5% CO_2 to allow virus to adsorb.

After virus adsorption, the test wells receive an additional 50 µl of a 2X concentration of drug and the control wells receive an additional 50 µl of complete EMEM. The total volume per well = 100 µl. Generally the standard drug test concentration range is from 1.0 µg/ml to 320 µg/ml.

The plates are incubated at 37°C/5% CO_2 until the virus control wells exhibit maximum CPE (+4 = 100%) by visual scoring under the microscope (40X). Generally, the VEE (with 32 $TCID_{50}$ virus load) requires 3 days of incubation to achieve maximum CPE. At this time, all wells (excluding plastic control wells) receive 50 µl of MTT solution (1.50) mg/ml, prepared in complete EMEM).

The plates are incubated 7 hours at 37°C/5% CO_2 (in the dark) to allow reduction of the tetrazolium salt to the formazan product, after which the cells are lysed and the formazan is solubilized by the addition of 100 µl of a lysing solution (10% SDS-0.01N HCl) to all wells. If the MTT solution is added in the morning, the lysing agent is added at the end of the day, and lysis occurs overnight (14-15 hours in the dark).

3.3.6 Punta Toro Virus (PT)

We obtained our original stock of Punta Toro virus (Adames strain) from Dr. Robert Sidwell of Utah State University. His virus stock originated from Dr. Dominique Pifat of USAMRIID.

To grow virus stocks, Vero cells (ATCC) were infected at a low multiplicity of infection (moi; $\leq$0.1) in MEM supplemented with 10% inactivated fbs. Culture fluid was collected at five days post-infection and clarified by centrifugation (5000 rpm, 15 minutes, 4°C) in a Sorvall SA-600 rotor. The supernate was dispensed into 0.5-ml aliquots, then frozen and stored at -84°C. One aliquot was used to determine a $TCID_{50}$ titer and a plaque forming unit (PFU) titer for the stock.

The standard operating procedure is an MTT-based assay as follows:

Vero cells are seeded in 96-well tissue culture plates at a density of 1.8×10^4 cells/well in 100 µl complete EMEM and incubated overnight at 37°C/5% CO_2.

The following day, the medium is aspirated and all cells are treated with 100 µl of pretreatment solution for 30 minutes at 37°C/5% CO_2. The pretreatment solution is composed of 1% DMSO from a 100% DMSO stock solution, 1% DEAE-Dextran from a 2.0 mg/ml stock solution in sterile water, and 98% Hank's Balanced Salt Solution.

After this the pretreatment medium is aspirated out of the wells and 50 μl of virus (diluted to a virus load of 32 $TCID_{50}$/well) are added to the test and virus control wells. The toxicity and cell control wells receive 50 μl of complete EMEM. The plates are incubated for 30 minutes at 37°C/5% CO_2 to allow virus to adsorb.

After virus adsorption, the test wells receive an additional 50 μl of a 2X concentration of drug and the control wells receive an additional 50 μl of complete EMEM. The total volume per well = 100 μl. Generally the standard drug for concentration range is from 1 μg/ml to 320 μg/ml.

The plates are incubated at 37°C/5% CO_2 until the virus control wells exhibit maximum CPE (+4 = 100%) by visual scoring under the microscope (40X). Generally, the PT virus (with 32 $TCID_{50}$ virus load) requires 6-7 days of incubation to achieve maximum CPE. At this time, all wells (excluding plastic control wells) receive 50 μl of MTT solution (1.50) mg/ml, prepared in complete EMEM).

The plates are incubated 7 hours at 37°C/5% CO_2 (in the dark) to allow reduction of the tetrazolium salt to the formazan product, after which the cells are lysed and the formazan is solubilized by the addition of 100 μl of a lysing solution (10% SDS-0.01N HCl) to all wells. Generally if the MTT solution is added in the morning, the lysing agent is added at the end of the day, and lysis occurs overnight (14 - 15 hours in the dark).

3.3.7 Sandfly Fever Virus (SF)

We obtained our original stock of Sandfly Fever virus, Sicilian strain (TC adapted), from Dr. George R. French of the Salk Institute, Government Services Division, Swiftwater, Pennsylvania.

To grow virus stocks, Vero-76 cells (Dr. French, Salk Institute) or Vero cells (ATCC), depending upon availability, were pre-treated with DEAE-dextran (25 μg/ml) and 1% DMSO in growth medium (MEM containing 10% inactivated fbs) for 30 minutes at 37°C. This was removed and then the cells were infected with SF virus in growth medium at an moi of 0.1. Virus was allowed to adsorb for one hour at 37°C. A minimal volume of growth medium was then added and the cells were incubated at 37°C. The culture fluid was collected at four days post infection and clarified by centrifugation (5000 rpm, 15 min, 4°C). The supernate was dispensed into 0.5 ml aliquots, then frozen and stored at -84°C. One aliquot was used to determine $TCID_{50}$ and PFU titers for the stock.

The standard operating procedure is an MTT-based assay as follows:

Vero cells are seeded in 96-well tissue culture plates at a density of 1.8×10^4 cells/well in 100 μl complete EMEM and incubated overnight at 37°C/5% CO_2.

The following day, the medium is aspirated and all cells are treated with 100 μl of pretreatment solution for 30 minutes at 37°C/5% CO_2. The pretreatment solution is composed of 1% DMSO from a 100% stock solution, 1% DEAE-Dextran from a 2.5 mg/ml stock solution in sterile water, and 98% HBSS.

After this, the pretreatment medium is aspirated out of the wells and 50 μl of virus (diluted to a virus load of 32 $TCID_{50}$/well) are added to the test and virus control wells. The toxicity and cell control wells receive 50 μl of complete EMEM. The plates are incubated for 30 minutes at 37°C/5% CO_2 to allow virus to adsorb.

After virus adsorption, the test wells receive an additional 50 μl of a 2X concentration of drug and the control wells receive an additional 50 μl of complete EMEM. The total volume per well = 100 μl. Generally the standard drug concentration range is from 1 μg/ml to 320 μg/ml.

The plates are incubated at 37°C/5% CO_2 until the virus control wells exhibit maximum CPE (+4 = 100%) by visual scoring under the microscope (40X). Generally, the SF virus (with 32 $TCID_{50}$ virus load) requires 6-7 days of incubation to achieve maximum CPE. At this time, all wells (excluding plastic control wells) receive 50 µl of MTT solution (1.50) mg/ml, prepared in complete EMEM).

The plates are incubated 7 hours at 37°C/5% CO_2 (in the dark) to allow reduction of the tetrazolium salt to the formazan product, after which the cells are lysed and the formazan is solubilized by the addition of 100 µl of a lysing solution (10% SDS-0.01N HCl) to all wells. Generally if the MTT solution is added in the morning, the lysing agent is added at the end of the day, and lysis occurs overnight (14 - 15 hours in the dark).

3.3.8 Hantaan Virus (HTN)

We obtained several vials of Hantaan Virus, strain 76-118, (formerly referred to as Korean Hemorrhagic Fever Virus, KHF) from Dr. John W. Huggins and Mr. Orville Brand of USAMRIID. Initial attempts to plaque this virus in a routine plaque assay were unsuccessful. Discussions with Dr. Huggins and Mr. Brand indicated that the quality of the reagents used in the assay is critical. Mr. Brand graciously supplied us with a shipment of his tested cell culture supplies and fresh cultures of Vero VSC-6 cells to use in assaying KHF virus.

Six-well culture trays of VSC-6 cells were seeded at a density of 3.75×10^5 cells/well with MEM containing 5% horse serum, 5% Nu serum, 10 mM HEPES buffer, 2 mM glutamine, 1 mM sodium pyruvate, and penicillin/streptomycin (at 100 units and 100 µg/ml, respectively) and incubated at 37°C in a 5% CO_2 humidified atmosphere. As suggested by Mr. Brand, KHF virus was diluted ten-fold in MEM with supplements and stored at 4°C and stored overnight prior to assay.

The following day, the culture medium was aspirated and 0.4 ml of virus dilution was added to duplicate cultures. Two cultures per tray were mock-infected with 0.4 ml MEM. Culture trays were incubated for 1 hour at 37°C and swirled every 15 minutes.

After 1 hour adsorption, 2.5 ml of overlay consisting of cell culture medium plus 0.6% agarose was added to each culture. The trays were reincubated at 37°C. Seven days after infection, a 2.0 ml volume of overlay was added to each culture and the cultures reincubated. Twelve days after infection, 1 ml of overlay with neutral red was added to each well. Culture trays were reincubated and observed for plaques from Day 13 to Day 20, post infection.

Testing of antiviral compounds against the Hantaan virus was temporarily suspended in our laboratory to complete the development of the ELISA system then testing was carried out at USAMRIID Ft. Detrick, Maryland under the direction of Dr. John Huggins.

3.3.9 Pichinde Virus (PIC)

Vero cells, obtained from Dr. George R. French of The Salk Institute, Swiftwater, Pennsylvania, were maintained in Eagle's Minimal Essential Medium containing 10% fetal bovine serum. Baby hamster kidney (BHK-21) cells were obtained from the American Type Culture Collection and maintained in MEM containing 10% newborn calf serum and 10% tryptose phosphate broth.

Pichinde virus strain 4763 was obtained from Dr. J. Gangemi of the University of South Carolina, School of Medicine. The virus preparation received was that of a guinea pig spleen homogenate from Pichinde virus infected guinea pigs. After amplifying this virus preparation in BHK-21 cells, a three-time plaque-purified virus preparation was generated in Vero cells. The plaque-purified virus was amplified twice in BHK-21 cell cultures and stored at -84°C as a virus seed stock. Several

preparations of virus used for plaque-reduction assays were prepared by infecting BHK-21 cells with seed stock virus at a multiplicity of infection of 1 PFU/cell. Culture fluids collected three days post-infection were clarified by centrifugation at 600 x g for 5 min., frozen rapidly in a dry ice/ethanol bath and stored at -84°C in small aliquots. These preparations had virus titers ranging from 6.4×10^7 to 1.2×10^9 PFU/ml.

Vero cells, seeded into six-well cell culture trays at a density of 8×10^5 cells per well, were incubated at 37°C in a humidified 5% CO_2 incubator. The following day the cultures were examined microscopically for confluency. Ribavirin and experimental antiviral drugs were serially diluted in half-$\log_{10}$ increments in MEM containing 10% fbs. The final test concentration range was from 1 - 320μg/ml. Culture fluids were removed by aspiration and to four of the six cultures of each tray were added a 0.2 ml inocula of PIC virus diluted in MEM containing 10% fbs so as to contain 40 to 80 PFU. To the remaining cultures of each tray, 0.2 ml of culture medium alone was added. The cultures were reincubated as above and periodically shaken so that the inoculum was dispensed over the entire monolayer.

One hour later, 0.2 ml of the appropriate dilution of drug was added to three of the virus-infected cultures (virus-infected, treated) and to one of the mock-infected cultures (toxicity control) on each tray. To the remaining mock-infected (cell control) and virus-infected (virus control) cultures were added 0.2 ml of MEM containing 10% fbs. The culture fluids were mixed by shaking the culture trays, then 1.6 ml of agar overlay was added and each culture was thoroughly mixed as above. The cultures were set on a level surface until the agar overlay solidified and were then reincubated at 37°C. The agar overlay used in the assay contained Eagle's MEM, fetal bovine serum, glutamine, non-essential amino acids, sodium bicarbonate, and Noble agar in final concentrations of 1x, 2%, 1 mM, 1mM, 2.2 mg/ml and 1%, respectively.

Three days later 2 ml of a sterily filtered neutral red solution (0.08 mg/ml in PBS) was added to each culture. Cultures were reincubated; then six to eight hours later plaques were examined and counted. With each daily assay, Ribavirin (positive control antiviral drug) was included in a parallel assay. Drug cytotoxicity was microscopically evaluated and rated as with CPE-inhibition assays.

3.3.10 Vesicular Stomatitis Virus (VSV)

The VSV (Indiana strain) was obtained from Dr. Robert Sidwell, Utah State University, Logan, Utah in 1973. Dr. Sidwell had originally obtained the virus from the ATCC. Since the virus has been in this laboratory, it has been passaged 5 times in L929 cells.

The L929 cells were obtained from the ATCC and have been carried in continuous passage or stored frozen in liquid nitrogen. The medium used to maintain the L929 cells was Eagle's minimum essential medium supplemented with 10% or 5% heat-inactivated fetal bovine serum, 100 units penicillin per ml, and 100 μg streptomycin per ml (EMEM + 10% or 5% heat-inactivated fbs).

From November 16, 1988 to January 13, 1989, CPE-inhibition assay was used to assay the drugs against VSV. The L929 cells were seeded into the 96-well plates at a concentration of 4×10^4 cells per well in 0.2 ml medium. The cells were pregrown for 20 hrs. before the addition of drug and virus.

Stock virus was pretitered according to the method of Reed and Muench (1938) and diluted in cell culture medium to yield 32 $TCID_{50}$ (tissue culture infectious dose, 50%) units per 0.1 ml. Antiviral assays were designed to test seven 0.5-$\log_{10}$ concentrations of each compound in triplicate against the challenge viruses. If drug cytotoxicity was provided, then drug concentrations were chosen to range from toxic to noncytotoxic. If no cytotoxicity information was available, testing began at 320 μg/ml. To each

of the replicate host cell cultures was added 0.1 ml of the test drug solution and 0.1 ml of virus suspension. Cell controls containing medium alone, virus controls containing medium and virus, and drug cytotoxicity controls containing medium and each drug concentration were included on each plate. The plates were incubated at 37°C and virus-induced CPE were scored on Day 3 post-virus infection.

The degree of inhibition of virus-induced CPE and the degree of drug-induced cytotoxicity were observed microscopically. CPE were scored numerically from 0 (normal uninfected cells) to 4 (100% virus-induced cell destruction) for each individual culture as follows:

4 = Viral CPE observed in 100% of the cells
3 = Viral CPE observed in 75% of the cells
2 = Viral CPE observed in 50% of the cells
1 = Viral CPE observed in 25% of the cells
0 = No CPE; normal cell monolayer
u = Unsatisfactory test, e.g., contamination or leakage
t = Drug is toxic to cells, CPE not discernible
p = Drug is partially toxic to cells, cell monolayer is intact so that CPE may be discernible

Antiviral activity was determined by calculating the degree of inhibition of virus-induced CPE in drug-treated, virus-infected cell cultures by means of a virus rating (VR). The VR is a standard weighted measurement of antiviral activity taking into account both the degree of CPE inhibition and drug cytotoxicity, and was determined by a modification of the method of **Ehrlich *et al.* (1965)**. The VR was calculated as 0.1 of the sum of the numerical differences between the recorded CPE grade of each test well and that of the corresponding virus control culture. Numerical differences between the reading of test wells containing a drug concentration which was partially cytotoxic (p) and their corresponding virus controls were halved. As requested by USAMRIID, the VR was also reported by the method of **Sidwell and Huffman (1971)**. This virus rating (VR*) was calculated by dividing the VR obtained by the method of **Ehrlich, *et al.* (1965)** by 3. The inhibitory drug concentration which reduced the CPE by 50% (ID_{50}) was calculated by using a regression analysis program for semilog curve fitting. A therapeutic index (TI) for each active test compound for each susceptible virus was determined by dividing the minimum cytotoxic concentration (MTC) of the test compound by the ID_{50}.

From January 14, 1989 to November 15, 1989, the following procedure was used to evaluate drugs in the MTT assay. L929 cells were seeded into 96-well tissue culture plates at a concentration of 4×10^4 cells/well on the day before the cells were used for the assay. A volume of 50 μl of the appropriate drug concentration and 50 μl of a virus suspension containing 32 $CCID_{50}$ of virus were added per well. On Day 3 after virus infection when CPE was complete in the virus controls, 50 μl of a solution containing 2 mg/ml MTT in Eagle's MEM + 5% heat-inactivated fetal bovine serum was added. The cultures were incubated with MTT for 7 hours before addition of 100 μl of 10% SDS:0.01*N* HCl per well. The cultures were incubated overnight and the following day the optical density was read at 570 nm on a Perkin-Elmer Lambda plate reader.

3.3.11 *In Vitro* Antiviral Screening: Retroviruses:

3.3.11.1 Primary Screening-HIV

3.3.11.1.1 Modified Broder assay

We obtained the human $OKT4^+$ T-cell clone, ATH8, from Dr. Samuel Broder's laboratory (NCI) through Dr. Hiroaki Mitsuya. This cell line is quite sensitive to the cytopathic effect of Human Immunodeficiency Virus (HIV). We propagated these cells in RPMI 1640 medium supplemented with

4 mM glutamine, 15% heat-inactivated fetal bovine serum, antibiotics (50 units of penicillin and 50 μg of streptomycin per ml), and 50 units of recombinant-derived human interleukin-2 (ala-125; AMGen Biologicals) per ml. The clone H9 cell line, an $OKT4^+$ human T-cell line that is permissive for HIV replication but largely resistant to virus-induced CPE, H9 cells productively infected with the HTLV-IIIB strain of HIV, and H9 cells productively infected with the RF-II Haitian variant of HIV were obtained from Dr. Robert Gallo's laboratory (NCI) through Dr. Howard Streicher. We propagated these cell lines in RPMI 1640 medium supplemented with 4mM glutamine, 20% heat-inactivated fetal bovine serum, and antibiotics (50 units of penicillin and 50μg of streptomycin per ml). For infectious virus we used undiluted culture supernates form H9/HTLV-IIIB producer cells. We have found that supernate collected 48 hours post-cell passage shows the best infectivity.

The initial screening of all compounds received from USAMRIID for retrovirus antiviral activity was done using the modified CPE-inhibition assay developed by Broder and co-workers (Mitsuya *et al.*, 1985 and 1986). This assay is based on the ability of uninfected ATH8 cells to grow and form a pellet at the bottom of a culture tube. Starting about 4 days after HIV addition, infected ATH8 cells began to die and the pellet started to break up. The cell pellet was completely destroyed within 10 days. The protective effect of test compounds was assessed by adding them at varying concentrations to the cultured cells at the time of virus infection, then monitoring the status of the cell pellet.

ATH8 cells were used as the primary target cells in the HIV-induced CPE-inhibition assay. Cells were treated with polybrene (2μg/ml in growth medium) for 30 minutes at 37°C, then collected by gentle centrifugation (40 xg for 15 minutes at room temperature) and resuspended in clarified (8000 xg for 15 minutes at 4°C) supernate freshly harvested form 48 hour post-passage H9/HTLV-IIIB cells. Following a 60-minute adsorption period at 37°C, the cells were dispensed into the U-bottom wells of 96-well trays (2×10^4 cells in 0.1 ml per well). An equal volume (0.1 ml) of supplemented RPMI 1640 medium containing test compound and twice the normal concentration of interleukin-2 was then added to each well. Test compounds were evaluated at seven half-$\log_{10}$ dilutions. Triplicate virus-infected cultures and one uninfected compound cytotoxicity control culture were included at each dosage level. Cultures were incubated at 37°C in a humidified atmosphere of 5% CO_2 in air. The sizes of the cell pellets in the test compound wells were compared to the pellet sizes of infected and uninfected cell control wells daily for 10 days. On day 10 post-infection aliquots were taken from selected individual wells and the total cell number and cell viability (based on trypan-blue dye-exclusion) were determined. Dideoxycytidine was included as a positive control with each set of compounds tested.

3.3.11.1.2 XTT Assay

In order to accommodate the large volume of screening required by the NCI modification of this contract, an automated assay system was adapted based on the screening program in use by the NCI Developmental Therapeutics Program. We have used the human T-cell line MT-2 (Harada *et al.*, 1985) in these assays. These cells have growth characteristics resembling transformed cells, do not require interleukin, and undergo a lytic infection with HIV. They are therefore well suited to a large scale screening program.

This assay resembles the modified Broder assay in the virus and drug inoculation regimens. At the time of assay analysis, however, the XTT assay involves addition of a tetrazolium dye (XTT) which is converted by viable cells to a soluble formazan derivative which is measured by optical density (O.D.). The O.D. value obtained for a given well is proportional to the number of viable cells in the well and is therefore a measure of virus-induced CPE (and also cytotoxicity) or conversely, the inhibition of CPE by a test compound.

As developed by the NCI (Developmental Therapeutics Program), the optical densities were read by an automated plate reader which is interfaced to a computer. In addition to collecting and analyzing

the test data, the computer system maintained schedules and plate identification numbers. The computer in the testing laboratory was linked to a unit in the compound preparation laboratory and both were on line to a mainframe computer at the NCI.

Assays were scheduled for testing using the ASGN module of the IVSS. We have begun specific drug assignments rather than utilizing the priority designation system from the mainframe Master files as we did at the beginning of the program. We changed this method primarily because the AVAIL module of the IVSS system, as written, cannot differentiate varying cell line assignments and the *in vitro* screening program now uses 2 cell lines, MT-2 and CEM.

In addition to AVAIL and ASGN which are accessed under MS-DOS on the IBM-370, there are XENIX operating system programs stored on a micro-computer in the treatment laboratory. These XENIX modules of the IVSS include Plate inoculation, Drug Addition, Stain Addition, and Plate Reading. The plate reading module uses a V MAX Kinetic Micro plate reader interfaced to the XENIX program on the micro-computer. Data from this computer is automatically up-loaded and down-loaded from the IVSS system managed by VSE in Alexandria, VA. Plate Analysis Reports are automatically generated and printed locally during Plate Read before automatic up-load of the data to the mainframe.

Requests for additional quantities of drugs to be retested, and periodic over-all status reports were communicated to DTP staff primarily through electronic mail services on the NIH mainframe computers.

3.3.11.2 Secondary Evaluations

3.3.11.2.1 Feline Leukemia Virus - FAIDS Variant (FeLV)

We obtained our initial stock of Feline Leukemia Virus, FAIDS variant from Dr. Ed Hoover of Colorado State University.

Following the procedure for growing stock virus established by Dr. Hoover, feline embryonic fibroblasts, AH-927 (Dr. Hoover), were grown in MEM containing 10% inactivated FBS and 1% non-essential amino acids. Twenty-four hours prior to infecting with virus, the cells were subcultured at a ratio of 1:4 and 0.2ml of Polybrene (2 mg/ml stock) was added for each 100 ml growth medium. On the day of infection, the growth medium was removed and the cells were washed twice with PBS. The virus inoculum was allowed to adsorb for 1 hour at 37°C. The virus inoculum was removed, the cells washed twice with PBS, and then a minimal volume of growth medium containing Polybrene was added. After five days incubation the culture fluid was collected and clarified by centrifugation (5000 rpm x 15 min). The supernate was dispensed into 1.0-ml aliquots, frozen, and then stored at -120°C. One aliquot was used to determine the $TCID_{50}$ and the focus forming unit (FFU) titers of the stock.

Antiviral screening of compounds for activity against FeLV-FAIDS was performed in 96-well trays (Corning). This screening procedure is a modification of the FeLV infectivity assay established by Fischinger *et al.*, (1974). Forty-eight hours prior to the assay, the indicator cells, 81C (obtained from D. Graves, University of Oklahoma, Oklahoma City, OK) were subcultured at a ratio of 1:2. Twenty hours prior to the assay, 96-wells trays were seeded with the 81C cells at 5 x 10_3 cells/well. On the day of the assay, the cells were pretreated for 30 minutes at 37°C with DEAE-dextran (25 μg/ml) in 0.1 ml Hanks balanced salt solution. This was removed and then 0.1 ml of growth medium containing 32 $TCID_{50}$ of FeLV-FAIDS, or 0.1 ml of growth medium alone, was added to each well. The virus was allowed to adsorb for 1 hour, then 0.1 ml of test or control compound (2',3'-dideoxycytidine or 3'-azidothymidine), or growth medium was added. Plates were incubated at 37°C. Cells were fed fresh growth medium containing compound on day 4 post-infection. Culture media were completely changed and replaced with fresh media containing compound on day 7 post-infection. On day 10 post-infection the cells were fixed by addition of 100μl buffered formalin for at least 1 hour at room temperature all

liquid was then removed and then the cells were stained with 0.1% Coomassie Brilliant Blue R-250. The plates were rinsed with deionized water, allowed to dry, and then observed microscopically for CPE and drug cytotoxicity.

3.3.11.2.2 Simian Retrovirus - SAIDS (SRV-2)

We received from Dr. Che-Chung Tsai one T25 flask and one 15 ml tube of a co-culture of Raji cells infected with a simian type D retrovirus (SRV-2) isolated from a macaque with SAIDS at the Washington Regional Primate Research Center. Subsequently, we purchased uninfected Raji cells (CCL-86) from the ATCC for the purpose of making fresh co-cultures with which to propagate the virus. These cells were successfully gown in Iscove's Modified Dulbecco's Medium containing 15% fetal bovine serum (complete Iscove's). The cells were subcultured every three days by a split ratio of 1:3. This yielded approximately 3 - 5 x 10^5 cells/ml.

Co-cultures of normal Raji cells and Raji cells infected with SRV-2 were also maintained in complete Iscove's. These cells were subcultured every three days by a split ratio of 1:3 (yield = 3 - 5 x 10^5 cells/ml). Raji cells and infected co-cultures were maintained regularly. Fresh co-cultures were routinely set up according to the procedure provided by Dr. Che-Chung Tsai of the Washington Regional Primate Research Center. Briefly, 1 ml of 8 ml of an actively growing co-culture was added to a T25 flask containing 8 ml of complete Iscove's medium to which 0.5 ml of actively growing Raji cells had been added. This new co-culture was incubated at 37°C with 5% CO_2 with the flask in an upright position.

The antiviral screening of compounds against the SAIDS virus was performed by a syncytia-inhibition assay on Raji cells. Compounds were diluted in complete Iscove's medium and then 100 µl of each dilution was added to the appropriate wells of a 96-well plate. Actively growing Raji cells, 5 x 10^3 cells in 50 µl of complete Iscove's medium, were then added to each well. This was followed by the addition of 50 µl of clarified supernate from an SRV-2/Raji cell co-culture. Plates were incubated at 37°C in a humidified atmosphere containing 5% CO_2. Syncytia were counted on day seven post-infection. Drug toxicities were ascertained by comparing viable cell counts of uninfected, drug-treated samples to the viabilities of uninfected, untreated controls.

3.3.11.2.3 Murine AIDS (MAIDS)

Drug testing was begun in the CAS-BR-M murine leukemia virus plaque-reduction assay on compounds which had demonstrated significant antiviral activity in the HIV primary screen. The CAS-BR-M murine leukemia virus was obtained from Dr. John Billelo, V.A. Medical Center, Baltimore, MD. Dr. Billelo provided a culture of infected SC-1 producer cells which were propagated, and the supernatant containing infectious virus was used for the stock virus. These producer cells were maintained in Dulbecco's MEM supplemented with 10% heat-inactivated fetal bovine serum.

The continuous passage SC-1 feral mouse embryo cell line and the continuous passage rat XC sarcoma cell line (obtained from the American Type Culture Collection, Rockville, MD) were used for the plaque assay. Eagle's MEM with Earle's balance salt solution supplemented with 5% or 10% heat-inactivated FBS was used as the growth medium for the propagation of both cell lines.

Falcon 6-well tissue culture plates were seeded with 1.75 x 10^5 cells per well in a total volume of 2.5 ml EMEM containing 5% inactivated FBS. Twenty hours after the cells were seeded, the medium was decanted and 2.5 ml DEAE-dextran (25 µg/ml in phosphate buffered saline) was added to each well. The cultures were incubated at 37°C for 1 hour, after which the DEAE-dextran solution was decanted and the cell layers rinsed once with 2.5 ml PBS. Normal cell controls were refed with 2.5 ml medium alone (no virus or drug). Drug control cultures received 2.5 ml of medium containing drug but no virus.

Virus-infected control cultures received 0.5 ml of the appropriate dilution of stock CAS-BR-M to produce countable plaques plus 2.0 ml medium. The test samples received 0.5 ml of the appropriate virus dilution plus 2.0 ml of the appropriate drug dilution. Six concentrations of each test compound diluted in serial half-$\log_{10}$ dilutions were tested.

Triplicate wells for each concentration of test compound and 6 virus and 6 cell control cultures were included in each assay. Hemacytometer cell counts, using the trypan blue dye-exclusion test for viability were done on duplicate cell control cultures at the time of virus inoculation.

On day three post-virus inoculation, the cultures were irradiated with an ultraviolet lamp for 20 seconds and XC cells were added to each culture (5×10^5 cells/well in 2.5 ml EMEM containing 10% inactivated FBS). Viable cell counts were made on control and drug-treated SC-1 cell cultures.

On day three post-UV irradiation, the cultures were fixed with formalin and stained with crystal violet. The plaques were counted with the aid of a dissection microscope.

Antiviral activity in the CAS-BR-M plaque-reduction assay was expressed in terms of the reduction in the mean number of plaques counted in the drug-treated, virus-infected cultures compared with the mean number of plaques counted in the untreated, virus-infected control cultures (percent of control). The MIC_{50} and a TI were also calculated.

3.4 Prescreen Assays (YF, VE, PT):

Large numbers of plant extracts are available for screening for *in vitro* antiviral activity. We were requested to develop an assay that would: 1) allow more compounds to be evaluated per microtiter plate than in the regular antiviral screen and 2) prescreen plant extracts as well as other compounds for activity against two indicator viruses. The three viruses selected by USAMRIID for this purpose were the attenuated, vaccine strain (17D) of Yellow Fever virus (YF) and Punta Toro virus (PT) and Venezuelan Equine Encephalomyelitis virus (VE). The prescreen assay should select candidate compounds for screening against the Asibi strain of YF and the other target RNA viruses in the full screen.

A prescreen procedure was developed which utilizes MTT and evaluates five compounds per virus per 96-well plate.

Host Cells. Vero cells are seeded as monolayer cultures in COSTAR 96-well plates at 18,000/0.2 ml/well in MEM + 10% heat-inactivated fetal bovine serum (Δfbs). The plates are incubated approximately 24 hours prior to use.

Challenge Virus. The 17D strain of YF virus was originally obtained by Dr. Lori Brando from the Alabama Public Health Department in Birmingham, Alabama. The Adames strain of PT virus was obtained from our regular screen. Stock virus pools were prepared by passaging and titrating each virus in Vero cell monolayers. For use in the prescreen assays, PT virus is diluted in experiment medium (MEM + 2% Δfbs) to yield an inoculum of 32 $CCID_{50}$ per well. The challenge dose of YF virus had to be increased from 32 to 64 $CCID_{50}$/well in order to obtain sufficient CPE and cell-kill by 6 days post-infection. An antiviral screening assay as long as 7 or 8 days would require replacing the culture fluids with fresh drug during the incubation period, thus increasing the cost of the assay.

Test compounds are dissolved or suspended in DMSO or H_2O, then diluted in serial tenfold dilutions in experiment medium to yield final concentrations of 1000, 100, 10 and 1 μg/ml in the plate wells. Selenazofurin (AVS-0253) is utilized as a positive control drug for YF and VE; the control drug for PT is Ribavirin (AVS-0001). AVS-6724 (2-Thio-6-Azauridine) has been tested against all three viruses as a possible candidate positive control drug.

Assay Procedure. The assay is designed to evaluate four 1.0 $\log_{10}$ concentrations of each compound in duplicate against the challenge virus. MEM + 2% Δfbs serves as the experiment medium. Cell culture medium is removed from the plate wells. To each of duplicate test wells containing replicate cell monolayers, 100 μl of each test drug solution (or suspension) and 100 μl of the challenge virus (diluted in experiment medium) are dispensed. Cell controls (6/plate) containing 200 μl medium, virus-infected, untreated cell controls (6/plate) containing virus and medium and drug cytotoxicity controls (1/drug concentration) containing cells, medium and test drug are included on each plate. Medium (Reagent) color controls (no cells), and drug colorimetric controls (drug + medium – no cells) accompany each test. The covered plates are incubated at 37°C in a humidified atmosphere containing 2% CO_2. When CPE reach 100%, 6 days post infection, 20 μl aliquots of MTT (5 μg/ml solution in PBS) are added to each well. The plates are incubated at 37°C for six hours to allow reduction of the MTT to the formazan form. Then 40 μl aliquots of a 30% solution of SDS in 0.02 NHCl are added to the plate wells. The plates are incubated overnight to allow the SDS to lyse the cells and to dissolve the

MTT formazan crystals. The absorbance (570 nm) of the contents of each well is determined by a plate reader. The plate reader is interfaced with a computer programmed to capture the optical density (O.D.) measurements from the reader and calculate mean optical densities, indices such as IC_{50}, TC_{25}, SI, and plot the percents cell viability and CPE reduction. The actual O.D. readings, the indices, and bar graphs expressing cell viability and CPE reduction are automatically printed on individual compound data sheets.

An example of a data sheet with results of a prescreen assay is shown as **Figure 2.** Section I of the data sheet gives the compound and test identification and the actual raw data (O.D. readings) for each assay. Printouts of pertinent Control and Test Results are in Section II. Calculations of the test results are the same as those for assays in the regular screen. Section III displays a bar graph plotted from the computed values in Section II.

IN VITRO ANTIVIRAL RESULTS

EXOTIC RNA VIRUSES — PRE-SCREEN ASSAY — DRUG: AVS 0001

SI: >5.04

PLATE NUMBER	0C9	TEST DATE	08/24/89
PROJECT	5975-4	DATE READ	08/31/89
SPONSOR	USAMRIID		
CELLS	VERO	Satisfactory	
VIRUS	PT		
STRAIN	ADAMES		

Section I

	1	2	3	4	5	6	7	8	9	10	11	12
	drug A – 0001											
	tox	experimental		color								
A	1.554	1.537	1.463	0.155								
B	1.471	0.510	0.686	0.155								
C	1.537	0.231	0.206	0.178								
D	1.506	0.223	0.227	0.157								
									virus control			reagent
E									0.211	0.361	0.220	0.175
F									0.249	0.278	0.325	0.179
G									1.455	1.493	1.538	0.174
H									1.402	1.474	1.493	0.177
									cell control			blank

tox=cell toxicity — BOLD = highest drug conc

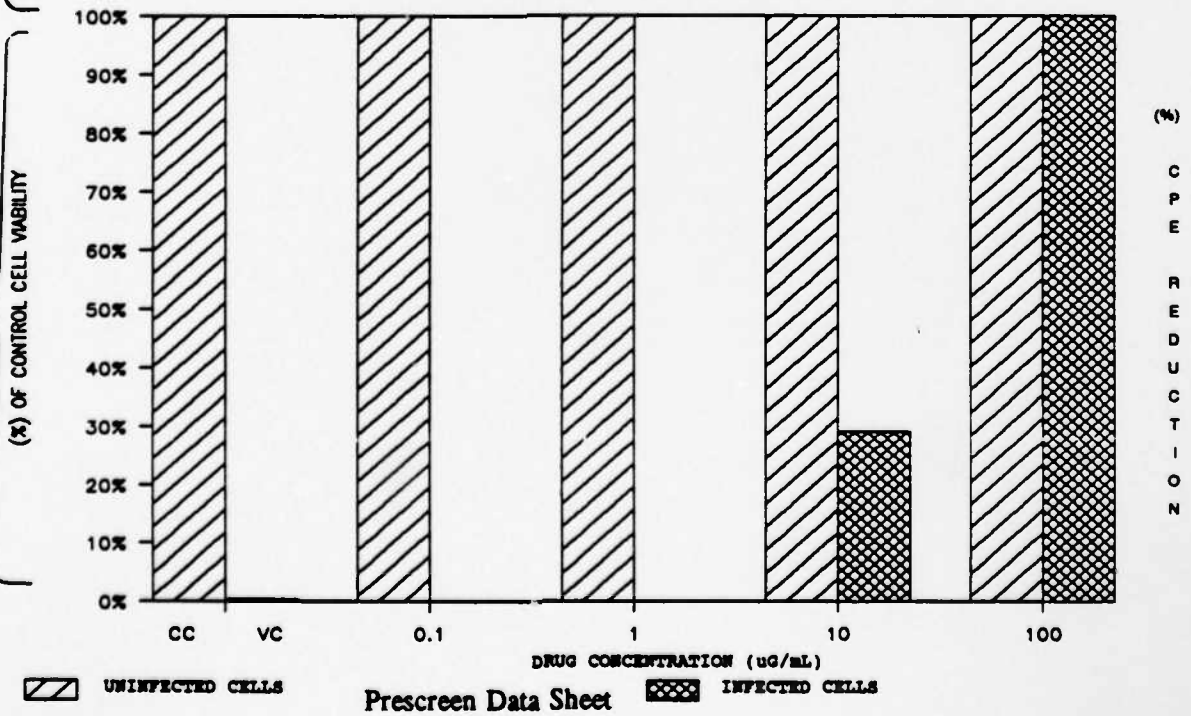
AVS 0001 vs. PT (08/24/89)

Section II

ROW ON PLATE	CONC. (uG/mL)	UNINFECTED CELL VIABILITY MEAN	UNINFECTED CELL VIABILITY PERCENT	INFECTED CPE REDUCTION MEAN	INFECTED CPE REDUCTION PERCENT
A	100	1.399	100%	1.247	100%
B	10	1.316	100%	0.346	29%
C	1	1.359	100%	-0.057	0%
D	0.1	1.349	100%	-0.030	0%

REAGENT		0.176
VIRUS CONTROL		0.098
CELL CONTROL		1.300
DIFFERENTIAL		1.202
IC50		19.80
TC25	>	100.00
SI	>	5.04

Section III



Prescreen Data Sheet

Figure 2

3.5 Antiviral Evaluation *In Vivo*:

3.5.1. Pichinde Virus in MHA Hamsters (PIC):

The *in vivo* testing protocol used for evaluation of antiviral efficacy against Pichinde virus was as follows: Soluble compounds were diluted in phosphate-buffered saline (PBS) (pH 7.2) while insoluble compounds were diluted and homogenized in 0.4% carboxymethylcellulose (CMC) in PBS. Other diluents were used specified by the sponsor. If the test compounds were stable, then compound solutions (suspensions) were prepared for the first half of the experiment on the first day of dosing. The solutions/suspensions for the second half of the experiment were prepared on Day 3. The compound solutions/suspensions were held at 4°C when not in use. Compounds with known instabilities were prepare daily prior to administration. In general, the compounds were prepared at concentrations appropriate for dosing hamsters at 0.1 ml of solution per 20 gm of body weight. Fifteen MHA strain hamsters (4 wk old, 60-80 gm) (5 uninfected, 10 infected) were treated subcutaneously at each dose level once daily for 7 days (qld x 7) with the first dose given 2 hr preceding or 4 hr following virus challenge. The virus challenge consisted of 1 x 10^4 pfu of plaque-purified Pichinde virus administered intraperitoneally in a volume of 0.5 ml. Compounds were administered to each hamster based on the average cage weight (5 hamsters/cage). Treatment groups included the test compounds as well as the diluent used for compound preparation. Controls included (1) untreated, uninfected hamsters, (2) untreated, virus-infected hamsters, (3) virus-infected diluent-treated hamsters and (4) ribavirin (positive control drug) treated hamsters.

Hamsters were monitored daily for mortality and body weight changes through day 28 post-infection. The mortality rates occurring in drug-treated hamsters were compared using Fisher's Exact test. The average day of death (ADD) was calculated and compared by Student's t-test. The virus rating (VR) was calculated as the geometric mean time to death (GMTD) of the drug treated hamsters divided by the GMTD of the diluent treated controls.

In several instances, this protocol was modified so that the compound were administered on alternate treatment schedules (i.e. qld x 10 days).

3.5.2. Venezuelan Equine Encephalomyelitis Virus (VE):

A prophylactic treatment protocol was used for evaluating the antiviral activity of compounds against Venezuelan Equine Encephalomyelitis virus infection of CD-1® outbred mice. Compounds submitted for *in vivo* evaluation were diluted in PBS (pH 7.2) if they were soluble or they were diluted and homogenized in 0.4% CMC in PBS if they were insoluble. Compounds were prepared at concentrations consistent with a dose volume of 0.1 ml of compound per 10 gm of body weight. Adequate compound was prepared for the entire treatment schedule unless the compound data sheet indicated that the compound was unstable. Unstable compounds were prepared immediately before each administration. Diluted compounds were held at 4°C when not in use. All compound administration was by the SC route on an individual animal weight basis. Fifteen female CD-1® mice (18-21 gm) were treated at each compound dose level of a qld x 7 days schedule starting day -1. Ten of the 15 mice were challenged IP with an LD_{90} dose of virus in a volume of 0.5 ml of MEM/2% FCS. The remaining 5 mice served as toxicity controls. Because of compound quantity limitations, the highest dose of compound generally tested was 320 mg/kg with 4 serial half-log dilutions below this level. Treatment groups included the test compound dilutions as well as the diluent used for compound preparation. Controls included (1) untreated, uninfected animals, (2) untreated, infected animals, and (3) virus-diluent treated animals (infected and uninfected). No positive control drug was available for this model. Mortality was monitored for 21 days post-infection. The calculations and statistical comparisons were as described for Pichinde virus.

3.5.3. Japanese Encephalitis Virus:

A prophylactic treatment protocol was used for evaluating the antiviral activity of compounds against Japanese Encephalitis virus infection of inbred C57Bl/6 mice. Compounds submitted for *in vivo* evaluation were diluted in PBS (pH 7.2) if they were soluble or they were diluted and homogenized in 0.4% CMC in PBS if they were insoluble. In some cases, compounds were solubilized in ethanol or DMSO prior to dilution into PBS or 0.4% CMC/PBS. Compounds were prepared at concentrations consistent with a dose volume of 0.1 ml of compound per 10 gm of body weight. If there were no stability problems noted on the compound data sheet then compound quantities adequate for the first half of the experiment were prepared on the first day of dosing. The remaining compound was prepared on experimental day 2. Unstable compounds were prepared immediately before administration. Diluted compounds were held at 4°C when not in use. Compound administration was primarily by the SC route on an individual animal weight basis; however, in some cases the IP route was used for comparative purposes. Fifteen female C57Bl/6 mice were treated at each compound dose level on a qld x 7 days schedule starting day -1. Ten of the 15 mice were challenged IP with an LD_{90} dose of virus in a volume of 0.5 ml of MEM/2% FCS. The remaining 5 mice served as toxicity controls. Because of compound quantity limitations, the highest dose of compound generally tested was 320 mg/kg with 4 serial half-log dilutions below this level. Treatment groups included the test compound dilutions as well as the diluent used for compound preparation. Controls included (1) untreated, uninfected animals, (2) untreated, infected animals and (3) virus diluent treated animals (infected and uninfected). No positive control drug was available for this model. The mice were monitored for 21 days. Calculations and statistics were as described for Pichinde virus.

3.5.4. Vaccinia Virus:

3.5.4.1. Intracranial Challenge:

A prophylactic treatment protocol was used for evaluating the antiviral activity of compounds against Vaccinia virus infection of CD-1® outbred mice. Compounds submitted for *in vivo* evaluation were diluted in PBS (pH 7.2) if they were soluble or they were diluted and homogenized in 0.4% CMC in PBS if they were insoluble. In some instances the compounds were solubilized in DMSO prior to dilution in PBS or 0.4% CMC/PBS. Compounds were prepared at concentrations consistent with a dose volume of 0.1 ml of compound per 10 gm of body weight. If there were no stability problems noted on the compound data sheet then compound quantities adequate for the first half of the experiment were prepared on the first day of dosing. The remaining compound was prepared on experiment day 2. Unstable compounds were prepared immediately before administration. Diluted compounds were held at 4°C when not in use. Compound administration was by the SC or by the IP route on an individual animal weight basis. Fifteen female CD-1 mice (18-21 gm) were treated at each compound dose level on a qld x 7 days schedule starting day -1. Ten of the 15 mice were challenged intracranially with an LD_{90} dose of virus in a volume of 0.03 ml of MEM/2% FCS. The remaining 5 mice served as toxicity control. Because of compound quantity limitations, the highest dose of compound generally tested was 320 mg/kg with 4 serial half-log dilutions below this level. Treatment groups included the test compound dilutions as well as the diluent used for compound preparation. Controls included (1) untreated, uninfected animals (2) untreated, infected animals and (3) virus diluent treated animals. Ara-A was the positive control drug for this model.

3.5.4.2. Tailpox Model:

The IHD strain of vaccinia virus, passed once in mouse brain and once in primary rabbit kidney cell culture, was used. Random-bred Swiss mice (CD-1™, VAF+, Charles River Laboratories, Inc.), weighing 18-21 grams, were inoculated via the tail vein (1 cm from the base) with 0.2 ml of a 1:40 dilution of the virus suspension. Compounds were administered SC once daily for 7 days with the first

dose given the day preceding virus challenge. Uninfected drug-treated toxicity controls were included for each treatment administered. Animals were sacrificed on the sixth day and their tails were stained with a solution of 1% fluorescein-0.5% methylene blue in 70% methanol. Lesions were enumerated under ultraviolet light (354 nm) with the aid of a hand lens. The average number of lesions for each treatment group was calculated prior to, and following square root transformation of the individual tailpox counts. Tailpox counts from each of the treatment groups were compared by student t-test. A p-value at or below 0.05 was considered indicative of antiviral activity.

4. RESULTS

4.1 *In Vitro* Antiviral Evaluations: DNA, Exotic RNA and Retrovirus Viruses:

During this five-year reporting period from November 16, 1985 to January 31, 1991, a total of 9658 (5849 primary screen and 3809 prescreen) test compounds were received at SRI for evaluation in the *in vitro* antiviral screen (prescreen and primary). A cumulative summary of the compound shipments received, and the number of compounds in each shipment, are presented in **Table 2**. Compounds received in amounts too small for appropriate evaluation against all of the viruses were screened according to a priority list (determined by the sponsor) of the target viruses from the primary screen. In some instances, the testing of compounds against the exotic viruses was coordinated with the testing against Human Immunodeficiency Virus (HIV). *In vitro* primary screening evaluations were carried out against Vaccinia Virus (VV), Adenovirus Type 2 (AD2), Vesicular Stomatitis Virus (VSV), Yellow Fever Virus (YF), Japanese Encephalitis Virus (JE), Venezuelan Equine Encephalomyelitis Virus (VE), Punta Toro Virus (PT), Sandfly Virus (SF), Pichinde Virus (PIC), and Hantaan Virus (HTN). In July 1986, the HIV virus was added as an additional virus to be tested under the primary screen. In January, 1988, primary screening of compounds versus HIV was moved from this contract to a cooperative agreement identified as DAMD17-88-H-8003 with USAMRIID.

Approximately 66,000 *in vitro* antiviral assays were performed during this contract period. This number includes all quality control and unsatisfactory tests (**Figure 3**). Positive control drugs, as specified in **Table 1** were tested in parallel in each assay. Numerous internal virus load and cell load quality control tests were performed. Results of the cell controls and virus controls were monitored to test for viability, consistency and repeatable results during the day-to-day operation. **Figure 4** illustrates the number of compounds that were tested *in vitro* primary screen each year.

The results for compounds found active are summarized in the following sections for each virus. A cumulative summary presenting all of the *in vitro* antiviral tests results (both positive and negative) is included in **Appendix A and B.**

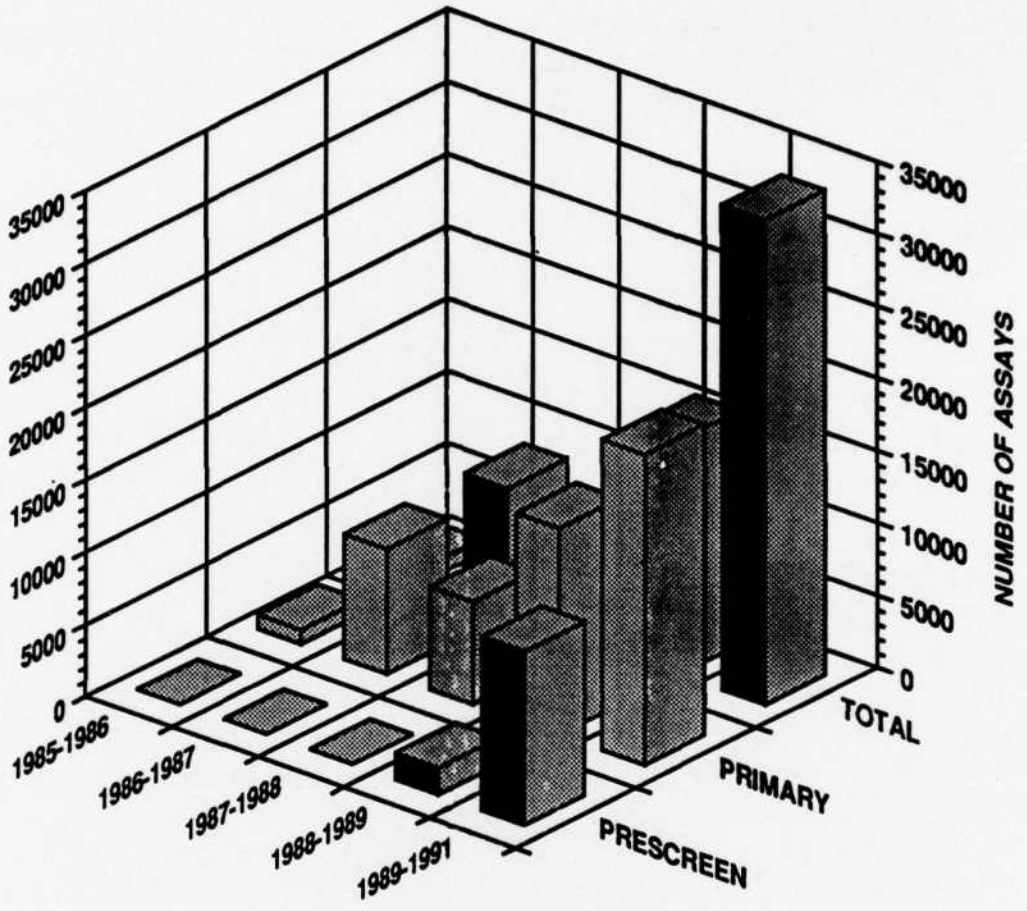
Primary Testing of compounds versus HIV was performed for the USAMRIID program by using the modified Broder assay. In order to accommodate the large volume of HIV screening required by the NCI modification to this contract, testing was carried out using the XTT automated assay system.

Table 2

Prescreen and Primary *In Vitro* Antiviral Screen
Number of Compounds Received Per Shipment Through January 31, 1991

Shipment Number	Compounds Per Shipment	Date Received
1	28	05/02/86
2	27	05/23/86
3	32	06/03/86
4	19	06/20/86
5	22	07/10/86
6	26	07/24/86
7	26	07/31/86
8	27	08/22/86
9	42	09/12/86
10	28	09/25/86
11	32	10/17/86
12	40	11/3-11/4/86
13	23	11/13/86
14	1	11/13/86
15	26	12/05/86
16	32	12/12/86
17	30	01/13/87
18	32	01/30/87
19	101	03/02/87
20	71	03/18/87
21	75	04/14/87
22	49	05/05/87
23	--	06/03/87
24	77	06/03/87
25	8	06/12/87
26	71	06/26/87
27	86	07/21/87
28	102	08/10/87
29	116	08/19/87
30	75	09/03/87
31	86	09/11/87
32	123	10/09/87
33	107	11/03/87
34	49	11/25/87
35	80	12/22/87
36	65	01/29/88
37	48	03/09/88
38	5	03/15/88
39	68	03/23/88
40	57	04/26/88
41	30	05/13/88
41B	30	05/13/88
41C	4	05/13/88
42	66	05/13/88
43	140	07/08/88
44	89	08/10/88
45	76	09/13/88
46	126	10/06/88
47	2	10/20/88
48	101	11/02/88
49	--	11/11/88
50	--	11/16/88
51	84	01/10/89
52	80	02/09/89
53	99	03/15/89
54	71	04/19/89
56	103	05/12/89
57	133	06/07/89
58	73	07/13/89
59	49	08/11/89
60	78	09/07/89
61	138	10/06/89
62	166	11/21/89
63	135	02/07/90
64	64	02/27/90
65	125	03/16/90
66	220	04/10/90
67	95	05/09/90
68	201	05/30/90
69	161	06/27/90
70	156	06/29/90
71	5	07/18/90
72	122	07/18/90
73	142	09/11/90
74	166	10/04/90
75	187	10/25/90
76	320	12/06/90
SubTotal		**5849**
Prescreen		
1P	598	06/08/89
2P	12	07/20/89
3P	695	08/26/89
4P	38	02/01/90
4P	707	03/15/90
5P	168	06/07/90
6P	183	07/05/90
7P	152	08/22/90
8P	111	08/28/90
9P	200	09/25/90
10P	200	10/15/90
11P	200	11/16/90
12P	189	12/03/90
13P	161	12/17/90
14P	195	1/24/90
SubTotal		**3809**
Total		**9658**

TOTAL NUMBER OF IN VITRO ANTIVIRAL ASSAYS (PRESCREEN AND PRIMARY SYSTEMS)

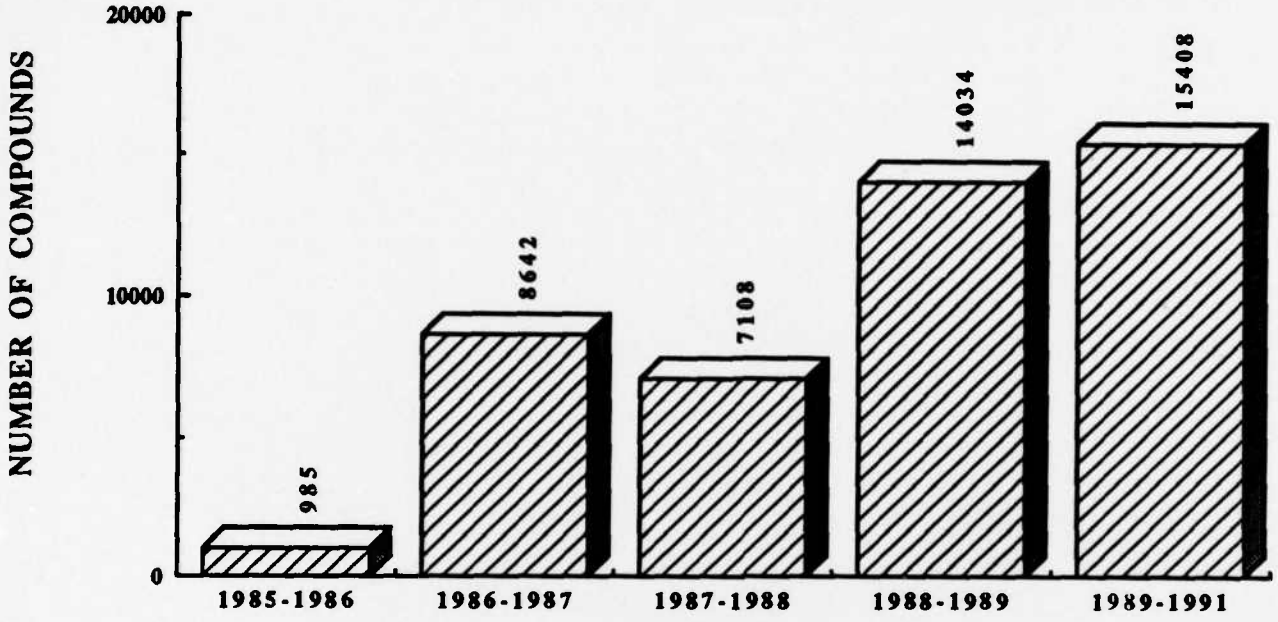


Number of Assays Tested

Year	Primary-Screen	Pre-Screen	Yearly Total
1985 - 1986	985	0	985
1986 - 1987	8,642	0	8,642
1987 - 1988	7,108	0	7,108
1988 - 1989	14,290	1,878	16,168
1989 - 1991	21,470	12,050	33,520
Total per Screen	**52,495**	**13,928**	**Grand Total: 66,423**

Figure 3

NUMBER OF COMPOUNDS TESTED IN VITRO PER YEAR DURING THE CONTRACT PERIOD (INCLUDES ALL VIRUSES TESTED IN THE PRIMARY SCREEN)



Virus	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991	Total No. Compounds Per Virus
VV	231	669	669	575	1520	3664
AD2	231	668	656	523	Not Required	2078
YF	0	819	875	1841	2717	6252
JE	0	905	848	1847	2710	6310
VE	0	167	854	2331	2715	6067
PT	138	871	869	1751	3005	6634
SF	139	718	877	1873	2741	6348
HTN	0	*	35	*	*	35
PIC	13	114	819	1195	*	2141
VSV	233	627	605	665	Not Required	2130
HIV (USAMRIID)	0	495	**	**	**	495
HIV (NCI)	0	1688	**	**	**	1688
TOTAL	985	7972	7107	12601	15408	44073

* Testing moved to Fort Detrick Campus (USAMRIID).

(Grand Total) 44,073

** Testing transferred to another project.

Figure 4

4.1.1 Vaccinia Virus (VV):

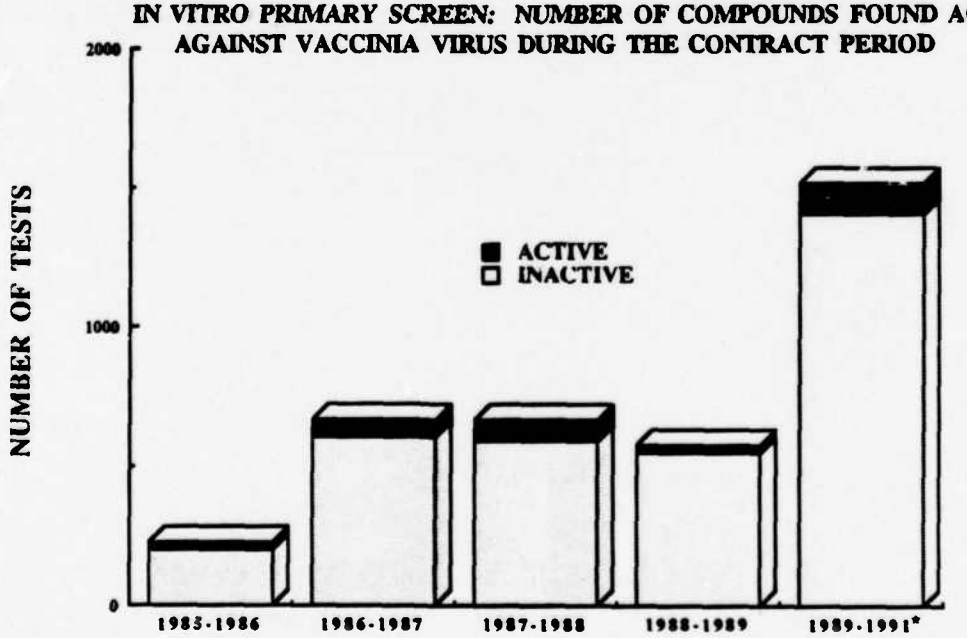
The number of single drug tests carried out against VV during this contract period is summarized in yearly increments in **Figure 5**. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since January, 1989, MTT based-antiviral assay format.

A total of 4354 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Ara-A (AVS-1752) and Selenazofurin (AVS-0253) were tested in each standard virus rating (VR) CPE-inhibition assay as positive control compounds. Results of these positive controls (VR tests) were used as a guideline to assess the quality of each assay.

After the testing was converted to the MTT-assay format, we performed a total of 219 control compound assays with Ara-A and Selenazofurin during the last 24 months of the contract period. The rest, totaling 2095, were actual single drug MTT-assays. The total number of MTT-assays (2554) tested during the last two years represents a 42% increase (improvement) in the total testing output as compared to the total of 1800 tests performed during the first 3 years of this contract.

Out of the 3664 accepted single drug tests, 305 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 8.3% of the tested compounds having *in vitro* antiviral activity against VV-virus. The remainder, 3359 compounds (91.7%), were considered inactive with both assay protocols (**Figure 5**).



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991*	Five-Year Totals
Number Active	32	63	80	23	107	305
Number Inactive	199	606	589	552	1413	3359
Yearly Total (Accepted Single Drug Tests)	**231**	**669**	**669**	**575**	**1520**	**3664**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

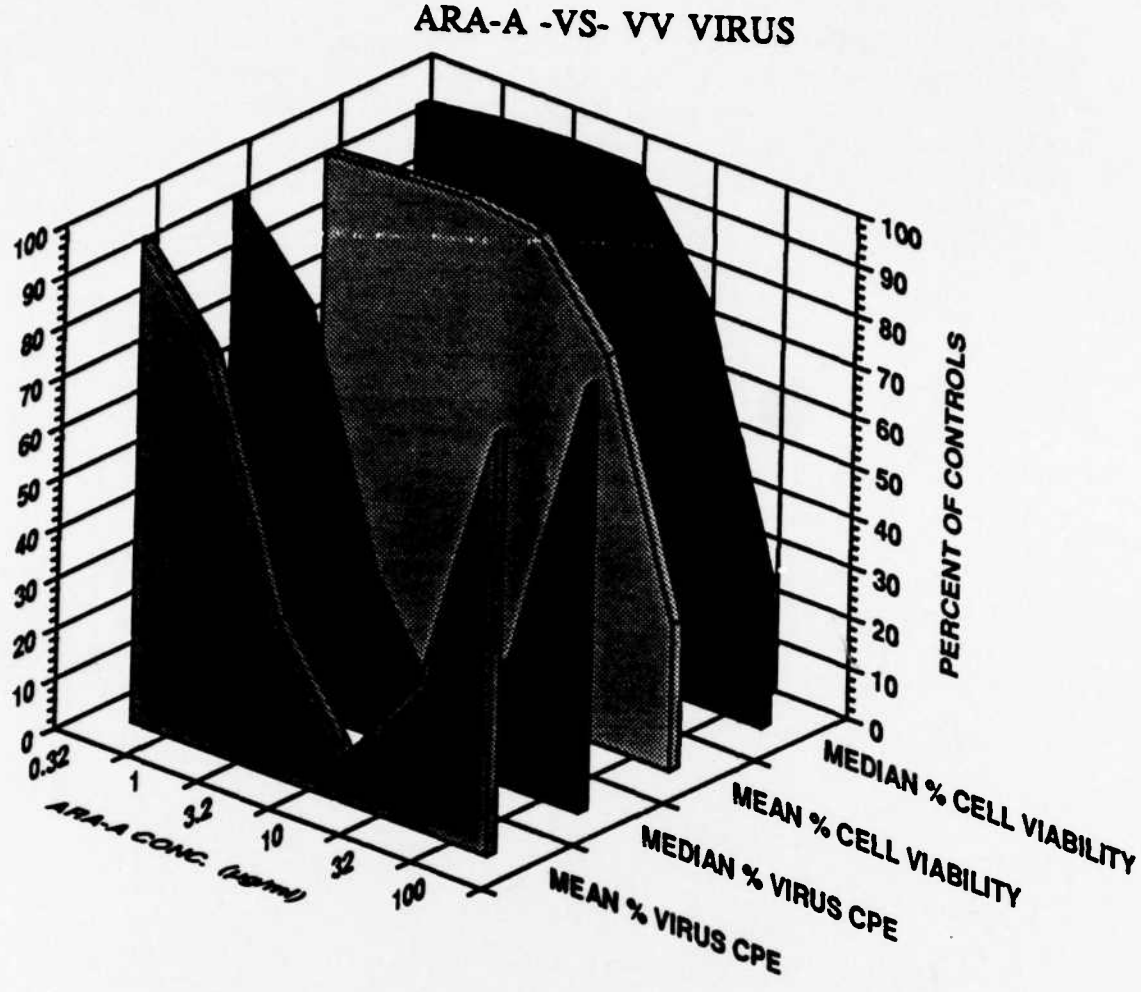
Figure 5

4.1.1.1 **VV-Quality Controls (MTT Assay):** Two positive control compounds (Ara-A and Selenazofurin) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to or better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

The following indices summarize the Ara-A data.

	IC_{50} µg/ml	TC_{50} µg/ml	SI	TAI
Mean	2.17	69.26	18.52	42.81
S.D.	0.79	15.57	7.66	8.59
Median	2.02	71.9	16.38	42.76

The closeness of the mean and median values indicate the reproducibility of the effect of Ara-A on VV and on host cells. A summary of the antiviral and cytotoxicity values for 89 Positive Control Tests at each concentration of Ara-A are listed and plotted in **Figure 6-A**. Excellent reproducibility was achieved in the 89 tests performed during November, 1989 through January, 1991. Ara-A continues to be a reliable positive control drug.



CONCENTRATION (μg/ml)

	% Viral CPE						% Cell Viability					
Conc.(μg/ml)	**0.32**	**1.0**	**3.2**	**10**	**32**	**100**	**0.32**	**1.0**	**3.2**	**10**	**32**	**100**
Mean	95	78	31	9	29	84	96	97	98	96	77	29
Median	95	79	31	7	26	85	97	99	100	100	79	29
Std. Dev.	0.04	0.10	0.15	0.09	0.14	0.09	0.04	0.04	0.03	0.05	0.13	0.09

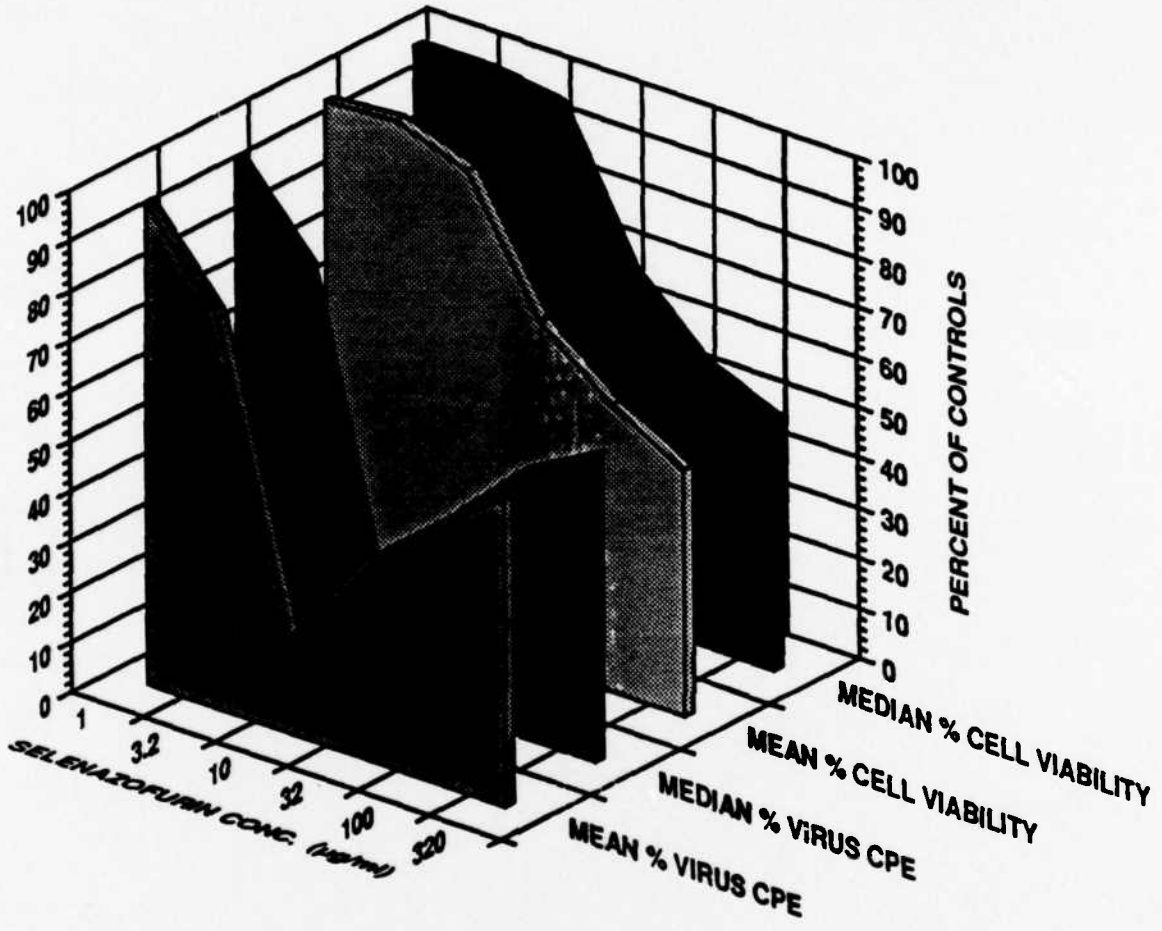
Figure 6-A
Average Antiviral and Cytotoxicity Values for 89 Positive Control Compound Tests

The following indices summarize the data for Selenazofurin:

	IC_{50} µg/ml	TC_{50} µg/ml	SI	TAI
Mean	5.70	233	6.51	27.61
S.D.	1.80	106	7.87	8.61
Median	5.40	320	4.80	26.52

As can be seen from the S.D.'s, cytotoxicity (TC_{50}) of Selenazofurin was somewhat inconsistent against VV in Vero cell cultures. This inconsistency is not significant since we are testing at 0.5 $\log_{10}$ dilutions. However, if one examines the average antiviral and cytotoxicity values at each concentration of Selenazofurin from 83 assays that were performed during November, 1989 through January, 1991 **(Figure 6-B)**, the results were quite reproducible.

SELENAZOFURIN -VS- VV VIRUS



CONCENTRATION (µg/ml)

	% Viral CPE						% Cell Viability					
Conc.(µg/ml)	**1**	**3.2**	**10**	**32**	**100**	**320**	**1**	**3.2**	**10**	**32**	**100**	**320**
Mean	96	78	19	39	51	61	98	99	94	69	57	49
Median	96	79	16	39	53	61	100	100	98	70	56	50
Std. Dev.	0.05	0.11	0.12	0.11	0.10	0.11	0.03	0.02	0.08	0.09	0.09	0.10

Figure 6-B
Average Antiviral and Cytotoxicity Values for 83 Positive Control Compound Tests

4.1.1.2 Maximum Antiviral Effect of Ara-A and Selenazofurin vs VV Virus: The distribution of the maximum VV CPE inhibition values (% CPE reduction) recorded from the 172 positive control assays (89 tests were Ara-A and 83 tests were Selenazofurin) conducted during the period of November, 1989 through January, 1991, is depicted in Figure 7. As expected, Ara-A had a much greater inhibitory effect than Selenazofurin.

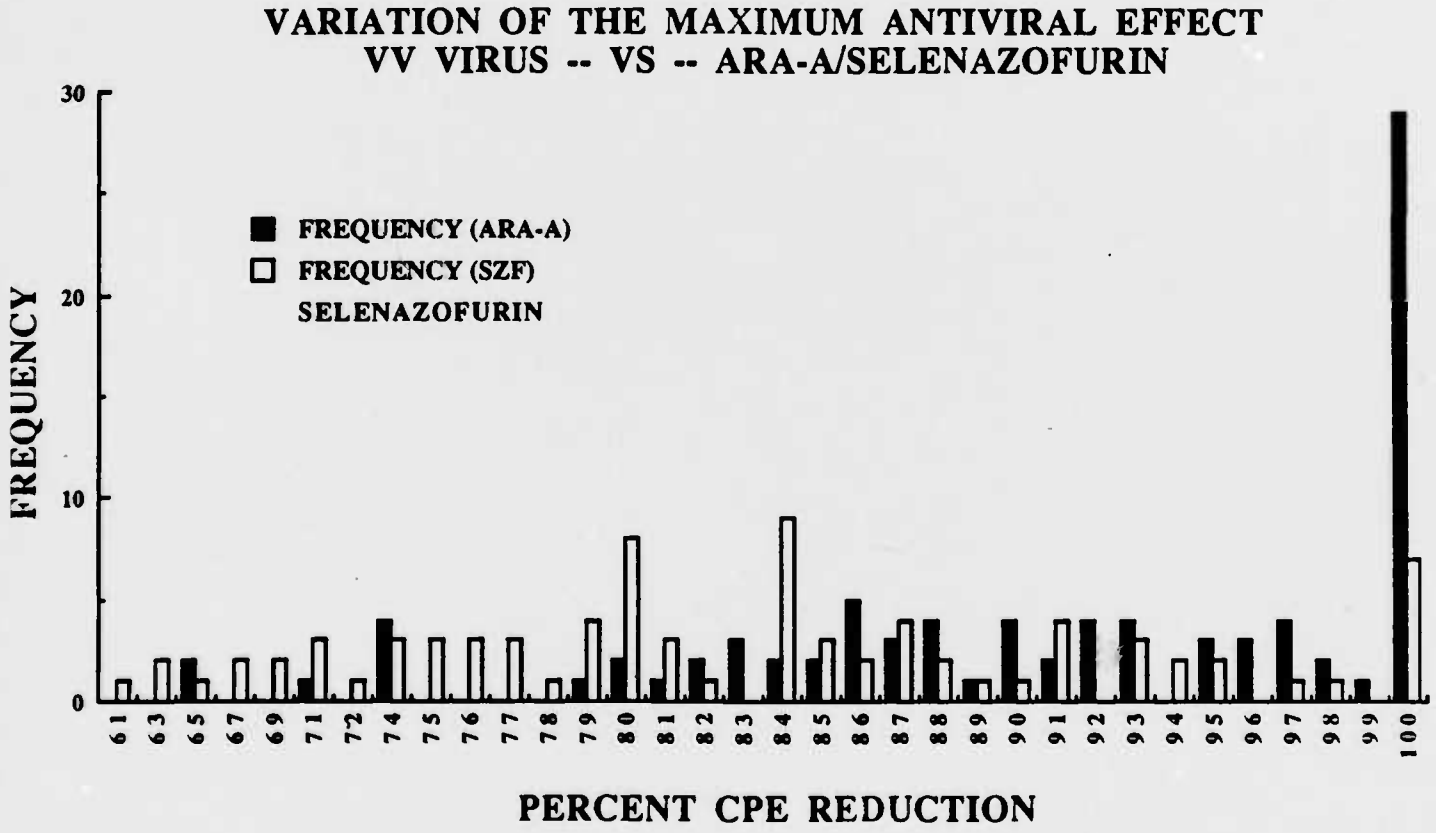


Figure 7

4.1.1.3 **VV-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Ara-A/Selenazofurin):** The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in **Figures 8, 9 and 10.** The cell control data **(Figure 8)** indicates that the cell load was somewhat less consistent than the virus load during the past fourteen-months. The plot of the virus control O.D.'s **(Figure 9)** indicates good host cell destruction and a uniform load of virus among the day-to-day experiments. **Figure 10** gives the frequency and variation of the mean values (O.D.) of the differential from each positive control assay. Each differential value represents the difference between the mean cell control O.D. and the mean O.D. of the virus controls of each of the 172 assays.

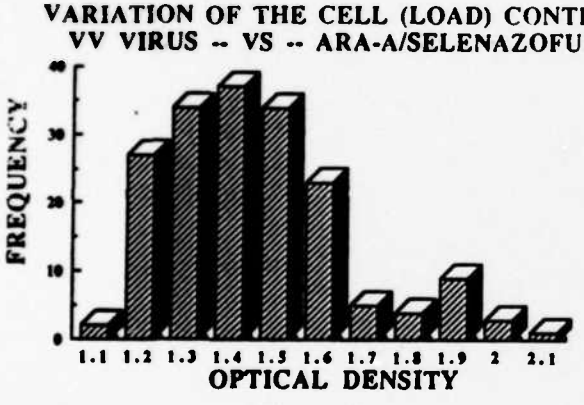


Figure 8

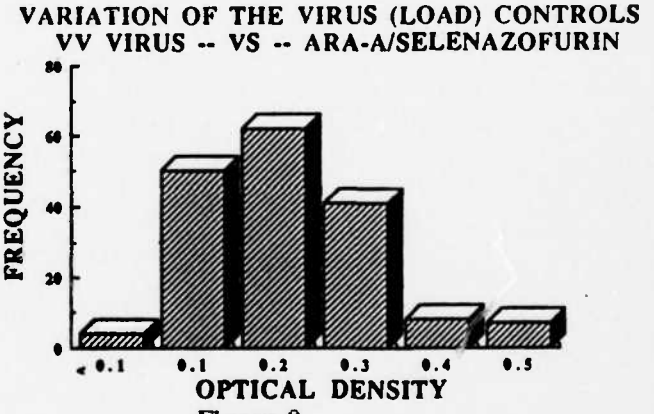


Figure 9

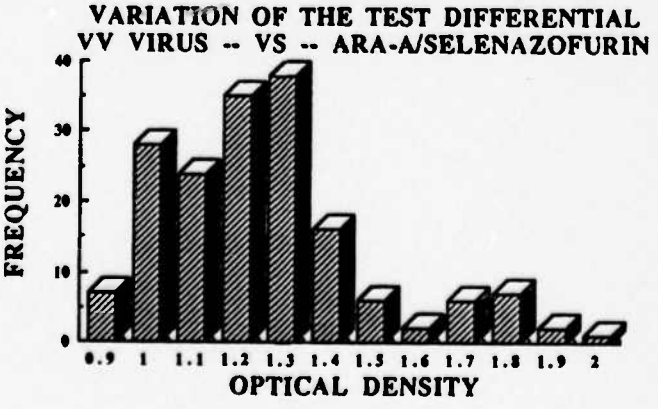


Figure 10

4.1.1.4 **VV-Antiviral Activity Results:**

New Drugs with 95% Antiviral Reduction Levels: Out of the 3895 actual single drug tests, 34 new compounds demonstrated excellent antiviral activity, having antiviral reduction values of equal to or better than 95% and Selectivity Indices (SI) of $\geq$1.0. This represents around 0.9% of the test compounds being active at this maximum reduction level criteria. These compounds are summarized in **Table 3** according to the highest **Total Antiviral Index (TAI)**. Compounds AVS-5569, 5568, 1214, 5219, 0303, 7449 and 6193 demonstrated the greatest *in vitro* promise, having TAI's that ranged from 51 - 83 and SI's that ranged from 19 - >320. The next thirteen compounds, AVS-3571, 1654, 8586, 6218, 2893, 6215, 5035, 6210, 2568, 6462, 2275, 1211 and 6220, demonstrated excellent antiviral activity with TAI's that ranged from 30 - 48 and SI values that ranged from 6 - 21. The rest (12 compounds) had only moderate antiviral activity with TAI's ranging from 11 - 27 and SI's of 1 to 5.9.

It is worthwhile to note that compounds received in shipment number 62 were mostly colored **(Table 3)**. Therefore those compounds appearing in the 95% active category from shipment number 62 should be interpreted with caution, since colored compounds can create false positive readings with the MTT assay. However, the drug color controls (OD's) are subtracted from the Test OD's and should compensate for higher readings due to drug color.

Table 3

AVS Compounds Active Against Vaccinia Virus (VV) at AI_{95} Level

AVS No.	Ship-ment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
** VIRUS VV								
VV 5569	09	07/13/89	1.469	2.17 >	320.00 >	147.36 >	320.00 >	82.80
VV 5568	09	07/13/89	1.465	2.17 >	320.00 >	147.36 >	320.00 >	75.99
VV 1214	52	03/23/89	1.384	12.10 >	320.00 >	26.40	65.90 >	65.14
VV 5219	51	05/04/89	1.754	0.79 >	10.00 >	12.70	84.00 >	62.29
VV 0303	62	01/17/90	1.113	0.92 >	32.00 >	34.66	24.69 >	59.69
VV 7449	71	10/04/90	1.115	0.87 >	100.00 >	114.81 >	29.68 >	59.01
VV 6193	62	02/22/90	1.039	191.00 >	320.00 >	1.68 >	19.05 >	51.01
VV 3571	32	08/17/89	1.299	30.90 >	320.00 >	10.36 >	17.68 >	47.60
VV 1654	46	06/01/89	2.374	0.96 >	32.00 >	33.40	13.80 >	46.18
VV 8586	76	01/31/91	1.260	100.00 >	320.00 >	3.20	20.95	39.42
VV 6218	62	02/22/90	1.210	277.00 >	320.00 >	1.16 >	15.15 >	37.51
VV 2893	26	08/17/89	1.261	78.90 >	320.00 >	4.06	10.26	37.30
VV 6215	62	01/24/90	1.209	91.60 >	320.00 >	3.49 >	7.69 >	36.32
VV 5035	48	06/01/89	2.287	6.66 >	32.00 >	4.81	8.97	34.26
VV 6210	62	02/22/90	1.079	93.00 >	320.00 >	3.44 >	6.64 >	33.52
VV 2568	67	06/27/90	0.969	29.60 >	100.00 >	3.38 >	6.86 >	33.06
VV 6462	63	03/29/90	1.341	9.54 >	320.00 >	33.56	7.85 >	32.30
VV 2275	67	06/21/90	1.086	29.30 >	320.00 >	10.91	10.01	32.18
VV 1211	27	08/17/89	1.249	72.90 >	320.00 >	4.39	8.48	32.10
VV 5053	48	01/05/89	1.491	30.10	274.00	9.11	5.20	31.95
VV 6220	62	01/17/90	1.143	94.50 >	320.00 >	3.39 >	5.66 >	30.04
VV 5069	48	01/12/89	1.851	264.00 >	320.00 >	1.21 >	5.30 >	26.64
VV 0206	67	06/14/90	1.122	93.90 >	320.00 >	3.41	5.87 >	26.53
VV 7053	72	10/04/90	1.113	282.00 >	320.00 >	1.13 >	3.62 >	26.45
VV 6209	62	03/15/90	0.978	89.60 >	100.00 >	1.12 >	2.99 >	24.55
VV 6219	62	02/22/90	1.137	264.00 >	320.00 >	1.21 >	4.43 >	24.05
VV 5072	48	09/07/89	1.249	139.00 >	320.00 >	2.30	4.18 >	22.92
VV 6986	68	07/19/90	1.202	92.70 >	320.00 >	3.45	3.89	21.69
VV 2866	20	08/17/89	1.261	289.00 >	320.00 >	1.11 >	2.77 >	20.04
VV 6199	62	01/11/90	1.223	92.80	309.00	3.33	3.28	19.71
VV 6217	62	04/12/90	1.265	92.20 >	100.00 >	1.08 >	2.26 >	19.24
VV 6192	62	02/22/90	1.245	94.50 >	100.00 >	1.06 >	1.77 >	14.61
VV 7479	73	11/29/90	1.083	315.00 >	320.00 >	1.02 >	2.02 >	13.67
VV 7023	69	07/12/90	1.299	301.00 >	320.00 >	1.06 >	1.84 >	11.28

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

IC_{95} = (Viral) inhibitory concentration 95% = The drug concentration (μg/ml) that inhibited viral CPE by 95% calculated by using a regression analysis for semilog curve fitting.

TC_{95} = (Cell) toxicity concentration 95% = The drug concentration (μg/ml) that reduced cell viability by 95%.

AI_{95} = Antiviral Index = A single point ration of the antiviral and anticellular effect of the compound, calculated with 95% reduction values (calculated by dividing the TC_{95} by the IC_{95}).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, μg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

New Drugs with 50% Antiviral Reduction Levels: Out of the 3895 actual single drug tests, 91 new compounds demonstrated good antiviral activity, having antiviral reduction values equal to or better than 50% and SI's of >1. This represents around 2.3% of the test compounds being active at this good antiviral reduction level criteria. These compounds are summarized in **Table 4** according to the highest **Total Antiviral Index (TAI)**. AVS-1985 and AVS-138 demonstrated the best TAI's of 73 and 63 and SI's of 178 and 103, respectively. Twenty-four other compounds demonstrated moderate antiviral activity, having TAI's that ranged from 20 - 53 and SI's from 2 - 32. The rest (65 compounds) showed marginal antiviral activity with TAI's that ranged from 3.4 to 19 and SI's from 1 to 5.5.

It is worthwhile to note **(Table 4)** that compounds received in shipment number 62 were mostly colored. Therefore those compounds appearing in the 50% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay. However, the absorbance values of the drug color controls are subtracted from the test O.D.'s which should compensate for the increased absorbance due to drug color.

Table 4

AVS Compounds Active Against Vaccinia Virus (VV) at AI_{50} Level

AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
** VIRUS VV								
VV 1985	67	06/21/90	1.077 <	0.03 >	10.00 >	312.50 >	177.92 >	73.32
VV 0138		08/17/89	1.236	3.11 >	320.00 >	102.95 >	102.95 >	62.56
VV 7447	71	10/04/90	1.014	8.59 >	320.00 >	37.25	24.45 >	52.61
VV 2290	71	08/02/90	1.186	8.75	286.00	32.69	21.84 >	43.80
VV 1655	62	12/22/89	1.731	9.13	287.00	31.44	9.15 >	38.80
VV 7448	71	10/04/90	1.014	32.00 >	320.00 >	9.99 >	9.99 >	37.29
VV 0001		06/14/90	1.030	27.10 >	320.00 >	11.81 >	11.81 >	35.34
VV 5034	48	05/18/89	1.899	15.80 >	320.00 >	20.30 >	20.30 >	35.02
VV 3802	67	06/27/90	1.009 <	0.10	20.80 >	208.25 >	32.00 >	32.95
VV 5988	61	12/07/89	1.372	1.95	27.30	14.01	8.96 >	30.91
VV 6724	67	06/27/90	1.000	3.81	85.80	22.51	7.28	30.67
VV 2860	20	09/07/89	1.249	6.10	63.20	10.36	6.60 >	29.17
VV 2318	67	07/19/90	1.259	0.15	19.20	123.29	11.58 >	28.57
VV 5987	61	12/07/89	1.372	1.45	20.10	13.79	8.39 >	28.23
VV 5450	53	04/13/89	1.537	6.20	98.10	15.80	8.21 >	27.96
VV 6224	62	01/17/90	0.903	62.60 >	320.00 >	5.12 >	5.12 >	27.63
VV 5997	66	06/14/90	1.057	0.63 >	100.00 >	159.38	10.16 >	26.11
VV 2966	27	08/17/89	1.299	8.99	158.00	17.57	7.25 >	25.66
VV 2503	67	07/19/90	1.326	0.17	8.57	49.93	7.96 >	24.29
VV 6223	62	01/17/90	1.050	45.60	283.00	6.22	4.21	23.39
VV 6467	63	04/19/90	1.193	0.18	1.86	10.53	4.65	23.24
VV 0646	67	07/12/90	1.367	0.19	9.24	47.74	4.21	23.11
VV 8239	75	12/13/90	1.354	55.60	308.00	5.53	3.67	21.86
VV 6042	61	12/13/89	0.921	49.10	172.00	3.51	1.99 >	21.79
VV 4934	51	02/02/89	1.613	11.20	50.50	4.53	1.68	20.86
VV 6469	63	03/29/90	1.248	43.20	251.00	5.81	3.91	19.64
VV 6304	63	03/01/90	1.154	67.30 >	320.00 >	4.76	4.63 >	19.07
VV 8532	76	01/24/91	1.224	13.80	73.10	5.30	2.73 >	19.00
VV 6754	67	07/19/90	1.305	1.38	8.93	6.45	3.21	18.78
VV 2991	41B	08/17/89	1.185	2.05	18.70	9.14	5.47	18.75
VV 5601	67	06/07/90	1.074	151.00 >	320.00 >	2.12 >	2.12 >	18.36
VV 1644	64	04/12/90	1.163	58.60	293.00	5.00	3.35	17.96
VV 5958	60	12/07/89	1.407	5.91	37.90	6.41	3.63	17.94
VV 7469	73	11/01/90	1.239	88.80 >	320.00 >	3.60 >	3.60 >	17.71
VV 0148	67	06/21/90	1.122	0.55 >	10.00 >	18.36	4.36	17.58
VV 8356	76	01/31/91	1.189	0.60	6.00	10.02	3.59 >	17.23
VV 5186	58	09/07/89	1.225	49.80	299.00	6.01	2.56 >	17.22
VV 7485	73	11/01/90	1.230	32.00	190.00	5.94	3.33	16.50
VV 6184	62	01/11/90	1.161	220.00 >	320.00 >	1.46 >	1.46 >	16.44
VV 7413	70	09/20/90	1.209	19.60	86.60	4.43	3.00	16.22
VV 5457	54	06/08/89	1.315	5.70	20.90	3.66	2.60	15.75
VV 6973	68	06/27/90	0.956	133.00 >	320.00 >	2.40 >	2.40 >	15.73
VV 6145	62	01/10/90	0.990	41.60	233.00	5.60	2.53	15.43
VV 7302	70	09/27/90	1.018	320.00 >	320.00 >	1.00 >	1.00 >	14.70
VV 5069	48	04/06/89	1.619	86.90 >	320.00 >	3.68	3.39 >	14.61
VV 6213	62	01/24/90	1.021	81.00 >	100.00 >	1.23	1.12 >	14.60
VV 5977	61	03/29/90	1.257	0.57	2.29	4.00	2.12 >	14.18
VV 1355	64	03/29/90	1.409	154.00 >	320.00 >	2.08 >	2.08 >	14.07
VV 4855	48	12/29/88	1.799	9.00 >	10.00 >	1.10 >	1.10 >	14.00
VV 5146	57	08/17/89	1.195	2.88 >	10.00 >	3.47 >	3.47 >	14.00
VV 5973	61	12/07/89	1.429	7.17	21.40	2.98	2.04 >	13.49
VV 2743	41B	08/17/89	1.249	95.70 >	320.00 >	3.34	3.12 >	12.85
VV 4532	42	02/23/89	1.735	85.80 >	320.00 >	3.73 >	3.73 >	12.70
VV 7110	70	08/09/90	1.445	42.90	191.00	4.45	2.56	12.02
VV 8355	76	01/10/91	1.241	16.10	254.00	15.78	1.30	11.98
VV 4992	51	02/16/89	1.716	134.00 >	320.00 >	2.39	1.46 >	11.45
VV 0124	69	07/12/90	1.266	20.60	128.00	6.18	1.69	11.41
VV 4849	48	12/29/88	1.822	151.00 >	320.00 >	2.11 >	2.11 >	11.36

Table 4 (Cont'd)

AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
VV 1017	64	03/29/90	1.317	85.50	237.00	2.77	1.72 >	11.06
VV 2688	41B	08/17/89	1.325	3.05	9.38	3.08	2.07 >	10.95
VV 4531	42	08/17/89	1.327	135.00 >	320.00 >	2.38 >	2.38 >	10.89
VV 6133	62	01/04/90	1.310	21.50	52.10	2.42	1.35	10.87
VV 8357	76	01/10/91	1.091	302.00 >	320.00 >	1.06 >	1.06 >	10.72
VV 6783	68	07/12/90	1.274	21.00	66.00	3.14	1.35	10.49
VV 7094	72	11/01/90	1.234	75.90	255.00	3.36	2.34	10.37
VV 5058	48	01/05/89	1.491	198.00 >	320.00 >	1.61 >	1.61 >	10.15
VV 5971	61	12/07/89	1.324	3.06	13.00	4.26	2.37	9.85
VV 7049	69	07/26/90	1.381	179.00 >	320.00 >	1.79 >	1.79 >	9.77
VV 7391	70	08/30/90	1.277	70.60	206.00	2.92	1.93	9.69
VV 6983	68	06/27/90	0.872	192.00 >	320.00 >	1.67 >	1.67 >	9.46
VV 5968	61	12/07/89	1.441	86.70	185.00	2.13	1.15	9.11
VV 4939	51	08/17/89	1.248	8.06	20.60	2.56	1.77	9.03
VV 6771	67	06/21/90	1.146	7.20	19.50	2.71	1.84	8.48
VV 4943	51	02/02/89	1.749	8.31	22.10	2.66	1.72	8.25
VV 7468	73	11/01/90	1.221	246.00 >	320.00 >	1.30 >	1.30 >	8.05
VV 7003	69	07/12/90	1.440	215.00 >	320.00 >	1.49	1.24 >	8.01
VV 6819	68	08/02/90	1.275	85.20	228.00	2.67	1.92 >	7.85
VV 7074	72	10/04/90	1.175	225.00 >	320.00 >	1.42 >	1.42 >	7.30
VV 6212	62	03/15/90	1.105	71.40 >	100.00 >	1.40 >	1.40 >	6.95
VV 7022	69	07/12/90	1.436	69.40	152.00	2.18	1.16	6.74
VV 6399	63	04/12/90	1.096	0.75	2.13	2.85	1.70	6.02
VV 5970	61	12/28/89	1.739	0.78	1.91	2.44	1.40	5.97
VV 6019	61	12/13/89	0.969	100.00	202.00	2.02	1.17	5.55
VV 7038	69	07/26/90	1.231	87.50	183.00	2.09	1.30	5.51
VV 1838	64	04/12/90	1.163	238.00 >	320.00 >	1.34	1.08 >	5.42
VV 7102	70	08/09/90	1.513	28.60	89.90	3.15	1.03	5.12
VV 5155	57	07/27/89	1.452	2.48	7.66	3.09	1.12	5.01
VV 5972	61	12/07/89	1.429	2.54	5.66	2.23	1.14 >	4.80
VV 5314	53	04/06/89	1.769	320.00 >	320.00 >	1.00	1.00 >	4.68
VV 6758	67	06/14/90	1.046	2.62	5.78	2.21	1.39	4.42
VV 5488	53	07/27/89	1.567	313.00 >	320.00 >	1.02 >	1.02 >	4.03
VV 4098	37	02/23/89	1.860	0.00 >	0.00 >	1.05 >	1.05 >	3.43

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

IC_{50} = (Viral) inhibitory concentration 50% = The drug concentration (μg/ml) that inhibited viral CPE by 50% calculated by using a regression analysis for semilog curve fitting.

TC_{50} = (Cell) toxicity concentration 50% = The drug concentration (μg/ml) that reduced cell viability by 50%.

AI_{50} = Antiviral Index = A single point ratio of the antiviral and anticellular effect of the compound, calculated with 50% reduction values (calculated by dividing the TC_{50} by the IC_{50}).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, μg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

New Drugs with 25% Antiviral Reduction Levels: Of the 3895 actual single drug tests, 127 new compounds demonstrated marginal antiviral activity, having antiviral reduction values equal to or better than 25%. This represents around 3.3% of the test compounds being active at this marginal antiviral reduction level. In general, when compared to the 95% and 50% antiviral activity categories, the compounds in this (25%) category do not appear to have any significant antiviral promise and probably do not need to be confirmed any further.

4.1.1.5 Confirmatory Assays:

The CPE-inhibition assay procedure using (VR and/or MTT) was employed to confirm the inhibitory effects of compounds shown to be active in the primary screen. The results of the confirmatory evaluations are summarized on **Table 5**. Except for a few compounds (most of which showed only marginal to moderate activity), the antiviral effects of the compounds against VV were confirmed. Thirty-seven compounds have confirmed activity that is significantly greater than the positive control drugs as demonstrated by **Selectivity Indices (SI)** > 100 and high Virus Ratings or TAI's. Of these highly effective compounds, nine (AVS-1985, 2994, 3679, 3912, 4224, 4225, 4226, 4227, and 4533) have SI's of > 1000.

All of the 37 most active compounds should be considered for *in vivo* evaluation against VV. Furthermore, these compounds should be examined for activity against other DNA viruses such as Herpes Simplex virus, Varicella-Zoster virus, and Human Cytomegalovirus.

Table 5

Confirmatory Assays for Compounds Active Against Vaccinia Virus (VV)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
** VIRUS VV																	
0001	04	07/31/86	---	NA	32.00	> 320.00	> 10.00	100.00	> 320.00	> 3.20	320.00	> 320.00	> 1.00	2.10	2.10[a]	CPE	+
0001		06/14/90	0Y0	1.030	9.55	> 320.00	> 33.49	27.10	> 320.00	> 11.81	0.00	> 320.00	0.00	> 11.81	> 35.34	MTT	+
0001		07/19/90	107	1.278	25.40	268.00	10.58	47.40	> 320.00	> 6.75	0.00	> 320.00	0.00	5.66	> 24.99	MTT	+
0071	02	07/24/86	---	NA	32.00	~ 100.00	3.20	81.00	320.00	3.90	320.00	> 320.00	> 1.00	3.90	1.70[a]	CPE	+
0071	41b	05/26/88	---	NA	32.00	~ 100.00	3.20	58.00	320.00	5.60	320.00	> 320.00	> 1.00	5.60	1.90[a]	CPE	+
0079	01	07/17/86	---	NA	10.00	100.00	10.00	32.00	100.00	3.10	0.00	> 320.00	0.00	3.10	1.70[a]	CPE	+
0079	33	02/04/88	---	NA ~	10.00	~ 32.00	~ 3.20	112.00	100.00	0.90	0.00	> 320.00	0.00	0.90	1.10[a]	CPE	+
0079	41b	05/26/88	---	NA	10.00	~ 100.00	~ 10.00	98.00	320.00	3.30	0.00	> 320.00	0.00	3.30	1.70[a]	CPE	+
0138	01	06/12/86	---	NA ~	10.00	100.00	10.00	8.80	320.00	36.36	2.20	320.00	145.50	11.40	3.10[a]	CPE	+
0138	01	07/17/86	---	NA	10.00	> 320.00	> 32.00	19.90	> 320.00	> 15.24	100.00	> 320.00	> 3.20	> 16.00	3.80[a]	CPE	+
0138	01	08/17/89	08K	1.236	1.50	> 320.00	> 213.00	3.11	> 320.00	> 103.00	0.00	> 320.00	0.00	> 102.95	> 65.56	MTT	+
0148	02	07/24/86	---	NA	0.66	32.00	48.00	1.00	100.00	100.00	3.20	> 320.00	> 100.00	100.00	5.40[a]	CPE	+
0148	41b	05/26/88	---	NA	0.66	1.00	1.50	0.80	3.20	4.10	10.00	> 320.00	32.00	4.10	3.50[a]	CPE	+
0148	67	06/21/90	0YX	1.122	0.22	2.38	10.70	0.55	> 10.00	> 18.36	0.00	> 10.00	0.00	4.36	17.58	MTT	+
0148	67	07/12/90	103	1.334	0.41	1.37	3.34	0.71	> 10.00	> 13.98	0.00	> 10.00	0.00	1.91	11.42	MTT	+
0206	05	08/07/86	---	NA	66.00	100.00	1.50	66.00	320.00	4.85	320.00	> 320.00	> 1.00	1.20	1.20[a]	CPE	+
0206	67	06/14/90	0XZ	1.122	38.70	312.00	8.05	53.10	> 320.00	> 6.03	93.90	> 320.00	> 3.41	5.87	> 26.53	MTT	+
0206	67	07/19/90	106	1.247	42.50	267.00	6.27	56.60	> 320.00	> 5.66	94.50	> 320.00	> 3.39	4.71	> 21.87	MTT	+
0206	67	08/09/90	11X	1.439	46.30	253.00	5.46	67.10	> 320.00	> 4.77	0.00	> 320.00	0.00	3.77	> 18.09	MTT	+
0215	01	07/17/86	---	NA	0.32	3.20	10.00	0.70	3.20	≥ 4.60	3.20	> 320.00	> 100.00	4.60	≥ 4.20[a]	CPE	+
0215	41b	05/26/88	---	NA	0.32	3.20	10.00	0.80	3.20	3.90	10.00	320.00	32.00	3.90	3.30[a]	CPE	+
0257	05	08/07/86	---	NA	32.00	320.00	10.00	100.00	> 320.00	> 3.20	0.00	> 320.00	0.00	1.80	1.40[a]	CPE	+
0257	05	05/26/88	---	NA	100.00	210.00	2.10	320.00	320.00	1.00	0.00	> 320.00	0.00	1.00	0.60[a]	CPE	+
0272	01	07/17/86	---	NA	0.21	3.20	15.20	0.70	3.20	4.60	3.20	> 320.00	> 100.00	4.60	4.70[a]	CPE	+
0272	41b	05/26/88	---	NA	0.32	3.20	10.00	0.60	3.20	5.70	3.20	> 320.00	> 100.00	5.70	4.30[a]	CPE	+
0303	01	07/17/86	---	NA	0.10	10.00	100.00	0.60	10.00	16.00	3.20	> 320.00	> 100.00	15.90	5.20[a]	CPE	+
0303	46	10/27/88	---	NA <	0.32	32.00	100.00	0.30	32.00	100.00	3.20	32.00	10.00	100.00	5.50[a]	CPE	+
0303	46	11/10/88	---	NA	0.21	32.00	152.00	0.20	100.00	410.00	10.00	> 320.00	32.00	410.00	6.30[a]	CPE	+
0303	62	01/17/90	0PC	1.113 <	0.10	9.27	> 92.71	0.38	> 32.00	> 85.22	0.92	> 32.00	> 34.66	24.69	> 59.69	MTT	+
0303	62	03/29/90	0T1	1.257	0.17	3.12	18.92	0.50	> 32.00	> 63.84	2.64	> 32.00	> 12.14	6.21	> 42.74	MTT	+
0646	07	07/24/86	---	NA <	0.32	1.00	3.10	0.32	32.00	100.00	3.20	> 320.00	> 100.00	1.70	> 4.00[a]	CPE	+
0646	67	06/21/90	0YX	1.122	0.15	0.94	6.40	0.21	> 3.20	> 14.89	0.00	> 3.20	0.00	4.36	> 18.85	MTT	+
0646	67	07/12/90	104	1.367	0.14	0.81	5.85	0.19	9.24	47.74	0.00	> 10.00	0.00	4.21	23.11	MTT	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
0707	30	10/22/87	---	NA	3.20 -	66.00 -	21.00	16.90	100.00	5.90	0.00	320.00	0.00	5.90	1.95[a]	CPE	+
0707	30	11/12/87	---	NA	10.00 -	21.00 -	2.10	24.10	32.00	1.33	0.00 >	32.00	0.00	1.33	0.70[a]	CPE	+
0707	30	05/12/88	---	NA	66.00 -	210.00 -	3.30	129.00	320.00	2.50	0.00 >	320.00	0.00	2.50	1.20[a]	CPE	+
1017	64	03/29/90	0SY	1.317	32.00	147.00	4.59	85.50	237.00	2.77	0.00 >	320.00	0.00	1.72 >	11.06	MTT	+
1017	64	04/19/90	0TL	1.206	62.20	82.00	1.32	0.00	177.00	0.00	0.00 >	320.00	0.00	0.00	2.30	MTT	+
1159	27	08/13/87	---	NA -	10.00	66.00	6.60	22.00	100.00	4.50	0.00	320.00	0.00	4.50	1.50[a]	CPE	+
1159	27	05/12/88	---	NA -	21.00	66.00	3.10	22.00	100.00	4.60	0.00	320.00	0.00	4.60	1.40[a]	CPE	+
1160	27	08/07/86	---	NA <	0.32	100.00 >	313.00	0.60	100.00	166.00	3.20	320.00	100.00	166.00	5.60[a]	CPE	+
1160	27	05/12/88	---	NA	0.32	6.60	21.00	5.70	10.00	1.70	0.00	320.00	0.00	1.70	2.60[a]	CPE	+
1214	52	03/23/89	01Y	1.384 <	1.00	109.00 >	109.00	1.66	196.00	119.00	12.10 >	320.00 >	26.40	65.90 >	65.14	MTT	+
1214	52	06/01/89	04X	2.381	1.71	77.30	45.20	3.48	176.00	50.50	32.00 >	320.00 >	10.00	22.20 >	49.31	MTT	+
1392	33	02/04/88	---	NA	32.00 -	210.00	6.60	123.00	320.00	2.60	0.00 >	320.00	0.00	2.60	1.50[a]	CPE	+
1392	33	02/18/88	---	NA	10.00	66.00	6.60	100.00	100.00	1.00	0.00 >	320.00	0.00	1.00	1.70[a]	CPE	+
1644	64	04/12/90	0T6	1.163	37.60	196.00	5.23	58.60	293.00	5.00	0.00 >	320.00	0.00	3.35	17.96	MTT	+
1644	64	05/03/90	0UQ	1.816	43.50	217.00	4.99	68.40 >	320.00 >	4.68	0.00 >	320.00	0.00	3.17 >	15.98	MTT	+
1654	46	10/13/88	---	NA	1.00	6.60	6.60	2.00	10.00	5.00	10.00 >	320.00 >	32.00	5.00	3.90[a]	CPE	+
1654	46	10/27/88	---	NA	1.00	66.00	66.00	3.10	100.00	32.00	32.00 >	320.00 >	10.00	32.00	4.30[a]	CPE	+
1654	46	05/04/89	03W	1.754	0.07	9.74	145.00	0.81 >	10.00 >	12.40	0.00 >	10.00	0.00	12.10 >	38.04	MTT	+
1654	46	06/01/89	040	2.374 <	0.10	5.02 >	50.20	0.36	9.17	25.20	0.96 >	32.00 >	33.40	13.80 >	46.18	MTT	+
1654	67	05/31/90	0XF	1.687	1.45	8.87	6.11	4.49	47.10	10.50	0.00 >	100.00	0.00	1.98 >	15.43	MTT	+
1654	67	06/21/90	0YW	1.107	0.75	22.80	30.30	1.69	66.00	39.10	8.16 >	100.00 >	12.26	13.50 >	41.18	MTT	+
1838	64	04/12/90	0T6	1.163	154.00	257.00	1.67	238.00 >	320.00 >	1.34	0.00 >	320.00	0.00	1.08 >	5.42	MTT	+
1838	64	05/03/90	0UR	1.832	0.00	173.00	0.00	0.00	247.00	0.00	0.00 >	320.00	0.00	0.00	0.04	MTT	-
1838	64	05/24/90	0WI	1.696	0.00	167.00	0.00	0.00	234.00	0.00	0.00 >	320.00	0.00	0.00	3.83	MTT	-
1947	28	08/27/87	---	NA	3.20	21.00	6.60	7.80	32.00	4.10	0.00	100.00	0.00	4.10	1.50[a]	CPE	+
1947	28	05/12/88	---	NA	10.00	66.00	6.60	0.00	100.00	0.00	0.00	320.00	0.00	0.00	0.90[a]	CPE	+
1985	02	07/24/86	---	NA <	0.32 <	0.32 >	1.00 <	0.32	100.00	313.00 <	0.32 >	320.00 >	1000.00	313.00 ≥	7.20[a]	CPE	+
1985	41b	05/26/88	---	NA	0.003	21.00	6563.00	0.01	32.00	5650.00	0.03 >	320.00 >	10000.00	5650.00	10.20[a]	CPE	+
*1985	41B	02/23/89	01M	1.975 <	1.00	2.65 >	2.65 <	1.00	7.24 >	7.24	0.00 >	320.00	0.00 >	2.65 >	16.01	MTT	+
*1985	41B	02/23/89	01M	1.975	0.00 >	0.32 >	159.00	0.00 >	0.32 >	72.50	0.00 >	0.32	0.00 >	72.50 >	55.85	MTT	+
**1985	67	06/21/90	0YZ	1.077 <	0.03	5.69 >	177.92 <	0.03 >	10.00 >	312.50	0.00 >	10.00	0.00 >	177.92 >	73.32	MTT	+
**1985	67	06/21/90	0YZ	1.077	0.00 >	0.01 >	9.40	0.00 >	0.01 >	5.59	0.00 >	0.01	0.00 >	5.59 >	30.17	MTT	+

* Based on combined results of plates 01M, Drug 1 and 01M Drug 2, the IC_{50} is 0.00441 µg/ml, the TC_{25} is 2.65 µg/ml and the SI = 601.

** Based on combined results of plates 0YZ, Drug 1 and 0YZ, Drug 2, the IC_{50} is 0.00179 µg/ml, the TC_{25} is 5.69 µg/ml and the SI = 3179.

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
1986	02	07/24/86	---	NA	< 0.32	> 320.00	>1000.00	0.60	> 320.00	> 533.00	3.20	> 320.00	> 100.00	> 533.00 ≥	7.40[a]	CPE	+
1986	41b	05/26/88	---	NA	< 0.32	> 320.00	>1000.00	0.70	> 320.00	> 487.00	3.20	> 320.00	> 100.00	> 487.00	7.20[a]	CPE	+
1987	02	07/24/86	---	NA	0.66	> 320.00	> 485.00	1.70	> 320.00	> 188.00	10.00	> 320.00	> 32.00	> 188.00	6.80[a]	CPE	+
1987	41b	05/26/88	---	NA	2.10	> 320.00	> 152.00	2.80	> 320.00	> 114.00	10.00	> 320.00	> 32.00	> 114.00	5.60[a]	CPE	+
1988	02	07/24/86	---	NA	0.32	> 320.00	>1000.00	3.60	> 320.00	> 89.00	10.00	> 320.00	> 32.00	> 89.00	6.40[a]	CPE	+
1988	41b	05/26/88	---	NA	2.10	> 320.00	> 152.00	2.00	> 320.00	> 160.00	10.00	> 320.00	> 32.00	> 160.00	5.90[a]	CPE	+
2170	08	10/16/86	---	NA	0.32	6.60	21.00	1.30	10.00	7.70	3.20	> 320.00	> 100.00	7.70	4.70[a]	CPE	+
2170	41c	06/16/88	---	NA	0.66	21.00	32.00	0.90	32.00	37.00	3.20	> 320.00	> 100.00	37.00	5.00[a]	CPE	+
2275	12	12/04/86	---	NA	10.00	66.00	6.60	23.00	100.00	6.80	100.00	320.00	3.20	6.80	2.10[a]	CPE	+
2275	12	01/21/88	---	NA	10.00	66.00	6.60	16.00	100.00	6.20	100.00	320.00	3.20	6.20	1.90[a]	CPE	+
2275	67	05/31/90	0XB	1.569	13.40	79.20	5.92	19.20	173.00	9.01	0.00	> 320.00	0.00	4.12	20.61	MTT	+
2275	67	06/21/90	0YK	1.086	7.59	135.00	17.73	13.40	242.00	18.04	29.30	> 320.00	> 10.91	10.01	32.18	MTT	+
2290	11	11/13/86	---	NA	1.00	21.00	21.00	5.70	32.00	5.60	32.00	320.00	10.00	5.60	3.20[a]	CPE	+
2290	11	05/12/88	---	NA	3.20	21.00	6.60	16.00	100.00	6.10	100.00	> 320.00	> 3.20	6.10	2.70[a]	CPE	+
2291	11	11/13/86	---	NA	0.32	6.60	21.00	3.20	10.00	3.20	0.00	32.00	0.00	2.10	1.90[a]	CPE	+
2291	11	05/12/88	---	NA	1.00	6.60	6.60	0.00	6.60	0.00	0.00	10.00	0.00	0.00	0.90[a]	CPE	+
2297	11	12/04/86	---	NA	2.10	21.00	10.00	5.00	32.00	6.40	32.00	> 320.00	> 10.00	6.40	3.40[a]	CPE	+
2297	11	01/21/88	---	NA	2.10	21.00	10.00	3.60	100.00	27.00	32.00	> 320.00	> 10.00	27.00	4.00[a]	CPE	+
2318	67	06/27/90	0ZJ	0.967	0.19	4.33	22.71	0.41	> 32.00	> 78.06	0.00	> 32.00	0.00	10.57	26.37	MTT	+
2318	67	07/19/90	10H	1.259 <	0.10	1.80	> 18.00	0.15	19.20	123.29	0.00	> 32.00	0.00	11.58	> 28.57	MTT	+
2321	13	12/18/86	---	NA	0.21	0.66	3.10	0.50	1.00	2.00	1.00	32.00	32.00	2.00	1.40[a]	CPE	+
2321	13	04/21/88	---	NA	0.32	0.66	2.10	0.80	3.20	4.20	0.00	3.20	0.00	4.20	1.10[a]	CPE	+
2323	13	12/11/86	---	NA	1.00	0.66	0.66	2.40	10.00	2.30	10.00	320.00	32.00	2.30	2.80[a]	CPE	+
2323	13	05/12/88	---	NA	1.00	66.00	66.00	2.70	100.00	37.00	10.00	> 320.00	> 32.00	37.00	4.50[a]	CPE	+
2326	13	12/11/86	---	NA	66.00	> 320.00	> 4.80	100.00	> 320.00	> 3.20	0.00	> 320.00	0.00	> 3.20	1.70[a]	CPE	+
2326	41b	05/26/88	---	NA	32.00	> 320.00	> 10.00	67.00	> 320.00	> 4.70	0.00	> 320.00	0.00	> 4.70	2.10[a]	CPE	+
2336	13	12/11/86	---	NA	32.00	210.00	6.60	151.00	320.00	7.10	320.00	> 320.00	> 1.00	2.10	1.50[a]	CPE	+
2336	13	05/12/88	---	NA	100.00	210.00	2.10	307.00	320.00	1.00	0.00	> 320.00	0.00	1.00	0.60[a]	CPE	+
2449	18	02/12/87	---	NA	32.00	210.00	6.60	88.00	320.00	3.60	320.00	> 320.00	> 1.00	3.60	1.50[a]	CPE	+
2449	18	05/12/88	---	NA	32.00	210.00	6.60	75.00	320.00	4.30	320.00	> 320.00	> 1.00	4.30	1.70[a]	CPE	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2503	67	06/27/90	0ZK	1.009	0.27	2.40	8.91	0.63	27.40	43.17	0.00 >	32.00	0.00	3.79	20.94	MTT	+
2503	67	07/19/90	10I	1.326	0.10	1.37	13.39	0.17	8.57	49.93	0.00 >	32.00	0.00	7.96 >	24.29	MTT	+
2568	21	05/14/87	---	NA	21.00	210.00	10.00	38.00	320.00	8.50	0.00 >	320.00	0.00	8.50	1.90[a]	CPE	+
2568	21	01/02/88	---	NA	10.00	210.00	21.00	18.00	320.00	18.00	320.00 >	320.00 >	1.00	18.00	2.90[a]	CPE	+
2568	67	06/07/90	0XI	1.044	12.40	69.00	5.56	17.00	142.00	8.34	30.00 >	320.00 >	10.65	4.05	21.40	MTT	+
2568	67	06/27/90	0ZI	0.969	9.57 >	100.00 >	10.45	14.60 >	100.00 >	6.86	29.60 >	100.00 >	3.38 >	6.86 >	33.06	MTT	+
2688	22	06/25/87	---	NA	1.00	6.60	6.60	3.10	10.00	3.30	0.00	32.00	0.00	3.30	1.40[a]	CPE	+
2688	41b	05/26/88	---	NA	2.10	6.60	3.10	5.60	10.00	1.80	0.00	32.00	0.00	1.80	0.90[a]	CPE	+
2688	41b	08/17/89	0BP	1.325	1.64	6.29	3.93	3.05	9.38	3.08	0.00	81.10	0.00	2.07 >	10.95	MTT	+
2700	22	06/25/87	---	NA	0.66	2.10	3.18	1.06	3.20	3.03	320.00 >	320.00 >	1.00	3.03	3.25[a]	CPE	+
2700	22	08/27/87	---	NA	1.00	6.60	6.60	1.77	10.00	5.65	10.00 >	320.00 >	32.00	5.65	3.60[a]	CPE	+
2716	22	05/28/87	---	NA	3.20 -	66.00	20.60	13.00	100.00	7.70	0.00	100.00	0.00	7.70	1.60[a]	CPE	+
2716	22	01/21/88	---	NA	10.00	6.60	0.66	20.00	10.00	0.50	0.00	100.00	0.00	0.50	0.80[a]	CPE	+
2716	46	05/12/88	---	NA	10.00	21.00	2.10	16.00	32.00	2.00	0.00	100.00	0.00	2.00	0.80[a]	CPE	+
2716	46	10/13/88	---	NA	10.00	6.60	0.66	18.00	10.00	0.60	0.00	100.00	0.00	0.60	0.60[a]	CPE	+
2786	24	07/02/87	---	NA	66.00	210.00	3.18	71.00	320.00	4.50	0.00	320.00	0.00	4.50	1.10[a]	CPE	+
2786	24	05/12/88	---	NA	66.00	210.00	3.18	100.00	320.00	3.20	0.00 >	320.00	0.00	3.20	1.30[a]	CPE	+
2873	26	07/16/87	---	NA	6.60 >	320.00 >	48.50	10.70 >	320.00 >	29.00	0.00 >	320.00	0.00	29.00	3.30[a]	CPE	+
2873	26	08/27/87	---	NA	6.60 >	320.00 >	48.50	10.00 >	320.00 >	32.00	320.00 >	320.00 >	1.00 >	32.00	3.60[a]	CPE	+
2874	26	07/16/87	---	NA	2.10 >	320.00 >	152.40	2.34 >	320.00 >	136.75	32.00 >	320.00 >	10.00 >	136.80	5.20[a]	CPE	+
2874	26	08/27/87	---	NA	2.10 >	320.00 >	152.40	3.59 >	320.00 >	89.17	100.00 >	320.00 >	3.20 >	89.20	5.00[a]	CPE	+
2875	26	07/16/87	---	NA	< 0.32 >	320.00 >	1000.00	< 0.32 >	320.00 >	1000.00	1.00 >	320.00 >	320.00 >	1000.00 ≥	7.30[a]	CPE	+
2875	26	09/24/87	---	NA	0.21 >	320.00 >	1523.80	0.41 >	320.00 >	786.00	100.00 >	320.00 >	3.20 >	786.00	7.10[a]	CPE	+
2879	26	07/16/87	---	NA	2.10 >	320.00 >	152.40	2.40 >	320.00 >	133.60	32.00 >	320.00 >	10.00 >	133.60	5.10[a]	CPE	+
2879	26	08/27/87	---	NA	1.00 >	320.00 >	320.00	3.20 >	320.00 >	100.00	100.00 >	320.00 >	3.20 >	100.00	5.40[a]	CPE	+
2888	26	07/16/87	---	NA	2.10 >	320.00 >	152.40	2.30 >	320.00 >	139.00	10.00 >	320.00 >	32.00 >	139.03	5.30[a]	CPE	+
2888	26	08/27/87	---	NA	0.66 >	320.00 >	485.00	1.55 >	320.00 >	206.48	32.00 >	320.00 >	10.00 >	206.50	6.00[a]	CPE	+
2889	26	07/16/87	---	NA	6.60 >	320.00 >	48.50	6.37 >	320.00 >	50.20	32.00 >	320.00 >	10.00 >	50.20	4.30[a]	CPE	+
2889	26	08/27/87	---	NA	0.66 >	320.00 >	485.00	1.55 >	320.00 >	207.00	10.00 >	320.00 >	32.00 >	207.00	6.10[a]	CPE	+
2890	26	07/16/87	---	NA	2.10 >	320.00 >	152.00	2.40 >	320.00 >	134.10	10.00 >	320.00 >	32.00 >	134.10	5.30[a]	CPE	+
2890	26	08/27/87	---	NA	1.00 >	320.00 >	320.00	1.76 >	320.00 >	181.90	32.00 >	320.00 >	10.00 >	181.90	5.90[a]	CPE	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2891	26	07/16/87	---	NA	2.10	> 320.00	> 152.00	3.70	> 320.00	> 86.90	32.00	> 320.00	> 10.00	> 86.90	4.70[a]	CPE	+
2891	26	08/27/87	---	NA	1.00	> 320.00	> 320.00	2.00	> 320.00	> 159.53	10.00	> 320.00	> 32.00	> 159.50	5.90[a]	CPE	+
2893	26	07/16/87	---	NA	32.00	210.00	6.60	87.00	320.00	3.70	0.00	> 320.00	0.00	3.70	1.70[a]	CPE	+
2893	26	05/12/88	---	NA	66.00	66.00	1.00	115.00	100.00	0.90	320.00	> 320.00	> 1.00	0.90	1.10[a]	CPE	+
2893	26	08/17/89	08M	1.261	12.10	200.00	16.53	19.50	300.00	15.39	78.90	> 320.00	> 4.06	10.26	37.30	MTT	+
2895	26	07/16/87	---	NA	0.66	> 320.00	> 485.00	1.27	> 320.00	> 251.28	10.00	> 320.00	> 32.00	> 251.30	5.80[a]	CPE	+
2895	26	08/27/87	---	NA	0.66	> 320.00	> 485.00	1.00	> 320.00	> 317.72	3.20	> 320.00	> 100.00	> 317.72	6.60[a]	CPE	+
2896	26	07/30/87	---	NA	< 0.32	> 320.00	>1000.00	1.08	> 320.00	> 295.20	100.00	> 320.00	> 3.20	> 295.20	≥ 6.00[a]	CPE	+
2896	26	08/27/87	---	NA	1.00	> 320.00	> 320.00	1.66	> 320.00	> 192.78	320.00	> 320.00	> 11.00	> 192.80	5.60[a]	CPE	+
2902	26	07/30/87	---	NA	< 0.32	21.00	66.00	0.32	32.00	100.00	0.00	100.00	0.00	100.00	3.75[a]	CPE	+
2902	26	09/24/87	---	NA	0.07	21.00	318.20	0.09	32.00	367.80	0.00	100.00	0.00	367.80	4.85[a]	CPE	+
2903	26	07/30/87	---	NA	1.00	> 320.00	> 320.00	4.99	> 320.00	> 64.01	0.00	> 320.00	0.00	> 64.01	4.40[a]	CPE	+
2903	26	08/27/87	---	NA	3.20	> 320.00	> 100.00	12.28	> 320.00	> 26.05	0.00	> 320.00	0.00	> 26.05	3.40[a]	CPE	+
2904	26	07/30/87	---	NA	1.00	210.00	210.00	3.20	320.00	100.00	0.00	> 320.00	0.00	100.00	4.00[a]	CPE	+
2904	26	08/27/87	---	NA	1.60	> 320.00	> 320.00	3.20	> 320.00	> 100.00	0.00	> 320.00	0.00	> 100.00	4.50[a]	CPE	+
2906	26	07/30/87	---	NA	6.60	66.00	10.00	11.00	100.00	8.70	100.00	320.00	32.00	8.70	2.20[a]	CPE	+
2906	26	01/21/88	---	NA	6.60	210.00	31.80	9.80	320.00	33.00	320.00	> 320.00	> 1.00	33.00	3.20[a]	CPE	+
2911	26	07/30/87	---	NA	0.66	> 320.00	> 485.00	1.03	> 320.00	> 309.95	320.00	> 320.00	> 1.00	> 310.00	6.20[a]	CPE	+
2911	26	08/27/87	---	NA	1.00	> 320.00	> 320.00	1.77	> 320.00	> 180.80	32.00	> 320.00	> 10.00	> 180.80	5.80[a]	CPE	+
2912	26	07/30/87	---	NA	0.66	> 320.00	> 485.00	1.45	> 320.00	> 220.00	10.00	> 320.00	> 32.00	> 220.00	5.90[a]	CPE	+
2912	26	08/27/87	---	NA	1.00	> 320.00	> 320.00	1.77	> 320.00	> 180.80	32.00	> 320.00	> 10.00	> 180.80	5.80[a]	CPE	+
2913	26	07/30/87	---	NA	0.66	> 320.00	> 485.00	1.02	> 320.00	> 313.70	32.00	> 320.00	> 10.00	> 313.70	6.10[a]	CPE	+
2913	26	08/27/87	---	NA	0.66	> 320.00	> 485.00	1.03	> 320.00	> 311.11	32.00	> 320.00	> 10.00	> 311.11	6.30[a]	CPE	+
2964	27	08/20/87	---	NA	10.00	66.00	6.60	21.00	100.00	4.90	100.00	> 320.00	> 3.20	4.90	2.30[a]	CPE	+
2964	27	05/12/88	---	NA	10.00	66.00	6.60	21.00	100.00	4.90	100.00	> 320.00	> 3.20	4.90	2.30[a]	CPE	+
2966	27	08/13/87	---	NA	6.60	66.00	10.00	23.00	100.00	4.40	0.00	> 320.00	0.00	4.40	2.20[a]	CPE	+
2966	27	05/12/88	---	NA	21.00	66.00	3.10	40.00	100.00	2.50	0.00	> 320.00	0.00	2.50	1.60[a]	CPE	+
2966	27	08/17/89	08N	1.299	3.69	65.10	17.65	8.99	15.80	17.57	0.00	> 320.00	0.00	7.25	> 25.66	MTT	+
2991	27	08/20/87	---	NA	0.32	2.10	6.60	0.80	3.20	4.10	3.20	10.00	3.10	4.10	1.60[a]	CPE	+
2991	41b	05/26/88	---	NA	3.20	6.60	2.10	5.60	10.00	1.80	0.00	32.00	0.00	1.80	0.80[a]	CPE	+
2991	41b	08/17/89	08S	1.185	1.10	11.20	10.15	2.05	18.70	9.14	0.00	> 32.00	0.00	5.47	18.75	MTT	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2992	27	08/20/87	---	NA	21.00	210.00	10.00	34.00	320.00	9.50	0.00 >	320.00	0.00	9.50	2.10[a]	CPE	+
2992	27	01/21/88	---	NA	66.00	210.00	3.20	100.00	320.00	3.20	0.00 >	320.00	0.00	3.20	1.30[a]	CPE	+
2994	27	09/04/87	---	NA	0.03	66.00	2063.00	0.11	100.00	916.80	10.00 >	320.00 >	32.00	916.80	7.10[a]	CPE	+
2994	27	09/24/87	---	NA	0.03	210.00	6563.00	0.09	320.00	3564.30	0.32 >	320.00	>1000.00	3564.30	8.60[a]	CPE	+
2994	46	10/27/88	---	NA	0.03	210.00	6563.00	0.06	320.00	5815.00	0.32 >	320.00	>1000.00	3564.30	8.70[a]	CPE	+
2995	27	08/20/87	---	NA	2.10 >	320.00 >	152.00	3.06 >	320.00 >	104.45	100.00 >	320.00 >	3.20 >	104.50	5.20[a]	CPE	+
2995	27	09/24/87	---	NA	6.60 >	320.00 >	48.50	6.84 >	320.00 >	46.81	100.00 >	320.00 >	3.20 >	47.00	4.50[a]	CPE	+
3513	33	02/18/88	---	NA	10.00	66.00	6.60	18.00	100.00	5.50	100.00 >	320.00 >	3.20	5.50	2.50[a]	CPE	+
3513	33	03/03/88	---	NA	10.00	210.00	21.00	18.00	320.00	18.00	320.00 >	320.00 >	1.00	18.00	2.90[a]	CPE	+
3533	31	10/29/87	---	NA	0.32 >	320.00	>1000.00	0.49 >	320.00 >	653.60	32.00 >	320.00 >	10.00 >	653.60	7.10[a]	CPE	+
3533	31	11/12/87	---	NA <	0.32 >	320.00	>1000.00	0.31 >	320.00	>1028.70	1.00 >	320.00 >	320.00 >	102.70 ≥	7.10[a]	CPE	+
3534	31	10/29/87	---	NA	0.32 >	320.00	>1000.00	0.74 >	320.00 >	433.70	3.20 >	320.00 >	100.00 >	433.70	6.80[a]	CPE	+
3534	31	11/12/87	---	NA	0.32 >	320.00	>1000.00	0.48 >	320.00 >	671.40	3.20 >	320.00 >	100.00 >	671.40	7.00[a]	CPE	+
3535	31	10/29/87	---	NA	3.20 >	320.00 >	100.00	55.10 >	320.00 >	5.80	320.00 >	320.00 >	1.00 >	5.80	2.30[a]	CPE	+
3535	31	11/12/87	---	NA	32.00 >	320.00 >	10.00	49.10 >	320.00 >	6.50	320.00 >	320.00 >	1.00 >	6.50	2.50[a]	CPE	+
3571	32	02/11/88	---	NA ~	12.00	66.00	5.50	17.88	100.00	5.50 ~	32.00 ~	320.00	10.00	5.59	1.60[a]	CPE	+
3571	32	08/17/89	06[illegible]	1.299	13.50 >	320.00 >	23.78	18.10 >	320.00 >	17.68	30.90 >	320.00 >	10.36 >	17.68 >	47.60	MTT	+
3586	32	03/03/88	---	NA <	0.32	210.00	656.00	0.40	3.20	8.90	0.00 >	320.00	0.00	8.90	3.20[a]	CPE	+
3586	32	03/17/88	---	NA	0.10	210.00	2100.00	0.40	1.00	2.70	100.00	320.00	3.20	2.70	3.40[a]	CPE	+
3593	32	10/22/87	---	NA <	0.32	2.10	6.60	0.30	10.00	39.50	0.00 >	320.00	0.00	39.50	4.20[a]	CPE	+
3593	32	11/12/87	---	NA <	0.32	0.66	2.10 <	0.30	1.00 >	3.10	3.20 >	320.00 >	100.00 >	3.10	4.10[a]	CPE	+
3593	32	01/21/88	---	NA	0.21	0.66	3.10	0.40	1.00	2.80	3.20 >	320.00 >	100.00	2.80	4.00[a]	CPE	+
3593	41b	05/26/88	---	NA	0.21	0.66	3.10	0.40	1.00	2.80	3.20 >	320.00 >	100.00	2.80	4.20[a]	CPE	+
3607	32	01/14/88	---	NA <	0.32 >	320.00	>1000.00 <	0.10 >	320.00	>1000.00	1.00 >	320.00 >	320.00	>1000.00	8.00[a]	CPE	+
3607	32	02/04/88	---	NA	0.10 >	320.00	>3200.00	0.30 >	100.00 >	306.00	1.00 >	320.00 >	320.00 >	306.00	7.20[a]	CPE	+
3607	32	02/18/88	---	NA	0.10	210.00	2100.00	0.30	320.00	992.00	3.20 >	320.00 >	100.00	992.00	7.20[a]	CPE	+
3679	32	01/21/88	---	NA <	0.01	66.00	6600.00	0.01	100.00	10000.00	0.03 >	320.00	>10000.0	10000.0	9.80[a]	CPE	+
3679	32	02/04/88	---	NA	0.003	21.00	6563.00	0.01	32.00	3200.00	0.03 >	320.00	>10000.0	3200.00	9.10[a]	CPE	+
3679	32	02/18/88	---	NA	0.003	21.00	6563.00	0.01	32.00	3200.00	0.10 >	320.00	>3200.00	3200.00	8.50[a]	CPE	+
3705	32	01/14/88	---	NA	32.00	66.00	2.10	35.00	100.00	2.90	0.00 >	320.00	0.00	2.90	1.40[a]	CPE	+
3705	32	02/04/88	---	NA	32.00	66.00	2.10	50.00	100.00	2.00	0.00 >	320.00	0.00	2.00	1.10[a]	CPE	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
3912	34	03/10/88	---	NA	0.21	> 320.00	>1524.00	0.30	> 320.00	>1075.00	1.00	> 320.00	> 320.00	>1075.00	7.90[a]	CPE	+
3912	34	03/31/88	---	NA	0.10	> 320.00	>3200.00	0.20	> 320.00	>1609.00	1.00	> 320.00	> 320.00	>1609.00	8.30[a]	CPE	+
3913	34	02/25/88	---	NA	66.00	> 320.00	> 4.80	67.00	> 320.00	> 4.80	0.00	> 320.00	0.00	> 4.80	2.10[a]	CPE	+
3913	34	03/10/88	---	NA	21.00	210.00	10.00	43.00	320.00	7.40	320.00	> 320.00	> 1.00	7.40	2.10[a]	CPE	+
3940	35	03/03/88	---	NA	3.20	> 320.00	> 100.00	5.00	> 320.00	> 64.00	32.00	> 320.00	> 10.00	> 64.00	5.00[a]	CPE	+
3940	35	03/17/88	---	NA	3.20	> 320.00	> 100.00	9.50	> 320.00	> 34.00	32.00	> 320.00	> 10.00	> 34.00	4.40[a]	CPE	+
3940	35	09/23/88	---	NA	0.00	> 100.00	0.00	0.48	> 100.00	207.21	~ 3.20	> 100.00	31.25	207.21	0.00	CPE	+
3940	35	02/23/89	01E	1.739 <	1.00	> 320.00	> 320.00	1.52	> 320.00	> 211.00	0.00	> 320.00	0.00	> 211.00	> 63.25	MTT	+
3941	35	03/03/88	---	NA	0.32	> 320.00	>1000.00	1.00	> 320.00	> 325.00	3.20	> 320.00	> 100.00	> 325.00	6.80[a]	CPE	+
3941	35	03/17/88	---	NA	0.32	> 320.00	>1000.00	1.10	> 320.00	> 285.00	3.20	> 320.00	> 100.00	> 285.00	6.60[a]	CPE	+
3944	35	03/03/88	---	NA	32.00	> 320.00	> 10.00	88.00	> 320.00	> 3.60	320.00	> 320.00	> 1.00	> 3.60	2.10[a]	CPE	+
3944	35	03/17/88	---	NA	0.66	> 320.00	> 4.80	100.00	> 320.00	> 3.20	0.00	> 320.00	0.00	> 3.20	1.80[a]	CPE	+
3963	35	03/03/88	---	NA	66.00	210.00	3.20	51.00	320.00	6.30	100.00	> 320.00	> 3.20	6.30	2.10[a]	CPE	+
3963	35	03/17/88	---	NA	21.00	66.00	3.10	18.00	100.00	5.60	32.00	> 320.00	> 10.00	5.60	2.40[a]	CPE	+
4050	37	04/14/88	---	NA	2.10	6.60	3.10	3.20	10.00	3.10	0.00	32.00	0.00	3.10	1.00[a]	CPE	+
4050	37	06/16/88	---	NA	3.20	21.00	6.60	0.00	32.00	0.00	0.00	32.00	0.00	0.00	0.80[a]	CPE	-
4050	37	06/30/88	---	NA	3.20	6.60	2.10	0.00	10.00	0.00	0.00	10.00	0.00	0.00	0.40[a]	CPE	-
4163	41	06/02/88	---	NA	21.00	66.00	3.10	64.00	100.00	1.60	0.00	> 320.00	0.00	1.60	1.30[a]	CPE	+
4163	41	06/16/88	---	NA	21.00	210.00	10.00	118.00	320.00	2.70	0.00	> 320.00	0.00	2.70	1.50[a]	CPE	+
4182	39	04/21/88	---	NA	6.60	> 320.00	> 48.50	32.00	> 100.00	> 3.10	0.00	> 320.00	0.00	> 3.10	1.00[a]	CPE	+
4182	39	06/16/88	---	NA	6.60	> 320.00	> 48.50	50.00	> 100.00	> 2.00	0.00	> 320.00	0.00	> 2.00	1.50[a]	CPE	+
4210	41	06/30/88	---	NA	0.02	0.07	3.10	0.03	0.10	2.90	0.32	> 320.00	>1000.00	2.90	5.50[a]	CPE	+
4210	41	07/21/88	---	NA	0.01	0.07	6.60	0.03	0.10	3.20	0.32	> 320.00	>1000.00	3.20	5.60[a]	CPE	+
4224	42	07/07/88	---	NA	0.10	> 320.00	>3200.00	0.20	> 320.00	>1760.00	3.20	> 320.00	> 100.00	>1760.00	8.40[a]	CPE	+
4224	42	07/21/88	---	NA	0.21	> 320.00	>1524.00	0.30	> 320.00	> 996.00	3.20	> 320.00	> 100.00	> 996.00	7.70[a]	CPE	+
4225	42	07/07/88	---	NA	0.21	> 320.00	>1524.00	0.30	> 320.00	>1000.00	1.00	> 320.00	> 320.00	>1000.00	7.90[a]	CPE	+
4225	42	07/21/88	---	NA	0.21	> 320.00	>1524.00	0.50	> 320.00	> 707.00	3.20	> 320.00	> 100.00	> 707.00	7.50[a]	CPE	+

[a] Southern Research Institute

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4226	42	07/07/88	---	NA	0.21 >	320.00	>1524.00	0.20 >	320.00	>1340.00	1.00 >	320.00	> 320.00	>1340.00	8.30[a]	CPE	+
4226	42	07/21/88	---	NA	0.21 >	320.00	>1524.00	0.40 >	320.00	> 849.00	1.00 >	320.00	> 320.00	> 849.00	7.70[a]	CPE	+
4227	42	07/07/88	---	NA	0.02	210.00	10000.00	0.08	320.00	3880.00	0.32 >	320.00	>1000.00	>3880.00	8.70[a]	CPE	+
4227	42	07/21/88	---	NA	0.07	210.00	3182.00	0.07	320.00	4100.00	0.32 >	320.00	>1000.00	>4100.00	8.70[a]	CPE	+
4229	42	06/23/88	---	NA	3.20	6.60	2.10	4.70	10.00	2.10	10.00	100.00	10.00	2.10	1.50[a]	CPE	+
4229	42	07/07/88	---	NA	6.60	6.60	1.00	5.30	10.00	1.90	10.00	100.00	10.00	1.90	1.30[a]	CPE	+
4230	42	06/23/88	---	NA	6.60	2.10	0.32	8.10	3.20	0.40	0.00	100.00	0.00	0.40	1.20[a]	CPE	+
4230	42	07/07/88	---	NA	6.60	6.60	1.00	5.60	10.00	1.80	10.00 >	100.00 >	10.00	1.80	1.80[a]	CPE	+
4232	42	06/23/88	---	NA	32.00 >	320.00 >	10.00	202.00 >	320.00 >	1.60	0.00 >	320.00	0.00	1.60	1.50[a]	CPE	+
4232	42	07/07/88	---	NA	6.00 >	320.00 >	4.80	176.00 >	320.00 >	1.80	0.00 >	320.00	0.00	1.80	1.40[a]	CPE	+
4275	39	04/21/88	---	NA	0.007	0.21	32.00	0.02	0.32	19.00	0.00 >	320.00	0.00	19.00	5.30[a]	CPE	+
4275	39	04/29/88	---	NA	0.01	0.21	21.00	0.03	0.32	10.00	0.00 >	320.00	0.00	10.00	4.40[a]	CPE	+
4530	42	06/23/88	---	NA	0.66	210.00	318.00	1.20	320.00	263.00	10.00 >	320.00 >	32.00	263.00	5.90[a]	CPE	+
4530	42	06/30/88	---	NA	< 0.32 >	320.00 >	1000.0	0.50 >	320.00 >	708.00	10.00 >	320.00 >	32.00 >	708.00	7.20[a]	CPE	+
4531	42	06/23/88	---	NA	66.00	210.00	3.20	110.00 >	320.00 >	2.90	0.00 >	320.00	0.00 >	2.90	1.40[a]	CPE	+
4531	42	07/07/88	---	NA	32.00 >	320.00 >	10.00	89.00	320.00 >	3.60	0.00 >	320.00	0.00 >	3.60	2.00[a]	CPE	+
4531	42	08/17/89	080	1.327	65.50 >	320.00 >	4.89	135.00 >	320.00 >	2.38	0.00 >	320.00	0.00 >	2.38 >	10.89	MTT	+
4532	42	06/23/88	---	NA	32.00	210.00	6.60	103.00	320.00	3.10	0.00 >	320.00	0.00	3.10	1.70[a]	CPE	+
4532	42	07/07/88	---	NA	32.00	210.00	6.60	100.00	320.00	3.20	0.00 >	320.00	0.00	3.20	1.40[a]	CPE	+
4532	42	02/23/89	01F	1.735	49.60 >	320.00 >	6.45	85.80 >	320.00 >	3.73	0.00 >	320.00	0.00 >	3.73 >	12.70	MTT	+
4532	42	06/01/89	04M	2.243	126.00	100.00	0.79	226.00 >	320.00 >	1.42	0.00 >	320.00	0.00	0.44 >	2.75	MTT	+
4533	42	07/07/88	---	NA	0.07 >	320.00	4848.00	0.10 >	320.00	>3010.00	1.00 >	320.00 >	320.00	>3010.00	9.20[a]	CPE	+
4533	42	07/21/88	---	NA	0.10	210.00	2100.00	0.20	320.00	1930.00	1.00 >	320.00 >	320.00	1930.00	8.00[a]	CPE	+
4588	42	06/23/88	---	NA	32.00	21.00	0.60	60.00	32.00	0.54	0.00	320.00	0.00	0.54	1.00[a]	CPE	+
4588	42	07/07/88	---	NA	66.00	66.00	1.00	96.00	100.00	1.00	320.00 >	320.00 >	1.00	1.00	1.10[a]	CPE	+
4619	43	07/21/88	---	NA	1.00 >	320.00 >	320.00	1.80 >	320.00 >	180.00	10.00 >	320.00 >	32.00 >	180.00	6.00[a]	CPE	+
4619	43	08/18/88	---	NA	1.00 >	320.00 >	320.00	1.80 >	320.00 >	180.00	10.00 >	320.00 >	32.00 >	180.00	6.00[a]	CPE	+
4620	43	07/21/88	---	NA	0.66 >	320.00 >	485.00	1.50 >	320.00 >	206.00	10.00 >	320.00 >	32.00 >	206.00	6.10[a]	CPE	+
4620	43	08/18/88	---	NA	1.00 >	320.00 >	320.00	1.80 >	320.00 >	174.00	10.00 >	320.00 >	32.00 >	174.00	6.10[a]	CPE	+
4621	43	07/21/88	---	NA	2.10 >	320.00 >	152.00	2.00 >	320.00 >	160.00	10.00 >	320.00 >	32.00 >	160.00	5.90[a]	CPE	+
4621	43	08/18/88	---	NA	1.00 >	320.00 >	320.00	1.80 >	320.00 >	180.00	10.00 >	320.00 >	32.00 >	180.00	6.00[a]	CPE	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4622	43	07/21/88	---	NA	2.10 >	320.00 >	152.00	2.80 >	320.00 >	114.00	10.00 >	320.00 >	32.00 >	114.00	5.60[a]	CPE	+
4622	43	08/18/88	---	NA	1.00 >	320.00 >	320.00	1.80 >	320.00 >	180.00	10.00 >	320.00 >	32.00 >	180.00	6.00[a]	CPE	+
4822	48	12/08/88	006	1.753	5.18	96.80	18.70	9.75	277.00	28.40	0.00 >	320.00	0.00	9.90	24.98	MTT	+
4822	48	05/18/89	049	1.925	0.00	188.00	0.00	0.00	297.00	0.00	0.00 >	320.00	0.00	0.00	0.17	MTT	-
4822	48	07/27/89	08V	1.392	0.00	187.00	0.00	0.00	275.00	0.00	0.00 >	320.00	0.00	0.00 >	15.41	MTT	-
4864	46	06/16/88	---	NA	100.00 >	320.00 >	3.20	320.00 >	320.00 >	1.00	0.00 >	320.00	0.00 >	1.00	1.10[a]	CPE	+
4864	46	06/30/88	---	NA	66.00 >	320.00 >	4.85	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	1.00[a]	CPE	-
4864	46	10/13/88	---	NA	21.00	210.00	10.00	32.00	320.00	10.00	0.00 >	320.00	0.00	10.00	2.10[a]	CPE	+
4864	46	10/27/88	---	NA	21.00	210.00	10.00	57.00	320.00	5.60	320.00 >	320.00 >	1.00	5.60	1.90[a]	CPE	+
4934	51	02/02/89	00L	1.613	3.02	18.80	6.22	11.20	50.50	4.53	0.00	220.00	0.00	1.68	20.86	MTT	+
4934	51	06/01/89	04N	2.287	0.00	14.70	0.00	0.00	23.70	0.00	0.00 >	100.00	0.00	0.00	0.06	MTT	-
4934	51	08/17/89	08P	1.325	0.00	15.40	0.00	0.00	23.90	0.00	0.00	86.90	0.00	0.00	0.45	MTT	-
4939	51	02/02/89	00N	1.752	6.15	39.50	6.42	13.80	53.80	3.90	0.00	94.00	0.00	8.80	16.36	MTT	+
4939	51	06/01/89	04Q	2.420	0.00	15.20	0.00	0.00	23.30	0.00	0.00 >	100.00	0.00	0.00	1.20	MTT	-
4939	51	08/17/89	08Q	1.248	3.73	14.30	3.83	8.06	20.60	2.56	0.00	32.00	0.00	1.80	9.03	MTT	+
5034	48	01/12/89	013	1.871	7.06	169.00	23.90	14.70 >	320.00 >	21.70	0.00 >	320.00	0.00	11.50	34.45	MTT	+
5034	48	05/18/89	04A	1.899	6.42 >	320.00 >	49.80	15.80 >	320.00 >	20.30	0.00 >	320.00	0.00 >	20.30	35.02	MTT	+
5035	48	02/02/89	00U	1.709	0.82	10.20	12.40	1.61	20.90	12.90	0.00	88.20	0.00	6.30 >	36.14	MTT	+
5035	48	06/01/89	04N	2.287	1.26	16.50	13.10	1.84	24.00	13.00	6.66 >	32.00 >	4.81	8.91	34.26	MTT	+
5053	48	01/05/89	004	1.491	3.70	39.60	10.70	7.70	69.20	9.00	30.10	274.00	9.11	5.20	31.95	MTT	+
5053	48	02/02/89	00V	1.795	4.30	32.80	7.60	8.50	66.40	7.82	0.00 >	100.00	0.00	3.90	25.20	MTT	+
5069	48	01/12/89	001	1.851	41.60 >	320.00 >	7.69	60.00 >	320.00 >	5.34	264.00 >	320.00 >	1.21 >	5.30 >	26.64	MTT	+
5069	48	04/06/89	037	1.619	52.70	295.00	5.58	86.90 >	320.00 >	3.68	0.00 >	320.00	0.00	3.40	14.61	MTT	+
5072	48	04/06/89	035	1.748	55.30	68.60	1.24	95.70	182.00	1.90	0.00 >	320.00	0.00	0.72	0.81	MTT	+
5072	48	09/07/89	0E8	1.249	43.50	247.00	5.67	59.00 >	320.00 >	5.42	139.00 >	320.00 >	2.30	4.18 >	22.92	MTT	+
5138	57	07/27/89	08N	1.429	49.20	22.90	0.47	105.00 >	320.00 >	3.06	286.00 >	320.00 >	1.12	0.22 >	13.24	MTT	+
5138	57	03/29/90	0SM	1.308	30.60 >	320.00 >	10.46	49.40 >	320.00 >	6.48	0.00 >	320.00	0.00 >	6.48 >	23.72	MTT	+
5146	57	07/13/89	076	1.354 <	1.00 <	1.00 ~	1.00 <	1.00	2.44 >	2.44	0.00 >	320.00	0.0 ~	1.00 >	2.83	MTT	+
5146	57	08/17/89	0BT	1.195	1.70 >	10.00 >	5.89	2.88 >	10.00 >	3.47	0.00 >	10.00	0.00 >	3.47 >	14.00	MTT	+
5219	51	04/06/89	036	1.893 <	1.00	5.34 >	5.34 <	1.00	12.20 >	12.20	0.00 >	320.00	0.00 >	5.34 >	21.47	MTT	+
5219	51	05/04/89	03W	1.754 <	0.03	6.32 >	197.00	0.08 >	10.00 >	133.00	0.79 >	10.00 >	12.70	84.00 >	62.29	MTT	+
5219	51	06/01/89	04P	2.341 <	0.32	6.16 >	19.30 <	0.32	13.70 >	42.70	0.00 >	100.00	0.00 >	19.30 >	37.83	MTT	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5450	53	04/13/89	038	1.537	2.17	50.90	23.40	6.20	98.10	15.80	0.00 >	320.00	0.00	8.21 >	27.96	MTT	+
5450	53	06/01/89	04V	2.442	4.02	15.20	3.78	0.00	31.40	0.00	0.00 >	100.00	0.00	0.00	6.15	MTT	+
5450	20	07/13/89	07C	1.378	3.39	79.10	23.34	12.30 >	100.00 >	8.14	0.00 >	100.00	0.00	6.44 >	26.92	MTT	+
5457	54	05/11/89	03Z	1.791	4.71	20.60	4.38	8.07	43.80	5.43	0.00	163.00	0.00	2.60 >	11.39	MTT	+
5457	54	06/08/89	058	1.315	3.82	14.80	3.89	5.70	20.90	3.66	0.00	31.80	0.00	2.60	15.75	MTT	+
5488	53	07/27/89	08W	1.567	177.00 >	320.00 >	1.81	313.00 >	320.00 >	1.02	0.00 >	320.00	0.00 >	1.02 >	4.03	MTT	+
5488	66	05/10/90	0VN	1.751	256.00	283.00	1.11	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.15	MTT	+
5497	53	07/27/89	08X	1.516	264.00 >	320.00 >	1.21	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.02	MTT	+
5497	66	05/17/90	0VX	1.980	170.00	216.00	1.27	288.00 >	320.00 >	1.11	0.00 >	320.00	0.00	0.75 >	0.90	MTT	+
5568	56	06/08/89	04Y	1.339 <	1.00 >	320.00 >	320.00 <	1.00 >	320.00 >	320.00	0.00 >	320.00	0.00 >	320.00 >	59.60	MTT	+
5568	09	07/13/89	07D	1.465 <	1.00 >	320.00 >	320.00 <	1.00 >	320.00 >	320.00	2.17 >	320.00 >	147.36 >	320.00 >	75.99	MTT	+
5569	56	06/08/89	04Z	1.255 <	1.00	158.00 >	157.89 <	1.00	230.00 >	230.26	0.00 >	320.00	0.00 >	157.89 >	60.04	MTT	+
5569	09	07/13/89	07E	1.469 <	1.00 >	320.00 >	320.00 <	1.00 >	320.00 >	320.00	2.17 >	320.00 >	147.36 >	320.00 >	82.80	MTT	+
5601	67	06/07/90	0XL	1.074	93.90 >	320.00 >	3.41	151.00 >	320.00 >	2.12	0.00 >	320.00	0.00 >	2.12 >	18.36	MTT	+
5601	67	06/27/90	020	0.987	72.70 >	320.00 >	4.40	217.00 >	320.00 >	1.47	0.00 >	320.00	0.00 >	1.47 >	13.53	MTT	+
5905	61	12/07/89	0KX	1.330 <	1.00	1.21 >	1.21	179.00	1.87	0.01	302.00	3.07	0.01	0.01 >	5.74	MTT	+
5905	61	12/28/89	0MU	1.503	0.23	1.37	5.81	0.00	1.98	0.00	0.00	3.08	0.00	0.00	7.30	MTT	+
5906	61	12/07/89	0KY	1.448 <	1.00 <	1.00 -	1.00 <	1.00	1.69 >	1.69	0.00	3.05	0.00 -	1.00 >	0.58	MTT	+
5906	61	12/28/89	0MT	1.468	0.20	0.85	4.19	0.00	1.58	0.00	0.00	3.04	0.00	0.00	9.58	MTT	+
5958	60	12/07/89	0LH	1.407	4.10	21.50	5.23	5.91	37.90	6.41	0.00 >	320.00	0.00	3.63	17.94	MTT	+
5958	60	12/28/89	0MY	1.686	4.68	15.50	3.31	7.07	29.30	4.14	0.00 >	100.00	0.00	2.19	10.24	MTT	+
5970	61	12/07/89	0L2	1.324 <	1.00	2.05 >	2.05 <	1.00	3.58 >	3.58	0.00	9.36	0.00 >	2.05 >	5.38	MTT	+
5970	61	12/28/89	0MW	1.739	0.49	1.10	2.26	0.78	1.91	2.44	0.00	6.60	0.00	1.40	5.97	MTT	+
5977	61	12/07/89	0L5	1.264 <	1.00	1.87 >	1.87 <	1.00	2.82 >	2.82	0.00	13.70	0.00 >	1.87 >	4.21	MTT	+
5977	61	12/28/89	0MV	1.613	0.39	1.49	3.79	0.63	2.71	4.32	0.00	9.30	0.00	2.38	12.81	MTT	+
5977	61	01/17/90	0PB	1.196	0.42	1.84	4.32	0.71	3.15	4.45	0.00	21.00	0.00	2.60 >	12.36	MTT	+
5977	61	03/29/90	0T1	1.257	0.24	1.22	5.08	0.57	2.29	4.00	0.00	8.83	0.00	2.12 >	14.18	MTT	+
5987	61	12/07/89	0L8	1.372 <	1.00	12.20 >	12.20	1.45	20.10	13.79	0.00	79.60	0.00	8.39 >	28.23	MTT	+
5987	61	12/28/89	0MX	1.680	0.67	4.69	7.00	1.49	10.00	6.71	0.00	31.10	0.00	3.15	17.96	MTT	+
5988	61	12/07/89	0L8	1.372	1.32	17.50	13.21	1.95	27.30	14.01	0.00	98.00	0.00	8.96 >	30.91	MTT	+
5988	61	12/28/89	0MX	1.680	1.11	5.86	5.27	1.89	14.20	7.51	0.00	31.20	0.00	3.11	17.96	MTT	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5997	61	12/13/89	0LI	0.852 <	1.00	2.20 >	2.20	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.90	MTT	+
5997	61	01/17/90	0P8	1.185	0.68	5.35	7.82	1.76 >	10.00 >	5.70	0.00 >	10.00	0.00	3.05 >	16.42	MTT	+
5997	66	05/17/90	0W2	1.765	1.20	8.17	6.82	1.80	81.50	45.16	0.00 >	320.00	0.00	4.53 >	22.68	MTT	+
5997	66	06/14/90	0YE	1.057	0.33	6.37	19.41	0.63 >	100.00 >	159.38	0.00 >	100.00	0.00	10.16 >	26.11	MTT	+
6042	61	12/13/89	0M1	0.921	10.00	97.40	9.74	49.10	172.00	3.51	0.00	308.00	0.00	1.99 >	21.79	MTT	+
6042	61	01/17/90	0PD	1.189	18.40	141.00	7.67	57.70	234.00	4.06	0.00 >	320.00	0.00	2.44 >	16.66	MTT	+
6145	62	01/10/90	0NP	0.990	15.40	105.00	6.82	41.60	233.00	5.60	0.00 >	320.00	0.00	2.53	15.43	MTT	+
6145	62	01/24/90	0PN	1.160	44.90	135.00	3.02	0.00	313.00	0.00	0.00 >	320.00	0.00	0.00	7.66	MTT	+
6193	62	02/22/90	0Q2	1.039	4.35 >	320.00 >	73.50	16.80 >	320.00 >	19.05	191.00 >	320.00 >	1.68 >	19.05 >	51.01	MTT	+
6193	62	03/15/90	0RK	0.938	40.50	62.90	1.55	93.50 >	100.00 >	1.07	0.00 >	100.00	0.00	0.67 >	5.70	MTT	+
6209	62	03/15/90	0RI	0.978	17.70 >	100.00 >	5.66	33.40 >	100.00 >	2.99	89.60 >	100.00 >	1.12 >	2.99 >	24.55	MTT	+
6209	62	04/12/90	0TC	1.277	38.30 >	100.00 >	2.61	52.70 >	100.00 >	1.90	93.80 >	100.00 >	1.07 >	1.90 >	13.24	MTT	+
6210	62	02/22/90	0Q5	1.079	33.40 >	320.00 >	9.57	48.20 >	320.00 >	6.64	93.00 >	320.00 >	3.44 >	6.64 >	33.52	MTT	+
6210	62	03/15/90	0RP	1.025	37.00	193.00	5.22	51.60	286.00	5.56	93.60 >	320.00 >	3.42	3.75 >	20.53	MTT	+
6210	62	04/12/90	0T5	1.165	42.50	208.00	4.89	56.60	316.00	5.58	94.50 >	320.00 >	3.39	3.67	19.67	MTT	+
6213	62	01/24/90	0PT	1.021	10.00	90.60	9.06	81.00 >	100.00 >	1.23	0.00 >	100.00	0.00	1.12 >	14.60	MTT	+
6213	62	02/22/90	0QF	1.144	44.50 >	100.00 >	2.24	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	7.46	MTT	+
6215	62	01/11/90	0OL	1.183	37.00	210.00	5.68	58.10	320.00	5.51	0.00 >	320.00	0.00	3.61	13.02	MTT	+
6215	62	01/24/90	0PP	1.209	23.00 >	320.00 >	13.94	41.60 >	320.00 >	7.69	91.60 >	320.00 >	3.49 >	7.69 >	36.32	MTT	+
6217	62	04/12/90	0TD	1.265	26.40 >	100.00 >	3.79	44.30 >	100.00 >	2.26	92.20 >	100.00 >	1.08 >	2.26 >	19.24	MTT	+
6217	62	05/03/90	0V5	1.838	32.00 >	100.00 >	3.13	46.80 >	100.00 >	2.14	92.70 >	100.00 >	1.08 >	2.14 >	18.18	MTT	+
6218	62	02/22/90	0Q6	1.210	12.60 >	320.00 >	25.46	21.10 >	320.00 >	15.15	277.00 >	320.00 >	1.1 >	15.15 >	37.51	MTT	+
6218	62	03/15/90	0RK	0.938	16.30	75.30	4.62	29.20 >	100.00 >	3.43	0.00 >	100.00	0.00	2.58 >	15.68	MTT	+
6218	62	04/12/90	0TE	1.313	15.40	80.60	5.24	28.90 >	100.00 >	3.46	0.00 >	100.00	0.00	2.79 >	12.92	MTT	+
6219	62	02/22/90	0Q7	1.137	48.10 >	320.00 >	6.66	72.20 >	320.00 >	4.43	264.00 >	320.00 >	1.21 >	4.43 >	24.05	MTT	+
6219	62	04/12/90	0TE	1.313	40.70 >	100.00 >	2.46	54.90 >	100.00 >	1.82	94.20 >	100.00 >	1.06 >	1.82 >	12.64	MTT	+
6219	62	05/03/90	0V6	1.798	39.90 >	100.00 >	2.51	54.20 >	100.00 >	1.85	94.10 >	100.00 >	1.06 >	1.85 >	11.52	MTT	+
6220	62	01/17/90	0PE	1.143	42.50 >	320.00 >	7.52	56.60 >	320.00 >	5.66	94.50 >	320.00 >	3.39 >	5.66 >	30.04	MTT	+
6220	62	03/29/90	0SK	1.175	38.30	187.00	4.89	52.70	275.00	5.21	93.80 >	320.00 >	3.41	3.55 >	20.57	MTT	+
6223	62	01/17/90	0PF	1.050	14.70	192.00	13.01	45.60	283.00	6.22	0.00 >	320.00	0.00	4.21	23.39	MTT	+
6223	62	03/29/90	0SL	1.306	28.80	163.00	5.67	91.30	226.00	2.48	0.00 >	320.00	0.00	1.79 >	14.14	MTT	+
6224	62	01/17/90	0PG	0.903	44.70 >	320.00 >	7.15	62.60 >	320.00 >	5.12	0.00 >	320.00	0.00 >	5.12 >	27.63	MTT	+
6224	62	03/29/90	0SL	1.306	49.60	200.00	4.03	76.90	300.00	3.90	0.00 >	320.00	0.00	2.60 >	11.82	MTT	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6304	63	03/01/90	0QJ	1.154	36.20	312.00	8.60	67.30 >	320.00 >	4.76	0.00 >	320.00	0.00	4.63 >	19.07	MTT	+
6304	63	03/22/90	0S0	1.309	66.10	202.00	3.05	0.00	304.00	0.00	0.00 >	320.00	0.00	0.00	7.28	MTT	+
6399	63	04/12/90	0TI	1.096	0.49	1.28	2.60	0.75	2.13	2.85	0.00	8.21	0.00	1.70	6.02	MTT	+
6399	63	05/03/90	0VA	1.910	0.50	0.09	0.19	0.00	1.92	0.00	0.00	8.83	0.00	0.00	0.53	MTT	+
6462	63	03/29/90	0SS	1.341	1.56	25.70	16.44	3.28	61.10	18.66	9.54 >	320.00 >	33.56	7.85 >	32.30	MTT	+
6462	63	04/19/90	0U2	1.238	1.10	16.70	15.27	1.72	24.40	14.12	0.00 >	100.00	0.00	9.69	30.00	MTT	+
6467	63	04/19/90	0U4	1.193	0.13	0.82	6.52	0.18	1.86	10.53	0.00 >	3.20	0.00	4.65	23.24	MTT	+
6467	63	05/10/90	0VV	1.714	0.14	0.92	6.40	0.25	2.01	8.03	0.00 >	3.20	0.00	3.66	17.08	MTT	+
6469	63	03/29/90	0SV	1.248	20.70	169.00	8.17	43.20	251.00	5.81	0.00 >	320.00	0.00	3.91	19.64	MTT	+
6469	63	04/12/90	0T8	1.215	0.00	195.00	0.00	0.00	303.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6469	63	07/19/90	107	1.278	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6724	67	06/07/90	0XS	1.194	1.56	21.60	13.84	4.37	78.20	17.92	0.00 >	320.00	0.00	4.96 >	22.77	MTT	+
6724	67	06/27/90	0ZH	1.000	1.53	27.70	18.11	3.81	85.80	22.51	0.00 >	100.00	0.00	7.28	30.67	MTT	+
6754	67	07/19/90	10J	1.305	0.48	4.45	9.26	1.38	8.93	6.45	0.00 >	10.00	0.00	3.21	18.78	MTT	+
6754	67	08/23/90	133	1.142	0.45	2.24	4.96	1.39	6.11	4.39	0.00 >	10.00	0.00	1.61	12.91	MTT	+
6771	67	06/21/90	0YL	1.146	4.16	13.30	3.18	7.20	19.50	2.71	0.00	30.80	0.00	1.84	8.48	MTT	+
6771	67	07/12/90	105	1.354	4.68	10.60	2.26	9.71	17.70	1.82	0.00	30.60	0.00	1.09	3.40	MTT	+
6783	68	06/21/90	0YT	1.039	13.20	50.50	3.84	28.30	89.20	3.15	0.00 >	320.00	0.00	1.79	8.58	MTT	+
6783	68	07/12/90	101	1.274	11.30	28.30	2.50	21.00	66.00	3.14	0.00 >	100.00	0.00	1.35	10.49	MTT	+
6819	68	08/02/90	11J	1.275	51.70	164.00	3.17	85.20	228.00	2.67	0.00 >	320.00	0.00	1.92 >	7.85	MTT	+
6819	68	08/23/90	135	1.057	0.00	143.00	0.00	0.00	233.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6973	68	06/27/90	0ZB	0.956	69.90 >	320.00 >	4.58	133.00 >	320.00 >	2.40	0.00 >	320.00	0.00 >	2.40 >	15.73	MTT	+
6973	68	07/19/90	108	1.258	162.00 >	320.00 >	1.98	304.00 >	320.00 >	1.05	0.00 >	320.00	0.00 >	1.05 >	6.54	MTT	+
6983	68	06/27/90	0ZG	0.872	130.00 >	320.00 >	2.46	192.00 >	320.00 >	1.67	0.00 >	320.00	0.00 >	1.67 >	9.46	MTT	+
6983	68	07/19/90	108	1.258	0.00	186.00	0.00	0.00	272.00	0.00	0.00 >	320.00	0.00	0.00	1.62	MTT	-
6986	68	07/19/90	109	1.202	32.00	182.00	5.69	46.80	264.00	5.65	92.70 >	320.00 >	3.45	3.89	21.69	MTT	+
6986	68	08/09/90	11Y	1.684	34.20	86.80	2.54	59.80	162.00	2.71	0.00	310.00	0.00	1.45 >	9.84	MTT	+
7003	69	07/12/90	0Z0	1.440	100.00	267.00	2.67	215.00 >	320.00 >	1.49	0.00 >	320.00	0.00	1.24 >	8.01	MTT	+
7003	69	08/02/90	11E	1.271	88.50	166.00	1.88	0.00	233.00	0.00	0.00 >	320.00	0.00	0.00	3.50	MTT	+
7022	69	07/12/90	0ZX	1.436	40.50	80.60	1.99	69.40	152.00	2.18	0.00	306.00	0.00	1.16	6.74	MTT	+
7022	69	08/02/90	11F	1.315	45.20	76.70	1.70	87.60	143.00	1.63	0.00	302.00	0.00	0.88	4.32	MTT	+
7023	69	07/12/90	0ZY	1.299	128.00 >	320.00 >	2.50	173.00 >	320.00 >	1.84	301.00 >	320.00 >	1.06 >	1.84 >	11.28	MTT	+
7023	69	08/02/90	11F	1.315	131.00 >	320.00 >	2.44	177.00 >	320.00 >	1.81	302.00 >	320.00 >	1.06 >	1.81 >	10.48	MTT	+

Table 5 (Cont'd)

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7094	72	10/11/90	16G	1.185	51.80	187.00	3.61	89.60	275.00	3.06	0.00 >	320.00	0.00	2.09	8.43	MTT	+
7094	72	11/01/90	176	1.234	49.30	177.00	3.60	75.90	255.00	3.36	0.00 >	320.00	0.00	2.34	10.37	MTT	+
7102	70	08/09/90	126	1.513	14.10	29.40	2.09	28.60	89.90	3.15	0.00 >	320.00	0.00	1.03	5.12	MTT	+
7102	70	08/30/90	144	1.214	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
7110	70	08/09/90	12A	1.445	20.50	110.00	5.36	42.90	191.00	4.45	0.00 >	320.00	0.00	2.56	12.02	MTT	+
7110	70	10/04/90	167	1.080	20.70	74.50	3.60	90.20 >	100.00 >	1.11	0.00 >	100.00	0.00	0.83 >	8.60	MTT	+
7302	70	09/27/90	151	1.018	69.60 >	320.00 >	4.60	320.00 >	320.00 >	1.00	0.00 >	320.00	0.00 >	1.00 >	14.70	MTT	+
7302	70	10/18/90	16S	1.052	129.00	286.00	2.21	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	8.73	MTT	+
7391	70	08/30/90	142	1.277	39.40	136.00	3.45	70.60	206.00	2.92	0.00 >	320.00	0.00	1.93	9.69	MTT	+
7391	70	11/01/90	174	1.148	76.70	179.00	2.33	0.00	257.00	0.00	0.00 >	320.00	0.00	0.00	4.52	MTT	+
7413	70	09/20/90	14J	1.209	11.20	58.80	5.25	19.60	86.60	4.43	0.00 >	320.00	0.00	3.00	16.22	MTT	+
7413	70	11/01/90	17L	1.253	21.10	28.30	1.34	0.00	63.60	0.00	0.00 >	100.00	0.00	0.00	2.16	MTT	+
7413	70	11/29/90	195	0.909	11.90	47.00	3.94	24.60	81.00	3.29	0.00	301.00	0.00	1.91	10.46	MTT	+
7447	71	08/02/90	11G	1.186	4.91	106.00	21.60	14.70	255.00	17.28	0.00 >	320.00	0.00	7.19	32.52	MTT	+
7447	71	10/04/90	15Q	1.014	3.32	210.00	63.18	8.59 >	320.00 >	37.25	0.00 >	320.00	0.0	24.45 >	52.61	MTT	+
7448	71	08/02/90	11N	1.372	17.50	207.00	11.82	65.20 >	320.00 >	4.91	0.00 >	320.00	0.00	3.18 >	20.56	MTT	+
7448	71	10/04/90	15Q	1.014	7.83 >	320.00 >	40.87	32.00 >	320.00 >	9.99	0.00 >	320.00	0.00 >	9.99 >	37.29	MTT	+
7449	71	08/02/90	11N	1.372 <	1.00	8.87 >	8.87 <	1.00	95.50 >	95.47	2.58 >	320.00 >	124.04 >	8.87 >	35.33	MTT	+
7449	71	08/23/90	13K	1.004 <	0.32	12.30 >	38.49	0.45	62.20	137.85	2.05 >	100.00 >	48.88	27.28 >	46.97	MTT	+
7449	71	10/04/90	166	1.115 <	0.32	9.50 >	29.68 <	0.32 >	100.00 >	312.50	0.87 >	100.00 >	114.81 >	29.68 >	59.01	MTT	+
7449	71	11/01/90	17M	1.238	0.17	6.82	41.25	0.32	32.00	100.00	2.43 >	32.00 >	13.19	21.30 >	45.75	MTT	+
7449	71	11/29/90	19J	0.973	0.27	27.70	104.43	0.66 >	32.00 >	48.43	2.75 >	32.00 >	11.65	41.98 >	58.71	MTT	+
7468	73	11/01/90	177	1.221	142.00 >	320.00 >	2.25	246.00 >	320.00 >	1.30	0.00 >	320.00	0.00 >	1.30 >	8.05	MTT	+
7468	73	11/29/90	193	1.000	197.00	249.00	1.26	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.60	MTT	+
7469	73	11/01/90	178	1.239	49.10 >	320.00 >	6.52	88.80 >	320.00 >	3.60	0.00 >	320.00	0.00 >	3.60 >	17.71	MTT	+
7469	73	11/29/90	193	1.000	44.30	245.00	5.52	100.00 >	320.00 >	3.20	0.00 >	320.00	0.00	2.45 >	14.28	MTT	+
7479	73	11/01/90	17D	1.296	150.00 >	320.00 >	2.13	244.00 >	320.00 >	1.31	0.00 >	320.00	0.00 >	1.31 >	7.03	MTT	+
7479	73	11/29/90	194	1.083	108.00 >	320.00 >	2.96	158.00 >	320.00 >	2.02	315.00 >	320.00 >	1.02 >	2.02 >	13.67	MTT	+
7485	73	11/01/90	17G	1.230	15.20	107.00	7.03	32.00	190.00	5.94	0.00 >	320.00	0.00	3.33	16.50	MTT	+
7485	73	11/29/90	194	1.083	13.60	51.80	3.81	23.50	71.50	3.04	0.00	241.00	0.00	2.20	11.97	MTT	+
8239	75	12/13/90	1AC	1.354	35.60	204.00	5.72	55.60	308.00	5.53	0.00 >	320.00	0.00	3.67	21.86	MTT	+
8239	75	01/10/91	1C2	1.287	40.30 >	100.00 >	2.48	62.90 >	100.00 >	1.59	0.00 >	100.00	0.00 >	1.59 >	9.74	MTT	+
8355	76	01/10/91	1BN	1.241	6.19	21.00	3.39	16.10	254.00	15.78	0.00 >	320.00	0.00	1.30	11.98	MTT	+
8355	76	01/31/91	1DS	1.170	1.71	3.20	1.87	4.25	28.90	6.78	0.00 >	100.00	0.00	0.75	9.88	MTT	+

Table 5 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
8357	76	01/10/91	180	1.091	80.20 >	320.00 >	3.99	302.00 >	320.00 >	1.06	0.00 >	320.00	0.00 >	1.06 >	10.72	MTT	+
8357	76	01/31/91	1DP	1.260	0.00	88.70	0.00	0.00	192.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-

* = This value is a virus rating (VR) rather than a TAI. The VR is a measurement of selective antiviral activity that takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound similar to TAI. TAI is more accurate with MTT measurements.

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

$IC_{25,50,95}$ = (Viral) inhibitory concentration 25%, 50% and 95% = The drug concentration (µg/ml) that inhibited viral CPE by 25%, 50% or 95% calculated by using a regression analysis for semilog curve fitting.

$TC_{25,50,95}$ = (Cell) toxicity concentration 25%, 50% and 95% = The drug concentration (µg/ml) that reduced cell viability by 25%, 50% or 95%.

$AI_{25,50,95}$ = Antiviral Index = A single point ratio of the antiviral and anticellular effect of the compound, calculated with 25%, 50% or 95% reduction values (calculated by dividing the $TC_{25,50,95}$ by the $IC_{25,50,95}$).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, µg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

ACT = Activity = A "+" denotes a rest that produced $\geq$25% reduction in CPE. A "-" denotes an inactive test (i.e. $\leq$25% reduction in CPE).

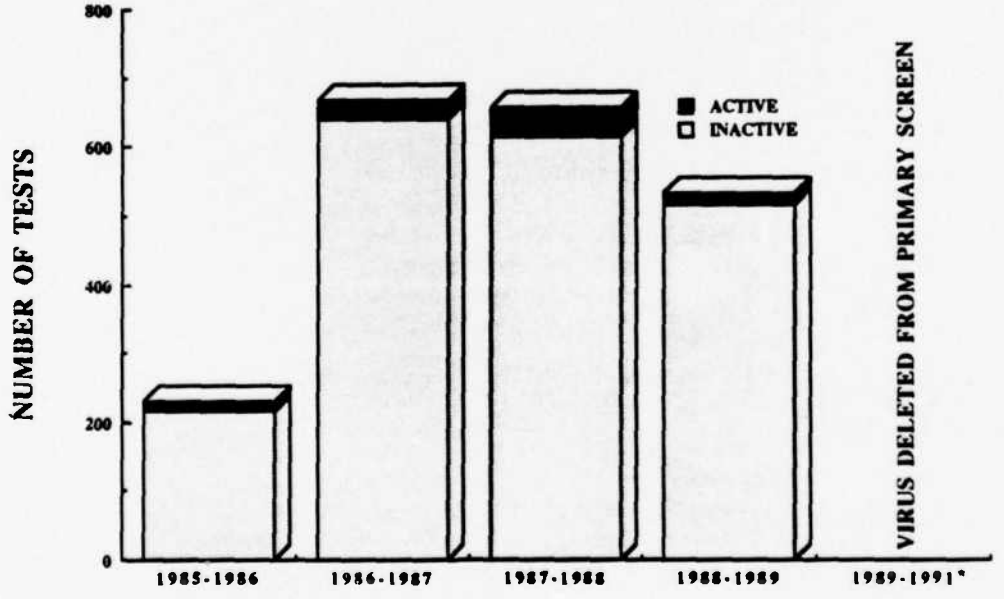
4.1.2 Adenovirus Type 2 (AD2)

The number of single drug tests carried out against AD2 during this contract period is summarized in yearly increments in Figure 11. During 1989, at the request of Ms. C. Susan Tiffany (Contract Specialist, Ft. Detrick, Frederick, Maryland), the Adenovirus was deleted for the primary screen.

A total of 2309 tests were performed during this contract period using a CPE-inhibition assay procedure. Adenovirus proved to be unsuitable for adaptation to the MTT assay without sacrificing sensitivity (Annual Report, December 15, 1988), therefore all screening with this virus was with the CPE-inhibition assay procedure. During the last year of AD2 testing (November 15, 1988 through November 15, 1989), the VR's of the positive control drugs ranged from 1.4 - 3.1 for Ribavirin and from 1.5 - 2.9 for Selenazofurin. The mean ID_{50} of Ribavirin was 24.05 ($\pm$ 11.1); the mean ID_{50} of Selenazofurin was 12.35 ($\pm$ 9.78). The selectivity of each of the positive control compounds, as measured by the TI, was: Ribavirin, mean 5.0 ($\pm$ 4.1), median 3.9; Selenazofurin, mean 4.96 ($\pm$ 3.21), median 3.91.

Out of the 2078 accepted single drug tests, 100 compounds demonstrated antiviral activity at greater than or equal to 50% reduction levels. This represents around 5% of the tested compounds having *in vitro* antiviral activity against the AD2 virus. The remainder, 1978 compounds (95%), were considered inactive with the CPE-inhibition assay protocol (Figure 11).

IN VITRO PRIMARY SCREEN: NUMBER OF COMPOUNDS FOUND ACTIVE AGAINST ADENOVIRUS DURING THE CONTRACT PERIOD



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991*	Five-Year Totals
Number Active	15	27	41	17	0	100
Number Inactive	216	641	615	506	0	1978
Yearly Total (Accepted Single Drug Tests)	**231**	**668**	**656**	**523**	**0**	**2078**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 11

4.1.2.1 **Confirmatory Assays:**

The CPE-inhibition assay in HEp-2 cells was used to confirm the inhibitory effects of compounds shown to be active (i.e. a VR of $\geq$1.0 or $\geq$50% reduction in CPE) in the primary screen. As shown in **Table 6**, 42 compounds demonstrated confirmed *in vitro* antiviral activity versus Adenovirus during this contract period. The activity of the remaining compounds (52/100) was either not confirmed on retest or there was insufficient drug available for retest. The compounds in **Table 6** are presented in ascending numerical order. Data from the primary and the subsequent CPE-inhibition assays are listed chronologically for each compound. Some of the most effective compounds against AD2 were: AVS-2296, 2700, 2980, 2986, 3593, 4070, and 4167.

Table 6

Confirmatory Assays for Compounds Active Against Adenovirus Type 2[a]

AVS No.	Shipment	Date Tested	VR	VR*	ID_{50}	MTC	TI
70	1	09/11/86	1.3	0.4	<0.32	0.32	>1.0
	1	09/25/86	2.4	0.8	0.06	0.32	5.3
	1	09/15/89	0.65	0.22	--	1.0	--
79	1	09/11/86	1.3	0.4	2.3	10	4.4
	1	02/04/88	2.1	0.7	0.8	3.2	3.9
94	1	09/11/86	1.0	0.3	231.1	320	1.4
	1	04/21/88	1.0	0.3	222	>320	>1.4
136	4	09/25/86	1.3	0.4	96.9	320	3.3
	38	05/19/88	1.2	0.4	178.8	>320	>1.8
	41b	05/26/88	1.0	0.3	200	>320	>1.6
361	2	09/18/86	1.3	0.4	0.1	0.1	1.0
	2	10/30/86	0.6	0.2	0.3	0.1	0.3
	2	03/03/88	1.2	0.4	1.3	1.0	0.8
1215	27	08/13/87	1.1	0.4	62.9	320	5.1
	27	01/08/88	0.8	0.3	50.5	100	2.0
	27	01/21/88	1.3	0.4	53.7	320	6.0
	27	05/12/88	0.6	0.2	100	320	3.2
1337	33	02/04/88	1.5	0.5	88.4	320	3.6
	33	02/18/88	1.5	0.5	78.2	320	4.1
1984	2	09/15/85	0.35	0.12	--	320	--
	2	09/18/86	1.9	0.63	88	>320	>3.6
	2	05/26/88	0.7	0.23	--	>320	--
2277	11	11/13/86	1.1	0.36	100	320	3.2
	11	05/12/88	0.35	0.12	--	320	--
2296	11	12/04/86	1.2	0.4	10	32	3.2
	11	01/08/88	2.4	0.8	3.2	32	10.1
	11	01/21/88	2.0	0.7	10	100	10.0
2318	13	12/18/86	1.7	0.6	0.32	3.2	10.0
	13	09/04/87	1.8	0.8	3.59	10	2.79
	13	09/24/87	0.3	0.1	-	10	-
2350[b]	14	11/05/87	1.8	0.6	6.3	20	3.2
	14	02/04/88	0.6	0.2	-	20	-
	14	02/25/88	0.2	0.1	-	200	-
	14	05/26/88	0.6	0.2	63.1	200	3.2

Table 6 (Cont'd)

AVS No.	Shipment	Date Tested	VR	VR*	ID_{50}	MTC	TI
2409	16	02/12/87	0.3	0.1	-	3.2	-
	16	04/10/87	1.5	0.5	2.8	10	3.6
	16	01/08/88	1.1	0.4	2	10	5.0
	16	05/12/88	0.3	0.1	-	10	-
	46	10/27/88	0.7	0.2	6.2	10	1.6
2563	21	01/14/88	1.1	0.4	46.8	100	2.1
	21	01/28/88	1.7	0.6	9.5	10	1.0
	21	03/03/88	1.7	0.6	20.6	100	4.9
2700	22	06/25/87	2.7	0.9	0.32	1.0	3.13
	22	07/09/87	3.7	1.23	0.21	3.2	15.20
	22	09/04/87	3.6	1.2	0.45	10.0	22.26
	22	09/24/87	1.8	0.6	0.45	1.0	2.23
2716	22	05/28/87	1.1	0.4	12.6	32	2.5
	22	01/21/88	1.4	0.5	14.1	100	7.1
	22	05/12/88	1.3	0.5	9.6	32	3.3
	46	10/13/88	0.9	0.3	10.0	32	3.2
2811	24	01/21/88	1.7	0.6	0.4	0.3	0.9
	24	02/04/88	1.2	0.4	0.2	0.1	0.5
2812	24	02/25/88	1.1	0.4	0.1	0.1	0.7
	24	03/10/88	1.5	0.5	0.1	0.1	0.9
2960	27	08/13/87	1.2	0.4	44.4	100	2.3
	27	01/08/88	1.4	0.5	81.1	320	3.9
	27	05/12/88	0.8	0.3	-	320	-
2964	27	08/20/87	1.2	0.4	100.0	>320	>3.2
	27	05/12/88	0.7	0.2	-	>320	-
2979	25	07/09/87	1.7	0.6	11.4	32	2.8
	25	01/08/88	0.9	0.3	68.4	320	4.7
	25	01/21/88	1.8	0.6	35.8	100	2.8
	41b	05/26/88	1.3	0.4	10.0	32	3.2
2980	25	07/09/87	2.1	0.7	1.5	10	6.8
	25	10/29/87	2.0	0.7	1.0	3.2	3.3
	25	11/12/87	1.5	0.5	1.5	3.2	2.2
	25	05/12/88	1.2	0.4	5.0	10	2.0
2985	27	08/20/87	1.2	0.4	100	>320	>3.2
	27	05/12/88	-	-	-	>320	-
2986	27	08/20/87	1.7	0.6	100	320	3.2
	27	01/08/88	1.5	0.5	100	320	3.2
2988	27	08/20/87	1.0	0.3	70.9	320	4.5
	27	01/08/88	0.6	0.2	-	320	-
	27	01/21/88	0.5	0.2	-	320	-
	27	05/12/88	0.9	0.3	307	>320	>1.0

Table 6 (Cont'd)

AVS No.	Shipment	Date Tested	VR	VR*	ID_{50}	MTC	TI
2994	27	08/20/87	1.5	0.5	25.5	25.5	3.9
	27	01/08/88	1.1	0.4	32.0	100	3.1
	27	01/21/88	0.7	0.2	64.1	100	1.6
3527	31	12/17/87	1.0	0.3	2.4	10	4.3
	31	05/12/88	0.4	0.1	-	100	-
3529	31	01/28/88	1.3	0.5	1.6	3.2	2.0
	31	02/18/88	1.6	0.5	1.8	10	5.5
3577	32	01/28/88	1.4	0.5	96.4	320	3.3
	32	02/18/88	1.8	0.6	113.0	320	2.8
3593	30	10/22/87	2.7	0.9	3.7	10	2.7
	30	10/27/87	2.7	0.9	3.7	10.0	2.7
	30	11/12/87	1.9	0.6	1.7	>3.2	>1.8
	30	12/31/87	1.1	0.4	2.5	3.2	1.3
	30	01/21/88	1.2	0.4	1.8	3.2	1.8
3610	32	12/31/87	0.6	0.2	100	320	3.2
	32	05/12/88	1.3	0.4	50.7	320	6.3
3705	32	01/14/88	1.7	0.6	73.1	320	4.4
	32	02/04/88	1.1	0.4	118	320	2.7
	32	02/18/88	0.9	0.3	147	320	2.2
	32	05/12/88	0.6	0.2	320	>320	>1.0
3910	34	02/18/88	1.2	0.4	56.5	320	5.7
	34	03/10/88	1.1	0.4	204	>320	>1.6
4001	36	03/10/88	1.1	0.4	204	>320	>1.6
	36	03/31/88	1.0	0.3	320	>320	>1.0
4002	36	03/10/88	1.0	0.3	320	>320	>1.0
	36	03/31/88	0.8	0.3	-	>320	-
	36	04/14/88	0.3	0.1	-	>320	-
4004	36	03/10/88	1.2	0.4	193	>320	>1.7
	36	03/31/88	0.8	0.3	-	>320	-
	36	04/14/88	0.5	0.2	-	>320	-
4041	36	03/17/88	1.1	0.4	320	>320	>1.0
	36	04/21/88	1.1	0.4	320	>320	>1.0
4070	35	01/28/88	2.2	0.7	4.3	10	2.4
	35	02/18/88	2.3	0.8	3.8	32	8.5
4167	41	06/16/88	3.5	1.2	2.5	32	12.8
	41	06/30/88	2.3	0.8	6.6	32	4.8
4262	39	05/05/88	1.1	0.4	199	>320	1.6
	39	05/26/88	0.6	0.2	--	>320	--
	39	06/16/88	0.5	0.2	--	>320	--

Table 6 (Cont'd)

AVS No.	Shipment	Date Tested	VR	VR*	ID_{50}	MTC	TI
4267	39	05/05/88	1.4	0.5	159	>320	2.0
	39	05/26/88	1.3	0.4	169	>320	1.9
4279	42	06/23/88	1.0	0.3	29.7	32	1.1
	42	07/07/88	1.0	0.3	40.3	100	2.5
4281	42	06/23/88	1.1	0.4	26.1	32	1.2
	42	07/07/88	1.1	0.4	37.6	100	2.7
4750	44	08/25/88	1.1	0.4	11.1	32	2.9
	44	09/01/88	0.4	0.1	8.4	10	1.2

a. Compounds are listed in ascending numerical order by AVS number. The results from the primary and the subsequent confirmatory CPE-inhibition assays are listed chronologically for each compound. Host cell were HEp-2. The VR is a measurement of selective antiviral activity which takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound, determined by a modification of the method of Ehrlich *et al.* (Ann. N.Y. Acad. Sci. *130*:5, 1965). VR* is the designation for the virus rating calculated by the method of Sidwell and Huffman (Appl. Microbiol. *22*:797, 1971). The drug concentration which reduced the CPE by 50% (50% inhibitory dose, ID_{50}) was calculated using a regression analysis program for semilog curve fitting and is expressed as μg/ml. The minimum cytotoxic drug concentration (MTC) is also expressed as μg/ml. The TI of a test compound was determined by dividing the MTC by the ID_{50}.

b. The ID_{50} and MTC for AVS-2350 are expressed as units/ml.

4.1.3 Yellow Fever Virus (YF):

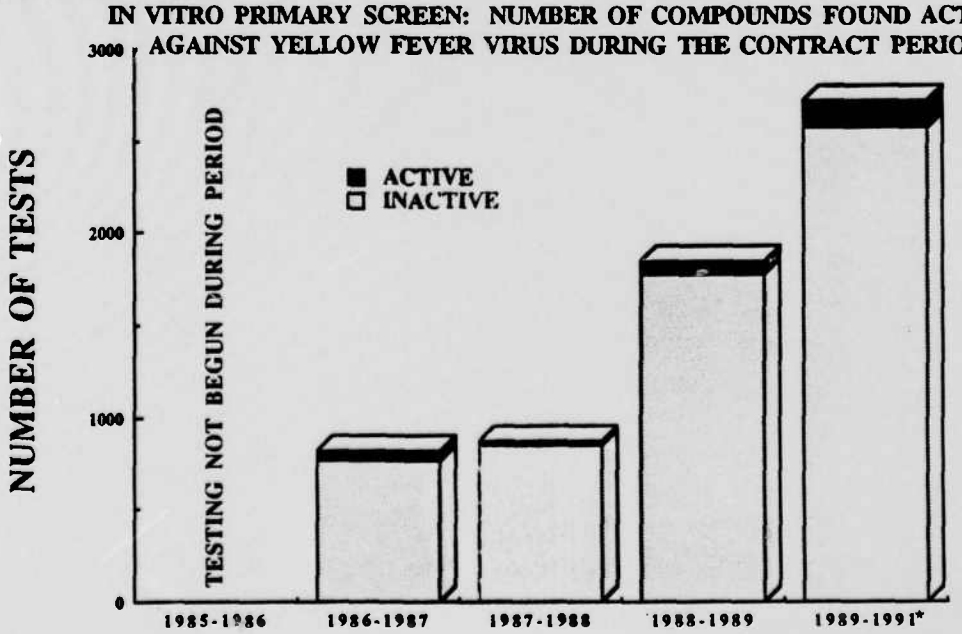
The number of single drug tests carried out against YF during this contract period is summarized in yearly increments in Figure 12. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since November, 1988, MTT based-antiviral assay format.

A total of 7654 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Selenazofurin (AVS-0253) was tested in each standard virus rating (VR) CPE-inhibition assay as a positive control compound. Results of the positive controls (VR tests) were used as a guideline to assess the quality of each assay.

After the testing was converted to the MTT-assay format, we performed a total of 211 control compound assays with Selenazofurin during the last 26 months of the contract period. During this time 585 tests were internal (+++) virus load, cell load, and other quality control tests. Three hundred fifteen (315) tests were considered unsatisfactory based on the criteria of the quality controls set during this reporting period. The rest, totaling 2717 were actual single drug MTT-assays. The total number of MTT-assays (5960) tested during the last two years represents a 252% increase (improvement) in the total testing output as compared to the total of 1694 tests performed during the first 3 years of this contract.

Out of the 6252 accepted single drug tests, 306 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 5.0% of the tested compounds having *in vitro* antiviral activity against YF-virus. The remainder, 5946 compounds (95%), were considered inactive with both assay protocols (Figure 12).



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991*	Five-Year Totals
Number Active	0	55	28	72	151	306
Number Inactive	0	764	847	1769	2566	5946
Yearly Total (Accepted Single Drug Tests)	**0**	**819**	**875**	**1841**	**2717**	**6252**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 12

4.1.3.1 **YF-Quality Controls:** Two positive control compounds (Selenazofurin and 2-Thio-6 Azauridine) were used in the daily MTT assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to of better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.1.3.1.1 **Antiviral Activity of Selenazofurin vs YF Virus:** A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0253 (Selenazofurin) is presented in **Figure 13-A** for 211 tests performed during November, 1989 through January, 1991.

Control Compound Antiviral Performance: Selenazofurin (AVS-0253) has been the sole control compound against YF in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Selenazofurin) are illustrated in **Figure 13-A**.

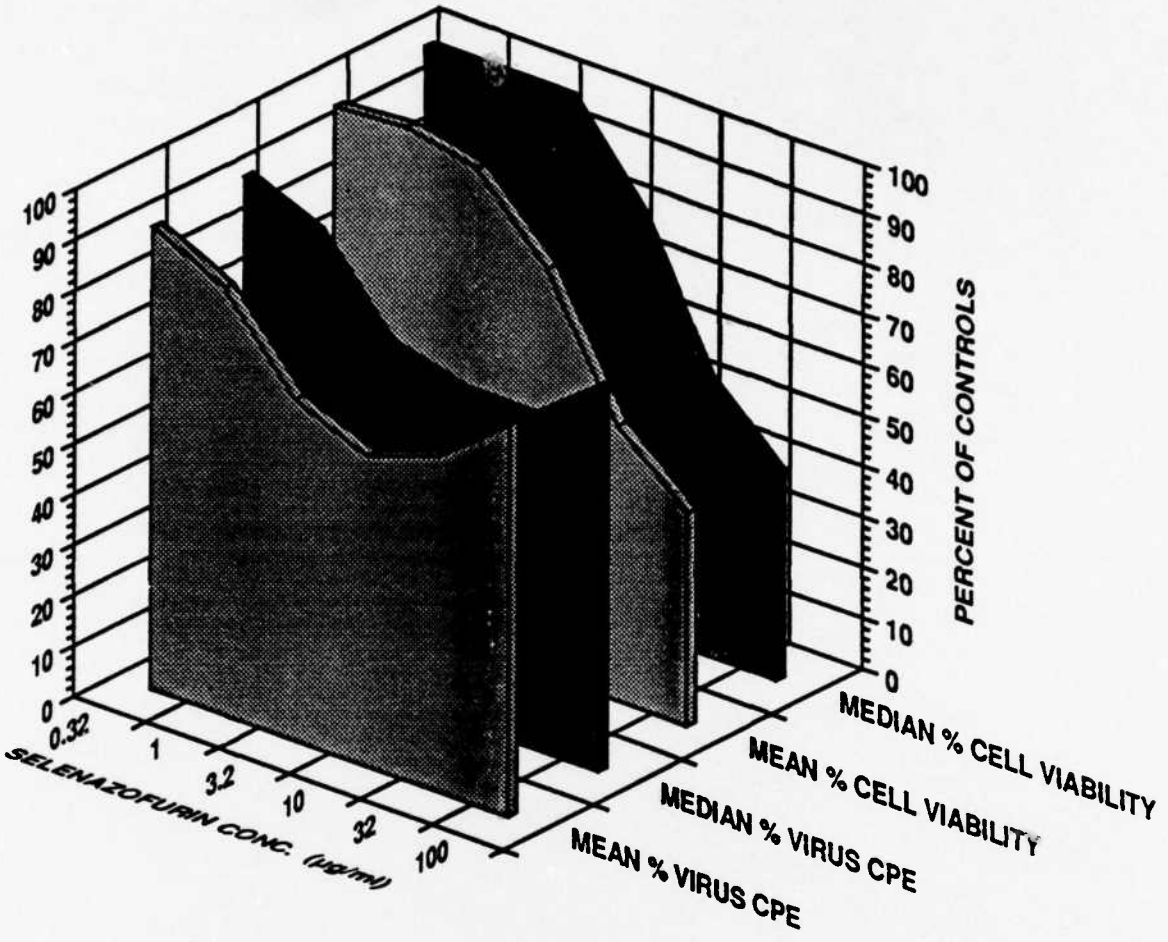
The 211 control tests performed with Selenazofurin gave a mean **Total Antiviral Index** (TAI) of 11.56% (SD ± 9.12) and the median value was 9.32%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~0 - 48% during this period. The mean **Selectivity Index (SI)** was only 1.06 (SD ± 2.72) and the median SI value was 0, indicating poor antiviral selectivity for Selenazofurin and it ranged from ~0 - 19 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25% (AI_{25})** value was 8.61 (SD ± 15.13). The median AI_{25} value was 3.76 (range 0.30 - >125). The mean **Antiviral Index 50% (AI_{50})** was 4.49 (SD ± 11.54) with a median of 0 (range 0 - 70.86). This indicates that Selenazofurin does not consistently reach 50% antiviral reduction levels. The **Antiviral Index 95% (AI_{95})** was not attainable with Selenazofurin versus Yellow Fever Virus.

The mean **Antiviral Inhibitory Concentration 25% (IC_{25})** was 5.62 μg/ml (SD ± 5.84). The median IC_{25} value was 4.25 μg/ml (range = <0.32 - 32.00 μg/ml). The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 2.49 μg/ml (SD ± 7.57). The median IC_{50} value was 0 μg/ml (range 0 - 83.6 μg/ml). This discrepancy indicates that the control compound Selenazofurin does not consistently reach 50% reduction levels. The mean **Antiviral Inhibitory Concentration 95% (IC_{95})** could not be attained with Selenazofurin versus Yellow Fever Virus.

The average maximum antiviral inhibitory level of 211 Selenazofurin tests (**Figure 13-A**) was reached at 10 μg/ml of the compound with 20% antiviral effect. Further increase of the drug concentration does not improve its antiviral activity. Maximum antiviral effect (~40%) was found with a simultaneous ~20% cytotoxic suppression. Above 10 μg/ml concentration of the antiviral protection levels off to 20% of reduction level at 100 μg/ml while simultaneously Selenazofurin becomes maximally toxic (~55%)

SELENAZOFURIN -- VS -- YF VIRUS



CONCENTRATION (µg/ml)

	% Viral CPE						% Cell Viability					
Conc.(µg/ml)	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**0.32**	**1**	**3.2**	**10**	**32**	**100**
Mean	91	84	67	61	66	77	97	98	95	80	54	42
Median	92	86	69	65	65	76	100	100	100	82	54	41
Std. Dev.	0.07	0.10	0.15	0.14	0.11	0.12	0.05	0.04	0.07	0.14	0.11	0.09

Figure 13-A
Average Antiviral and Cytotoxicity Values for 211 Positive Control Compound Tests

4.1.3.1.2 Maximum Antiviral Effect of Selenazofurin vs YF Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Selenazofurin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (**Figure 14-A**) depicts the distribution of the maximum antiviral reduction values of all 211 control compound assays for Selenazofurin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 43% (SD ± 12.46) reduction levels. The maximum reduction levels vary from 25 - 96% but remain quite consistently around the median of 41%. The assay control values give a relatively broad bell-shaped distribution curve. This indicates quite a consistent day-to-day performance of the control compound in the YF-MTT assay.

During this period the positive control compound performance criteria for Selenazofurin versus the YF Virus was set at 25% reduction level. All assays in which Selenazofurin did not meet this accepted quality control level (≥25%) were rejected (i.e., 315 unsatisfactory tests).

Since Selenazofurin is only marginally active against YF virus,better quality control compounds are needed. However, regardless of the poor performance of the YF quality control drug Selenazofurin, around 430 different compounds have equal or better antiviral activity against YF virus than AVS-0253. Some of these could certainly be used as a better *in vitro* antiviral control compound in this large-scale antiviral screening program.

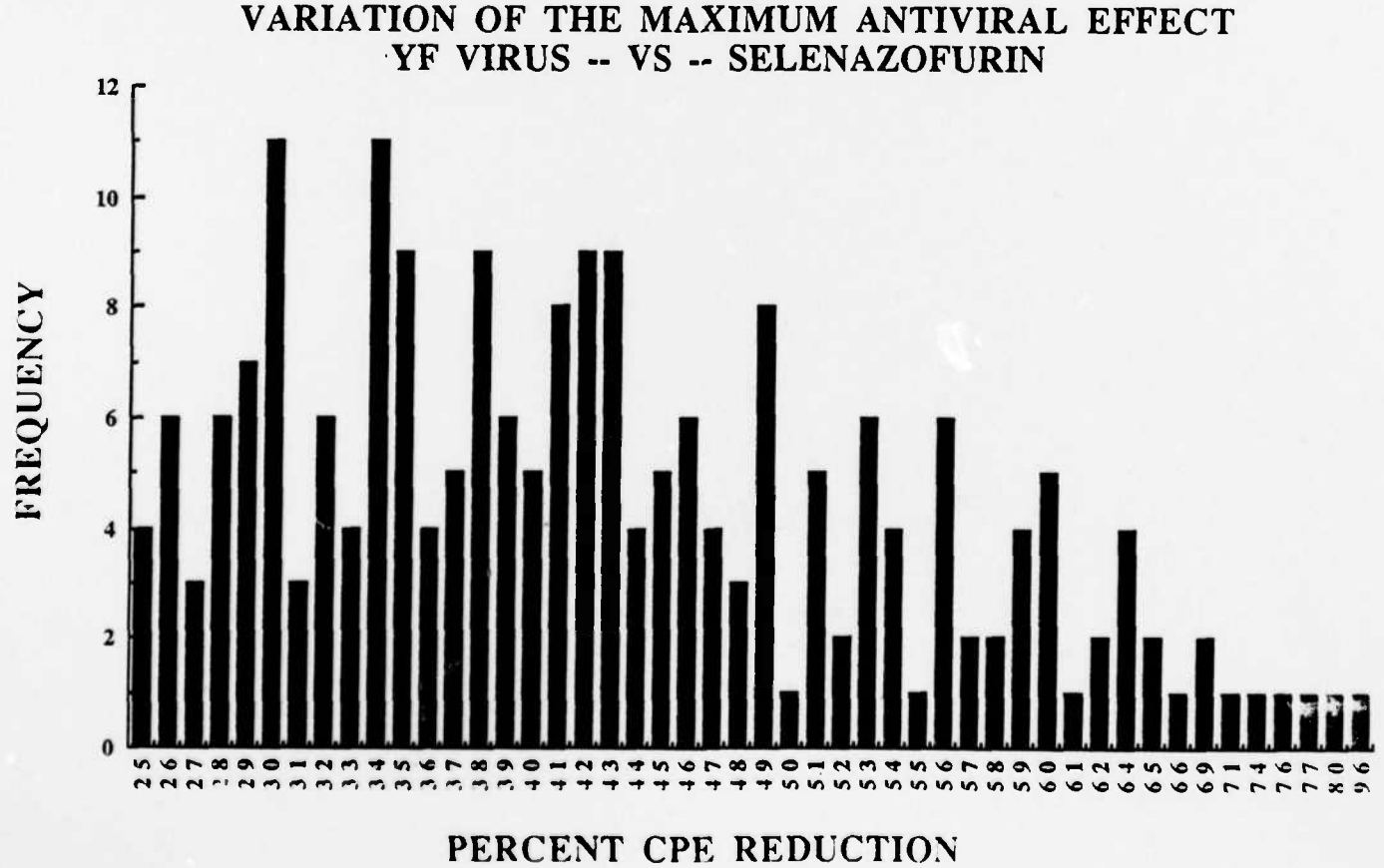


Figure 14-A
Maximum Antiviral CPE Reduction (%).
Summary of 211 Control Tests.

4.1.3.1.3 Cellular Cytotoxicity of Selenazofurin vs YF Virus:

YF-Control Compound-Cytotoxicity Performance: The 211 cytotoxicity values of the positive control compound Selenazofurin are also very consistent. The **mean cell Toxic Concentration 25%** (TC_{25}) was 16.49 μg/ml (SD ± 10.45) and the median was 15.80 μg/ml (range of 0.24 - 62.9 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 57.38 μg/ml (SD ± 29.85) and the median was 54.70 μg/ml (range of 8.51 - 100 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value cannot be attained with Selenazofurin versus Yellow Fever Virus.

As can be seen from **Figure 13-A**, the toxicity starts to become measurable above the concentration of 3.2 μg/ml and the maximum toxicity has not been reached at 100 μg/ml.

When the cytotoxicity reaches around 20% (10 μg/ml), the control compound (Selenazofurin) loses its maximum antiviral effect (~35%). Above 32 μg/ml the antiviral protection of Selenazofurin starts to decrease (down to ~20%). Selenazofurin becomes maximally toxic at 100 μg/ml concentration. The highest selenazofurin concentration tested in these assays was 100 μg/ml.

Selenazofurin has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} and TC_{50} toxicity can be achieved with relative consistency at 100 μg/ml.

4.1.3.1.4 YF-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Selenazofurin): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in **Figures 15-A, 16-A and 17-A.**

YF-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 211 control assays is plotted in **Figure 15-A.** The results indicate that the cell O.D. readings reached a mean 1.130 (SD ± 0.180) with a median of 1.140 (range of 0.400 - 1.680). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

YF-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 211 control assays is presented in **Figure 16-A.** The results indicate that the average virus load O.D. reading is 0.230 (SD ± 0.110) with a median of 0.210 (range of 0.01 - 0.530). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

YF-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 211 control assays is provided in **Figure 17-A.** The results indicate that the average differential O.D. reading is 0.900 (SD ± 0.173) with a median of 0.891 (range 0.389 - 1.440). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 90% measurement accuracy.

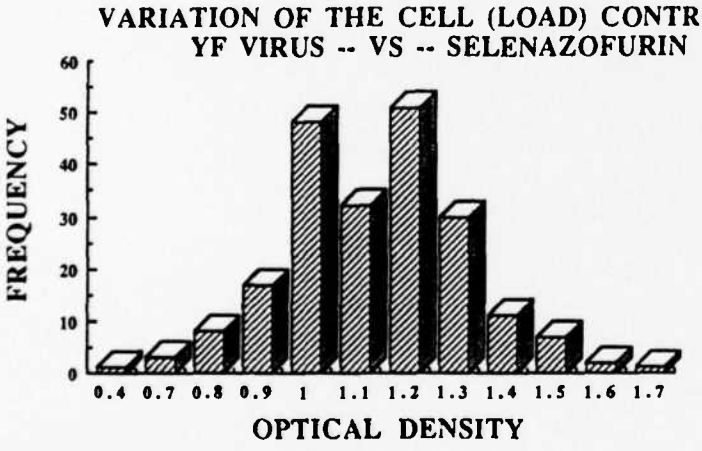


Figure 15-A

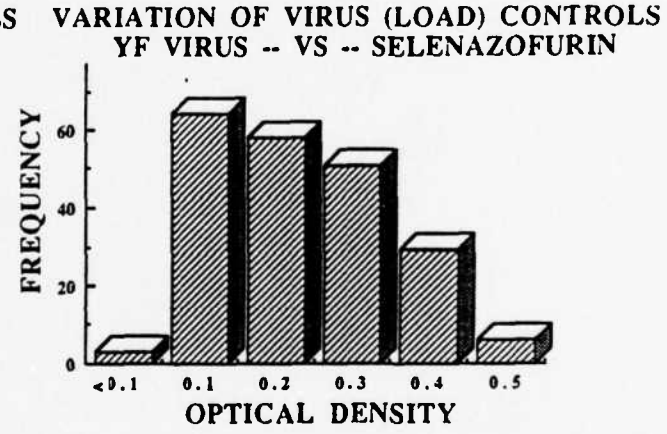


Figure 16-A

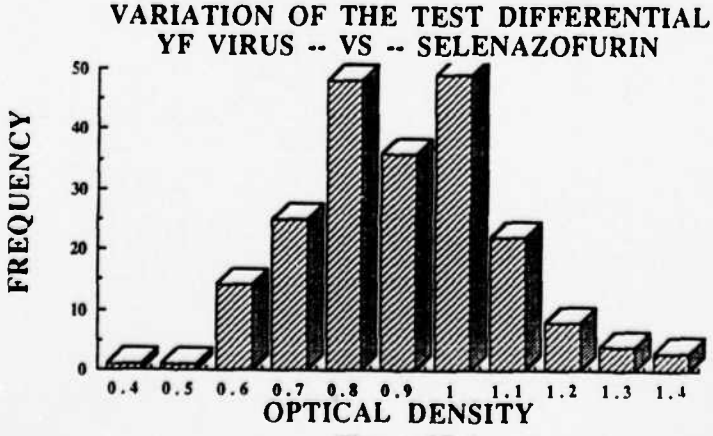


Figure 17-A

4.1.3.1 YF-Quality Controls:

4.1.3.1.1 Antiviral Activity of 2-Thio-6-Azauridine vs YF Virus: A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in Figure 13-B for 42 tests performed during November, 1989 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible second control compound against YF in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of this second positive control drug are illustrated in Figure 13-B.

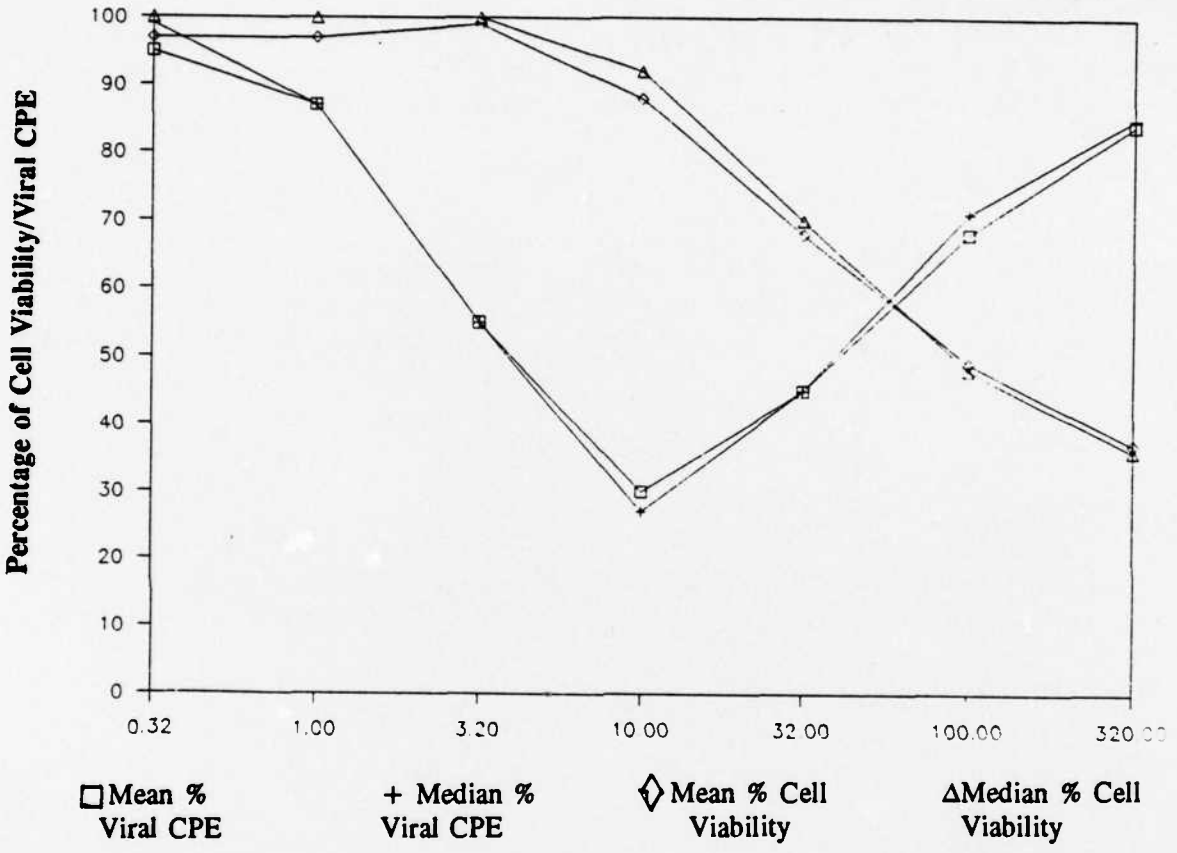
The 42 control tests performed with 2-Thio-6-Azauridine gave a mean Total Antiviral Index (TAI) of 27.90% (SD ± 14.50) and the median value was 25.00%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~6.25 - 58.77% during this period. The mean Selectivity Index (SI) was 8.60 (SD ± 8.90) and the median SI value was 5.20, indicating moderate antiviral selectivity for 2-Thio-6-Azauridine and it ranged from ~0 - 37.08 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean Antiviral Index 25% (AI_{25}) value was 21.50 (SD ± 23.70). The median AI_{25} value was 11.00 (range 2.18 - 98.96). The mean Antiviral Index 50% (AI_{50}) was 29.20 (SD ± 30.30) with a median of 23.20 (range 0 - 162.60). This indicates that 2-Thio-6-Azauridine does not consistently reach 50% antiviral reduction levels. The Antiviral Index 95% (AI_{95}) was not attainable with 2-Thio-6-Azauridine versus Yellow Fever Virus.

The mean Antiviral Inhibitory Concentration 25% (IC_{25}) was 2.90 μg/ml (SD ± 3.40). The median IC_{25} value was 1.50 μg/ml (range = 0.32 - 17.50 μg/ml). The mean Antiviral Inhibitory Concentration 50% (IC_{50}) was 6.50 μg/ml (SD ± 9.00). The median IC_{50} value was 3.30 μg/ml (range 0 - 49.30 μg/ml). This discrepancy indicates that the control compound 2-Thio-6-Azauridine does not consistently reach 50% reduction levels. The mean Antiviral Inhibitory Concentration 95% (IC_{95}) could not be attained with 2-Thio-6-Azauridine versus Yellow Fever Virus.

The average maximum antiviral inhibitory level of 42 2-Thio-6-Azauridine tests (Figure 13-B) was reached at 10 μg/ml of the compound with 70% antiviral effect. Further increase of the drug concentration does not improve its antiviral activity. Maximum antiviral effect (~77%) was found with a simultaneous ~15% cytotoxic suppression. Above 10 μg/ml concentration the antiviral protection levels off to 50% reduction level at 320 μg/ml while simultaneously 2-Thio-6-Azauridine become maximally toxic (~70%).

2-THIO-6-AZAURIDINE -VS- YF VIRUS



	% Viral CPE							% Cell Viability						
Conc.(μg/ml)	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**320**	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**320**
Mean	95	87	55	30	45	68	84	97	97	99	88	68	49	37
Median	99	87	55	27	45	71	85	100	100	100	92	70	48	36
Std. Dev.	0.08	0.1	0.26	0.25	0.17	0.14	0.13	0.06	0.05	0.03	0.11	0.14	0.1	0.11

Figure 13-B
Average Antiviral and Cytotoxicity Values for 42 Positive Control Compound Tests

4.1.3.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs YF Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 14-B) depicts the distribution of the maximum antiviral reduction values of all 42 control compound assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 77% (SD ± 17.20) reduction levels. The maximum reduction levels vary from 43 - 100% but remain quite consistently around the median of 76%. The assay control values give a relatively shifted bell-shaped distribution curve. This indicates quite a consistent day-to-day performance of the control compound in the YF-MTT assay.

Recommendations:

Based upon the data obtained in parallel studies with Selenazofurin, we recommend that 2-Thio-6-Azauridine (AVS #6724) will be used as a second control compound against YF virus. It's overall performance is much better than the present control, Selenazofurin. It is readily available from Sigma Chemical Company, it is inexpensive and works as effectively at low drug concentrations as Selenazofurin.

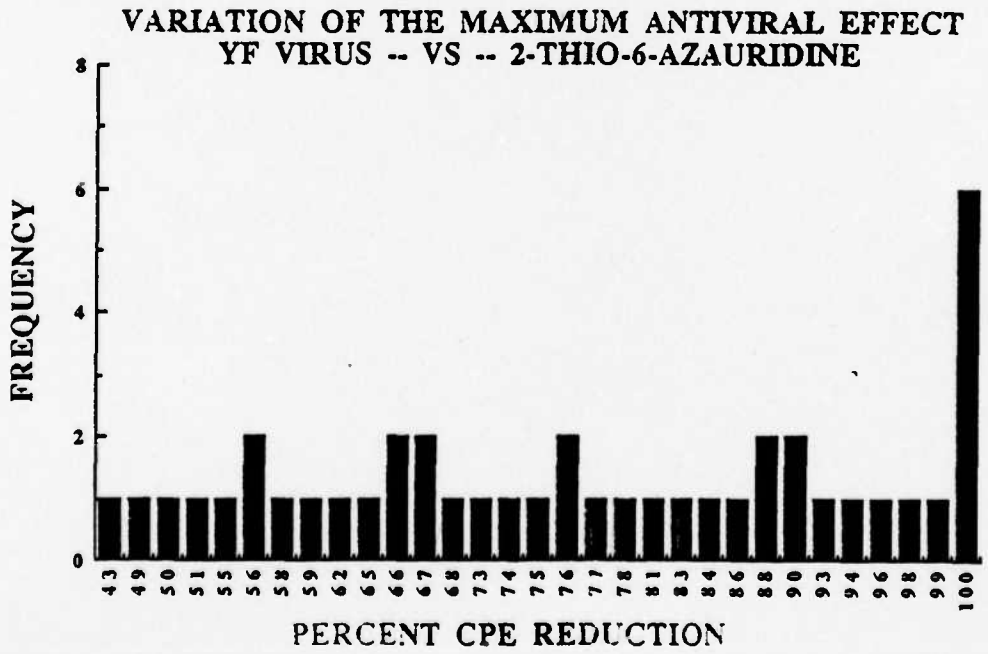


Figure 14-B
Maximum Antiviral CPE Reduction (%).
Summary of 42 Control Tests.

4.1.3.1.3 **Cellular Cytotoxicity of 2-Thio-6-Azauridine vs YF Virus:**

YF-Control Compound-Cytotoxicity Performance: The 42 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 29.80 μg/ml (SD ± 21.90) and the median was 26.80 μg/ml (range of 7.73 - 100 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 95.80 μg/ml (SD ± 61.00) and the median was 94.30 μg/ml (range of 26.00 - 320 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value cannot consistently be attained with 2-Thio-6-Azauridine versus Yellow Fever Virus.

As can be seen from **Figure 13-B**, the toxicity starts to become measurable above the concentration of 10 μg/ml and the maximum toxicity has not been reached at 320 μg/ml.

When the cytotoxicity reaches around 10% (10 μg/ml), the control compound (2-Thio-6-Azauridine) loses its maximum antiviral effect (~77%). Above 10 μg/ml the antiviral protection of 2-Thio-6-Azauridine starts to decrease (down to ~15%). 2-Thio-6-Azauridine becomes maximally toxic at 320 μg/ml concentration. The highest 2-Thio-6-Azauridine concentration tested in these assays was 320 μg/ml.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} and TC_{50} toxicity can be achieved with relative consistency at 100 μg/ml.

4.1.3.1.4 YF-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991 is presented in Figures 15-B, 16-B, and 17-B.

YF-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 42 control assays is plotted in Figure 15-B. The results indicate that the cell O.D. readings reached a mean 1.110 (SD ± 0.180) with a median of 1.100 (range of 0.550 - 1.590). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

YF-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 42 control assays is presented in Figure 16-B. The results indicate that the average virus load O.D. reading is 0.240 (SD ± 0.110) with a median of 0.240 (range of 0.030 - 0.480). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

YF-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 42 control assays is provided in Figure 17-B. The results indicate that the average differential O.D. reading is 0.870 (SD ± 0.150) with a median of 0.872 (range 0.515 - 1.182). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 87% measurement accuracy.

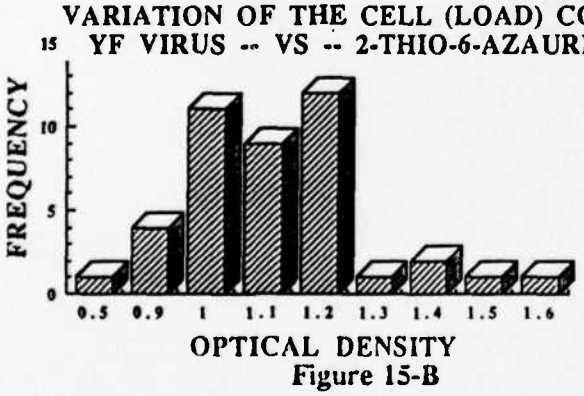


Figure 15-B

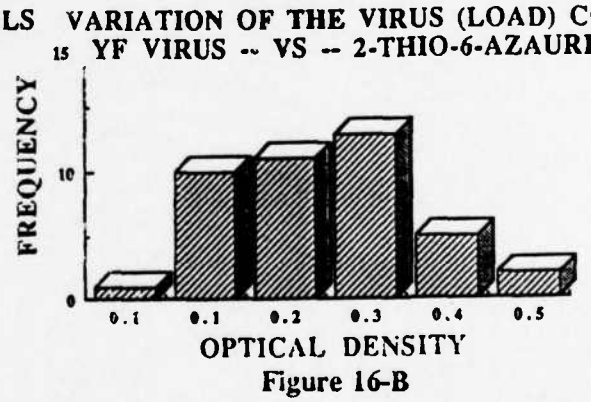


Figure 16-B

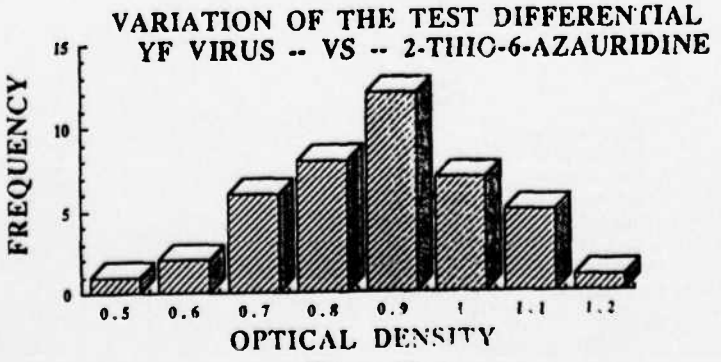


Figure 17-B

4.1.3.2 **YF-Antiviral Activity Results:**

Drugs with 95% Antiviral Reduction Levels: Out of the 6252 actual single drug tests, 62 new compounds demonstrated excellent antiviral activity, having antiviral reduction values of equal to or better than 95%. This represents around 1.0% of the test compounds being active at this excellent reduction level. These compounds are summarized in **Table 7** according to the highest **Total Antiviral Index (TAI)**. Compounds AVS-3102, 2631 and 5580 demonstrated the greatest *in vitro* promise, having TAI is of 99, 75 and 70% and **Selectivity Indices (SI)** of >313, 98 and 76, respectively. The next nine compounds, demonstrated good antiviral activity with TAI's greater than 40% and SI values that ranged from 8 - 58. Twenty-nine other compounds demonstrated moderate antiviral activity, having TAI's from 25 -37% and SI's from 4.8 - 9.9. The rest (29 compounds) had only marginal antiviral activity with TAI's ranging from 5 - 24% and SI's of <1 to 26.

It is worthwhile to note that compounds received in shipment number 62 were mostly colored **(Table 7)**. Therefore those compounds appearing in the 95% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 7

AVS Compounds Active Against Yellow Fever Virus (YF) at AI_{95} Level

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
YF	3102	28	05/19/89	0.812	0.39 >	100.00 >	258.00 >	313.00 >	99.41
YF	2631	65	07/06/90	1.083	9.30 >	1000.00 >	107.58	98.03 >	75.11
YF	5580	54	05/03/89	1.295	6220.00 >	100000 >	16.10 >	75.60 >	70.14
YF	3802	67	05/31/90	0.862	0.30 >	10.00 >	33.27 >	58.40 >	56.12
YF	1019	28	03/06/90	1.032	6.22 >	100.00 >	16.08	30.74 >	55.70
YF	4855	48	09/12/89	0.751	29.30 >	320.00 >	10.91 >	23.82 >	55.28
YF	6225	62	01/16/90	0.996	30.10 >	320.00 >	10.62 >	18.33 >	47.17
YF	2604	19	09/06/89	0.650	18.90 >	100.00 >	5.30	25.16 >	46.09
YF	6218	62	01/16/90	0.755	44.30 >	320.00 >	7.22 >	17.12 >	43.56
YF	0148	66	05/30/90	1.076	0.91 >	3.20 >	3.51 >	8.14 >	42.52
YF	2591	19	09/06/89	0.619	30.20 >	320.00 >	10.60 >	17.89 >	39.96
YF	2589	65	04/12/90	0.766	91.70 >	320.00 >	3.49 >	7.59 >	39.82
YF	5121	56	11/01/90	0.856	97.90 >	320.00 >	3.27 >	8.30 >	37.43
YF	6214	62	11/01/90	0.694	94.50 >	1000.00 >	10.59	8.96	35.36
YF	8374	76	01/17/91	0.640	929.00 >	3200.00 >	3.44	8.12 >	35.14
YF	2590	19	09/06/89	0.619	92.70 >	320.00 >	3.45 >	6.84 >	35.03
YF	7067	72	10/03/90	1.130	28.30	906.00	31.97	9.86	33.97
YF	0206	67	05/30/90	1.076	92.90 >	1000.00 >	10.77	9.72 >	32.31
YF	6200	62	02/01/90	0.712	97.30 >	320.00 >	3.29 >	6.15 >	32.24
YF	6201	62	02/01/90	0.767	93.80 >	320.00 >	3.41 >	6.07 >	32.24
YF	2318	67	05/31/90	0.989	0.97 >	10.00 >	10.34	6.23	31.89
YF	6219	62	11/01/90	0.643	94.20 >	320.00 >	3.40 >	5.83 >	31.04
YF	6943	69	07/25/90	0.990	94.20 >	320.00 >	3.40 >	5.83 >	30.64
YF	4113	39	09/11/89	0.624	0.57 >	1.00 >	1.77 >	5.96 >	30.37
YF	2572	65	04/12/90	0.861	93.30 >	320.00 >	3.43	5.80 >	28.99
YF	2980	61	12/06/89	0.740	0.90 >	3.20 >	3.56	6.03 >	28.76
YF	6208	62	01/16/90	0.843	246.00 >	320.00 >	1.30 >	4.82 >	28.41
YF	5138	57	08/15/89	0.940	283.00 >	1000.00 >	3.53	5.90	27.36
YF	6946	69	09/06/90	0.988	279.00	966.00	3.47	5.73 >	27.01
YF	2506	21	09/06/89	0.715	3.20 >	10.00 >	3.13 >	6.11 >	26.99
YF	6220	62	01/16/90	0.994	93.70 >	320.00 >	3.42 >	6.16 >	26.49
YF	6217	62	01/16/90	0.755	94.50 >	320.00 >	3.39 >	5.66 >	26.11
YF	4281	61	12/06/89	0.782	2.98 >	32.00 >	10.75	5.45	25.99
YF	8364	76	01/17/91	0.540	286.00	966.00	3.38	4.79	24.40
YF	6195	62	02/01/90	0.703	267.00 >	320.00 >	1.20 >	4.33 >	23.80
YF	6942	69	09/06/90	0.970	715.00 >	1000.00 >	1.40	3.12 >	22.51
YF	6369	63	03/20/90	0.871	29.50	96.60	3.28	3.47 >	21.91
YF	6460	63	03/22/90	0.871	93.20	874.00	9.38	3.54 >	21.20
YF	7092	72	10/25/90	1.114	984.00 >	1000.00 >	1.02 >	2.11 >	20.15
YF	6203	62	02/01/90	0.740	94.50	309.00	3.27	2.74	19.96
YF	7068	72	10/03/90	1.130	30.80	293.00	9.51	3.83	19.91
YF	6196	62	02/01/90	0.703	286.00 >	320.00 >	1.12 >	3.06 >	19.66
YF	8563	76	01/03/91	0.608	93.80 >	320.00 >	3.41	3.94 >	19.43
YF	2570	19	09/06/89	0.718	31.00 >	32.00 >	1.03 >	2.16 >	19.20
YF	6197	62	02/01/90	0.573	296.00 >	320.00 >	1.08 >	2.19 >	19.06
YF	2586	19	09/06/89	0.775	306.00 >	320.00 >	1.05 >	2.08 >	17.27
YF	5405	66	07/06/90	1.155	0.31	8.19	26.12	3.67	17.25
YF	6183	62	01/31/90	0.788	294.00 >	320.00 >	1.09 >	2.35 >	16.47
YF	6185	62	01/31/90	0.766	94.10	315.00	3.35	2.89	16.47
YF	4992	61	12/06/89	0.702	302.00	966.00	3.20	2.74	15.08
YF	6207	62	10/31/90	0.951	302.00	966.00	3.20	2.74	15.08
YF	5780	59	01/23/90	0.798	94.50	318.00	3.36	2.78	15.02
YF	6186	62	02/01/90	0.821	96.60	313.00	3.24	2.73	14.62
YF	2453	18	09/06/89	0.736	10.00	31.50	3.15	2.69	14.12
YF	6205	62	02/01/90	0.745	299.00 >	320.00 >	1.07 >	2.00 >	13.18
YF	2582	19	09/06/89	0.775	93.60 >	100.00 >	1.07 >	1.94 >	11.89
YF	6227	62	01/16/90	0.982	302.00 >	320.00 >	1.06 >	1.79 >	10.08
YF	2960	27	10/04/90	1.046	903.00 >	1000.00 >	1.11	0.00 >	9.92

Table 7 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
YF	7049	69	09/13/90	1.039	945.00 >	1000.00 >	1.06 >	1.77 >	9.27
YF	4074	48	12/07/89	1.211 <	1.00	26.80 >	26.82 >	1.60 >	6.33
YF	0361	2	08/22/89	1.020 <	0.03	0.29 >	9.02 >	1.63 >	5.46
YF	6194	62	02/01/90	0.714	302.00	96.10	0.32	0.23 >	5.04

Drugs with 50% Antiviral Reduction Levels: Out of the 6252 actual single drug tests, 175 new compounds demonstrated good antiviral activity, having antiviral reduction values equal to or better than 50%. This represents around 2.8% of the test compounds being active at this good antiviral reduction levels. These compounds are summarized in Table 8 according to the highest Total Antiviral Index (TAI). AVS-4611 demonstrated the best TAI of 66% and SI of 109. Twenty-seven other compounds demonstrated moderate antiviral activity, having TAI's from 25 - 43 and SI's from 1 - 56. The rest (147 compounds) showed marginal antiviral activity with TAI's from <1 to 24% and SI's from <1 to 7.

It is worthwhile to note (Table 8) that compounds received in shipment number 62 were mostly colored. Therefore those compounds appearing in the 50% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 8

AVS Compounds Active Against Yellow Fever Virus (YF) at AI_{50} Level

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
YF	4611	65	07/06/90	0.874	6.54 >	1000.00 >	152.94	108.82 >	65.62
YF	2978	27	04/17/89	1.019	42.30 >	320.00 >	7.56 >	7.56 >	42.81
YF	0084	67	05/30/90	1.062	17.50	316.00	18.06	11.76 >	37.83
YF	6618	64	04/19/90	0.574	147.00 >	1000.00 >	6.79 >	6.79 >	36.65
YF	2503	67	07/12/90	0.526	0.58 >	10.00 >	17.13 >	17.13 >	36.44
YF	6444	63	03/22/90	0.956	29.80	731.00	24.55	13.77 >	34.97
YF	2573	65	04/12/90	0.861	58.50 >	1000.00 >	17.11	9.35 >	33.37
YF	7438	73	09/20/90	1.304	1.94	206.00	106.01	55.49 >	33.12
YF	4796	61	12/06/89	0.893	21.50 >	320.00 >	14.89	9.64 >	31.89
YF	5998	61	02/01/90	0.539	2.01 >	32.00 >	15.92	8.34 >	30.66
YF	8370	76	01/17/91	0.603	168.00	1920.00	11.46	7.64 >	30.66
YF	0053	64	03/08/90	0.845	246.00 >	320.00 >	1.30 >	1.30 >	30.54
YF	5450	65	04/26/90	0.708	2.68	65.30	24.42	11.96 >	30.16
YF	4035	65	07/06/90	0.783	109.00 >	1000.00 >	9.17 >	9.17 >	29.41
YF	4592	61	12/06/89	0.795	7.04	83.90	11.92	7.53 >	29.08
YF	6209	62	01/16/90	0.912	55.00 >	320.00 >	5.82 >	5.82 >	29.02
YF	8661	76	01/17/91	0.423	1.69	320.00	189.07	13.00 >	28.61
YF	2575	57	12/06/90	0.980	19.40	679.00	34.93	4.95	28.46
YF	6458	63	03/22/90	1.028	234.00 >	1000.00 >	4.27 >	4.27 >	28.19
YF	8511	76	12/20/90	0.741	599.00 >	3200.00 >	5.34 >	5.34 >	27.10
YF	5484	66	05/08/90	0.781	76.70 >	320.00 >	4.17 >	4.17 >	26.75
YF	8268	76	12/12/90	0.685 <	3.20	494.00 >	154.36 >	56.25 >	26.65
YF	2600	65	04/12/90	0.843	59.90 >	1000.00 >	16.70	4.98 >	26.52
YF	2563	21	09/06/89	0.739	0.17	2.20	13.17	6.00 >	25.60
YF	4590	61	12/06/89	0.795	0.34	2.77	8.20	5.29 >	25.48
YF	6223	62	01/16/90	0.932	27.70	216.00	7.78	5.69	25.20
YF	6707	67	07/12/90	0.723	12.10	95.00	7.82	5.23 >	24.91
YF	4277	65	07/06/90	0.893	2.19	20.40	9.33	5.08 >	24.56
YF	4609	63	02/13/90	0.944	0.03	0.26	8.31	4.23	24.39
YF	7087	72	08/31/90	1.037	3.88	31.50	8.10	4.65	24.20
YF	8261	76	12/12/90	0.826	170.00	2940.00	17.28	3.66	24.07
YF	8327	76	01/17/91	0.552	2370.00 >	3200.00 >	1.35 >	1.35 >	24.01
YF	2363	15	08/29/89	0.666	8.18	64.50	7.88	5.52 >	23.84
YF	2309	53	12/05/89	0.765	34.70	297.00	8.56	5.26	23.69
YF	8377	76	01/17/91	0.677	30.30	409.00	13.48	7.01 >	23.44
YF	3612	32	11/03/88	1.033	143.00 >	320.00 >	2.23 >	2.23 >	23.05
YF	0360	2	08/22/89	0.842	0.05	0.29	6.23	4.19	22.90
YF	2581	65	04/12/90	0.752	52.40 >	320.00 >	6.10	4.99 >	22.90
YF	2585	65	04/12/90	0.952	55.80 >	320.00 >	5.74	4.92 >	22.88
YF	6202	62	10/31/90	1.034	154.00	660.00	4.28	3.17	22.15
YF	8378	76	01/17/91	0.627	148.00	868.00	5.86	4.01 >	22.01
YF	5997	61	11/01/90	0.694	1.82	32.00	17.58	4.28 >	21.58
YF	8332	76	01/17/91	0.568	177.00	1630.00	9.19	5.00 >	21.46
YF	8262	76	12/12/90	0.826	495.00 >	1000.00 >	2.02 >	2.02 >	21.45
YF	1381	45	02/13/90	0.961	13.60	87.70	6.45	4.40	20.78
YF	6234	67	11/01/90	0.553	1530.00 >	3200.00 >	2.09 >	2.09 >	20.74
YF	2812	61	12/06/89	0.813	0.01	0.04	8.66	4.75 >	20.52
YF	4978	27	12/05/89	0.739	112.00	806.00	7.20	4.10	20.42
YF	4278	61	12/06/89	0.782	5.14	53.70	10.44	5.00	20.15
YF	6445	63	03/01/90	0.677	18.90	65.30	3.45	2.53 >	19.99
YF	4527	63	02/13/90	1.030	3.66	26.90	7.36	5.05	19.83
YF	8225	75	12/06/90	1.265	32.00	202.00	6.30	0.86 >	19.75
YF	2580	19	09/06/89	0.820	2.37 >	10.00 >	4.22 >	4.22 >	19.63
YF	7085	72	08/31/90	1.071	6.31	56.30	8.92	3.49	19.39
YF	7383	70	09/27/90	1.052	158.00	680.00	4.29	3.03 >	19.31
YF	6589	64	04/18/90	0.760	200.00 >	1000.00 >	5.01 >	5.01 >	19.18
YF	4591	63	02/13/90	0.977 <	0.00	0.03 >	8.50 >	5.81 >	19.16
YF	8371	76	01/17/91	0.603	431.00	2680.00	6.23	4.24 >	19.02
YF	7319	70	08/16/90	0.842	2.85	21.60	7.58	4.07	18.82
YF	7354	70	08/16/90	0.777	432.00 >	320.00 >	0.74 >	0.74 >	18.62

Table 8 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Differntl.	IC 50	TC 50	AI 50	SI	TAI
YF	7904	74	10/24/90	1.352	6.34 >	320.00 >	50.48	1.27	18.43
YF	2811	48	02/06/89	1.184	0.03	0.23	9.00	3.55 >	18.20
YF	8353	75	11/30/90	0.941	58.60 >	320.00 >	5.46	2.78 >	18.13
YF	8373	76	01/17/91	0.595	863.00 >	3200.00 >	3.71 >	3.71 >	17.99
YF	6250	1P	11/14/89	0.669	88.50	286.00	3.24	2.18 >	17.65
YF	2979	48	02/07/89	1.083	1.93	14.90	7.73	3.79 >	17.57
YF	6979	68	06/21/90	0.729	88.50 >	320.00 >	3.62 >	3.62	17.36
YF	6792	67	07/12/90	0.675	2.21	13.00	5.91	3.13 >	17.23
YF	7083	72	08/31/90	1.081	21.90	147.00	6.69	2.37 >	17.13
YF	0646	67	05/30/90	1.079	0.26 >	3.20 >	12.33	3.42 >	16.80
YF	5483	66	07/18/90	0.866	0.04	0.24	5.34	3.68 >	16.73
YF	4753	44	12/14/89	0.904	2.88	18.40	6.38	3.96	16.63
YF	6256	1P	11/14/89	0.598	7.41	50.70	6.85	3.51	16.55
YF	0094	1	11/01/90	0.915	239.00	742.00	3.10	1.68 >	16.29
YF	3734	34	09/11/89	0.626	3.53 >	10.00 >	2.83	0.23 >	15.84
YF	1644	64	11/01/90	0.865	17.90	76.10	4.25	2.49 >	15.73
YF	1337	67	05/30/90	1.118	59.00	228.00	3.87	2.76 >	15.56
YF	6456	64	04/18/90	0.677	61.00	198.00	3.25	2.16 >	15.51
YF	7321	70	08/16/90	0.967	15.00	94.90	6.34	3.50	15.50
YF	8372	76	01/17/91	0.595	890.00 >	3200.00 >	3.59 >	3.59 >	15.24
YF	0083	64	03/08/90	0.973	1.28	9.16	7.14	4.82 >	15.11
YF	6211	62	01/16/90	0.908	106.00 >	320.00 >	3.01 >	3.01 >	14.72
YF	4223	63	02/13/90	0.976	0.22	0.90	4.08	2.77	14.58
YF	6477	66	07/11/90	0.958	18.00	76.20	4.22	3.00	14.54
YF	5916	60	10/23/89	0.874	8.85	46.90	5.30	2.73 >	14.50
YF	5040	GABSN	02/08/90	0.848	268.00	2890.00	10.79	5.09	14.42
YF	5691	57	07/17/89	0.989	144.00 >	320.00 >	2.22 >	2.22 >	14.36
YF	7424	70	09/27/90	0.932	320.00	595.00	1.86	1.23	14.12
YF	7065	72	10/25/90	1.247	18.30	81.80	4.46	2.20 >	13.92
YF	8263	76	12/12/90	0.845	44.30	91.60	2.07	1.40 >	13.83
YF	7377	70	08/22/90	0.911	955.00 >	1000.00 >	1.05 >	1.05 >	13.68
YF	7945	75	12/05/90	1.038	647.00	2110.00	3.27	2.41 >	13.47
YF	5601	GABSN	02/08/90	0.897	3720.00 >	3200.00 >	0.86	0.73 >	13.40
YF	7044	69	08/02/90	0.984	83.70	193.00	2.31	1.54 >	13.35
YF	7084	72	08/31/90	1.081	7.44	27.60	3.71	1.86 >	13.21
YF	6620	64	04/19/90	0.563	60.70	192.00	3.16	2.11 >	12.91
YF	6986	68	06/21/90	0.750	63.60	255.00	4.02	2.74	12.38
YF	8269	76	12/12/90	0.685	100.00	940.00	9.40	4.40 >	12.34
YF	4280	42	11/01/90	0.956	6.84	20.30	2.97	1.67 >	12.25
YF	8271	76	12/12/90	0.679	189.00	830.00	4.40	2.52 >	11.88
YF	6215	62	01/16/90	0.988	168.00 >	320.00 >	1.91 >	1.91 >	11.74
YF	2579	19	09/06/89	0.820	214.00 >	320.00 >	1.50 >	1.50 >	11.72
YF	7433	70	08/30/90	0.662	19.80	82.20	4.15	2.74	11.62
YF	5539	56	08/07/89	1.006	2.27	6.08	2.68	1.31 >	11.55
YF	7375	70	08/22/90	0.966	61.40	320.00	5.21	1.63	11.51
YF	7332	70	08/16/90	0.902	100.00	207.00	2.07	1.28	11.12
YF	2907	26	09/07/89	0.731	66.80	248.00	3.71	2.58	10.97
YF	6226	62	01/16/90	0.996	184.00 >	320.00 >	1.74 >	1.74 >	10.87
YF	6628	64	04/19/90	0.600	192.00 >	320.00 >	1.67 >	1.67 >	10.84
YF	3935	65	07/06/90	0.857	84.30	210.00	2.49	1.84	10.75
YF	5241	52	12/14/89	1.014	100.00	578.00	5.78	3.63	10.47
YF	4036	65	07/06/90	0.837	201.00	667.00	3.32	1.55 >	10.30
YF	5186	58	10/03/89	0.877	74.90	341.00	4.56	2.63	10.12
YF	4070	48	12/07/89	1.222	2.22	8.30	3.73	1.99 >	10.07
YF	7071	72	10/25/90	1.147	226.00	495.00	2.19	1.01 >	10.07
YF	8698	76	01/23/91	0.707	88.10	199.00	2.26	1.08	9.87
YF	6417	66	07/06/90	0.765	86.40	396.00	4.58	1.84	9.67
YF	6147	62	01/04/90	1.041	2.66	6.60	2.48	1.84 >	9.63
YF	6626	64	04/19/90	0.603	243.00 >	320.00 >	1.32 >	1.32 >	9.52
YF	9123	77	01/31/91	0.852	296.00	1830.00	6.16	0.28	9.25
YF	7910	75	11/08/90	1.010	1870.00 >	3200.00 >	1.71 >	1.71 >	9.16
YF	6228	62	01/16/90	0.982	222.00 >	320.00 >	1.44 >	1.44 >	9.15

Table 8 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
YF	2274	12	08/29/89	0.733	65.20 >	100.00 >	1.53 >	1.53 >	8.90
YF	6212	62	01/16/90	0.908	206.00 >	320.00 >	1.56 >	1.56 >	8.66
YF	6044	61	02/08/90	0.857 <	0.10	0.66 >	6.60 >	4.90 >	8.63
YF	6315	63	03/20/90	1.303	7.62	20.50	2.69	1.94	8.59
YF	7378	70	08/22/90	0.911	257.00	614.00	2.38	1.63	8.45
YF	6617	64	04/19/90	0.574	626.00 >	1000.00 >	1.60 >	1.60 >	8.43
YF	2992	27	09/07/89	0.676	81.60 >	100.00 >	1.23 >	1.23 >	8.39
YF	6137	62	12/28/89	1.061	9.31	21.00	2.26	1.66 >	8.29
YF	7086	72	08/31/90	1.071	6.40	10.00	1.56	1.03 >	8.07
YF	4739	44	07/06/89	0.749	29.00	67.60	2.33	1.65	8.03
YF	4452	44	07/06/89	1.012	78.50	301.00	3.84	1.84	7.92
YF	5781	59	01/30/90	0.738	195.00	601.00	3.08	0.44	7.87
YF	5543	56	10/04/90	0.810	28.10	77.90	2.77	1.36	7.77
YF	5995	61	11/07/89	0.795	8.19	22.20	2.71	1.08 >	7.66
YF	5535	56	06/13/89	1.142	185.00 >	320.00 >	1.73 >	1.73 >	7.36
YF	7472	73	10/31/90	0.977	100.00	213.00	2.13	0.85	7.34
YF	3980	36	09/11/89	0.576	65.70 >	100.00 >	1.52 >	1.52 >	7.22
YF	6334	63	03/20/90	1.026	3.09	11.60	3.77	1.75 >	7.11
YF	7032	69	08/01/90	1.119	230.00 >	320.00 >	1.39 >	1.39 >	6.98
YF	5538	56	06/13/89	1.142	215.00 >	320.00 >	1.49 >	1.49 >	6.96
YF	1736	45	12/07/89	1.290	134.00	547.00	4.09	0.83	6.78
YF	5197	58	10/04/90	0.845	86.70	159.00	1.83	0.98	6.76
YF	6326	63	03/20/90	1.303	8.64	19.70	2.28	1.20	6.73
YF	6422	66	07/06/90	0.720	313.00	657.00	2.10	1.55	6.71
YF	8240	75	12/06/90	1.097	714.00	2230.00	3.13	1.59 >	6.17
YF	3592	61	12/06/89	0.813	806.00 >	1000.00 >	1.24 >	1.24 >	6.06
YF	8326	76	01/17/91	0.558	259.00	568.00	2.19	1.30 >	5.80
YF	7390	70	08/22/90	0.856	245.00	558.00	2.28	1.38 >	5.78
YF	2902	26	09/07/89	0.817	65.20 >	100.00 >	1.53 >	1.53 >	5.72
YF	9128	77	01/31/91	0.858	2990.00 >	3200.00 >	1.07	0.17 >	5.41
YF	4768	44	11/08/88	0.816	74.90	173.00	2.31	1.34	5.40
YF	7445	73	10/25/90	0.960	2550.00 >	3200.00 >	1.25 >	1.25 >	4.64
YF	1976	1	08/29/89	0.851	80.40 >	100.00 >	1.24 >	1.24 >	4.32
YF	6683	64	04/05/90	0.892	204.00 >	320.00 >	1.57	1.35 >	4.25
YF	5072	48	02/27/89	0.919	230.00 >	320.00 >	1.39	0.38 >	4.01
YF	8395	76	12/19/90	0.891	752.00	1450.00	1.93	0.79	3.92
YF	1838	64	11/01/90	0.951	252.00	558.00	2.22	1.34	3.75
YF	7003	69	09/06/90	1.009	252.00	556.00	2.21	1.31	3.75
YF	7434	70	10/03/90	1.224	264.00	570.00	2.16	1.34	3.65
YF	6199	62	02/01/90	0.712	245.00 >	320.00 >	1.31	0.90 >	3.49
YF	7373	70	08/22/90	0.971	252.00 >	320.00 >	1.27	1.20 >	3.35
YF	4785	46	11/01/90	0.899	3.20	8.09	2.53	0.89 >	3.20
YF	5905	61	10/30/89	0.706	8.85	16.10	1.81	0.94 >	3.03
YF	4754	44	12/20/89	1.024	7.99	11.20	1.41	0.85	2.08
YF	7045	69	08/02/90	1.000	320.00 >	320.00 >	1.00	0.37 >	1.67
YF	7051	72	10/03/90	1.175	759.00 >	1000.00 >	1.32	0.54 >	1.02
YF	8311	76	12/12/90	0.718	864.00	1240.00	1.43	0.33 >	0.71
YF	6309	63	03/20/90	1.046	95.10	250.00	2.63	0.38	0.59
YF	7461	73	10/31/90	1.067	84.10	29.50	0.35	0.22	0.58
YF	8404	76	12/19/90	0.831	896.00	959.00	1.07	0.50	0.47
YF	8693	76	01/23/91	0.967	320.00 >	320.00 >	1.00	0.07 >	0.17
YF	6204	62	02/01/90	0.740	30.00	22.80	0.76	0.55	0.00
YF	8251	76	12/12/90	0.867	320.00	217.00	0.68	0.50	0.00

Drugs with 25% Antiviral Reduction Levels: Of the 6252 actual single drug tests, 394 new compounds demonstrated moderate antiviral activity, having antiviral reduction values equal to or better than 25%. This represents around 6.3% of the test compounds being active at this marginal antiviral reduction level.

In general, when compared to the 95% and 50% antiviral activity categories, the compounds in this (25%) category do not appear to have any significant antiviral promise and probably do not need to be presently confirmed any further.

4.1.3.3 **Confirmatory Assays:**

Some of the compounds were sent to us in more than one separate drug shipment. These compounds were tested more than once. Data from the confirmatory assays are summarized in **Table 9**. If a compound showed $\geq$50% reduction in CPE during this contract period, then it was considered a candidate for confirmatory testing. The confirmatory tests are from active compounds picked by both the VR and MTT assays. Out of 178 confirmatory tests, 137 compounds were confirmed active during this reporting period and the remaining 41 compounds gave conflicting results. The criteria for activity is that the confirmatory test has to show $\geq$25% reduction in CPE. Failure to confirm the activity in these compounds was probably due to differences during the assay conditions:

1) In confirmatory assays the concentration range is adjusted to a more accurate semilog scale to maximize the TAI window.

2) Differences in the "differential" of the two runs can cause the compound to read positive or negative, falsely. The variability in the differential can cause false positive or negative bias to be introduced into the calculations, thus reflecting the variability in the maximum activity of the compound.

3) The metabolic rate, cell and virus load/well, age, and passage number of the cells may cause the above observed variability in the confirmatory results.

4) Problems associated with stability and storage of the compound (i.e., different lot numbers, solubility, light sensitivity, hygroscopic, etc.).

5) Problems associated with technical execution of large numbers of plates by different technicians.

During this reporting period the overall confirmatory rate against YF was 77%. The conflicting results should be retested at a later date based on the availability of the compound.

4.1.3.4 **Recommendations of YF-Actives Based Upon the *In Vitro* Results with MTT Assay (Vero Cells).**

Based upon the *in vitro* results with the MTT assay (Vero cells) we recommend the following:

1) Compounds with the highest TAI in the 95% activity category that have confirmed results with the exception of "colored" compounds should receive the highest priority for further profile studies and *in vivo* animal testing.

2) Compounds with the highest TAI in the 50% activity category that have confirmed results with the exception of "colored" compounds should receive the next highest priority for further profile studies and *in vivo* animal testing.

Table 9

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.		IC 25		TC 25	AI 25		IC 50		TC 50	AI 50		IC 95		TC 95	AI 95		SI	TAI	ASSAY TYPE	ACT
** VIRUS YF																								
0053	64	03/08/90	UF2	0.845	<	1.00	>	320.00	> 320.00		246.00	>	320.00	> 1.30		0.00	>	320.00	0.00	>	1.30	> 30.54	MTT	+
0053	64	05/01/90	VSS	0.985		0.00		6.46	0.00		0.00		9.86	0.00		0.00		279.00	0.00		0.00	> 1.23	MTT	-
0053	64	10/04/90	Z80	1.044		0.00		22.90	0.00		0.00		87.60	0.00		0.00	>	320.00	0.00		0.00	> 0.01	MTT	-
0083	64	03/08/90	UF4	0.973	<	1.00		6.18	> 6.18		1.28		9.16	7.14		0.00		30.40	0.00		4.82	> 15.11	MTT	+
0083	64	05/01/90	VSU	1.030		1.21		4.45	3.67		3.20		6.40	2.00		0.00		9.92	0.00		1.39	> 9.67	MTT	+
0083	64	11/01/90	ZXA	0.984		1.58		5.47	3.47		0.00		7.73	0.00		0.00		28.30	0.00		0.00	> 9.14	MTT	+
0084	1	05/22/89	Q57	1.252		0.00		42.90	0.00		0.00		73.30	0.00		0.00	>	320.00	0.00		0.00	0.32	MTT	-
0084	1	08/22/89	R9X	0.897		30.40	>	100.00	> 3.29		71.50	>	100.00	> 1.40		0.00	>	100.00	0.00	>	1.40	> 10.57	MTT	+
0084	67	05/30/90	WDA	1.062		9.09		206.00	22.61		17.50		316.00	18.06		0.00		970.00	0.00		11.76	> 37.83	MTT	+
0094	1	10/10/89	S25	0.793		0.00	>	100.00	0.00		0.00	>	100.00	0.00		0.00	>	100.00	0.00		0.00	> 9.21	MTT	-
0094	65	04/10/90	V6J	1.114		0.00		279.00	0.00		0.00		694.00	0.00		0.00	>	1000.00	0.00		0.00	> 1.30	MTT	-
0094	1	11/01/90	ZXB	0.915		40.80		402.00	9.83		239.00		742.00	3.10		0.00		2850.00	0.00		1.68	> 16.29	MTT	+
0111	42	07/06/88	--	NA	~	32.00		100.00	~ 3.20		48.00	>	320.00	> 6.70	~	320.00	>	320.00	~ 1.00		2.10	1.50[a]	CPE	+
0111	42	05/08/89	QOQ	1.088		0.00		64.00	0.00		0.00		235.00	0.00		0.00	>	320.00	0.00		0.00	0.00	MTT	-
0140	4	02/04/88	--	NA		0.07		0.07	1.00		0.48		1.00	0.20		0.00		0.32	0.00		0.20	1.40[a]	CPE	+
0140	4	05/04/88	--	NA		3.20		0.07	0.02		1.00		0.32	1.00		0.00		10.00	0.00		1.00	1.40[a]	CPE	+
0140	4	05/18/88	--	NA		3.20		0.66	0.21		0.00		0.10	0.00		0.00		10.00	0.00		0.00	0.30[a]	CPE	+
0148	2	08/22/89	RA0	0.981		0.03		0.25	10.03		0.06	>	3.20	> 55.79		0.00	>	3.20	0.00		4.38	> 25.62	MTT	+
0148	66	05/30/90	WDB	1.076		0.17	>	3.20	> 18.28		0.39	>	3.20	> 8.14		0.91	>	3.20	> 3.51	>	8.14	> 42.52	MTT	+
0148	2,67	10/04/90	Z8P	1.061		0.41		0.60	1.48		0.86		2.52	2.93		0.00	>	10.00	0.00		0.70	3.05	MTT	+
0206	4,5	01/30/87	--	NA	~	320.00		320.00	~ 1.00		115.00	>	320.00	> 2.80	~	320.00	>	320.00	~ 1.00		2.80	1.40[a]	CPE	+
0206	4,5	02/02/87	--	NA	~	320.00		320.00	~ 1.00		297.00	>	320.00	> 1.10	~	320.00	>	320.00	~ 1.00		1.10	0.60[a]	CPE	+
0206	4,5	05/24/88	--	NA		0.00		100.00	0.00		217.00	>	320.00	1.50		0.00	>	320.00	0.00		0.50	0.50[a]	CPE	-
0206	5	05/08/89	QOR	1.072		191.00	>	320.00	> 1.68		0.00	>	320.00	0.00		0.00	>	320.00	0.00		0.00	> 2.22	MTT	+
0206	4	12/05/89	SRA	0.705		89.70		459.00	5.11		0.00		806.00	0.00		0.00	>	1000.00	0.00		0.00	4.73	MTT	+
0206	4	12/05/89	SRJ	0.739		53.90		402.00	7.44		0.00		742.00	0.00		0.00	>	1000.00	0.00		0.00	13.21	MTT	+
0206	67	05/30/90	WDB	1.076		33.00		464.00	14.07		47.70		791.00	16.57		92.90	>	1000.00	> 10.77		9.72	> 32.31	MTT	+
0303	1	01/15/87	--	NA	~	1.00		100.00	~ 100.00		9.90		320.00	32.00		0.00		320.00	0.00		10.00	2.60[a]	CPE	+
0303	1	08/19/87	--	NA		0.32		0.32	1.00		100.00	>	320.00	> 3.20	>	0.00	>	320.00	0.00		0.003	1.10[a]	CPE	+
0303	46	01/23/89	--	0.986		0.00		88.00	0.00		0.00	>	320.00	0.00		0.00	>	320.00	0.00		0.00	0.73	MTT	-
0360	2	03/06/87	--	NA	~	0.032		0.32	~ 10.00		0.07	>	0.32	> 4.60	~	0.10	>	0.32	> 3.20		4.60	1.60[a]	CPE	+
0360	48	05/18/88	--	NA		0.00	>	10.00	0.00		0.00	>	10.00	0.00		0.00	>	10.00	0.00		0.00	0.00[a]	CPE	-
0360	48	02/06/89	OJU	1.193		0.05		0.21	4.38		0.08		0.51	6.47		0.00		2.93	0.00		2.72	> 11.70	MTT	+
0360	48	02/06/89	OJU	1.193		0.00	>	0.00	0.00		0.00	>	0.00	0.00		0.00	>	0.00	0.00		0.00	0.41	MTT	-
0360	2	08/22/89	RA3	0.842		0.03		0.20	7.39		0.05		0.29	6.23		0.00	>	1.00	0.00		4.19	22.90	MTT	+
0360	2	11/01/90	ZXB	0.915		0.14		0.71	5.25		0.32	>	1.00	> 3.13		0.00	>	1.00	0.00		2.23	10.18	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
0361	2	03/01/88	--	NA	0.032	0.10	3.20	0.04 ~	0.32 ~	8.00 ~	0.10 ~	0.32 ~	3.20	2.7	1.10[a]	CPE	+
0361	48	02/06/89	OJV	1.182	0.01	0.05	4.76	0.02	0.07	4.41	0.00	0.28	0.00	2.72	14.54	MTT	+
0361	2	08/22/89	RA4	1.020 <	0.03	0.05 >	1.63 <	0.03	0.07 >	2.35 <	0.03	0.29 >	9.02 >	1.63 >	5.46	MTT	+
0361	48	02/13/90	U10	0.944	0.01	0.06	12.43	0.01	0.08	7.74	0.00	0.29	0.00	5.29	22.59	MTT	+
0361	2	11/01/90	ZXC	0.865	0.01	0.05	4.83	0.02	0.08	3.99	0.00 >	0.32	0.00	2.76 >	15.48	MTT	+
0646	2	03/06/87	--	NA	0.21	2.10	10.00	0.20	3.20	13.00	0.32 >	320.00	>1000.00	13.00	3.10[a]	CPE	+
0646	2	08/19/87	--	NA	0.66	0.021	32.00	0.50	0.032	0.10	1.00 >	1.00 >	1.00	0.10	0.60[a]	CPE	+
0646	2	12/14/87	--	NA	0.66	0.66	1.00	0.08	0.10	1.20	0.32 >	320.00	>1000.00	1.20	1.70[a]	CPE	+
0646	2	05/17/88	--	NA	0.032	0.021	0.66	0.04	0.032	0.70	0.10 >	320.00	>3200.00	0.70	3.20[a]	CPE	+
0646	2	08/22/89	RA4	1.020	0.16	0.60	3.68	0.29	2.17	7.60	0.00 >	3.20	0.00	2.10	9.18	MTT	+
0646	67	05/30/90	WDC	1.079	0.16	0.89	5.50	0.26 >	3.20 >	12.33	0.00 >	3.20	0.00	3.42 >	16.80	MTT	+
0703	5	02/02/87	--	NA	0.66	21.00	32.00	2.50	32.00	13.00	0.00	320.00	0.00	13.00	3.00[a]	CPE	+
0703	5	07/29/87	--	NA	6.60	6.60	1.00	17.40	10.00	0.60	100.00	320.00	3.20	0.60	1.30[a]	CPE	+
1019	28	11/30/87	--	NA >	0.32 ~	0.32 ~	100.00 <	0.32 ~	320.00 ~	1000.00 >	0.32	320.00	1000.00 >	1.00	3.50[a]	CPE	+
1019	28	02/02/88	--	NA ~	0.10	0.10 ~	1.00	0.26 >	1.00 >	3.80 ~	1.00 >	1.00 >	1.00	0.40	1.10[a]	CPE	+
1019	28	05/08/89	QOT	1.130	0.96	0.68	0.71	0.00	2.35	0.00	0.00 >	10.00	0.00	0.00 ~	10.00	MTT	+
1019	28	08/22/89	RA5	0.968	0.46 >	1.00 >	2.18	0.00 >	1.00	0.00	0.00 >	1.00	0.00	0.00 >	5.36	MTT	+
1019	28	03/06/90	UDO	1.032	0.47	28.30	60.56	0.92 >	100.00 >	108.48	6.22 >	100.00 >	16.08	30.74 >	55.70	MTT	+
1337	33	08/28/89	RBT	1.064	0.00	9.50	0.00	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
1337	62	01/18/90	TEN	0.897	22.70	152.00	6.70	63.90	228.00	3.57	0.00 >	320.00	0.00	2.38	11.66	MTT	+
1337	64	03/13/90	U19	0.847	83.30 >	320.00 >	3.84	232.00 >	320.00 >	1.38	0.00 >	320.00	0.00 >	1.38 >	13.23	MTT	+
1337	65	04/12/90	V8G	0.945	134.00	191.00	1.43	0.00	286.00	0.00	0.00 >	1000.00	0.00	0.00	4.68	MTT	+
1337	64	05/03/90	VVZ	0.996	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
1337	67	05/30/90	WDE	1.118	38.60	163.00	4.22	59.00	228.00	3.87	0.00	806.00	0.00	2.76 >	15.56	MTT	+
1381	45	11/15/88	00G	0.888	39.70	150.00	3.78	85.70	207.00	2.41	0.00	309.00	0.00	1.75 >	12.02	MTT	+
1381	45	02/13/90	U11	0.961	5.85	59.90	10.23	13.60	87.70	6.45	0.00	297.00	0.00	4.40	20.78	MTT	+
1644	64	03/13/90	U1B	0.976	12.30 >	320.00 >	26.06	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	23.99	MTT	+
1644	64	05/03/90	VW0	1.138	0.00	462.00	0.00	0.00	716.00	0.00	0.00 >	1000.00	0.00	0.00 >	7.87	MTT	-
1644	64	11/01/90	ZXC	0.865	5.51	44.60	8.10	17.90	76.10	4.25	0.00	869.00	0.00	2.49 >	15.73	MTT	+
1838	64	03/13/90	U1B	0.976	147.00	240.00	1.63	261.00 >	320.00 >	1.23	0.00 >	320.00	0.00	0.92 >	2.27	MTT	+
1838	64	05/03/90	VW1	0.997	194.00	126.00	0.65	0.00	433.00	0.00	0.00	943.00	0.00	0.00	0.08	MTT	+
1838	64	11/01/90	ZXD	0.951	159.00	338.00	2.13	252.00	558.00	2.22	0.00	956.00	0.00	1.34	3.75	MTT	+
1975	1	01/16/87	--	NA	3.20	210.00	67.00	24.20	320.00	13.20	0.00	320.00	0.00	13.20	2.30[a]	CPE	+
1975	1	07/29/87	--	NA	21.00	21.00	1.00	19.70	32.00	1.60	320.00 >	320.00 >	1.00	1.60	1.60[a]	CPE	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
1976	1	01/16/87	--	NA	6.60	210.00	32.00	18.00	320.00	17.70	100.00 >	320.00 >	3.20	17.70	2.90[a]	CPE	+
1976	1	08/19/87	--	NA	100.00	2.10	0.021	0.00	3.20	0.00	0.00 >	320.00	0.00	0.00	0.40[a]	CPE	+
1976	1	12/14/87	--	NA <	0.10 >	100.00	>1000.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00[a]	CPE	+
1976	1	05/18/88	--	NA	21.00	66.00	3.10	57.00	100.00	1.80	0.00	320.00	0.00	1.80	0.80[a]	CPE	+
1976	27	05/15/89	Q1E	0.680	0.00	93.50	0.00	0.00	183.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
1976	1	08/29/89	RDK	0.851	43.90 >	100.00 >	2.28	80.40 >	100.00 >	1.24	0.00 >	100.00	0.00 >	1.24 >	4.32	MTT	+
1978	1	01/20/87	--	NA	6.60	2.00	32.00	31.50	320.00	10.20	320.00	320.00	1.00	10.20	1.90[a]	CPE	+
1978	1	08/19/87	--	NA	210.00	2.10	0.01	0.00	3.20	0.00	320.00	320.00	1.00	0.00	0.00[a]	CPE	+
1983	2	01/23/87	--	NA	66.00	210.00	3.20	7.40	320.00	42.90	320.00 >	320.00 >	1.00	42.90	3.20[a]	CPE	+
1983	2	08/19/87	--	NA	0.00	21.00	0.00	0.00	32.00	0.00	0.00 >	320.00	0.00	0.00	0.20[a]	CPE	-
1985	2	01/23/87	--	NA	1.00	21.00	21.00	1.20	32.00	26.30	32.00	320.00	10.00	26.30	3.80[a]	CPE	+
1985	2	07/29/87	--	NA	3.20	6.60	2.10	3.90	10.00	2.60	10.00 >	320.00 >	32.00	2.60	2.70[a]	CPE	+
2274	12	08/29/89	RDP	0.733	19.70 >	100.00 >	5.07	65.20 >	100.00 >	1.53	0.00 >	100.00	0.00 >	1.53 >	8.90	MTT	+
2274	67	05/31/90	WG9	1.069	0.00	135.00	0.00	0.00	203.00	0.00	0.00 >	320.00	0.00	0.00	0.25	MTT	-
2275	12	01/19/87	--	NA -	10.00	320.00 -	32.00	13.10 >	320.00 >	24.00 -	32.00 >	320.00 >	10.00	24.30	3.33[a]	CPE	+
2275	12	02/19/87	--	NA	10.00	210.00	21.00	13.10	320.00	24.40	100.00 >	320.00 >	3.20	24.40	3.20[a]	CPE	+
2275	12	08/19/87	--	NA	32.00	6.60	0.21	79.60	10.00	0.10	0.00	320.00	0.00	0.10	0.50[a]	CPE	+
2275	12	08/19/87	--	NA -	32.00	10.00	0.30	79.50 -	320.00 -	4.00	0.00 -	320.00	0.00	0.13	0.50[a]	CPE	+
2305	11	02/13/87	--	NA	100.00	66.00	0.66	2.70	100.00	36.70	0.00 >	320.00	0.00	36.70	2.50[a]	CPE	+
2305	11	08/19/87	--	NA	0.00	21.00	0.00	0.00	32.00	0.00	0.00 >	320.00	0.00	0.00	0.20[a]	CPE	-
2309	11	02/13/87	--	NA -	81.90	320.00	3.90	81.90 >	320.00	3.90	0.00 >	320.00	0.00	3.90	1.00[a]	CPE	+
2309	11	05/25/88	--	NA	32.00	32.00	1.00	53.20 >	320.00	6.00	0.00 >	320.00	0.00	0.60	1.20	MTT	+
2309	53	04/10/89	PER	0.955	41.50 >	320.00 >	7.71	93.70 >	320.00 >	3.42	0.00 >	320.00	0.00 >	3.42 >	20.90	MTT	+
2309	53	12/05/89	SRI	0.765	14.70	183.00	12.38	34.70	297.00	8.56	0.00 >	1000.00	0.00	5.26	23.69	MTT	+
2309	53	12/12/89	SVH	0.928	75.20	495.00	6.58	0.00	671.00	0.00	0.00	986.00	0.00	0.00	12.96	MTT	+
2318	13	03/04/88		NA -	1.00	3.20 -	3.20	1.60 >	320.00 >	200.00 -	3.20 >	320.00 >	100.00	2.00	3.20[a]	CPE	+
2318	53	04/10/89	PER	0.955 <	1.00 <	1.00 -	1.00	0.00	2.51	0.00	0.00 >	320.00	0.00	0.00 >	0.40	MTT	+
2318	13	08/29/89	RDQ	0.872	0.27	0.26	0.97	0.52 >	10.00 >	19.12	0.00 >	10.00	0.00	0.50	14.62	MTT	+
2318	67	05/31/90	WGA	0.989	0.25	2.83	11.17	0.46 >	10.00 >	21.98	0.97 >	10.00 >	10.34	6.23	31.89	MTT	+
2318	67	07/12/90	XFS	0.666	0.19	2.80	15.00	0.40 >	10.00 >	25.07	0.00 >	10.00	0.00	7.02 >	28.34	MTT	+
2363	15	08/29/89	RDR	0.666	3.54	45.10	12.76	8.18	64.50	7.88	0.00	99.20	0.00	5.52 >	23.84	MTT	+
2363	64	03/13/90	UID	1.046	9.09	55.90	6.15	0.00	79.90	0.00	0.00	282.00	0.00	0.00	6.50	MTT	+
2363	64	05/03/90	VW1	0.997	0.00	13.30	0.00	0.00	20.70	0.00	0.00	287.00	0.00	0.00	0.00	MTT	-

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
2453	18	09/06/89	RFF	0.736	4.32	15.70	3.63	5.83	21.30	3.66	10.00	31.50	3.15	2.69	14.12	MTT	+
2453	64	03/13/90	UID	1.046	9.19	15.70	1.71	0.00	21.50	0.00	0.00	31.80	0.00	0.00	2.85	MTT	+
2453	64	05/03/90	VW2	1.011	0.00	6.19	0.00	0.00	10.80	0.00	0.00	29.90	0.00	0.00	0.02	MTT	-
2503	21	07/16/87	--	NA ~	1.00	1.00	1.00	0.56 >	320.00 >	571.00 ~	1.00 >	320.00 >	320.00	1.80	3.60[a]	CPE	+
2503	53	04/10/89	PES	0.986 >	1.00 <	1.00 ~	1.00	0.00	2.52	0.00	0.00 >	320.00	0.00	0.00 >	0.50	MTT	+
2503	21	09/06/89	RFG	0.724	0.14	2.68	19.50	0.22 >	10.00 >	45.48	0.00 >	10.00	0.00	12.20	32.81	MTT	+
2503	67	05/31/90	WGB	1.121	0.32	4.25	13.27	0.51 >	10.00 >	19.44	0.00 >	10.00	0.00	8.25	33.26	MTT	+
2503	67	07/12/90	XFT	0.526	0.39 >	10.00 >	25.44	0.58 >	10.00 >	17.13	0.00 >	10.00	0.00 >	17.13 >	36.44	MTT	+
2503	67	10/04/90	Z8Q	1.074	0.40	0.83	2.09	0.72	3.02	4.22	0.00 >	32.00	0.00	1.16	5.89	MTT	+
2506	21	09/06/89	RFH	0.715	1.13 >	10.00 >	8.88	1.64 >	10.00 >	6.11	3.20 >	10.00 >	3.13 >	6.11 >	26.99	MTT	+
2506	64	03/13/90	UIE	1.068 <	1.00	29.00 >	28.97	5.13	94.10	18.35	0.00 >	320.00	0.00	5.65 >	31.15	MTT	+
2506	64	05/03/90	VW2	1.011	26.40	16.50	0.63	0.00	31.40	0.00	0.00 >	320.00	0.00	0.00 >	4.01	MTT	+
2563	21	06/25/87	--	NA <	0.32	3.20 >	10.00 <	0.32	10.00	31.00 ~	1.00	10.00	10.00 >	10.00	2.30[a]	CPE	+
2563	32	03/01/88	--	NA ~	0.32 <	3.20 >	10.00	0.63	3.20	5.10	0.00	3.20	0.00	5.10	1.00[a]	CPE	+
2563	32	05/25/88	--	NA	0.10	0.32	3.20	0.13	3.20	25.00 ~	0.32	3.20	10.00	2.40	1.60[a]	CPE	+
2563	48	02/06/89	OJW	1.189	0.25	1.64	6.62	0.47	2.86	6.07	0.00 >	3.20	0.00	3.47 >	19.70	MTT	+
2563	48	02/06/89	OJW	1.189	0.00 >	0.00	0.00	0.00 >	0.00	0.00	0.00 >	0.00	0.00	0.00	0.68	MTT	-
2563	15	05/22/89	Q5B	1.160	1.44	3.98	2.77	2.22	10.90	4.90	0.00	30.70	0.00	1.79	8.60	MTT	+
2563	21	09/06/89	RFI	0.739	0.11	1.00	9.32	0.17	2.20	13.17	0.00 >	10.00	0.00	6.00 >	25.60	MTT	+
2563	48	12/05/89	SRG	0.694	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00	0.48	MTT	-
2563	15/21	11/01/90	ZXE	0.924	0.12	0.59	4.86	0.21	1.06	5.04	0.00 >	10.00	0.00	2.81 >	14.35	MTT	+
2570	19	09/06/89	RFJ	0.718	7.52 >	32.00 >	4.25	14.80 >	32.00 >	2.16	31.00 >	32.00 >	1.03 >	2.16 >	19.20	MTT	+
2570	19	12/06/90	1S6	1.101	11.80	53.30	4.52	21.40	78.70	3.68	0.00	311.00	0.00	2.49	13.53	MTT	+
2573	57	06/26/89	QIR	1.117	46.50 >	320.00 >	6.88	68.80 >	320.00 >	4.65	0.00 >	320.00	0.00 >	4.65 >	21.02	MTT	+
2573	65	04/12/90	V8K	0.861	42.10	547.00	12.98	58.50 >	1000.00 >	17.11	0.00 >	1000.00	0.00	9.35 >	33.37	MTT	+
2575	57	06/26/89	QIR	1.117	24.90	159.00	6.36	49.30 >	320.00 >	6.49	0.00 >	320.00	0.00	3.22 >	22.68	MTT	+
2575	57	12/06/90	1S7	0.980	12.30	96.20	7.85	19.40	679.00	34.93	0.00 >	1000.00	0.00	4.95	28.46	MTT	+
2580	19	09/06/89	RFK	0.820	0.88 >	10.00 >	11.35	2.37 >	10.00 >	4.22	0.00 >	10.00	0.00 >	4.22 >	19.63	MTT	+
2580	65	04/12/90	V8L	0.752	0.00	44.70	0.00	0.00	63.40	0.00	0.00	97.00	0.00	0.00 >	2.95	MTT	-
2580	19	12/06/90	1S7	0.980	2.74	22.80	8.32	0.00	40.40	0.00	0.00	94.00	0.00	0.00 >	10.25	MTT	+
2582	19	09/06/89	RFL	0.775	37.00 >	100.00 >	2.70	51.60 >	100.00 >	1.94	93.60 >	100.00 >	1.07 >	1.94 >	11.89	MTT	+
2582	65	04/12/90	V8M	0.952	47.80	320.00	6.70	71.40 >	1000.00 >	14.01	0.00 >	1000.00	0.00	4.48	23.48	MTT	+
2586	19	09/06/89	RFL	0.775	105.00 >	320.00 >	3.06	153.00 >	320.00 >	2.08	306.00 >	320.00 >	1.05 >	2.08 >	17.27	MTT	+
2586	19	12/06/90	1S8	0.958	113.00 >	320.00 >	2.84	172.00 >	320.00 >	1.87	0.00 >	320.00	0.00 >	1.87 >	14.96	MTT	+
2590	19	09/06/89	RFM	0.619	32.00 >	320.00 >	10.00	46.80 >	320.00 >	6.84	92.70 >	320.00 >	3.45 >	6.84 >	35.03	MTT	+
2590	65	04/12/90	V8N	0.766	42.80	570.00	13.31	57.20	917.00	16.02	96.60 >	1000.00 >	10.35	9.96	34.33	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
2591	19	09/06/89	RFM	0.619	13.40 >	320.00 >	23.93	17.90 >	320.00 >	17.39	30.20 >	320.00 >	10.60 >	17.89 >	39.96	MTT	+
2591	65	04/12/90	V8O	0.843	37.40	240.00	6.42	57.60 >	1000.00 >	17.38	0.00 >	1000.00	0.00	4.17 >	27.40	MTT	+
2604	19	09/06/89	RFN	0.650	1.52	85.10	55.93	3.38 >	100.00 >	29.56	18.90 >	100.00 >	5.30	25.16 >	46.09	MTT	+
2604	19	12/06/90	1S9	1.033	3.98	76.60	19.23	7.30 >	100.00 >	13.70	0.00 >	100.00	0.00	10.49	28.85	MTT	+
2630	19	04/17/87	--	NA	3.20 <	320.00 >	100.00	6.40	320.00	49.80	100.00 >	320.00 >	3.20	49.80	3.80[a]	CPE	+
2630	19	07/29/87	--	NA	10.00	66.00	6.60	2.60	100.00	38.30	32.00 >	320.00 >	10.00	38.30	3.80[a]	CPE	+
2631	19	09/06/89	RFN	0.650	1.72 >	320.00 >	185.96	5.48 >	320.00 >	58.39	26.50 >	320.00 >	12.06 >	58.39 >	63.24	MTT	+
2631	65	04/17/90	VCY	1.066	7.96 >	320.00 >	40.19	16.40 >	320.00 >	19.50	74.10 >	320.00 >	4.32 >	19.50 >	49.47	MTT	+
2631	65	07/06/90	X9B	1.083	3.34	472.00	141.25	4.82	726.00	150.71	9.30 >	1000.00 >	107.58	98.03 >	75.11	MTT	+
2716	22	05/27/87	--	NA	3.20	10.00	3.10	7.60 ~	100.00	13.00 ~	10.00	100.00 ~	10.00	1.30	1.20[a]	CPE	+
2716	46	01/23/89	OE8	0.962	0.00	22.00	0.00	0.00	37.00	0.00	0.00	93.70	0.00	0.00 >	0.80	MTT	-
2811	48	02/06/89	OJZ	1.184	0.01	0.09	6.08	0.03	0.23	9.00	0.00	0.94	0.00	3.55 >	18.20	MTT	+
2811	48	02/06/89	OJZ	1.184	0.00 >	0.00	0.00	0.00 >	0.00	0.00	0.00 >	0.00	0.00	0.00 >	2.10	MTT	-
2812	48	02/06/89	OKO	1.135	0.00	0.01	4.57	0.00 >	0.01 >	3.28	0.00 >	0.01	0.00	2.49 >	12.11	MTT	+
2812	61	12/06/89	SPI	0.813 <	0.00	0.02 >	7.12	0.01	0.04	8.66	0.00	0.17	0.00	4.75 >	20.52	MTT	+
2812	61	12/06/90	1S9	1.033	0.00 <	0.32	0.00	0.00 <	0.32	0.00	0.00 <	0.32	0.00	0.00	0.00	MTT	-
2906	26	09/14/87	--	NA ~	24.60	320.00	13.00	24.60 >	320.00	13.00 ~	320.00 >	320.00	1.00	12.90	2.30[a]	CPE	+
2906	26	05/25/88	--	NA	10.00	32.00	3.20	23.10 >	320.00	14.00 ~	100.00 >	320.00 >	3.20	1.40	2.10[a]	CPE	+
2906	53	04/10/89	PET	1.020	47.00	62.00	1.30	0.00	97.20	0.00	0.00 >	320.00	0.00	0.00	4.85	MTT	+
2907	26	09/07/89	RHC	0.731	36.90	172.00	4.67	66.80	248.00	3.71	0.00 >	320.00	0.00	2.58	10.97	MTT	+
2907	64	03/13/90	UIE	1.068	67.40	69.80	1.04	0.00	157.00	0.00	0.00 >	320.00	0.00	0.00	0.29	MTT	+
2960	27	09/07/89	RHE	0.754	146.00	13.10	0.09	213.00	41.70	0.20	0.00 >	320.00	0.00	0.06 >	4.00	MTT	+
2960	27	10/04/90	Z8R	1.046	160.00	1.31	0.01	362.00	2.62	0.01	903.00 >	1000.00 >	1.10	0.00 >	9.92	MTT	+
2978	25	02/28/89	OUF	0.854	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.48	MTT	-
2978	27	04/17/89	PLY	1.019 <	1.00 >	320.00 >	320.00	42.30 >	320.00 >	7.56	0.00 >	320.00	0.00 >	7.56 >	42.81	MTT	+
2978	27	05/15/89	Q1F	0.843	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
2978	27	02/13/90	U12	0.969	114.00	675.00	5.91	262.00 >	1000.00 >	3.81	0.00 >	1000.00	0.00	2.57 >	16.57	MTT	+
2979	25	09/01/87	--	NA	3.20	10.00	3.10	4.70	32.00	6.80	10.00	32.00	3.20	2.10	1.00[a]	CPE	+
2979	48	02/07/89	OL3	1.083	0.68	7.31	10.80	1.93	14.90	7.73	0.00	28.60	0.00	3.79 >	17.57	MTT	+
2979	48	03/10/89	P02	1.067	4.36	13.20	3.03	6.55	24.70	3.77	0.00	95.60	0.00	2.02	8.93	MTT	+
2979	27	04/17/89	PLZ	1.045	1.77	12.90	7.27	0.00	23.00	0.00	0.00	89.90	0.00	0.00	11.98	MTT	+
2979	25	09/07/89	RHE	0.754	0.00	1.64	0.00	0.00	2.53	0.00	0.00	9.09	0.00	0.00	0.00	MTT	-

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
2980	25	09/01/87	--	NA	~ 0.32	3.20	10.00	0.63	32.00	51.00	~ 3.20	32.00	10.00	5.10	2.30[a]	CPE	+
2980	25	05/25/88	--	NA	0.32	3.20	10.00	1.40	3.20	2.30	10.00	10.00	1.00	2.30	2.40[a]	CPE	+
2980	48	02/07/89	OL4	1.154	0.05	0.97	21.30	0.07	2.35	35.96	0.00 >	3.20	0.00	14.78 >	32.11	MTT	+
2980	48	03/10/89	P03	0.971	0.43	1.12	2.58	0.62	2.53	4.08	0.00 >	3.20	0.00	1.80	10.03	MTT	+
2980	25	09/07/89	RHF	0.676	0.14	1.04	7.70	0.22	2.17	9.92	0.00 >	10.00	0.00	4.78 >	13.49	MTT	+
2980	61	12/06/89	SPR	0.740	0.17	2.10	12.09	0.35	3.20	9.19	0.90 >	3.20 >	3.56	6.03 >	28.76	MTT	+
3592	ABEBE	01/11/89	OAA	0.904	200.00 >	320.00 >	1.60	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.53	MTT	+
3592	51	03/06/89	OW1	1.099	0.00	300.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3592	51	09/11/89	RJ1	0.626	222.00 >	320.00 >	1.44	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.48	MTT	+
3592	61	12/06/89	SPI	0.813	373.00 >	1000.0 >	2.68	806.00 >	1000.00 >	1.24	0.00 >	1000.00	0.00 >	1.24 >	6.06	MTT	+
3592	65	04/24/90	VJJ	0.769	0.00	276.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3612	32	11/03/88	01Q	1.033	65.70 >	320.00 >	4.87	143.00 >	320.00 >	2.23	0.00 >	320.00	0.00 >	2.23 >	23.05	MTT	+
3612	32	12/05/89	SRH	0.760	0.00	960.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
3612	32	10/31/90	ZUM	1.017	0.00	973.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
3802	35	09/11/89	RJ2	0.622	0.19 >	10.00 >	53.86	0.34 >	10.00 >	29.30	0.90 >	10.00 >	11.13 >	29.30 >	55.42	MTT	+
3802	67	05/31/90	WGD	0.862	0.13 >	10.00 >	79.84	0.17 >	10.00 >	58.40	0.30 >	10.00 >	33.27 >	58.40 >	56.12	MTT	+
3802	67	07/12/90	XFT	0.526	0.14 >	10.00 >	71.73	0.21 >	10.00 >	47.34	7.00 >	10.00 >	1.43 >	47.34 >	52.81	MTT	+
3935	35	09/11/89	RJ4	0.475	0.00	146.00	0.00	0.00	204.00	0.00	0.00	308.00	0.00	0.00	0.00	MTT	-
3935	65	04/24/90	VJM	0.798	0.00	50.20	0.00	0.00	74.10	0.00	0.00	272.00	0.00	0.00	0.50	MTT	-
3935	65	07/06/90	X9D	0.857	41.40	155.00	3.75	84.30	210.00	2.49	0.00	309.00	0.00	1.84	10.75	MTT	+
3964	27	02/15/88	--	NA	~ 10.00	32.00	3.20	19.20	32.00	1.70	0.00 >	320.00	0.00	1.70	1.00[a]	CPE	+
3964	27	02/28/89	OUF	0.854	8.40	49.00	5.80	0.00	97.80	0.00	0.00 >	160.00	0.00	0.00	11.68	MTT	+
3964	27	03/21/89	P9G	1.007	4.20	17.00	4.00	8.30 >	32.00 >	3.87	0.00 >	32.00	0.00	2.00	11.51	MTT	+
4035	65	04/24/90	VJN	0.748	230.00	245.00	1.07	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.43	MTT	+
4035	65	07/06/90	XBK	0.783	54.40 >	1000.0 >	18.39	109.00 >	1000.00 >	9.17	0.00 >	1000.00	0.00 >	9.17 >	29.41	MTT	+
4036	65	04/24/90	VJN	0.748	127.00	306.00	2.41	246.00 >	320.00 >	1.30	0.00 >	320.00	0.00	1.25 >	7.43	MTT	+
4036	65	07/06/90	XBL	0.837	112.00	312.00	2.77	201.00	667.00	3.32	0.00 >	1000.00	0.00	1.55 >	10.30	MTT	+
4070	35	04/12/88	--	NA	1.00	3.20	3.20	1.80	3.20	1.80	~ 10.00	10.00	1.00	1.80	1.40	CPE	+
4070	48	02/07/89	OL5	1.172	1.36 >	3.20 >	2.35	2.04 >	3.20 >	1.57	0.00 >	3.20	0.00 >	1.57	0.10	MTT	+
4070	48	03/10/89	P03	0.971	1.49 >	3.20 >	2.15	2.26 >	3.20 >	1.42	0.00 >	3.20	0.00 >	1.42 >	5.01	MTT	+
4070	48	12/07/89	STA	1.222	1.21	4.44	3.65	2.22	8.30	3.73	0.00	66.00	0.00	1.99 >	10.07	MTT	+
4074	48	02/07/89	OL7	1.156	0.00 >	0.03	0.00	0.00 >	0.03	0.00	0.00 >	0.03	0.00	0.00	0.00	MTT	-
4074	48	03/10/89	P04	0.984	0.02 >	0.03 >	1.72	0.00 >	0.03	0.00	0.00 >	0.03	0.00	0.00 >	2.81	MTT	+
4074	48	12/07/89	STB	1.211 <	1.00	1.60 >	1.60 <	1.00	2.68 >	2.68 <	1.00	26.80 >	26.82 >	1.60 >	6.33	MTT	+
4074	48	02/13/90	U13	0.798	0.04	1.27	29.84	0.15	2.39	16.02	0.00 >	10.00	0.00	8.50 >	31.63	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
4113	48	02/07/89	OL8	1.184	0.23 >	0.32 >	1.39	0.00 >	0.32	0.00	0.00 >	0.32	0.00	0.00 >	2.43	MTT	+
4113	48	03/10/89	P05	0.961	0.31 >	0.32 >	1.05	0.00 >	0.32	0.00	0.00 >	0.32	0.00	0.00 >	1.48	MTT	+
4113	39	05/23/89	Q6B	1.252	0.47 <	0.03 <	0.07	0.00	0.74	0.00	0.00	5.75	0.00	0.00	0.00	MTT	+
4113	39	09/11/89	RJ7	0.624	0.11 >	1.00 >	8.93	0.17 >	1.00 >	5.96	0.57 >	1.00 >	1.77 >	5.96 >	30.37	MTT	+
4113	39	11/01/90	ZXF	0.945	0.13 >	0.32 >	2.43	0.22 >	0.32 >	1.43	0.00 >	0.32	0.00 >	1.43 >	6.96	MTT	+
4223	62	01/18/90	TEQ	1.039	1.00 <	1.00 <	1.00	0.00 <	1.00	0.00	0.00	7.17	0.00	0.00	0.00	MTT	+
4223	62	02/06/90	TSP	0.743	0.67 >	1.00 >	1.49	0.00 >	1.00	0.00	0.00 >	1.00	0.00	0.00 >	6.58	MTT	+
4223	63	02/13/90	U0X	0.976	0.09	0.61	6.69	0.22	0.90	4.08	0.00 >	1.00	0.00	2.77	14.58	MTT	+
4277	42	09/12/89	RL6	0.748	1.66 >	10.00 >	6.03	4.37 >	10.00 >	2.29	0.00 >	10.00	0.00 >	2.29 >	17.50	MTT	+
4277	65	04/24/90	VJT	0.851	4.08	16.90	4.14	5.97	23.80	3.98	0.00	83.00	0.00	2.83	14.49	MTT	+
4277	65	07/06/90	XBM	0.893	1.16	11.10	9.55	2.19	20.40	9.33	0.00	88.00	0.00	5.08 >	24.56	MTT	+
4278	42	09/12/89	RL7	0.742	4.11	28.20	6.86	6.41 >	32.00 >	4.99	0.00 >	32.00	0.00	4.40 >	16.81	MTT	+
4278	61	12/06/89	SPJ	0.782	3.46	25.70	7.42	5.14	53.70	10.44	0.00 >	100.00	0.00	5.00	20.15	MTT	+
4278	61	11/01/90	ZXG	0.956	3.45	12.60	3.65	6.40	21.70	3.39	0.00 >	100.00	0.00	1.96	12.15	MTT	+
4280	42	09/12/89	RL7	0.742	3.53 >	10.00 >	2.83	6.56 >	10.00 >	1.52	0.00 >	10.00	0.00 >	1.52 >	8.97	MTT	+
4280	42	11/01/90	ZXG	0.956	2.25	11.40	5.08	6.84	20.30	2.97	0.00	90.30	0.00	1.67 >	12.25	MTT	+
4281	42	09/12/89	RL8	0.715	0.59	5.80	9.75	1.11	8.89	7.98	0.00 >	10.00	0.0	5.20	20.84	MTT	+
4281	61	12/06/89	SPJ	0.782	0.67	7.15	10.75	1.31	13.30	10.11	2.98 >	32.00 >	10.75	5.45	25.99	MTT	+
4281	61	11/01/90	ZXH	0.899	0.77	5.64	7.30	1.61	8.17	5.08	0.00 >	32.00	0.00	3.51	19.77	MTT	+
4452	44	07/06/89	QNP	1.012	42.80	144.00	3.36	78.50	301.00	3.84	0.00 >	320.00	0.00	1.84	7.92	MTT	+
4452	44	08/15/89	R6L	1.023	76.90	143.00	1.86	0.00	263.00	0.00	0.00 >	320.00	0.00	0.00	3.43	MTT	+
4527	47	01/31/89	OIN	0.945	2.06	8.26	4.01	7.76	20.70	2.67	0.00	90.60	0.00	1.06 >	10.76	MTT	+
4527	47	02/06/90	TSQ	0.818	0.00	0.94	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.62	MTT	-
4527	47	02/13/90	U14	0.944	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.30	MTT	-
4527	63	02/13/90	U0Y	1.030	1.69	18.50	10.91	3.66	26.90	7.36	0.00	100.00	0.00	5.05	19.83	MTT	+
4590	42	07/27/88	--	NA	0.32	3.20	10.00	1.40	3.20	2.30 ~	10.00 >	10.00 >	1.00	2.30	1.90[a]	CPE	+
4590	48	02/27/89	OUC	0.852	0.66	2.80	4.27	2.79	6.60	2.36	0.00	30.30	0.00	1.00 >	10.69	MTT	+
4590	42	09/12/89	RLA	0.672	0.34	2.10	6.11	0.84	3.20	3.82	0.00 >	10.00	0.00	2.51	13.11	MTT	+
4590	61	12/06/89	SPK	0.795	0.14	1.79	12.87	0.34	2.77	8.20	0.00	9.28	0.00	5.29 >	25.48	MTT	+
4590	48	02/06/90	TSQ	0.818	0.56	5.03	9.07	1.33	8.30	6.25	0.00 >	10.00	0.00	3.79	22.49	MTT	+
4590	63	02/13/90	U0Y	1.030	0.69	5.10	7.35	0.00	7.88	0.00	0.00 >	10.00	0.00	0.00	10.46	MTT	+
4592	42	07/28/88	--	NA	~ 1.00	32.00 ~	32.00	3.20 ~	100.00	31.00 ~	32.00	32.00 ~	1.00	10.00	2.40[a]	CPE	+
4592	48	02/27/89	OUD	0.883	10.40	41.00	3.94	17.20	77.10	4.49	0.00 >	100.00	0.00	2.39	16.34	MTT	+
4592	42	09/12/89	RLA	0.672	4.39	24.10	5.49	9.69	54.70	5.64	0.00 >	100.00	0.00	2.49	11.63	MTT	+
4592	61	12/06/89	SPK	0.795	4.07	53.00	13.02	7.04	83.90	11.92	0.00 >	100.00	0.00	7.53 >	29.08	MTT	+
4592	48	02/06/90	TSR	0.725	5.50	62.40	11.34	11.20	92.70	8.25	0.00 :	100.00	0.00	5.55 >	26.81	MTT	+
4592	63	02/13/90	U0Z	0.977	0.80	6.27	7.87	3.02	9.60	3.18	0.00	73.80	0.00	2.08	14.08	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
4609	48	02/27/89	OUE	0.892	0.04 >	0.10 >	2.57	0.06 >	0.10 >	1.71	0.00 >	0.10	0.00 >	1.71 >	12.34	MTT	+
4609	48	12/05/89	SRI	0.765	0.02	0.18	9.21	0.04	0.31	6.97	0.00 >	1.00	0.00	4.16	21.70	MTT	+
4609	63	02/13/90	U10	0.944	0.01	0.13	11.96	0.03	0.26	8.31	0.00	0.92	0.00	4.23	24.39	MTT	+
4611	65	04/24/90	VJV	0.822	70.70 >	320.00 >	4.53	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.52	MTT	+
4611	65	07/06/90	XBN	0.874	4.03	712.00	176.35	6.54 >	1000.00 >	152.94	0.00 >	1000.00	0.00	108.82 >	65.62	MTT	+
4739	44	07/06/89	QNQ	0.749	15.60	47.80	3.06	29.00	67.60	2.33	0.00	247.00	0.00	1.65	8.03	MTT	+
4739	44	08/15/89	R6L	1.023	21.50	39.90	1.86	0.00	62.00	0.00	0.00 >	100.00	0.00	0.00 >	1.92	MTT	+
4739	64	03/08/90	UF9	0.791	0.00	34.80	0.00	0.00	57.70	0.00	0.00	99.10	0.00	0.00	0.00	MTT	-
4739	64	05/03/90	VW3	0.966	32.00	29.40	0.92	0.00	52.80	0.00	0.00	95.30	0.00	0.00	3.54	MTT	+
4754	44	11/02/88	OOP	0.621	0.00	4.95	0.00	0.00	6.71	0.00	0.00	9.86	0.00	0.00	0.00	MTT	-
4754	44	12/20/89	TOO	1.024	5.01	6.82	1.36	7.99	11.20	1.41	0.00	29.90	0.00	0.85	2.08	MTT	+
4768	44	11/08/88	O2K	0.816	49.00	100.00	2.04	74.90	173.00	2.31	0.00	305.00	0.00	1.34	5.40	MTT	+
4768	44	02/13/90	U16	0.900	0.00	227.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4785	46	01/24/89	OFN	0.993	3.20	6.60	2.06	0.00	16.60	0.00	0.00 >	320.00	0.00	0.00 >	5.05	MTT	+
4785	46	09/12/89	RLC	0.577	1.86	7.00	3.77	0.00	18.50	0.00	0.00 >	32.00	0.00	0.00	7.52	MTT	+
4785	46	11/01/90	ZXH	0.899	1.65	2.83	1.71	3.20	8.09	2.53	0.00 >	32.00	0.00	0.89 >	3.20	MTT	+
4796	46	01/24/89	OFS	0.943	6.63	21.50	3.24	21.70	79.60	3.67	0.00 >	320.00	0.00	0.99	8.37	MTT	+
4796	46	09/12/89	RLD	0.732	4.38	49.00	11.18	6.08 >	100.00 >	16.45	0.00 >	100.00	0.00	8.06	27.40	MTT	+
4796	61	12/06/89	SPL	0.893	14.70	207.00	14.14	21.50 >	320.00 >	14.89	0.00 >	320.00	0.00	9.64 >	31.89	MTT	+
4855	48	02/21/89	OQL	1.222	10.00	80.80	8.07	20.00	171.00	8.58	89.60 >	320.00 >	3.57	4.04 >	34.86	MTT	+
4855	48	09/12/89	RLG	0.751	7.22 >	320.00 >	44.31	13.40 >	320.00 >	23.82	29.30 >	320.00 >	10.91 >	23.82 >	55.28	MTT	+
4855	61	12/06/89	SPO	0.765	7.83 >	320.00 >	40.85	14.80 >	320.00 >	21.59	0.00 >	320.00	0.00 >	21.59 >	45.81	MTT	+
4855	48	12/06/90	1SA	0.986	5.76 >	100.00 >	17.38	11.90 >	100.00 >	8.37	29.00 >	100.00 >	3.45 >	8.37 >	39.69	MTT	+
4978	51	03/13/89	P13	0.783	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4978	27	12/05/89	SRJ	0.739	49.80	459.00	9.20	112.00	806.00	7.20	0.00 >	1000.00	0.00	4.10	20.42	MTT	+
4992	51	03/13/89	P1A	0.765	134.00 >	320.00 >	2.39	179.00 >	320.00 >	1.79	302.00 >	320.00 >	1.06 >	1.79 >	9.79	MTT	+
4992	61	12/06/89	SPQ	0.702	134.00	490.00	3.66	179.00	660.00	3.69	302.00	966.00	3.20	2.74	15.08	MTT	+
5040	62	12/05/89	SRC	0.725	0.00	426.00	0.00	0.00	958.00	0.00	0.00 >	1000.00	0.00	0.00	0.55	MTT	-
5040	45	12/20/89	T02	1.220	0.00	215.00	0.00	0.00	564.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
5040	GABSN	02/08/90	TVR	0.848	111.00	1370.0	12.30	268.00	2890.00	10.79	0.00 >	3200.00	0.00	5.09	14.42	MTT	+
5072	48	02/27/89	OUB	0.919	77.20	87.10	1.13	230.00 >	320.00 >	1.39	0.00 >	320.00	0.00	0.38 >	4.01	MTT	+
5072	48	10/02/89	RU9	0.927	32.00	66.00	2.06	0.00	253.00	0.00	0.00	983.00	0.00	0.00	0.98	MTT	+
5072	48	10/10/89	S23	0.845	0.00	130.00	0.00	0.00	238.00	0.00	0.00 >	320.00	0.00	0.00 >	3.94	MTT	-

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
5121	56	06/20/89	QHT	0.935	17.30	155.00	8.98	31.20	210.00	6.72	89.00	309.00	3.47	4.96	25.50	MTT	+
5121	56	08/07/89	R1B	0.892	30.50	155.00	5.08	48.10	210.00	4.36	0.00	309.00	0.00	3.22 >	20.19	MTT	+
5121	56	11/01/90	ZX1	0.856	20.30 >	320.00 >	15.74	38.60 >	320.00 >	8.30	97.90 >	320.00 >	3.27 >	8.30 >	37.43	MTT	+
5138	57	07/10/89	QPA	1.012	64.20 >	320.00 >	4.98	123.00 >	320.00 >	2.59	291.00 >	320.00 >	1.10 >	2.59 >	18.57	MTT	+
5138	57	08/15/89	R6M	0.940	52.70	563.00	10.68	95.40	806.00	8.45	283.00 >	1000.00 >	3.5	5.90	27.36	MTT	+
5138	65	04/26/90	VNL	0.777	147.00 >	1000.0 >	6.79	217.00 >	1000.00 >	4.61	827.00 >	1000.00 >	1.21 >	4.61 >	24.85	MTT	+
5186	58	07/24/89	QV7	0.952	179.00	100.00	0.56	0.00	312.00	0.00	0.00 >	320.00	0.00	0.00	0.37	MTT	+
5186	58	10/03/89	RW9	0.877	49.00	197.00	4.03	74.90	341.00	4.56	0.00 >	1000.00	0.00	2.63	10.12	MTT	+
5186	65	04/26/90	VNN	0.776	0.00	194.00	0.00	0.00	311.00	0.00	0.00 >	1000.00	0.00	0.00	0.56	MTT	-
5197	58	07/24/89	QWQ	1.326	0.00	45.00	0.00	0.00	71.90	0.00	0.00	274.00	0.00	0.00	0.00	MTT	-
5197	58	10/03/89	RWB	0.920	0.00	30.20	0.00	0.00	89.90	0.00	0.00	296.00	0.00	0.00 >	0.38	MTT	-
5197	58	10/04/90	Z8W	0.845	47.90	85.10	1.78	86.70	159.00	1.83	0.00	307.00	0.00	0.98	6.76	MTT	+
5241	52	03/07/89	QYV	0.800	47.30 >	320.00 >	6.76	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	13.17	MTT	+
5241	52	12/14/89	SXA	1.014	48.20	363.00	7.54	100.00	578.00	5.78	0.00	966.00	0.00	3.63	10.47	MTT	+
5405	53	03/27/89	PC8	1.071	1.00 <	1.00 <	1.00	0.00 <	1.00	0.00	0.00	10.00	0.00	0.00	0.00	MTT	+
5405	63	05/08/90	VYO	0.832	0.00 <	1.00	0.00	0.00 <	1.00	0.00	0.00	6.91	0.00	0.00	0.00	MTT	-
5405	66	07/06/90	X9E	1.155	0.06	0.45	7.47	0.12	0.73	5.90	0.31	8.19	26.12	3.67	17.25	MTT	+
5450	53	04/11/89	PGY	1.235	4.39	4.23	0.96	0.00	20.40	0.00	0.00 >	320.00	0.00	0.00	4.37	MTT	+
5450	65	04/26/90	VNP	0.708	1.27	32.00	25.21	2.68	65.30	24.42	0.00 >	100.00	0.00	11.96 >	30.16	MTT	+
5450	65	07/06/90	XBO	0.871	1.34	19.50	14.57	4.95	29.00	5.85	0.00 >	100.00	0.00	3.94 >	24.30	MTT	+
5483	53	03/27/89	PCA	1.059 <	1.00	2.42 >	2.42	0.00	5.47	0.00	0.00	320.00	0.00	0.00 >	5.94	MTT	+
5483	66	05/08/90	VYQ	0.781 <	0.32	1.77 >	5.53	0.53	2.69	5.10	0.00	83.00	0.00	3.36 >	13.16	MTT	+
5483	66	07/18/90	XJX	0.866 <	0.03	0.17 >	5.20	0.04	0.24	5.34	0.00	9.24	0.00	3.68 >	16.73	MTT	+
5484	53	03/27/89	PCB	1.109	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.19	MTT	-
5484	53	12/12/89	SVK	0.912	532.00	906.00	1.70	976.00 >	1000.00 >	1.02	0.00 >	1000.00	0.00	0.93 >	8.33	MTT	+
5484	53	12/14/89	SX5	0.904	79.60	509.00	6.39	0.00	698.00	0.00	0.00 >	1000.00	0.00	0.00	11.88	MTT	+
5484	66	05/08/90	VYQ	0.781	27.10 >	320.00 >	11.81	76.70 >	320.00 >	4.17	0.00 >	320.00	0.00 >	4.17 >	26.75	MTT	+
5535	56	06/13/89	QDA	1.142	119.00 >	320.00 >	2.68	185.00 >	320.00 >	1.73	0.00 >	320.00	0.00 >	1.73 >	7.36	MTT	+
5535	56	08/07/89	R3D	1.040	0.00	478.00	0.00	0.00	711.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.30	MTT	-
5538	56	06/13/89	QDB	1.142	147.00 >	320.00 >	2.18	215.00 >	320.00 >	1.49	0.00 >	320.00	0.00 >	1.49 >	6.96	MTT	+
5538	56	08/07/89	R3E	1.006	0.00	501.00	0.00	0.00	682.00	0.00	0.00 >	1000.00	0.00	0.00	1.11	MTT	-
5539	56	06/13/89	QDC	1.119	1.34	3.80	2.84	0.00	6.78	0.00	0.00	100.00	0.00	0.00 >	4.39	MTT	+
5539	56	08/07/89	R3E	1.006	0.65	2.96	4.54	2.27	6.08	2.68	0.00 >	100.00	0.00	1.31 >	11.55	MTT	+
5539	56	11/01/90	ZXJ	0.819	0.49	1.35	2.74	0.00	2.34	0.00	0.00 >	32.00	0.00	0.00 >	5.82	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
5543	56	06/13/89	QDE	1.042	6.18	8.91	1.44	0.00	17.10	0.00	0.00 >	320.00	0.00	0.00	1.85	MTT	+
5543	56	08/07/89	R3G	1.101	0.41	0.77	1.88	0.75	1.59	2.12	0.00 >	32.00	0.00	1.03	5.43	MTT	+
5543	65	05/01/90	VSN	0.968	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
5543	56	10/04/90	Z8X	0.810	14.70	38.30	2.60	28.10	77.90	2.77	0.00 >	100.00	0.00	1.36	7.77	MTT	+
5601	62	12/05/89	SRE	0.821	0.00	95.80	0.00	0.00	873.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
5601	GABSN	02/08/90	TVT	0.897	280.00	2710.0	9.68	3720.00 >	3200.00 >	0.86	0.00 >	3200.00	0.00	0.73 >	13.40	MTT	+
5601	67	05/31/90	WGF	0.915	0.00	618.00	0.00	0.00	916.00	0.00	0.00 >	1000.00	0.00	0.00	5.77	MTT	-
5601	62/67	11/01/90	ZXK	0.853	674.00	606.00	0.90	0.00	1670.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	+
5691	57	07/17/89	QSQ	0.989	68.40 >	320.00 >	4.68	144.00 >	320.00 >	2.22	0.00 >	320.00	0.00 >	2.22 >	14.36	MTT	+
5691	57	08/15/89	R6U	1.114	123.00	206.00	1.68	254.00	490.00	1.93	0.00 >	1000.00	0.00	0.81	3.01	MTT	+
5905	61	10/30/89	S9W	0.706	5.32	8.30	1.56	8.85	16.10	1.81	0.00	320.00	0.00	0.94 >	3.03	MTT	+
5905	61	01/30/90	TMB	0.738	1.97	2.22	1.13	0.00	3.82	0.00	0.00	9.38	0.00	0.00	0.00	MTT	+
5916	60	10/23/89	S5E	0.874	3.20	24.20	7.56	8.85	46.90	5.30	0.00	94.70	0.00	2.73 >	14.50	MTT	+
5916	60	01/23/90	THK	0.778	2.61	19.50	7.45	0.00	29.00	0.00	0.00	91.90	0.00	0.00	8.82	MTT	+
5995	61	11/07/89	SEE	0.795	4.02	8.87	2.21	8.19	22.20	2.71	0.00	91.80	0.00	1.08 >	7.66	MTT	+
5995	61	01/30/90	TME	0.757	4.82	5.63	1.17	0.00	14.80	0.00	0.00	88.70	0.00	0.00	2.06	MTT	+
5997	61	11/07/89	SEF	0.712 <	1.00	14.10 >	14.07	4.43	52.40	11.82	0.00 >	320.00	0.00	3.18 >	17.81	MTT	+
5997	61	11/01/90	ZXL	0.694	1.17	7.79	6.65	1.82	32.00	17.58	0.00 >	100.00	0.00	4.28 >	21.58	MTT	+
5998	61	11/07/89	SEF	0.712 <	1.00	3.12 >	3.12 <	1.00	9.73 >	9.73	0.00 >	320.00	0.00 >	3.12 >	11.86	MTT	+
5998	61	02/01/90	TO1	0.539	0.93	16.80	18.09	2.01 >	32.00 >	15.92	0.00 >	32.00	0.00	8.34 >	30.66	MTT	+
5998	61	02/08/90	TVK	0.886	0.78	12.40	16.03	2.73	27.70	10.15	0.00 >	32.00	0.00	4.56	21.00	MTT	+
6044	61	12/12/89	SVA	0.984 <	1.00	1.00 >	1.00	0.00	2.53	0.00	0.00	9.13	0.00	0.00 >	0.21	MTT	+
6044	61	02/08/90	TVL	0.857 <	0.10	0.49 >	4.90 <	0.10	0.66 >	6.60	0.00	0.97	0.00 >	4.90 >	8.63	MTT	+
6044	61	06/13/90	WPE	0.732	0.13	1.57	12.05	0.00	2.13	0.00	0.00	3.15	0.00	0.00 >	17.53	MTT	+
6195	62	02/01/90	TQC	0.703	48.60 >	320.00 >	6.58	74.00 >	320.00 >	4.33	267.00 >	320.00 >	1.20 >	4.33 >	23.80	MTT	+
6195	62	10/31/90	ZUI	1.087	45.80	457.00	9.99	77.60	638.00	8.22	0.00	964.00	0.00	5.89	26.85	MTT	+
6195	62	12/06/90	1SB	0.911	85.50	490.00	5.73	141.00	660.00	4.68	295.00	966.00	3.28	3.47	20.89	MTT	+
6196	62	02/01/90	TQC	0.703	57.90 >	320.00 >	5.52	105.00 >	320.00 >	3.06	286.00 >	320.00 >	1.1 >	3.06 >	19.66	MTT	+
6196	62	10/31/90	ZUI	1.087	119.00	346.00	2.92	165.00	564.00	3.41	300.00	956.00	3.19	2.09	13.69	MTT	+
6199	62	02/01/90	TQE	0.712	134.00	220.00	1.64	245.00 >	320.00 >	1.31	0.00 >	320.00	0.00	0.90 >	3.49	MTT	+
6199	62	10/31/90	ZUJ	1.034	0.00	156.00	0.00	0.00	212.00	0.00	0.00	313.00	0.00	0.00	0.05	MTT	-
6200	62	02/01/90	TQE	0.712	36.80 >	320.00 >	8.70	52.00 >	320.00 >	6.15	97.30 >	320.00 >	3.29 >	6.15 >	32.24	MTT	+
6200	62	12/06/90	1SB	0.911	103.00 >	320.00 >	3.10	150.00 >	320.00 >	2.13	297.00 >	320.00 >	1.08 >	2.13 >	14.67	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
6201	62	02/01/90	TQF	0.767	38.30	> 320.00	> 8.36	52.70	> 320.00	> 6.07	93.80	> 320.00	> 3.41	> 6.07	> 32.24	MTT	+
6201	62	12/06/90	1SC	1.009	55.90	> 320.00	> 5.72	97.80	> 320.00	> 3.27	284.00	> 320.00	> 1.13	> 3.27	> 20.26	MTT	+
6202	62	02/01/90	TQF	0.767	129.00	> 320.00	> 2.49	179.00	> 320.00	> 1.79	0.00	> 320.00	0.00	> 1.79	> 10.98	MTT	+
6202	62	10/31/90	ZUJ	1.034	100.00	490.00	4.90	154.00	660.00	4.28	0.00	966.00	0.00	3.17	22.15	MTT	+
6203	62	02/01/90	TQG	0.740	42.50	155.00	3.64	56.60	210.00	3.71	94.50	309.00	3.27	2.74	19.96	MTT	+
6203	62	10/31/90	ZUK	1.006	42.50	159.00	3.73	56.60	217.00	3.84	94.50	433.00	4.59	2.80	15.14	MTT	+
6204	62	02/01/90	TQG	0.740	17.30	16.40	0.95	30.00	22.80	0.76	0.00	> 320.00	0.00	0.55	0.00	MTT	+
6204	62	10/31/90	ZUK	1.006	0.00	17.20	0.00	0.00	24.50	0.00	0.00	88.20	0.00	0.00	0.00	MTT	-
6207	62	02/01/90	TQI	0.720	131.00	> 320.00	> 2.44	177.00	> 320.00	> 1.81	302.00	> 320.00	> 1.06	> 1.81	> 10.18	MTT	+
6207	62	10/31/90	ZUL	0.951	134.00	490.00	3.66	179.00	660.00	3.69	302.00	966.00	3.20	2.74	15.08	MTT	+
6214	62	01/16/90	TBR	1.020	48.60	> 320.00	> 6.58	74.00	> 320.00	> 4.33	267.00	> 320.00	> 1.20	> 4.33	> 24.36	MTT	+
6214	62	11/01/90	ZXL	0.694	42.50	507.00	11.91	56.60	694.00	12.26	94.50	> 1000.00	> 10.59	8.96	35.36	MTT	+
6218	62	01/16/90	TBT	0.755	13.70	> 320.00	> 23.41	18.70	> 320.00	> 17.12	44.30	> 320.00	> 7.22	> 17.12	> 43.56	MTT	+
6218	62	12/06/90	1SD	0.959	13.50	> 320.00	> 23.69	18.70	> 320.00	> 17.09	100.00	> 320.00	> 3.20	> 17.09	> 41.45	MTT	+
6219	62	01/16/90	TBU	0.994	46.50	> 320.00	> 6.88	72.60	> 320.00	> 4.41	267.00	> 320.00	> 1.20	> 4.41	> 24.45	MTT	+
6219	62	11/01/90	ZXM	0.643	40.70	> 320.00	> 7.87	54.90	> 320.00	> 5.83	94.20	> 320.00	> 3.40	> 5.83	> 31.04	MTT	+
6220	62	01/16/90	TBU	0.994	37.40	> 320.00	> 8.55	52.00	> 320.00	> 6.16	93.70	> 320.00	> 3.42	> 6.16	> 26.49	MTT	+
6220	62	12/06/90	1SE	1.025	49.00	624.00	12.74	74.90	927.00	12.38	0.00	> 1000.00	0.00	8.33	18.07	MTT	+
6225	62	01/16/90	TBX	0.996	12.90	> 320.00	> 24.81	17.50	> 320.00	> 18.33	30.10	> 320.00	> 10.62	> 18.33	> 47.17	MTT	+
6225	62	11/01/90	ZXM	0.643	121.00	490.00	4.04	168.00	660.00	3.94	300.00	966.00	3.22	2.92	17.09	MTT	+
6234	62	12/05/89	SRF	0.613	0.00	> 1000.0	0.00	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	0.26	MTT	-
6234	GABSN	02/08/90	TVU	0.928	1430.0	> 3200.0	> 2.24	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	> 4.57	MTT	+
6234	67	05/31/90	WGG	0.827	3200.0	2020.0	0.63	0.00	3040.00	0.00	0.00	> 3200.00	0.00	0.00	0.00	MTT	+
6234	67	11/01/90	ZXN	0.553	634.00	> 3200.0	> 5.05	1530.00	> 3200.00	> 2.09	0.00	> 3200.00	0.00	> 2.09	> 20.74	MTT	+
6250	1P	11/14/89	SIB	0.669	32.00	193.00	6.04	88.50	286.00	3.24	0.00	> 320.00	0.00	2.18	> 17.65	MTT	+
6250	1P	02/06/90	TSU	0.802	131.00	94.30	0.72	0.00	282.00	0.00	0.00	> 320.00	0.00	0.00	0.34	MTT	+
6256	1P	11/14/89	SIE	0.598	3.50	26.00	7.43	7.41	50.70	6.85	0.00	95.10	0.00	3.51	16.55	MTT	+
6256	1P	02/06/90	TSW	0.781	6.64	24.10	3.62	0.00	59.90	0.00	0.00	> 100.00	0.00	0.00	7.32	MTT	+
6309	63	02/15/90	U2U	0.840	0.00	92.70	0.00	0.00	294.00	0.00	0.00	> 320.00	0.00	0.00	> 0.92	MTT	-
6309	63	03/20/90	U00	1.046	27.20	35.70	1.31	95.10	250.00	2.63	0.00	925.00	0.00	0.38	0.59	MTT	+
6315	63	02/15/90	U2X	0.611	0.00	15.60	0.00	0.00	21.10	0.00	0.00	31.10	0.00	0.00	2.19	MTT	-
6315	63	03/20/90	U02	1.303	4.85	14.80	3.05	7.62	20.50	2.69	0.00	30.90	0.00	1.94	8.59	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
6326	63	02/20/90	U4L	0.809	8.39	47.60	5.68	0.00	67.20	0.00	0.00	183.00	0.00	0.00	11.77	MTT	+
6326	63	03/20/90	U02	1.303	4.16	10.40	2.49	8.64	19.70	2.28	0.00	80.00	0.00	1.20	6.73	MTT	+
6334	63	02/20/90	U4P	0.795	22.40	50.10	2.24	93.90	148.00	1.58	0.00	303.00	0.00	0.53	3.67	MTT	+
6334	63	03/20/90	U03	1.026	1.24	5.39	4.34	3.09	11.60	3.77	0.00	30.00	0.00	1.75 >	7.11	MTT	+
6369	63	02/27/90	U81	0.896	19.70	46.30	2.36	0.00	64.20	0.00	0.00	96.40	0.00	0.00	3.78	MTT	+
6369	63	03/20/90	U06	0.871	8.45	49.00	5.80	14.10	66.00	4.68	29.50	96.60	3.28	3.47 >	21.91	MTT	+
6369	63	11/01/90	ZXN	0.553	0.00	3.45	0.00	0.00	9.75	0.00	0.00	80.00	0.00	0.00	0.00	MTT	-
6417	66	05/10/90	W1E	0.741	77.90	272.00	3.49	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	7.19	MTT	+
6417	66	07/06/90	XBT	0.765	41.60	159.00	3.81	86.40	396.00	4.58	0.00 >	1000.00	0.00	1.84	9.67	MTT	+
6422	66	05/15/90	W36	0.890	0.00	0.96	0.00	0.00	217.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6422	66	07/06/90	XBV	0.720	177.00	485.00	2.74	313.00	657.00	2.10	0.00	966.00	0.00	1.55	6.71	MTT	+
6444	63	03/01/90	UAR	0.677	17.90 >	320.00 >	17.89	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	7.30	MTT	+
6444	63	03/22/90	UQ9	0.956 <	3.20	410.00 >	128.07	29.80	731.00	24.55	0.00 >	1000.00	0.00	13.77 >	34.97	MTT	+
6445	63	03/01/90	UAR	0.677	2.22	48.00	21.56	18.90	65.30	3.45	0.00	96.50	0.00	2.53 >	19.99	MTT	+
6445	63	03/22/90	UQA	0.979	2.35	29.60	12.63	9.06	52.80	5.83	0.00	95.30	0.00	3.27 >	18.33	MTT	+
6456	63	03/06/90	UCT	1.021	20.70	40.30	1.95	0.00	63.20	0.00	0.00	210.00	0.00	0.00	2.92	MTT	+
6456	64	04/18/90	VAT	0.677	21.40	132.00	6.17	61.00	198.00	3.25	0.00	317.00	0.00	2.16 >	15.51	MTT	+
6458	63	03/06/90	UCU	0.945	80.20 >	320.00 >	3.99	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	12.50	MTT	+
6458	63	03/22/90	UQC	1.028	36.10 >	1000.0 >	27.69	234.00 >	1000.00 >	4.27	0.00 >	1000.00	0.00 >	4.27 >	28.19	MTT	+
6460	63	03/06/90	UCV	0.900	203.00	181.00	0.89	0.00	266.00	0.00	0.00 >	320.00	0.00	0.00	2.50	MTT	+
6460	63	03/22/90	UQD	0.871	34.80	175.00	5.04	49.50	251.00	5.07	93.20	874.00	9.38	3.54 >	21.20	MTT	+
6477	66	05/15/90	W3J	0.804	15.40	29.70	1.92	23.80	54.70	2.29	0.00	99.00	0.0	1.25	4.52	MTT	+
6477	66	07/11/90	XDY	0.958	12.00	54.10	4.52	18.00	76.20	4.22	0.00	272.00	0.00	3.00	14.54	MTT	+
6589	64	04/18/90	VAI	0.760	82.70 >	1000.0 >	12.09	200.00 >	1000.00 >	5.01	0.00 >	1000.00	0.00 >	5.01 >	19.18	MTT	+
6589	64	06/27/90	X3T	1.101	0.00	2510.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	5.43	MTT	-
6617	64	04/19/90	VF5	0.574	447.00 >	1000.0 >	2.24	626.00 >	1000.00 >	1.60	0.00 >	1000.00	0.00 >	1.60 >	8.43	MTT	+
6617	64	06/27/90	X40	1.000	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	-
6618	64	04/19/90	VF5	0.574	8.13 >	1000.0 >	123.02	147.00 >	1000.00 >	6.79	0.00 >	1000.00	0.00 >	6.79 >	36.65	MTT	+
6618	64	06/27/90	X41	0.945	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	-
6707	67	05/31/90	WGH	0.785	8.81	49.90	5.66	0.00	67.80	0.00	0.00	100.00	0.00	0.00 >	6.53	MTT	+
6707	67	07/12/90	XFU	0.723	5.56	63.50	11.42	12.10	95.00	7.82	0.00 >	320.00	0.00	5.23 >	24.91	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
6724	67	06/05/90	WIY	0.877	1.26	70.10	55.53	3.55	247.00	69.50	9.02 >	320.00 >	35.49	19.75 >	47.19	MTT	+
6724	67	07/12/90	XFW	0.657	1.28	17.90	14.05	1.97 >	320.00 >	162.60	0.00 >	320.00	0.00	9.11 >	26.68	MTT	+
6792	67	06/13/90	WPD	0.894 <	1.00	4.68 >	4.68	2.33	6.86	2.94	0.00	24.10	0.00	2.01 >	9.56	MTT	+
6792	67	07/12/90	XG3	0.675	1.23	6.90	5.59	2.21	13.00	5.91	0.00 >	32.00	0.00	3.13 >	17.23	MTT	+
6942	69	07/25/90	XQ4	0.990	264.00 >	320.00 >	1.21	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.02	MTT	+
6942	69	09/06/90	YMI	0.970	124.00	582.00	4.70	186.00	843.00	4.52	715.00 >	1000.00 >	1.40	3.12 >	22.51	MTT	+
6943	69	07/25/90	XQ4	0.990	40.70 >	320.00 >	7.87	54.90 >	320.00 >	5.83	94.20 >	320.00 >	3.40 >	5.83 >	30.64	MTT	+
6943	69	09/06/90	YMJ	0.986	37.50	329.00	8.77	53.80	553.00	10.28	0.00	955.00	0.00	6.12	27.23	MTT	+
6946	69	07/26/90	XSV	1.062	49.30	169.00	3.42	75.90	238.00	3.13	0.00 >	320.00	0.00	2.22	9.53	MTT	+
6946	69	09/06/90	YMK	0.988	52.30	490.00	9.37	85.50	660.00	7.72	279.00	966.00	3.47	5.73 >	27.01	MTT	+
6979	68	06/21/90	X19	0.729	32.00 >	320.00 >	10.00	88.50 >	320.00 >	3.62	0.00 >	320.00	0.00 >	3.62	17.36	MTT	+
6979	68	08/08/90	XZD	1.198	294.00	480.00	1.63	0.00	653.00	0.00	0.00	965.00	0.00	0.00	2.41	MTT	+
6986	68	06/21/90	X1D	0.750	45.10	174.00	3.87	63.60	255.00	4.02	0.00 >	320.00	0.00	2.74	12.38	MTT	+
6986	68	08/08/90	XZE	1.187	228.00	193.00	0.85	0.00	286.00	0.00	0.00	917.00	0.00	0.00	0.33	MTT	+
7003	69	07/26/90	XSX	1.062	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7003	69	09/06/90	YML	1.009	159.00	329.00	2.07	252.00	556.00	2.21	0.00	964.00	0.00	1.31	3.75	MTT	+
7032	69	08/01/90	XV4	1.119	151.00 >	320.00 >	2.11	230.00 >	320.00 >	1.39	0.00 >	320.00	0.00 >	1.39 >	6.98	MTT	+
7032	69	09/06/90	YMS	0.997	0.00	493.00	0.00	0.00	667.00	0.00	0.00	979.00	0.00	0.00 >	1.37	MTT	-
7044	69	08/02/90	XY1	0.984	34.40	128.00	3.74	83.70	193.00	2.31	0.00	310.00	0.00	1.54 >	13.35	MTT	+
7044	69	09/13/90	YPX	1.034	93.50	75.60	0.81	0.00	140.00	0.00	0.00	302.00	0.00	0.00 >	1.88	MTT	+
7045	69	08/02/90	XY2	1.000	90.90	117.00	1.29	320.00 >	320.00 >	1.00	0.00 >	320.00	0.00	0.37 >	1.67	MTT	+
7045	69	09/13/90	YPX	1.034	0.00	86.80	0.00	0.00	163.00	0.00	0.00	313.00	0.00	0.00	0.00	MTT	-
7049	69	08/02/90	XY4	1.030	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7049	69	09/13/90	YPZ	1.039	425.00 >	1000.0 >	2.35	566.00 >	1000.00 >	1.77	945.00 >	1000.00 >	1.06 >	1.77 >	9.27	MTT	+
7051	72	08/30/90	YCC	0.743	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.64	MTT	-
7051	72	10/03/90	Z6N	1.175	493.00	409.00	0.83	759.00 >	1000.00 >	1.32	0.00 >	1000.00	0.00	0.54 >	1.02	MTT	+
7065	72	08/31/90	YE9	1.463	41.10	10.00	0.24	100.00	130.00	1.30	0.00 >	320.00	0.00	0.10	0.11	MTT	+
7065	72	10/03/90	Z6P	1.164	13.70	44.00	3.22	23.90	94.00	3.93	0.00	918.00	0.00	1.84	7.19	MTT	+
7065	72	10/25/90	ZPO	1.247	9.45	40.30	4.27	18.30	81.80	4.46	0.00	869.00	0.00	2.20 >	13.92	MTT	+
7067	72	08/31/90	YEA	1.444	11.80	5.75	0.49	21.70	155.00	7.14	0.00	320.00	0.00	0.26	9.34	MTT	+
7067	72	10/03/90	Z6Q	1.130	4.89	93.50	19.13	9.48	218.00	22.95	28.30	906.00	31.97	9.86	33.97	MTT	+
7067	72	10/25/90	ZPO	1.247	3.50	53.60	15.33	6.12	192.00	31.33	0.00 >	320.00	0.00	8.77 >	32.54	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
7068	72	08/31/90	YEA	1.444	29.30	111.00	3.80	54.10	181.00	3.34	0.00	306.00	0.00	2.05	8.13	MTT	+
7068	72	10/03/90	Z6Q	1.130	6.45	50.80	7.88	13.20	87.00	6.56	30.80	293.00	9.51	3.83	19.91	MTT	+
7068	72	10/25/90	ZPP	1.147	11.40	103.00	9.05	18.40	189.00	10.29	0.00 >	320.00	0.00	5.62 >	26.73	MTT	+
7071	72	08/31/90	YEC	1.282	0.00	24.70	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
7071	72	10/03/90	Z6R	1.376	56.60	109.00	1.92	0.00	216.00	0.00	0.00	869.00	0.00	0.00	1.34	MTT	+
7071	72	10/25/90	ZPP	1.147	51.70	227.00	4.40	226.00	495.00	2.19	0.00	959.00	0.00	1.01 >	10.07	MTT	+
7083	72	08/31/90	YEI	1.081	10.00	52.00	5.20	21.90	147.00	6.69	0.00	309.00	0.00	2.37 >	17.13	MTT	+
7083	72	10/03/90	Z6T	1.058	13.50	96.90	7.17	41.50	171.00	4.13	0.00	305.00	0.00	2.34	15.83	MTT	+
7083	72	10/25/90	ZPR	1.417	20.10	41.10	2.04	77.60	145.00	1.86	0.00	313.00	0.00	0.53 >	7.35	MTT	+
7084	72	08/31/90	YEI	1.081	1.89	13.90	7.34	7.44	27.60	3.71	0.00 >	100.00	0.00	1.86 >	13.21	MTT	+
7084	72	10/03/90	Z6T	1.058	9.27	21.30	2.30	0.00	41.70	0.00	0.00	96.40	0.00	0.00	5.56	MTT	+
7084	72	10/25/90	ZPS	0.936	4.02	20.20	5.03	0.00	44.60	0.00	0.00 >	100.00	0.00	0.00 >	11.84	MTT	+
7085	72	08/31/90	YEJ	1.071	3.44	22.00	6.39	6.31	56.30	8.92	0.00 >	100.00	0.00	3.49	19.39	MTT	+
7085	72	10/03/90	Z6U	1.047	10.90	23.10	2.11	0.00	59.20	0.00	0.00	298.00	0.00	0.00	4.83	MTT	+
7085	72	10/25/90	ZPS	0.936	3.02	33.00	10.95	21.10	59.20	2.80	0.00 >	100.00	0.00	1.56 >	16.05	MTT	+
7086	72	08/31/90	YEJ	1.071	3.45	6.60	1.91	6.40	10.00	1.56	0.00	100.00	0.00	1.03 >	8.07	MTT	+
7086	72	10/03/90	Z6U	1.047	6.84	16.40	2.40	0.00	24.90	0.00	0.00 >	100.00	0.00	0.00	4.42	MTT	+
7086	72	10/25/90	ZPT	1.018	5.31	15.80	2.98	0.00	26.20	0.00	0.00 >	100.00	0.00	0.00 >	8.12	MTT	+
7087	72	08/31/90	YEK	1.037	1.35	18.00	13.33	3.88	31.50	8.10	0.00 >	100.00	0.00	4.65	24.20	MTT	+
7087	72	10/03/90	Z6V	0.944	6.96	21.80	3.13	0.00	56.00	0.00	0.00 >	100.00	0.00	0.00	7.65	MTT	+
7087	72	10/25/90	ZPT	1.018	3.66	19.30	5.26	0.00	40.20	0.00	0.00 >	100.00	0.00	0.00 >	12.79	MTT	+
7092	72	09/05/90	YJ1	0.991	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.03	MTT	-
7092	72	10/03/90	Z6W	0.938	120.00 >	1000.0 >	8.32	176.00 >	1000.00 >	5.68	0.00 >	1000.00	0.00 >	5.68 >	22.36	MTT	+
7092	72	10/25/90	ZPU	1.114	290.00 >	1000.0 >	3.44	473.00 >	1000.00 >	2.11	984.00 >	1000.00 >	1.02 >	2.11 >	20.15	MTT	+
7319	70	08/16/90	Y3E	0.842	1.38	11.60	8.42	2.85	21.60	7.58	0.00 >	32.00	0.00	4.07	18.82	MTT	+
7319	70	09/13/90	YSL	0.955	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.83	MTT	-
7321	70	08/16/90	Y3F	0.967	7.07	52.40	7.41	15.00	94.90	6.34	0.00 >	320.00	0.00	3.50	15.50	MTT	+
7321	70	09/13/90	YSM	0.997	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.62	MTT	-
7332	70	08/16/90	Y3K	0.902	39.90	128.00	3.22	100.00	207.00	2.07	0.00 >	320.00	0.00	1.28	11.12	MTT	+
7332	70	09/13/90	YSO	0.920	40.50	80.60	1.99	0.00	170.00	0.00	0.00	811.00	0.00	0.00 >	7.68	MTT	+
7354	70	08/16/90	Y5U	0.777	30.40 >	320.00 >	10.52	432.00 >	320.00 >	0.74	0.00 >	320.00	0.00 >	0.74 >	18.62	MTT	+
7354	70	09/19/90	YUJ	1.148	141.00	265.00	1.88	310.00	528.00	1.70	0.00	953.00	0.00	0.85	2.57	MTT	+
7373	70	08/22/90	Y7F	0.971	159.00	302.00	1.90	252.00 >	320.00 >	1.27	0.00 >	320.00	0.00	1.20 >	3.35	MTT	+
7373	70	09/19/90	YUO	0.859	200.00	137.00	0.68	0.00	382.00	0.00	0.00	938.00	0.00	0.00	0.00	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
7375	70	08/22/90	Y7G	0.966	34.30	100.00	2.91	61.40	320.00	5.21	0.00	> 320.00	0.00	1.63	11.51	MTT	+
7375	70	09/19/90	YUP	0.746	0.00	7.54	0.00	0.00	19.80	0.00	0.00	> 1000.00	0.00	0.00	0.00	MTT	-
7377	70	08/22/90	Y7H	0.911	290.00	> 1000.0 >	3.44	955.00	> 1000.00 >	1.05	0.00	> 1000.00	0.00	> 1.05	> 13.68	MTT	+
7377	70	09/19/90	YUQ	0.697	0.00	> 3200.0	0.00	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	> 5.79	MTT	-
7378	70	08/22/90	Y7H	0.911	140.00	420.00	2.99	257.00	614.00	2.38	0.00	961.00	0.00	1.63	8.45	MTT	+
7378	70	09/19/90	YUQ	0.697	3200.0	2960.0	0.93	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	1.19	MTT	+
7383	70	08/22/90	Y7K	0.974	76.90	192.00	2.49	0.00	283.00	0.00	0.00	> 320.00	0.00	0.00	5.55	MTT	+
7383	70	09/27/90	Z1T	1.052	58.50	480.00	8.21	158.00	680.00	4.29	0.00	> 1000.00	0.00	3.03	> 19.31	MTT	+
7390	70	08/22/90	Y7N	0.856	156.00	338.00	2.16	245.00	558.00	2.28	0.00	956.00	0.00	1.38	> 5.78	MTT	+
7390	70	09/27/90	Z1V	1.064	0.00	427.00	0.00	0.00	618.00	0.00	0.00	962.00	0.00	0.00	0.00	MTT	-
7424	70	08/23/90	YAH	0.814	0.00	190.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	1.66	MTT	-
7424	70	09/27/90	Z23	0.932	62.90	393.00	6.25	320.00	595.00	1.86	0.00	960.00	0.00	1.23	14.12	MTT	+
7433	70	08/30/90	YC9	0.662	11.20	54.30	4.84	19.80	82.20	4.15	0.00	> 320.00	0.00	2.74	11.62	MTT	+
7433	70	10/03/90	Z6L	1.217	12.40	24.70	1.99	22.40	58.20	2.59	0.00	> 320.00	0.00	1.10	4.70	MTT	+
7434	70	08/30/90	YCA	0.630	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 9.41	MTT	-
7434	70	10/03/90	Z6M	1.224	162.00	354.00	2.18	264.00	570.00	2.16	0.00	957.00	0.00	1.34	3.65	MTT	+
7438	73	09/20/90	YWX	1.304 <	1.00	108.00 >	107.86	1.94	206.00	106.01	0.00	> 320.00	0.00	55.49	> 33.12	MTT	+
7438	73	10/25/90	ZPV	1.030 <	1.00	72.80 >	72.80	2.39	158.00	66.22	0.00	313.00	0.00	30.43	> 24.71	MTT	+
7445	73	09/20/90	YX1	1.090	0.00	578.00	0.00	0.00	835.00	0.00	0.00	> 1000.00	0.00	0.00	0.00	MTT	-
7445	73	10/25/90	ZPW	0.960	1600.0	> 3200.0 >	2.00	2550.00	> 3200.00 >	1.25	0.00	> 3200.00	0.00	> 1.25	> 4.64	MTT	+
7461	73	09/20/90	YX7	0.877	0.00	58.20	0.00	0.00	84.30	0.00	0.00	> 320.00	0.00	0.00	0.70	MTT	-
7461	73	10/31/90	ZUD	1.067	35.50	18.90	0.53	84.10	29.50	0.35	0.00	308.00	0.00	0.22	0.58	MTT	+
7472	73	09/25/90	YYN	0.937	48.10	37.20	0.77	0.00	195.00	0.00	0.00	> 320.00	0.00	0.00	0.31	MTT	+
7472	73	10/31/90	ZUE	0.977	19.30	85.40	4.42	100.00	213.00	2.13	0.00	883.00	0.00	0.85	7.34	MTT	+
7904	74	10/24/90	ZNG	1.352	2.03	8.06	3.96	6.34	> 320.00 >	50.48	0.00	> 320.00	0.00	1.27	18.43	MTT	+
7904	75	11/08/90	ZYR	0.978	0.00	268.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7906	74	10/24/90	ZNH	1.418	134.00	0.25	0.00	179.00	0.50	0.00	302.00	0.95	0.00	0.00	> 5.04	MTT	+
7906	75	11/08/90	ZYS	1.033	0.00	222.00	0.00	0.00	3200.00	0.00	0.00	> 3200.00	0.00	0.00	0.00	MTT	-
7910	74	10/24/90	ZNJ	1.066	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7910	75	11/08/90	ZYU	1.010	1370.0	> 3200.0 >	2.34	1870.00	> 3200.00 >	1.71	0.00	> 3200.00	0.00	> 1.71	> 9.16	MTT	+
7945	74	10/16/90	ZIJ	0.863	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7945	75	12/05/90	1MK	1.038	455.00	1560.0	3.42	647.00	2110.00	3.27	0.00	3110.00	0.00	2.41	> 13.47	MTT	+

Table 9 (Cont'd)

Confirmatory Assays for Compounds Active Against Yellow Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	ASSAY TYPE	ACT
8519	76	12/20/90	24V	0.702	1190.00	176.00	0.15	1650.00	271.00	0.16	3000.00	> 3200.00	> 1.07	0.11	> 2.94	MTT	+
8519	76	01/16/91	2MS	0.963	0.00	397.00	0.00	0.00	671.00	0.00	0.00	2650.00	0.00	0.00	0.00	MTT	-

* = This value is a virus rating (VR) rather than a TAI. The VR is a measurement of selective antiviral activity that takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound similar to TAI. TAI is more accurate with MTT measurements.

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

$IC_{25,50,95}$ = (Viral) inhibitory concentration 25%, 50% and 95% = The drug concentration (µg/ml) that inhibited viral CPE by 25%, 50% or 95% calculated by using a regression analysis for semilog curve fitting.

$TC_{25,50,95}$ = (Cell) toxicity concentration 25%, 50% and 95% = The drug concentration (µg/ml) that reduced cell viability by 25%, 50% or 95%.

$AI_{25,50,95}$ = Antiviral Index = A single point ration of the antiviral and anticellular effect of the compound, calculated with 25%, 50% or 95% reduction values (calculated by dividing the $TC_{25,50,95}$ by the $IC_{25,50,95}$).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, µg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

ACT = Activity = A "+" denotes a test that produced ≥25% reduction in CPE. A "-" denotes an inactive test (i.e. ≤25% reduction in CPE.

4.1.4 Japanese Encephalitis Virus (JE):

The number of single drug tests carried out against JE during this contract period is summarized in yearly increments in Figure 18. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

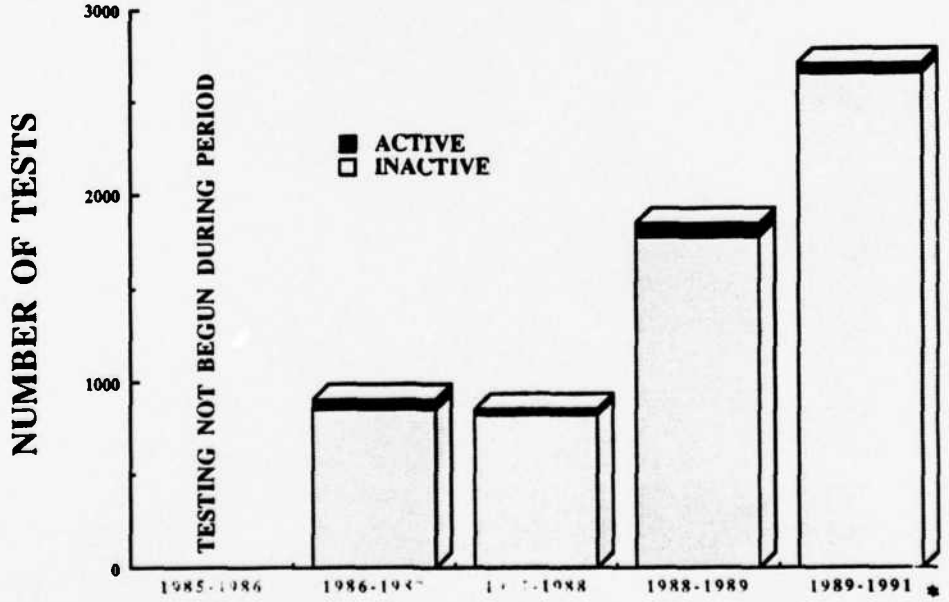
1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since November, 1988, MTT based-antiviral assay format.

A total of 7873 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Selenazofurin (AVS-0253) was tested in each standard virus rating (VR) CPE-inhibition assay as a positive control compound. Results of these positive controls (VR tests) were used as a guideline to assess the quality of each assay.

After the testing was converted to the MTT-assay format, we performed a total of 372 control compound assays with Selenazofurin during the last 26 months of the contract period. During this time 781 tests were internal (+++) virus load, cell load, and other quality control tests. Four hundred ten (410) tests were considered unsatisfactory based on the criteria of the quality controls set during this reporting period. The rest, totaling 4557 were actual single drug MTT-assays. The total number of MTT-assays (6120) tested during the last two years represents a 224% increase (improvement) in the total testing output as compared to the total of 1937 tests performed during the first 3 years of this contract.

Out of the 6310 accepted single drug tests, 206 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 3.0% of the tested compounds having *in vitro* antiviral activity against JE-virus. The remainder, 6104 compounds (97%), were considered inactive with both assay protocols (Figure 18).

IN VITRO PRIMARY SCREEN: NUMBER OF COMPOUNDS FOUND
ACTIVE AGAINST JAPANESE ENCEPHALITIS VIRUS DURING THE CONTRACT PERIOD



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	0	56	26	67	57	206
Number Inactive	0	849	822	1780	2653	6104
Yearly Total (Accepted Single Drug Tests)	**0**	**905**	**848**	**1847**	**2710**	**6310**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 18

4.1.4.1 **JE-Quality Controls:** Two positive control compounds (Selenazofurin and 2-Thio-6-Azauridine) were used in the daily assay sets as antiviral activity quality control. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to of better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.1.4.1.1 **Antiviral Activity of Selenazofurin vs JE Virus:** A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0253 (Selenazofurin) is presented in **Figure 19-A** for 191 tests performed during November, 1989 through January, 1991.

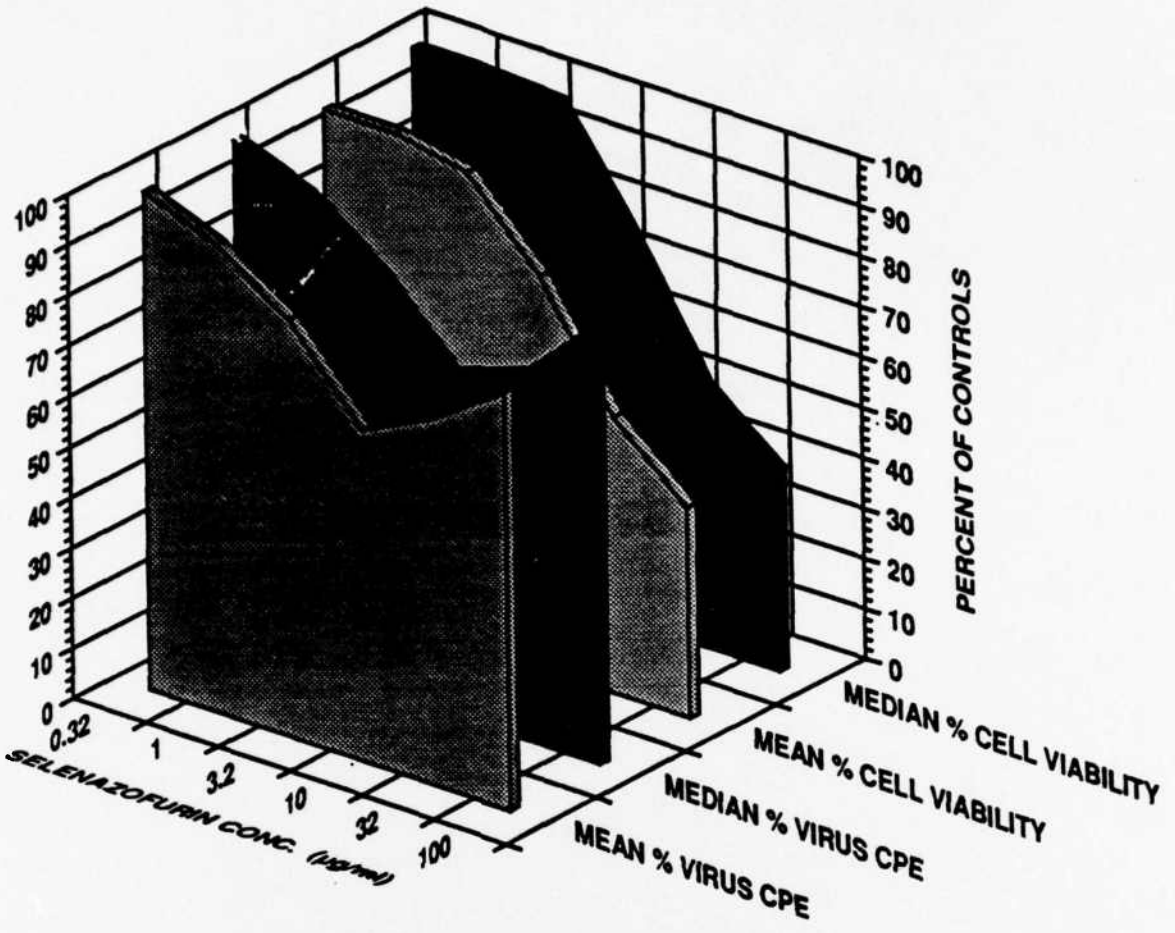
Control Compound-Antiviral Performance: Selenazofurin (AVS-0253) has been the sole control compound against JE in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Selenazofurin) are illustrated in **Figure 19-A.**

The 191 control tests performed with Selenazofurin gave a mean **Total Antiviral Index** (TAI) of 7.60% (SD ± 7.60) and the median value was 5.07%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~0 - 33.94% during this period. The mean **Selectivity Index (SI)** was only 0.39 (SD ± 1.14) and the median SI value was 0, indicating poor antiviral selectivity for Selenazofurin and it ranged from ~0 - 7.17 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25% (AI_{25})** value was 5.21 (SD ± 11.5). The median AI_{25} value was 2.11 (range 0 - 124.76). The mean **Antiviral Index 50% (AI_{50})** was 1.09 (SD ± 3.34) with a median of 0 (range 0 - 25.40). This indicates that Selenazofurin does not consistently reach 50% antiviral reduction levels. The mean **Antiviral Index 95% (AI_{95})** was not attainable with Selenazofurin versus Japanese Encephalitis Virus.

The mean **Antiviral Inhibitory Concentration 25% (IC_{25})** was 7.15 μg/ml (SD ± 8.33). The median IC_{25} value was 5.96 μg/ml (range = 0 - 100 μg/ml). The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 2.84 μg/ml (SD ± 8.33). The median IC_{50} value was 0 μg/ml (range = 0 - 43.1 μg/ml). This discrepancy indicates that the control compound Selenazofurin does not consistently reach 50% reduction levels. The mean **Antiviral Inhibitory Concentration 95% (IC_{95})** could not be attained with Selenazofurin versus Japanese Encephalitis Virus.

The average maximum antiviral inhibitory level of 191 Selenazofurin tests (**Figure 19-A**) was reached at 10 μg/ml of the compound with 35% antiviral effect. Further increase of the drug concentration does not improve its antiviral activity. Maximum antiviral effect (~38%) was found with a simultaneous ~25% cytotoxic suppression. Above 10 μg/ml concentration the antiviral protection levels off to ~15% reduction level at 100 μg/ml, while simultaneously the Selenazofurin becomes maximally toxic (~60%).



CONCENTRATION (µg/ml)

	% Viral CPE						% Cell Viability					
Conc.(µg/ml)	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**0.32**	**1**	**3.2**	**10**	**32**	**100**
Mean	99	93	83	66	73	83	97	97	94	78	55	42
Median	100	94	83	68	73	87	100	100	99	77	52	40
Std. Dev.	0.02	0.06	0.08	0.10	0.15	0.15	0.05	0.04	0.08	0.14	0.14	0.09

Figure 19-A
Average Antiviral and Cytotoxicity Values for 191 Positive Control Compound Tests

4.1.4.1.2 Maximum Antiviral Effect of Selenazofurin vs JE Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Selenazofurin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (**Figure 20-A**) depicts the distribution of the maximum antiviral reduction values of all 191 control compound assays for Selenazofurin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 38% (SD ± 10.50) reduction levels. The maximum reduction levels vary from 21 - 75% but remain quite consistently around the median of 35%. The assay control values give a relatively broad, bell-shaped distribution curve. This indicates quite a consistent day-to-day performance of the control compound in the JE-MTT assay.

During this period the positive control compound performance criteria for Selenazofurin versus the JE virus was set at 25% reduction level. Assays in which Selenazofurin did not meet this accepted quality control level (≥25%) were rejected (i.e., 410 unsatisfactory tests).

Since Selenazofurin is only marginally active against JE virus, better quality control compounds are needed. However, regardless of the poor performance of the JE quality control drug Selenazofurin, around 142 different compounds have equal or better antiviral activity against JE virus than AVS-0253. Some of these could certainly be used as a better *in vitro* antiviral control compound in this large-scale antiviral screening program.

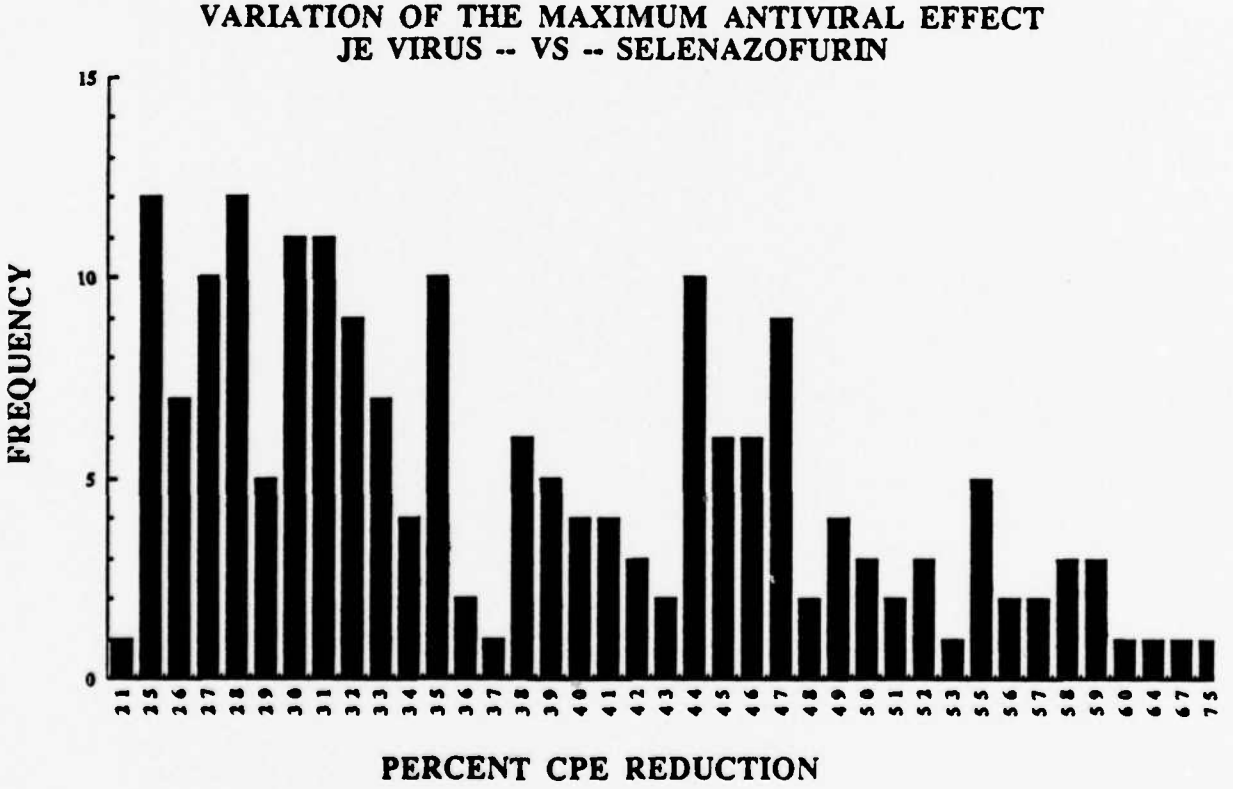


Figure 20-A
Maximum Antiviral CPE Reduction (%).
Summary of 191 Control Tests.

4.1.4.1.3 Cellular Cytotoxicity of Selenazofurin vs JE Virus:

JE-Control Compound-Cytotoxicity Performance: The 191 cytotoxicity values of the positive control compound Selenazofurin are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 18.76 μg/ml (SD ± 18.19) and the median was 11.80 μg/ml (range of 2.29 - > 100 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 57.54 μg/ml (SD ± 38.84) and the median was 47.10 μg/ml (range of 7.59 - 311 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value cannot be attained with Selenazofurin versus Japanese Encephalitis Virus.

As can be seen from **Figure 19-A**, the toxicity starts to become measurable above the concentration of 3.2 μg/ml and the maximum toxicity has not been reached at 100 μg/ml.

When the cytotoxicity reaches around 20% (10 μg/ml), the control compound (Selenazofurin) loses its maximum antiviral effect (35%). Above 10 μg/ml the antiviral protection of Selenazofurin starts to decrease down to (~15%), Selenazofurin becomes maximally toxic at 100 μg/ml concentration. The highest Selenazofurin concentration tested in these assays was 100 μg/ml.

Selenazofurin has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} and TC_{50} toxicity can be achieved with relative consistency at 100 μg/ml.

4.1.4.1.4. **JE-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Selenazofurin):** The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in **Figures 21-A, 22-A and 23-A.**

JE-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 191 control assays is plotted in **Figure 21-A.** The results indicate that the cell O.D. readings reached a mean 1.160 (SD ± 0.160) with a median of 1.150 (range of 0.770 - 1.630). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

JE-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 191 control assays is presented in **Figure 22-A.** The results indicate that the average load O.D. reading is 0.310 (SD ± 0.130) with a median of 0.330 (range of 0.040 - 0.640). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

JE-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 191 control assays is provided in **Figure 23-A.** The results indicate that the average differential O.D. reading is 0.850 (SD ± 0.135) with a median of 0.848 (range 0.552 - 1.200). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 85% measurement accuracy.

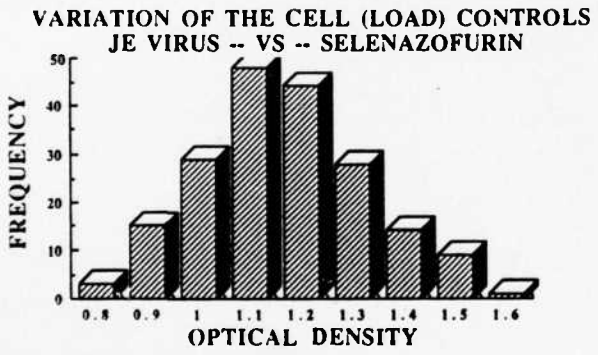


Figure 21-A

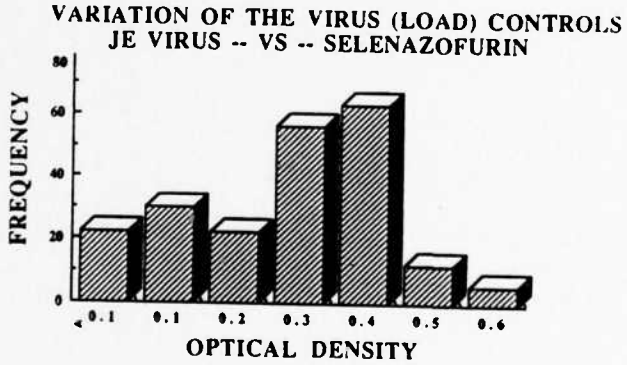


Figure 22-A

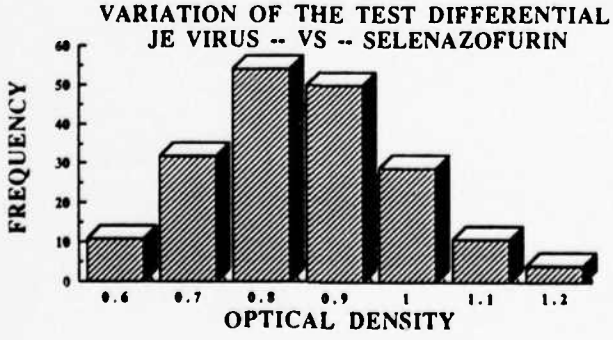


Figure 23-A

4.1.4.1 JE-Quality Controls:

4.1.4.1.1 Antiviral Activity of 2-Thio-6-Azauridine vs JE Virus: A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in **Figure 19-B** for 46 tests performed during November, 1989 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) was tested as a possible second control compound against JE in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of this second positive control drug are illustrated in **Figure 19-B**.

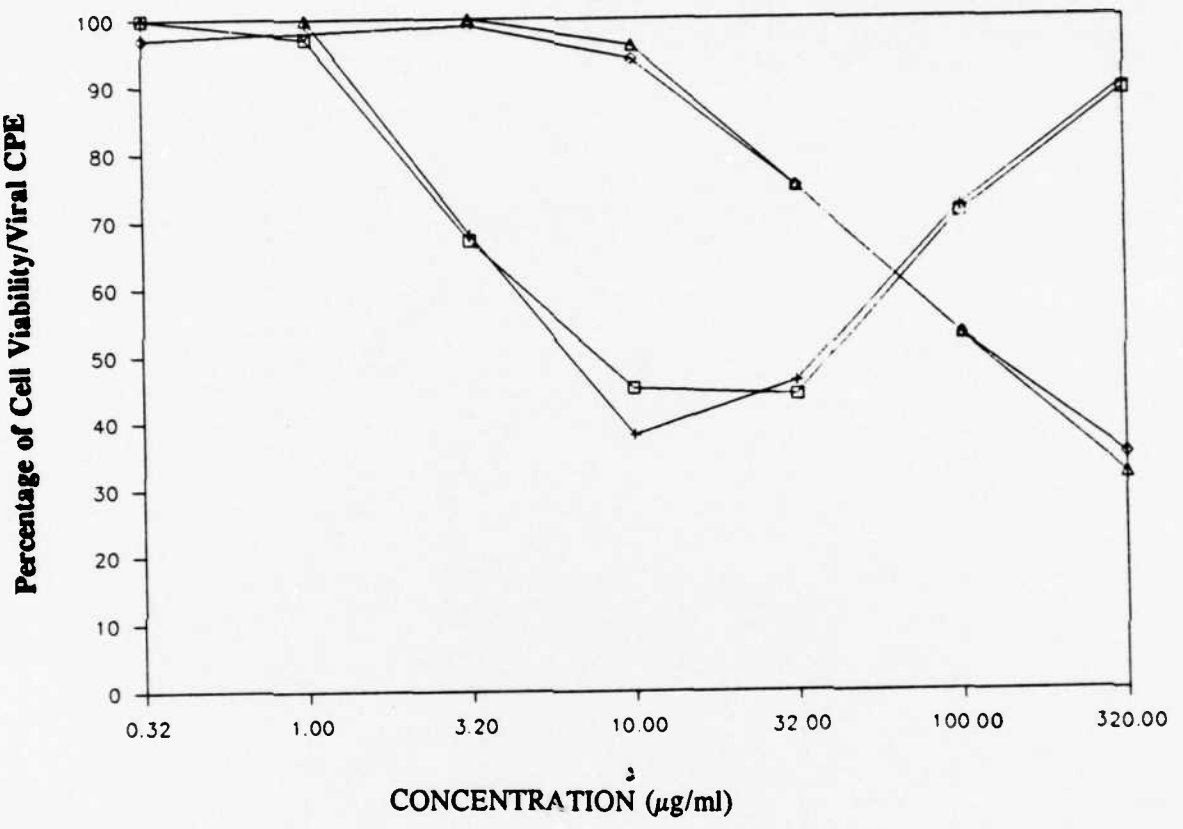
The 46 control tests performed with 2-Thio-6-Azauridine gave a mean **Total Antiviral Index** (TAI) of 24.5% (SD ± 12.20) and the median value was 20.20%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~5.64 - 48.49% during this period. The mean **Selectivity Index (SI)** was only 8.00 (SD ± 7.60) and the median SI value was 4.60, indicating moderate antiviral selectivity for 2-Thio-6-Azauridine and it ranged from ~0 - 27.27 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25% (AI_{25})** value was 16.50 (SD ± 12.30). The median AI_{25} value was 11.70 (range 2.84 - 46.73). The mean **Antiviral Index 50% (AI_{50})** was 18.50 (SD ± 15.20) with a median of 13.60 (range 0 - 56.47). This indicates that 2-Thio-6-Azauridine does not consistently reach 50% antiviral reduction levels. The mean **Antiviral Index 95% (AI_{95})** was not attainable with 2-Thio-6-Azauridine versus Japanese Encephalitis Virus.

The mean **Antiviral Inhibitory Concentration 25% (IC_{25})** was 3.44 μg/ml (SD ± 3.20). The median IC_{25} value was 2.50 μg/ml (range = 1 - 21.40 μg/ml). The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 6.67 μg/ml (SD ± 6 20). The median IC_{50} value was 5.03 μg/ml (range = 0 - 26.10 μg/ml). This discrepancy indicates that the control compound 2-Thio-6-Azauridine does not consistently reach 50% reduction levels. The mean **Antiviral Inhibitory Concentration 95% (IC_{95})** could not be attained with 2-Thio-6-Azauridine versus Japanese Encephalitis Virus.

The average maximum antiviral inhibitory level of 46 2-Thio-6-Azauridine tests (**Figure 19-B**) was reached at 10 μg/ml of the compound with 60% antiviral effect. Further increase of the drug concentration does not improve its antiviral activity. Maximum antiviral effect (~70%) was found with a simultaneous ~10% cytotoxic suppression. Above 32 μg/ml concentration the antiviral protection levels off to ~10% reduction level at 320 μg/ml, while simultaneously the 2-Thio-6-Azauridine becomes maximally toxic (~75%).

2-THIO-6-AZAURIDINE - VS - JE VIRUS



% Viral CPE

% Cell Viability

Conc.(μg/ml)	0.32	1	3.2	10	32	100	320	0.32	1	3.2	10	32	100	320
Mean	100	97	67	45	44	71	89	97	98	99	94	75	53	35
Median	100	100	68	38	46	72	90	100	100	100	96	75	53	32
Std. Dev.	0.01	0.07	0.21	0.21	0.17	0.11	0.09	0.05	0.04	0.02	0.07	0.13	0.10	0.07

Figure 19-B
Average Antiviral and Cytotoxicity Values for 46 Positive Control Compound Tests

4.1.4.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs JE Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 20-B) depicts the distribution of the maximum antiviral reduction values of all 46 control compound assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 70% (SD ± 17.50) reduction levels. The maximum reduction levels vary from 46 - 100% but remain quite consistently around the median of 64%. The assay control values give a relatively broad, bell-shaped distribution curve. This indicates quite a consistent day-to-day performance of the control compound in the JE-MTT assay.

Recommendations:

Based upon the data obtained in parallel studies with Selenazofurin, we recommend that 2-Thio-6-Azauridine (AVS #6724) be used as a second control compound against JE virus. It's overall performance is much better than the present control, Selenazofurin. It is readily available from Sigma Chemical Company, it is inexpensive and works as effectively at low drug concentrations as Selenazofurin.

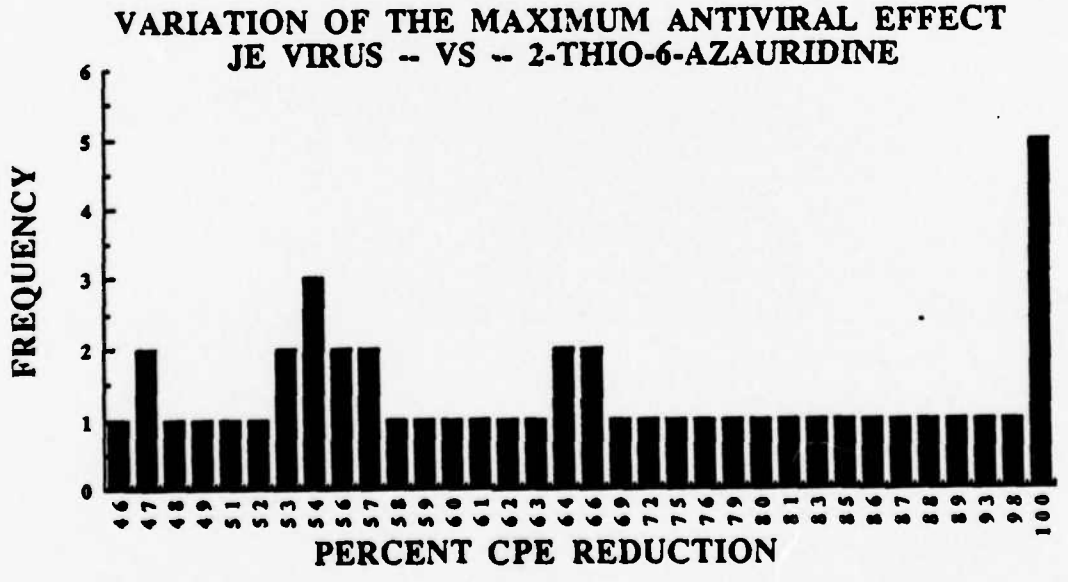


Figure 20-B
Maximum Antiviral CPE Reduction (%).
Summary of 46 Control Tests.

4.1.4.1.3 **Cellular Cytotoxicity of 2-Thio-6-Azauridine vs JE Virus:**

JE-Control Compound-Cytotoxicity Performance: The 46 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 40.20 μg/ml (SD ± 22.50) and the median was 33.40 μg/ml (range of 9.50 - 100 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 98.20 μg/ml (SD ± 41.10) and the median was 100 μg/ml (range of 41.70 - 320 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value cannot consistently be attained with 2-Thio-6-Azauridine versus Japanese Encephalitis Virus.

As can be seen from **Figure 19-B**, the toxicity starts to become measurable above the concentration of 10 μg/ml and the maximum toxicity has not been reached at 320 μg/ml.

When the cytotoxicity reaches around 25% (32 μg/ml), the control compound (2-Thio-6-Azauridine) loses its maximum antiviral effect (70%). Above 32 μg/ml the antiviral protection of 2-Thio-6-Azauridine starts to decrease down to (~ 10%), becomes maximally toxic at 320 μg/ml concentration. The highest 2-Thio-6-Azauridine concentration tested in these assays was 320 μg/ml.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} and TC_{50} toxicity can be achieved with relative consistency at 100 μg/ml.

4.1.4.1.4. JE-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991 is presented in Figures 21-B, 22-B, and 23-B.

JE-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 46 control assays is plotted in Figure 21-B. The results indicate that the cell O.D. readings reached a mean 1.160 (SD ± 0.100) with a median of 1.160 (range of 0.930 - 1.350). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

JE-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 46 control assays is presented in Figure 22-B. The results indicate that the average load O.D. reading is 0.330 (SD ± 0.070) with a median of 0.350 (range of 0.080 - 0.440). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

JE-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 46 control assays is provided in Figure 23-B. The results indicate that the average differential O.D. reading is 0.820 (SD ± 0.100) with a median of 0.820 (range 0.575 - 1.117). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 82% measurement accuracy.

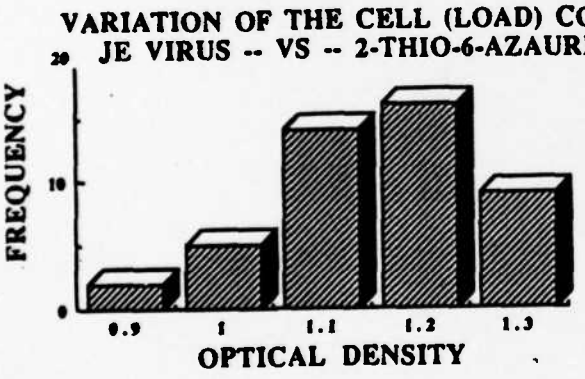


Figure 21-B

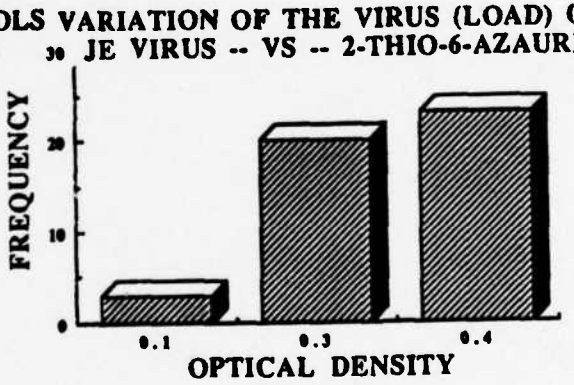


Figure 22-B

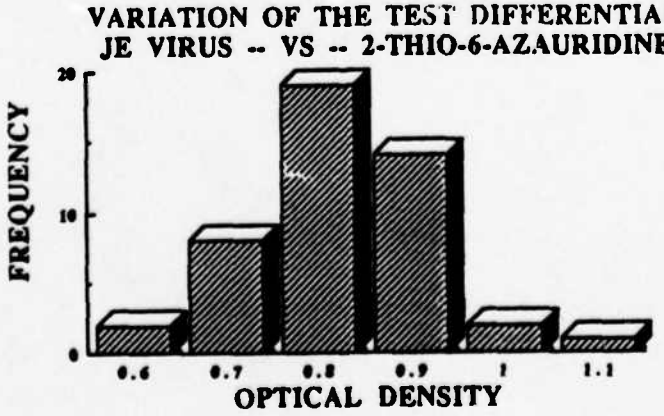


Figure 23-B

4.1.4.2 **JE-Antiviral Activity Results:**

New Drugs with 95% Antiviral Reduction Levels: Out of the 6310 actual single drug tests, 45 new compounds demonstrated excellent antiviral activity, having antiviral reduction values of equal to or better than 95%. This represents around 0.7% of the test compounds being active at this excellent reduction level. These compounds are summarized in **Table 10** according to the highest **Total Antiviral Index (TAI)**. Compounds AVS-5580 demonstrated the greatest *in vitro* promise, having a TAI of 96% and **Selectivity Index (SI)** of >313. The next 23 compounds demonstrated good antiviral activity with TAI's that ranged from 25 - 62 and SI values that ranged from <1 - 41. Twenty-one other compounds demonstrated moderate antiviral activity, having TAI's that ranged from 9 - 24% and SI's from 2 - 5.

It is worthwhile to note that compounds received in shipment number 62 were mostly colored **(Table 10)**. Therefore those compounds appearing in the 95% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 10

AVS Compounds Active Against Japanese Encephalitis Virus (JE) at AI_{95} Level

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 95	TC 95	AI 95	SI	TAI
JE	5580	54	05/03/89	0.486	< 320.00	> 100000	> 313.00	> 313.00	> 95.79
JE	4855	48	09/13/89	0.615	28.80	> 320.00	> 11.12	> 28.79	> 62.18
JE	4796	46	09/13/89	0.539	3.05	> 100.00	> 32.78	40.51	> 60.74
JE	2631	65	07/06/90	0.766	71.50	> 320.00	> 4.47	> 36.90	> 57.59
JE	3802	67	07/12/90	0.926	0.93	> 10.00	> 10.75	> 20.57	> 45.81
JE	2318	13	08/30/89	0.686	0.87	> 10.00	> 11.45	24.21	> 43.71
JE	0148	67	06/21/90	0.579	0.89	> 3.20	> 3.59	> 10.00	> 43.41
JE	2563	48	02/06/89	0.554	0.89	> 3.20	> 3.59	> 10.00	> 41.49
JE	2980	48	03/10/89	0.737	0.73	> 3.20	> 4.39	12.00	40.06
JE	4527	47	01/31/89	0.511	7.72	94.60	12.30	11.20	> 37.38
JE	2811	48	02/06/89	0.629	0.09	0.91	10.40	11.00	> 37.18
JE	0206	67	06/21/90	0.579	93.10	> 1000.00	> 10.74	12.94	36.80
JE	8353	75	11/29/90	0.727	97.80	> 320.00	> 3.27	> 8.77	> 35.30
JE	4592	48	02/28/89	0.764	26.50	> 100.00	> 3.77	7.19	32.32
JE	5138	57	07/11/89	0.830	94.30	> 320.00	> 3.39	0.16	> 30.37
JE	4609	48	02/28/89	0.810	0.03	> 0.10	> 3.22	> 6.54	> 30.11
JE	0361	48	02/06/89	0.660	0.03	0.30	10.40	4.30	> 29.61
JE	6214	62	11/01/90	0.960	294.00	> 1000.00	> 3.40	3.82	> 29.31
JE	6195	62	10/31/90	0.880	292.00	966.00	3.31	3.80	> 29.00
JE	6219	62	11/01/90	0.841	282.00	> 320.00	> 1.13	> 3.67	> 28.64
JE	0360	2	08/23/89	0.464	0.09	> 1.00	> 10.84	5.64	27.74
JE	4113	39	05/24/89	0.809	0.28	2.85	10.10	4.01	> 27.24
JE	4277	65	07/06/90	0.680	9.16	93.80	10.24	4.12	> 26.83
JE	4281	42	09/13/89	0.706	2.92	> 10.00	> 3.42	4.39	> 24.56
JE	4278	42	09/13/89	0.697	9.40	> 32.00	> 3.40	5.15	> 23.73
JE	5539	56	08/09/89	0.866	3.20	94.30	29.48	3.94	> 23.28
JE	5121	56	08/08/89	0.749	91.50	309.00	3.38	3.78	22.70
JE	4590	48	02/28/89	0.744	0.94	28.70	30.60	4.11	> 21.90
JE	4074	48	03/10/89	0.762	0.03	> 0.03	> 1.09	> 2.30	> 19.27
JE	5484	53	12/12/89	0.849	914.00	> 1000.00	> 1.09	> 2.47	> 18.89
JE	6225	62	11/01/90	0.841	301.00	964.00	3.21	2.70	> 18.51
JE	6207	62	10/31/90	0.725	302.00	966.00	3.20	2.74	> 18.18
JE	2812	48	02/06/89	0.576	0.01	> 0.01	> 1.06	> 2.57	18.14
JE	8352	75	11/29/90	0.727	3.06	32.00	10.45	3.58	> 17.41
JE	6946	69	07/26/90	0.765	301.00	> 320.00	> 1.06	> 1.86	> 16.70
JE	5405	66	07/06/90	0.739	0.30	9.07	29.84	3.09	16.46
JE	6203	62	01/11/90	0.853	94.50	> 320.00	> 3.39	3.08	16.40
JE	1337	33	08/29/89	0.806	29.40	> 32.00	> 1.09	> 2.30	> 16.15
JE	6986	68	08/09/90	0.807	302.00	973.00	3.22	2.75	> 16.01
JE	6204	62	01/11/90	0.853	30.20	96.60	3.20	2.74	14.73
JE	4070	48	03/10/89	0.737	2.99	> 3.20	> 1.07	> 1.98	> 13.87
JE	6199	62	01/11/90	0.865	94.50	> 320.00	> 3.39	2.80	> 13.49
JE	4280	42	09/13/89	0.697	9.29	> 10.00	> 1.08	> 2.10	> 13.40
JE	6196	62	10/31/90	0.880	302.00	952.00	3.15	1.62	> 10.13
JE	7445	73	10/25/90	0.769	3020.00	> 3200.00	> 1.06	> 1.79	> 8.72

New Drugs with 50% Antiviral Reduction Levels: Out of the 6310 actual single drug tests, 84 new compounds demonstrated good antiviral activity, having antiviral reduction values equal to or better than 50%. This represents around 3% of the test compounds being active at this good antiviral reduction levels. These compounds are summarized in **Table 11** according to the highest **Total Antiviral Index (TAI)**. AVS-0217, 5998 and 1645 demonstrated the best TAI is of ~40% and SI is that ranged from 11 - 18. The next six compounds demonstrated moderate antiviral activity, having TAI's that ranged from 25 - 29% and SI's from 4 - 9. The rest (74) compounds showed marginal antiviral activity with TAI's that ranged from < 1 - 23 and SI's that ranged from < 1 - 4.

It is worthwhile to note (**Table 11**) that compounds received in shipment number 62 were mostly colored. Therefore those compounds appearing in the 50% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 11

AVS Compounds Active Against Japanese Encephalitis Virus (JE) at AI_{50} Level

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
JE	0217	33	09/27/89	0.786	28.10 >	320.00 >	11.39 >	11.39 >	41.60
JE	5998	61	02/01/90	0.849	1.69 >	32.00 >	18.94	18.94 >	41.36
JE	1645	33	08/29/89	0.941	1.79 >	32.00 >	17.89	13.28 >	40.13
JE	2979	48	03/10/89	0.763	2.11	21.20	10.10	5.91	28.50
JE	2503	21	09/06/89	0.986	0.43	9.43	22.06	6.78 >	28.10
JE	0111	42	05/10/89	0.741	48.80 >	320.00 >	6.56	4.45	27.93
JE	4785	46	09/13/89	0.490	1.56	22.10	14.16	5.94 >	27.84
JE	5997	61	11/07/89	0.919	3.51	75.30	21.47	5.23 >	25.75
JE	0646	2	08/23/89	0.427	0.21	3.15	15.21	8.72 >	25.70
JE	1019	28	03/06/90	0.896	2.57	78.80	30.61	5.79	24.72
JE	0094	1	09/27/89	0.766	31.00 >	100.00 >	3.23 >	3.23 >	23.29
JE	5532	56	08/09/89	0.818	172.00	663.00	3.85	2.85 >	21.79
JE	4871	61	11/29/89	0.939	196.00 >	1000.00 >	5.09	3.85	21.64
JE	4978	27	12/05/89	0.770	153.00	857.00	5.59	3.64	21.45
JE	5515	53	04/18/89	0.639	11.20	58.40	5.20	3.04	21.27
JE	3964	33	03/21/89	0.815	6.61	32.30	4.89	2.43	19.74
JE	5695	57	08/22/89	0.605	21.70 >	32.00 >	1.47 >	1.47 >	18.09
JE	6413	66	07/06/90	0.718	32.00	158.00	4.94	2.66 >	17.63
JE	5503	53	04/18/89	0.703	25.60	154.00	6.03	2.98	17.26
JE	5601	GABSN	02/08/90	0.769	1430.00 >	3200.00 >	2.23	2.23 >	17.12
JE	2275	12	08/30/89	0.803	22.40	234.00	10.43	7.45	17.05
JE	5497	53	12/20/89	0.947	221.00	767.00	3.48	2.46	16.05
JE	6942	69	10/24/90	1.001	95.90	205.00	2.14	1.55 >	16.04
JE	5142	57	08/16/89	0.463	56.10	210.00	3.74	2.76	15.95
JE	1644	64	05/03/90	0.866	139.00	813.00	5.85	0.47	15.25
JE	7911	75	11/07/90	0.689	238.00	938.00	3.95	2.65 >	15.09
JE	4452	44	07/07/89	0.945	68.40	277.00	4.05	2.61	14.99
JE	0084	1	08/23/89	0.688	49.20 >	100.00 >	2.03 >	2.03 >	14.89
JE	7949	75	12/12/90	0.871	235.00	950.00	4.04	2.70	14.83
JE	1381	45	02/13/90	0.791	24.10	81.30	3.38	2.35 >	14.76
JE	7321	70	08/15/90	0.753	20.70	86.80	4.19	2.87 >	14.47
JE	0124	64	03/08/90	0.633	226.00 >	320.00 >	1.42 >	1.42 >	14.11
JE	4739	44	07/07/89	0.742	19.00	66.00	3.47	2.54 >	13.96
JE	2506	64	03/13/90	1.032	10.00	68.00	6.80	1.99	13.02
JE	6206	62	01/11/90	0.776	60.30	210.00	3.48	2.57	12.46
JE	0347	41	05/10/89	0.913	2.08	8.55	4.10	2.37	12.33
JE	6228	62	01/16/90	1.007	62.60	210.00	3.36	2.48	12.33
JE	6227	62	01/16/90	1.007	80.00	210.00	2.63	1.94 >	12.09
JE	4992	61	11/29/89	1.017	249.00	660.00	2.65	1.96	11.74
JE	5906	61	10/31/89	0.787	2.12	15.00	7.08	2.00	11.52
JE	5495	53	04/18/89	0.798	1.42	5.75	4.04	1.85 >	11.51
JE	8263	76	12/12/90	0.741	66.30	232.00	3.50	2.31	11.47
JE	5035	48	10/10/89	1.134	1.72	6.26	3.65	0.19	11.29
JE	4098	37	02/24/89	0.372	0.00 >	0.00 >	1.37 >	1.37 >	11.24
JE	5483	66	07/18/90	0.667	0.07	0.26	3.64	2.52 >	10.78
JE	0083	64	03/08/90	0.686	3.11	10.40	3.36	2.15 >	10.68
JE	2034	56	08/08/89	0.829	0.65	2.43	3.72	2.62	10.63
JE	5538	56	08/09/89	0.866	207.00	587.00	2.84	1.80 >	10.49
JE	6234	GABSN	02/08/90	0.827	2670.00 >	3200.00 >	1.20 >	1.20 >	10.07
JE	6477	66	07/11/90	0.806	22.70	72.50	3.19	2.30 >	9.27
JE	0230	1	08/23/89	0.577	94.00 >	100.00 >	1.06 >	1.06 >	9.02
JE	4769	44	11/08/88	0.954	77.80	169.00	2.18	1.22 >	8.82
JE	8499	75	11/29/90	0.734	221.00 >	320.00 >	1.45 >	1.45 >	8.53
JE	4768	44	11/08/88	1.017	75.70	165.00	2.18	1.18	8.52
JE	5058	48	02/27/89	0.881	310.00 >	320.00 >	1.03 >	1.03 >	8.39
JE	7087	72	08/31/90	0.997	8.11	30.00	3.70	1.08 >	8.05
JE	5905	61	10/31/89	0.787	7.06	19.10	2.70	1.78 >	8.02
JE	6202	62	01/11/90	0.830	219.00 >	320.00 >	1.46 >	1.46 >	7.56
JE	7083	72	10/03/90	0.747	83.30	191.00	2.29	1.51 >	7.55
JE	7910	75	11/07/90	0.689	2220.00 >	3200.00 >	1.44 >	1.44 >	7.46
JE	7085	72	10/25/90	0.811	24.60	65.30	2.65	1.30	7.29
JE	2992	27	09/07/89	0.875	83.30 >	100.00 >	1.20 >	1.20 >	6.27
JE	5489	66	05/08/90	0.927	282.00 >	320.00 >	1.14 >	1.14 >	6.14
JE	4984	51	10/10/89	1.087	7.52	21.20	2.81	1.78	5.98

Table 11 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
JE	5535	56	06/14/89	0.967	204.00 >	320.00 >	1.57	1.44 >	5.90
JE	5053	48	10/10/89	1.029	56.60 >	100.00 >	1.77	1.37 >	5.79
JE	7319	70	08/15/90	0.776	10.00	18.40	1.84	0.84 >	5.48
JE	5485	53	12/14/89	0.864	25.80 >	32.00 >	1.24	1.10 >	5.44
JE	8364	76	12/13/90	0.891	222.00	580.00	2.62	0.33	5.41
JE	6369	63	03/20/90	1.018	28.30	61.40	2.17	1.49	5.16
JE	7433	70	08/30/90	1.049	26.00	73.10	2.81	1.58	5.08
JE	8374	76	12/13/90	0.903	824.00	1840.00	2.24	1.41	5.00
JE	4996	51	10/10/89	1.085	232.00 >	320.00 >	1.38	1.38 >	4.44
JE	1838	64	11/01/90	0.868	259.00	558.00	2.15	1.30	4.29
JE	5072	48	02/28/89	0.724	207.00 >	320.00 >	1.54	0.42 >	3.42
JE	8221	75	11/21/90	0.859	29.20	60.60	2.08	0.97	2.95
JE	6617	64	04/19/90	0.878	814.00 >	1000.00 >	1.23	1.12 >	2.49
JE	8372	76	12/13/90	0.889	2550.00 >	3200.00 >	1.25	1.08 >	2.29
JE	7051	72	10/03/90	1.019	749.00 >	1000.00 >	1.34	0.63 >	2.09
JE	7461	73	10/31/90	0.866	90.20	158.00	1.76	0.25 >	1.85
JE	2600	65	04/12/90	0.881	802.00 >	1000.00 >	1.25	0.37 >	1.75
JE	5643	57	07/06/89	0.937	230.00	282.00	1.23	0.04 >	0.68
JE	7375	70	08/23/90	0.855	313.00 >	320.00 >	1.02	0.30 >	0.55
JE	7045	69	08/02/90	0.899	288.00 >	320.00 >	1.11	0.60 >	0.52

New Drugs with 25% Antiviral Reduction Levels: Of the 6310 actual single drug tests, 180 new compounds demonstrated moderate antiviral activity, having antiviral reduction values equal to or better than 25%. This represents around 2.9% of the test compounds being active at this marginal antiviral reduction level.

In general, when compared to the 95% and 50% antiviral activity categories, the compounds in this (25%) category do not appear to have any significant antiviral promise and probably do not need to be presently confirmed any further.

4.1.4.3 **Confirmatory Assays:**

Some of the compounds were sent to us in more than one separate drug shipment. These compounds were tested more than once. Data from the confirmatory assays are summarized in **Table 12**. If a compound showed $\geq$50% reduction in CPE during this contract period, then it was considered a candidate for confirmatory testing. The confirmatory tests are from active compounds picked up by both the VR and MTT assay testing. Out of 119 confirmatory tests, 91 compounds were confirmed active during this reporting period and the remaining 28 compounds gave conflicting results. The criteria for activity is that the confirmatory test has to show $\geq$25% reduction in CPE. Failure to confirm the activity in these compounds was probably due to differences during the assay conditions:

1) In confirmatory assays the concentration range is adjusted to a more accurate semilog scale to maximize the TAI window.

2) Differences in the "differential" of the two runs can cause the compound to read positive or negative, falsely. The variability in the differential can cause false positive or negative bias to be introduced into the calculations, thus reflecting the variability in the maximum activity of the compound.

3) The metabolic rate, cell and virus load/well, age, and passage number of the cells may cause the above observed variability in the confirmatory results.

4) Problems associated with stability and storage of the compound (i.e., different lot numbers, solubility, light sensitivity, hygroscopic, etc.).

5) Problems associated with technical execution of large numbers of plates by different technicians.

During this reporting period the overall confirmatory rate against JE was 76%. The conflicting results should be retested at a later date based on the availability of the compound.

4.1.4.4 **Recommendations of JE-Actives Based Upon the *In Vitro* Results with MTT Assay (Vero Cells).**

Based upon the *in vitro* results with the MTT assay (Vero cells) we recommend the following:

1) Compounds with the highest TAI in the 95% activity category that have confirmed results with the exception of "colored" compounds should receive the highest priority for further profile studies and *in vivo* animal testing.

2) Compounds with the highest TAI in the 50% activity category that have confirmed results with the exception of "colored" compounds should receive the next highest priority for further profile studies and *in vivo* animal testing.

Table 12

Confirmatory Assays for Compounds Active Against Japanese Encephalitis Virus (JE)

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
** VIRUS JE																	
0079	9	01/27/87	---	NA	- 10.00	1.00	0.10	24.00	3.20	0.13	0.00 >	100.00	0.00	0.13	0.20[a]	CPE	+
0079	9	05/20/88	---	NA	10.00	32.00	3.20	17.00	1.00	0.06	0.00	100.00	0.00	0.06	0.50[a]	CPE	+
0083	64	03/08/90	UFY	0.686	1.50	6.67	4.44	3.11	10.40	3.36	0.00	29.80	0.00	2.15 >	10.68	MTT	+
0083	64	05/01/90	VS0	0.914	2.15	2.87	1.34	0.00	5.62	0.00	0.00	24.00	0.00	0.00	0.83	MTT	+
0083	64	11/01/90	ZWT	0.911	1.59	5.41	3.40	0.00	7.62	0.00	0.00	28.00	0.00	0.00	9.45	MTT	+
0084	1	05/23/89	Q5P	0.959	0.00	54.20	0.00	0.00	91.10	0.00	0.00 >	320.00	0.00	0.00 >	2.65	MTT	-
0084	1	08/23/89	RAN	0.688	32.50 >	100.00 >	3.07	49.20 >	100.00 >	2.03	0.00 >	100.00	0.00 >	2.03 >	14.89	MTT	+
0084	67	06/21/90	WYW	0.833	13.30	60.30	4.54	24.10	88.70	3.68	0.00	314.00	0.00	2.51	12.20	MTT	+
0094	1	03/09/87	---	NA	10.00 >	100.00 >	10.00	19.00 >	100.00	5.20	0.00 >	100.00	0.00	5.20	1.80[a]	CPE	+
0094	1	01/29/88	---	NA	3.20	100.00	31.00	18.00	100.00	5.50	- 320.00 >	320.00 >	1.00	5.50	2.80[a]	CPE	+
0094	1	05/04/88	---	NA	- 100.00 -	100.00 -	1.00	246.00	32.00	0.10	0.00 >	320.00	0.00	0.10	1.50[a]	CPE	+
0094	1	09/27/89	RS9	0.766	4.29 >	100.00 >	23.31	31.00 >	100.00 >	3.23	0.00 >	100.00	0.00 >	3.23 >	23.29	MTT	+
0094	65	04/10/90	V6Y	0.880	0.00	388.00	0.00	0.00	955.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
0094	1	11/01/90	ZWU	1.014	286.00	188.00	0.66	0.00	1000.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	+
0111	42	05/10/89	Q0W	0.741	8.10	217.00	26.80	48.80 >	320.00 >	6.56	0.00 >	320.00	0.00	4.45	27.93	MTT	+
0111	42	08/23/89	RAP	0.643	60.30 >	100.00 >	1.66	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	4.54	MTT	+
0111	9	12/07/89	STP	0.672	217.00	616.00	2.84	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	12.14	MTT	+
0111	9	12/07/89	STG	0.828	0.00	303.00	0.00	0.00 -	879.00	0.00	0.00 >	1000.00	0.00	0.00	4.38	MTT	-
0124	64	03/08/90	UG0	0.633	55.70 >	320.00 >	5.75	226.00 >	320.00 >	1.42	0.00 >	320.00	0.00 >	1.42 >	14.11	MTT	+
0124	64	05/01/90	VS0	0.914	0.00	25.20	0.00	0.00	61.60	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
0124	69	07/18/90	XK0	0.772	0.00	58.20	0.00	0.00	90.80	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
0136	4	03/20/87	---	NA	- 21.00 -	100.00	5.00	31.00	320.00	10.40	100.00 >	320.00 >	3.20	10.40	2.10[a]	CPE	+
0136	4	07/28/87	---	NA	66.00 >	320.00 >	4.80	94.00 >	320.00 >	3.40	320.00 >	320.00 >	1.00	3.40	1.80[a]	CPE	+
0136	4	12/07/87	---	NA	0.00	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00[a]	CPE	-
0136	4	01/29/88	---	NA	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
0136	4	05/04/88	---	NA	86.00	86.00	1.00	121.00	86.00	0.70	0.00 >	275.00	0.00	0.70	0.70[a]	CPE	+
0136	4	05/18/88	---	NA	66.00	100.00	1.50	83.00	100.00	1.20	320.00	320.00	1.00	1.20	1.10[a]	CPE	+
0148	2	08/23/89	RAQ	0.641	0.26	0.03	0.12	0.77 >	3.20 >	4.16	0.00 >	3.20	0.00	0.04 >	24.05	MTT	+
0148	67	06/21/90	WYX	0.579	0.14 >	3.20 >	22.95	0.32 >	3.20 >	10.00	0.89 >	3.20 >	3.59 >	10.00 >	43.41	MTT	+
0148	2/67	10/04/90	Z92	0.925	0.57	0.74	1.31	0.00	2.63	0.00	0.00 >	10.00	0.00	0.00	0.57	MTT	+
0206	5	03/23/87	---	NA	32.00 >	320.00 >	10.00	108.00 >	320.00 >	3.00	0.00 >	320.00	0.00 >	2.90	1.80[a]	CPE	+
0206	5	05/24/88	---	NA	- 125.00	100.00	0.80	178.00 -	200.00	1.10	320.00 >	320.00 >	1.00	0.60	0.60[a]	CPE	+
0206	5	05/10/89	Q0X	0.932	115.00	253.00	2.20	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.26	MTT	+
0206	4	12/05/89	SRW	0.770	159.00	566.00	3.56	0.00	813.00	0.00	0.00 >	1000.00	0.00	0.00	9.73	MTT	+
0206	4	12/05/89	SRN	1.007	0.00	547.00	0.00	0.00	793.00	0.00	0.00 >	1000.00	0.00	0.00	3.22	MTT	-
0206	67	06/21/90	WYX	0.579	34.40	635.00	18.47	49.10	950.00	19.36	93.10 >	1000.00 >	10.74	12.94	36.80	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
0217	33	04/19/89	PMP	0.797	2.36 >	320.00 >	136.00	34.70 >	320.00 >	9.22	0.00 >	320.00	0.00 >	9.22 >	38.60	MTT	+
0217	33	09/27/89	RSC	0.786	4.28 >	320.00 >	74.74	28.10 >	320.00 >	11.39	0.00 >	320.00	0.00 >	11.39 >	41.60	MTT	+
0217	61	11/29/89	SQJ	0.954	7.96 >	320.00 >	40.19	29.00 >	320.00 >	11.02	0.00 >	320.00	0.00 >	11.02 >	33.57	MTT	+
0272	1	03/11/87	---	NA	1.00	3.20	3.20	1.30 >	100.00	77.00	10.00 >	100.00 >	10.00	2.50	2.50[a]	CPE	+
0272	1	06/01/88	---	NA ~	0.50	1.00	2.00	0.80 ~	10.00 ~	13.00	3.20	10.00	3.10	1.20	1.20[a]	CPE	+
0272	41	05/10/89	QOX	0.932	0.00	0.50	0.00	0.00	0.82	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
0347	41	03/13/87	---	NA	1.00	10.00	10.00	2.60	10.00	3.90	0.00	3.20	0.00	3.90	1.20[a]	CPE	+
0347	41	03/01/88	---	NA	0.10	1.00	10.00	0.00	1.00	0.00	0.00	3.20	0.00	0.00	0.90[a]	CPE	+
0347	41	05/18/88	---	NA	3.20	3.20	1.00	3.90	3.20	0.80	10.00	3.20	0.30	0.80	2.70[a]	CPE	+
0347	41	05/10/89	QOY	0.913	1.25	4.94	3.94	2.08	8.55	4.10	0.00 >	32.00	0.00	2.37	12.33	MTT	+
0347	62	01/18/90	TFP	1.052	0.00	4.41	0.00	0.00	7.15	0.00	0.00	28.20	0.00	0.00 >	0.55	MTT	-
0360	48	02/06/89	OKC	0.722	0.01	0.28	25.80	0.04	0.67	15.90	0.00	2.83	0.00	6.61 >	30.84	MTT	+
0360	2	08/23/89	RAT	0.464	0.03	0.25	9.59	0.04	0.54	11.97	0.09 >	1.00 >	10.84	5.64	27.74	MTT	+
0360	2	11/01/90	ZWU	1.014	0.00	0.54	0.00	0.00	0.94	0.00	0.00 >	1.00	0.00	0.00	0.00	MTT	-
0361	2	07/24/87	---	NA ~	0.05	0.10 ~	2.00	0.02 >	0.10 >	5.00 >	0.10	0.10 >	1.00	3.80	1.50[a]	CPE	+
0361	2	05/24/88	---	NA ~	0.02	0.10 ~	5.00	0.02 ~	0.32 ~	16.00	0.00	0.32	0.00	4.10	1.40[a]	CPE	+
0361	48	02/06/89	OKD	0.660 <	0.00	0.04 >	14.00	0.01	0.09	8.29	0.03	0.30	10.40	4.30 >	29.61	MTT	+
0361	2	08/23/89	RAU	0.427 <	0.03	0.06 >	1.92 <	0.03	0.09 >	2.83	0.00	0.31	0.00 >	1.92 >	3.71	MTT	+
0361	48	02/13/90	TZX	0.725	0.01	0.06	4.29	0.02	0.08	3.54	0.00	0.30	0.00	2.45 >	14.49	MTT	+
0361	2	11/01/90	ZWV	1.057	0.03	0.04	1.57	0.00	0.07	0.00	0.00 >	0.32	0.00	0.00	0.74	MTT	+
0646	2	08/23/89	RAU	0.427	0.14	1.80	12.55	0.21	3.15	15.21	0.00 >	3.20	0.00	8.72 >	25.70	MTT	+
0646	67	06/21/90	WYY	0.895	0.60	0.70	1.18	0.00	2.32	0.00	0.00 >	3.20	0.00	0.00	0.11	MTT	+
1019	28	09/21/87	---	NA ~	1.00	3.20 ~	3.20	1.30 ~	320.00 ~	246.00 ~	3.20	320.00 ~	100.00	2.40	2.50[a]	CPE	+
1019	28	05/10/89	QOZ	0.845	1.10	1.80	1.70	2.50	7.80	3.10	0.00 >	10.00	0.00	0.70	3.34	MTT	+
1019	28	08/23/89	RAV	0.331	0.36 >	1.00 >	2.75	0.70 >	1.00 >	1.44	0.00 >	1.00	0.00 >	1.44 >	14.16	MTT	+
1019	28	03/06/90	UCL	0.896	1.04	14.90	14.36	2.57	78.80	30.61	0.00 >	100.00	0.00	5.79	24.72	MTT	+
1337	33	08/29/89	RC6	0.806	7.89 >	32.00 >	4.06	13.90 >	32.00 >	2.30	29.40 >	32.00 >	1.09 >	2.30 >	16.15	MTT	+
1337	62	01/18/90	TFQ	1.204	76.70	134.00	1.75	0.00	212.00	0.00	0.00 >	320.00	0.00	0.00	1.25	MTT	+
1337	64	03/13/90	UIO	1.111	179.00 >	320.00 >	1.79	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.62	MTT	+
1337	65	04/12/90	V8V	0.986	100.00	157.00	1.57	0.00	259.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.49	MTT	+
1337	64	05/03/90	VVK	0.870	304.00 >	320.00 >	1.05	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	4.61	MTT	+
1337	67	06/21/90	WZO	0.863	65.00	163.00	2.51	0.00	239.00	0.00	0.00 >	1000.00	0.00	0.00	4.98	MTT	+
1644	64	03/13/90	UIQ	1.063	22.70 >	320.00 >	14.08	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	21.39	MTT	+
1644	64	05/03/90	VVL	0.866	54.50	66.00	1.21	139.00	813.00	5.85	0.00 >	1000.00	0.0	0.47	15.25	MTT	+
1644	64	11/01/90	ZWV	1.057	13.40	42.30	3.17	0.00	79.30	0.00	0.00	858.00	0.00	0.00	4.66	MTT	+
1645	33	08/29/89	RC7	0.941	0.51	23.80	47.05	1.79 >	32.00 >	17.89	0.00 >	32.00	0.00	13.28 >	40.13	MTT	+
1645	33	11/01/90	ZWW	0.868	0.00	83.50	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	2.58	MTT	-

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
1838	64	03/13/90	UIQ	1.063	159.00	160.00	1.01	252.00 >	320.00 >	1.27	0.00 >	320.00	0.00	0.64 >	1.96	MTT	+
1838	64	05/03/90	VVM	0.869	162.00	247.00	1.53	304.00	521.00	1.71	0.00	952.00	0.00	0.81	2.11	MTT	+
1838	64	11/01/90	ZWW	0.868	161.00	338.00	2.10	259.00	558.00	2.15	0.00	956.00	0.00	1.30	4.29	MTT	+
2034	56	06/13/89	QBY	0.957	0.60	1.83	3.05	0.00	2.78	0.00	0.00	9.62	0.00	0.00	5.07	MTT	+
2034	56	08/08/89	R1W	0.829	0.45	1.71	3.84	0.65	2.43	3.72	0.00	8.76	0.00	2.62	10.63	MTT	+
2275	53	04/10/89	PF5	0.811	18.00	106.00	5.80	0.00	216.00	0.00	0.00 >	320.00	0.00	0.00	12.86	MTT	+
2275	12	08/30/89	RE3	0.803	13.70	167.00	12.19	22.40	234.00	10.43	0.00 >	320.00	0.00	7.45	17.05	MTT	+
2275	67	05/31/90	WGP	0.972	0.00	162.00	0.00	0.00	237.00	0.00	0.00 >	320.00	0.00	0.00	0.98	MTT	-
2318	13	05/05/87	---	NA ~	0.32	10.00 ~	31.30	0.70	10.00	14.00	3.20 >	320.00 >	100.00	14.00	3.30[a]	CPE	+
2318	13	07/28/87	---	NA ~	0.32	3.20	10.00	0.50 >	10.00	20.00	1.00 >	10.00 >	10.00	6.30	2.50[a]	CPE	+
2318	53	04/10/89	PF6	0.791	0.00 <	1.00	0.00	0.00	2.60	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
2318	13	08/30/89	RE4	0.686	0.17	6.60	39.98	0.27 >	10.00 >	36.69	0.87 >	10.00 >	11.45	24.21 >	43.71	MTT	+
2318	67	05/31/90	WGP	0.972	0.54	0.93	1.73	0.00	2.95	0.00	0.00 >	10.00	0.00	0.00	2.68	MTT	+
2318	67	07/12/90	XG6	0.871	0.34	7.38	21.60	0.52 >	10.00 >	19.36	0.00 >	10.00	0.00	14.30 >	34.12	MTT	+
2503	21	06/18/87	---	NA <	0.32	1.00 >	3.00	0.19	1.00	5.30	1.00	320.00	320.00	5.10	3.60[a]	CPE	+
2503	21	05/25/88	---	NA >	1.00	3.20	3.20	1.80	3.20	1.80	3.20 >	10.00 >	3.10	1.80	1.20[a]	CPE	+
2503	53	04/10/89	PF7	0.845 <	1.00	1.00 >	1.00	0.00	2.60	0.00	0.00 >	320.00	0.00	0.00 >	0.05	MTT	+
2503	21	09/06/89	RFT	0.986	0.18	2.90	15.81	0.43	9.43	22.06	0.00 >	10.00	0.00	6.78 >	28.10	MTT	+
2503	67	05/31/90	WGQ	0.953	0.59	1.30	2.22	0.00	3.20	0.00	0.00 >	10.00	0.00	0.00	2.51	MTT	+
2503	67	07/12/90	XG7	0.926	0.51	0.30	0.58	0.81 >	10.00 >	12.28	0.00 >	10.00	0.00	0.36 >	21.75	MTT	+
2503	67	10/04/90	Z93	0.942	0.45	1.14	2.51	0.00	2.92	0.00	0.00 >	32.00	0.00	0.00	4.08	MTT	+
2506	21	09/06/89	RFU	0.996	1.79 >	10.00 >	5.59	7.02 >	10.00 >	1.42	0.00 >	10.00	0.00 >	1.42 >	8.07	MTT	+
2506	64	03/13/90	UIT	1.032	2.64	19.90	7.53	10.00	68.00	6.80	0.00 >	320.00	0.00	1.99	13.02	MTT	+
2506	64	05/03/90	VVN	0.911	6.52	5.03	0.77	0.00	18.80	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
2563	32	06/25/87	---	NA	0.32 <	3.20	10.00	0.60 ~	3.20	5.30	0.00	3.20	0.00 <	5.00	1.00[a]	CPE	+
2563	32	03/01/88	---	NA	0.32	1.00	3.10	0.40 ~	3.20	8.00	1.00	3.20	3.20	2.60	1.00[a]	CPE	+
2563	32	05/25/88	---	NA ~	0.50	3.20 ~	6.40	0.80 ~	1.00 ~	1.30	3.20	10.00	3.10	3.90	1.50[a]	CPE	+
2563	48	02/06/89	OKE	0.554	0.14 >	3.20 >	23.50	0.32 >	3.20 >	10.00	0.89 >	3.20 >	3.59 >	10.00 >	41.49	MTT	+
2563	15	05/23/89	Q5T	0.850	1.61	12.40	7.68	2.59	20.80	8.03	0.00 >	32.00	0.00	4.77	20.32	MTT	+
2563	21	09/06/89	RFV	1.087	0.08	1.39	16.86	0.16	2.21	13.50	0.00	8.57	0.00	8.49 >	18.23	MTT	+
2563	48	12/05/89	SRT	0.822	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	0.65	MTT	-
2563	15/21	11/01/90	ZWX	1.046	0.29	0.61	2.12	0.00	1.24	0.00	0.00 >	10.00	0.00	0.00	2.32	MTT	+
2631	19	09/06/89	RGO	0.885	7.33	0.69	0.09	55.40	306.00	5.53	0.00 >	320.00	0.00	0.01	16.57	MTT	+
2631	65	04/17/90	VDD	0.917	8.83 >	320.00 >	36.25	45.00 >	320.00 >	7.10	0.00 >	320.00	0.00 >	7.10 >	32.03	MTT	+
2631	65	07/06/90	X9S	0.766	4.25 >	320.00 >	75.21	8.67 >	320.00 >	36.90	71.50 >	320.00 >	4.47 >	36.90 >	57.59	MTT	+
2716	22	05/27/87	---	NA ~	2.00	10.00 ~	5.00	3.20	100.00	31.00	10.00	100.00	10.00	3.20	1.60[a]	CPE	+
2716	22	05/25/88	---	NA ~	10.00	3.20	0.30	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00	0.50[a]	CPE	+
2716	46	01/23/89	OEI	1.248 <	1.00	18.00 >	18.00	0.00	38.00	0.00	0.00	94.00	0.00	0.00 >	14.21	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.		IC 25		TC 25		AI 25		IC 50		TC 50		AI 50		IC 95		TC 95		AI 95		SI		TAI	Assay Type	ACT
2811		12/04/87	---	NA	<	0.32		0.32		1.00		0.60		3.20		5.30		0.32		3.20		10.00		0.60		1.20[a]	CPE	+
2811		03/01/88	---	NA	-	0.10		1.00	-	10.00		0.30	>	1.00		3.00		1.00	>	1.00	>	1.00		3.50		1.10[a]	CPE	+
2811	48	02/06/89	OKH	0.629		0.01		0.24		32.70		0.02		0.47		22.20		0.09		0.91		10.40		11.00	>	37.18	MTT	+
2812	32	03/01/88	---	NA		0.03	<	0.03	-	1.00		0.005	-	0.032	-	6.40		0.00		0.032		0.00		5.90		1.00[a]	CPE	+
2812	48	02/06/89	OK1	0.576		0.00	>	0.01	>	4.89		0.00	>	0.01	>	2.57		0.01	>	0.01	>	1.06	>	2.57		18.14	MTT	+
2812	61	11/29/89	SQL	0.963		0.01		0.02		4.11		0.00		0.04		0.00		0.00		0.26		0.00		0.00	>	8.53	MTT	+
2812	61	12/06/90	1PP	0.918		0.00	<	0.32		0.00		0.00	<	0.32		0.00		0.00	<	0.32		0.00		0.00		0.00	MTT	-
2979	25	08/11/87	---	NA	-	3.20		32.00	-	10.00		6.20	-	100.00	-	16.00		0.00		100.00		0.00		5.10		1.50[a]	CPE	+
2979	25	05/25/88	---	NA	-	5.00		10.00	-	2.00		8.40	-	32.00	-	3.80		0.00		32.00		0.00		1.20		0.40[a]	CPE	+
2979	48	02/07/89	OLL	1.181		0.69		0.93		1.34		1.67		2.26		1.35		0.00		25.10		0.00		0.56		1.63	MTT	+
2979	48	03/10/89	OZX	0.763		1.43		12.40		8.71		2.11		21.20		10.10		0.00		88.00		0.00		5.91		28.50	MTT	+
2979	27	04/19/89	PME	0.698		1.91		4.95		2.59		6.11		8.89		1.46		0.00	>	320.00		0.00		0.81	>	8.81	MTT	+
2979	25	09/07/89	RHR	0.933		1.85		2.90		1.56		0.00		16.40		0.00		0.00		30.70		0.00		0.00	>	4.28	MTT	+
2980	25	08/11/87	---	NA		0.32		10.00		31.00		0.60	-	32.00	-	53.00		3.20		32.00		10.00		16.00		2.30[a]	CPE	+
2980	25	05/25/88	---	NA	-	0.50		1.00	-	2.00		0.80	-	10.00	-	13.00		0.00		10.00		0.00		1.20		1.10[a]	CPE	+
2980	48	02/07/89	OLM	1.142		0.42		1.72		4.13		0.69	>	3.20	>	4.62		0.00	>	3.20		0.00		2.48	>	15.31	MTT	+
2980	48	03/10/89	OZY	0.737		0.11		2.10		19.10		0.18	>	3.20	>	18.20		0.73	>	3.20	>	4.39		12.00		40.06	MTT	+
2980	25	09/07/89	RHS	0.875		0.15		0.90		5.90		0.27		1.94		7.26		0.00	>	10.00		0.00		3.37	>	17.45	MTT	+
2980	61	11/29/89	SQU	1.012		0.24		1.76		7.45		0.50		2.58		5.15		0.00	>	3.20		0.00		3.51	>	21.71	MTT	+
3038		09/09/87	---	NA	<	0.32		0.32		1.00		0.10	-	32.00	-	320.00		1.00		32.00		32.00		3.10		2.30[a]	CPE	+
3038		05/25/88	---	NA		0.10		0.01		0.10		0.30	>	1.00	>	3.30		0.00	>	1.00		0.00		0.03		0.90[a]	CPE	+
3038		04/10/89	PF9	0.918		0.00	<	1.00		0.00		0.00	<	1.00		0.00		0.00	>	320.00		0.00		0.00		0.00	MTT	-
3802	35	09/12/89	RJF	0.484		0.13		0.81		6.47		0.19	>	10.00	>	52.70		0.00	>	10.00		0.00		4.25		20.53	MTT	+
3802	67	05/31/90	WGS	1.027		0.35		0.24		0.69		3.85		1.00		0.26		0.00	>	10.00		0.00		0.06	>	0.28	MTT	+
3802	67	07/12/90	XG7	0.926		0.34	>	10.00	>	29.50		0.49	>	10.00	>	20.57		0.93	>	10.00	>	10.75	>	20.57	>	45.81	MTT	+
3964	33	02/28/89	OU3	0.820		9.26		53.00		5.72		40.60		105.00		2.57		0.00	>	160.00		0.00		1.30		12.64	MTT	+
3964	33	03/21/89	P81	0.815		1.57		16.00		10.20		6.61		32.30		4.89		0.00	>	32.00		0.00		2.43		19.74	MTT	+
3964	33	09/27/89	RSA	0.830		3.85		8.57		2.23		9.64		24.90		2.58		0.00		94.60		0.00		0.89		4.70	MTT	+
4070	35	04/12/88	---	NA	-	0.50		1.00	-	2.00		0.70	-	32.00	-	46.00		10.00		32.00		3.20		1.50		1.50[a]	CPE	+
4070	48	02/07/89	OLN	1.137		1.34		3.24		2.42		2.45	>	3.20	>	1.31		0.00	>	3.20		0.00		1.32	>	5.66	MTT	+
4070	48	03/10/89	OZY	0.737		1.15	>	3.20	>	2.79		1.61	>	3.20	>	1.98		2.99	>	3.20	>	1.07	>	1.98	>	13.87	MTT	+
4070	48	12/07/89	STN	0.686		0.93		8.51		9.14		4.47		16.40		3.66		0.00		45.60		0.00		1.90	>	18.93	MTT	+
4074	48	02/07/89	OLP	1.229		0.00	>	0.03		0.00		0.00	>	0.03		0.00		0.00	>	0.03		0.00		0.00		0.00	MTT	-
4074	48	03/10/89	OZZ	0.762		0.01	>	0.03	>	4.20		0.01	>	0.03	>	2.30		0.03	>	0.03	>	1.09	>	2.30	>	19.27	MTT	+
4074	48	12/07/89	STO	0.617	<	1.00		1.98	>	1.98	<	1.00		2.96	>	2.96	<	1.00		26.80	>	26.8	>	1.98	>	7.52	MTT	+
4074	48	02/13/90	U00	0.746		0.20		0.81		3.93		0.68		1.80		2.64		0.00	>	10.00		0.00		1.18	>	11.27	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4113	39	05/04/88	---	NA	0.21	0.10	0.50	0.26	0.10	0.40	1.00	0.10	0.10	0.40	1.10[a]	CPE	+
4113	39	06/14/88	---	NA <	0.32	1.00	3.10	0.18	1.00	5.50	1.00	1.00	1.00	5.50	1.40[a]	CPE	+
4113	48	02/07/89	OLQ	1.210	0.26 >	0.32 >	1.21	0.00 >	0.32	0.00	0.00 >	0.32	0.00	0.00 >	2.35	MTT	+
4113	48	03/10/89	P00	0.827	0.12 >	0.32 >	2.75	0.20 >	0.32 >	1.61	0.00 >	0.32	0.00 >	1.61 >	12.65	MTT	+
4113	39	05/24/89	Q6T	0.809	0.05	0.36	7.02	0.09	0.69	7.67	0.28	2.85	10.10	4.01 >	27.24	MTT	+
4113	39	09/12/89	RJK	0.700	0.12 >	1.00 >	8.60	0.17 >	1.00 >	5.89	0.00 >	1.00	0.00 >	5.89 >	22.13	MTT	+
4113	39	11/01/90	ZWY	1.028	0.19 >	0.32 >	1.71	0.00 >	0.32	0.00	0.00 >	0.32	0.00	0.00 >	2.46	MTT	+
4277	42	09/13/89	RLJ	0.745	1.66 >	10.00 >	6.03	3.99 >	10.00 >	2.51	9.12 >	10.00 >	1.10 >	2.51 >	20.16	MTT	+
4277	65	05/09/90	W0Y	0.926	4.40	15.00	3.41	6.69	23.30	3.49	0.00	96.60	0.00	2.24 >	8.99	MTT	+
4277	65	07/06/90	XC1	0.680	1.73	17.10	9.88	4.16	24.60	5.90	9.16	93.80	10.24	4.12 >	26.83	MTT	+
4278	42	09/13/89	RLK	0.697	3.95	27.70	7.02	5.38 >	32.00 >	5.94	9.40 >	32.00 >	3.40	5.15 >	23.73	MTT	+
4278	61	11/29/89	SQM	0.956	4.96	25.30	5.10	32.00	55.20	1.73	0.00 >	100.00	0.00	0.79	14.47	MTT	+
4278	61	11/01/90	ZWZ	1.015	4.88	12.90	2.65	8.27	22.10	2.67	0.00 >	100.00	0.00	1.56	5.15	MTT	+
4280	42	09/13/89	RLK	0.697	3.30 >	10.00 >	3.03	4.77 >	10.00 >	2.10	9.29 >	10.00 >	1.08 >	2.10 >	13.40	MTT	+
4280	42	11/01/90	ZWZ	1.015	5.20	11.90	2.30	9.53	21.60	2.27	0.00	210.00	0.00	1.25	3.41	MTT	+
4281	42	09/13/89	RLL	0.706	0.62	5.66	9.17	1.29	8.13	6.30	2.92 >	10.00 >	3.42	4.39 >	24.56	MTT	+
4281	61	11/29/89	SQM	0.956	1.39	6.82	4.89	3.20	12.00	3.75	0.00 >	32.00	0.00	2.13 >	13.42	MTT	+
4281	61	11/01/90	ZX0	1.081	1.81	4.56	2.51	0.00	7.65	0.00	0.00 >	32.00	0.00	0.00	3.69	MTT	+
4452	44	07/07/89	QO1	0.945	19.40	179.00	9.19	68.40	277.00	4.05	0.00 >	320.00	0.00	2.61	14.99	MTT	+
4452	44	08/16/89	R6Y	0.655	230.00	8.30	0.04	0.00	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
4527	47	01/31/89	OIZ	0.511 <	1.00	16.80 >	16.80	1.50	33.40	22.20	7.72	96.60	12.30	11.20 >	37.38	MTT	+
4527	47	02/06/90	TRA	0.899	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.35	MTT	-
4527	47	02/13/90	U01	0.744	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	2.00	MTT	-
4527	63	02/13/90	TZV	0.705	5.05	19.20	3.80	0.00	28.30	0.00	0.00	100.00	0.00	0.00	11.23	MTT	+
4590	42	07/27/88	---	NA ~	0.50	3.20 ~	6.40	0.90 >	10.00 >	10.00	3.20 >	10.00 >	3.00	3.60	1.90[a]	CPE	+
4590	48	02/28/89	OU0	0.744	0.38	2.17	5.66	0.53	5.47	10.40	0.96	28.70	30.60	4.11 >	21.90	MTT	+
4590	42	09/13/89	RLN	0.615	0.39	2.17	5.64	0.58	3.75	6.41	0.00 >	10.00	0.00	3.71	16.13	MTT	+
4590	61	11/29/89	SQN	1.006	0.37	1.56	4.23	0.67	2.49	3.73	0.00	8.90	0.00	2.33	12.97	MTT	+
4590	48	02/06/90	TRA	0.899	1.26	5.06	4.01	2.05	7.81	3.81	0.00 >	10.00	0.00	2.47 >	14.80	MTT	+
4590	63	02/13/90	TZV	0.705	1.65	5.86	3.56	0.00	8.51	0.00	0.00 >	10.00	0.00	0.00 >	11.13	MTT	+
4592	48	02/28/89	OU1	0.764	4.34	50.10	11.60	6.97	92.50	13.30	26.50 >	100.00 >	3.77	7.19	32.32	MTT	+
4592	42	09/13/89	RLN	0.615	4.12	23.10	5.61	5.96	50.40	8.46	0.00 >	100.00	0.00	3.87 >	19.07	MTT	+
4592	61	11/29/89	SQN	1.006	6.34	32.00	5.05	17.90	71.50	4.00	0.00 >	100.00	0.00	1.79	15.38	MTT	+
4592	48	02/06/90	TRB	0.965	14.20	45.60	3.22	25.40	76.50	3.02	0.00 >	100.00	0.00	1.80 >	10.40	MTT	+
4592	63	02/13/90	TZW	0.734	2.81	7.25	2.58	0.00	14.30	0.00	0.00	80.00	0.00	0.00 >	7.17	MTT	+
4609	48	02/28/89	OU2	0.810	0.01 >	0.10 >	9.69	0.01 >	0.10 >	6.54	0.03 >	0.10 >	3.22 >	6.54 >	30.11	MTT	+
4609	43	09/27/89	RSA	0.830	0.01	0.09	7.39	0.02	0.21	8.73	0.00	1.00	0.00	3.76	15.73	MTT	+
4609	48	12/05/89	SRV	0.934	0.04	0.21	5.64	0.06	0.31	4.94	0.00 >	1.00	0.00	3.26	17.75	MTT	+
4609	63	02/13/90	TZX	0.725	0.03	0.17	4.81	0.05	0.26	4.83	0.00	0.89	0.00	3.12 >	19.40	MTT	+

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Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4739	44	07/07/89	QQ2	0.742	13.00	48.30	3.72	19.00	66.00	3.47	0.00	97.90	0.00	2.54 >	13.96	MTT	+
4739	44	08/16/89	R6Y	0.655	0.00	0.82	0.00	0.00	45.20	0.00	0.00	94.50	0.00	0.00	0.00	MTT	-
4739	64	03/08/90	UG3	0.398	0.00	0.58	0.00	0.00	143.00	0.00	0.00	302.00	0.00	0.00	0.00	MTT	-
4739	64	05/03/90	VV0	0.873	0.00	23.80	0.00	0.00	46.00	0.00	0.00	94.60	0.00	0.00	0.00	MTT	-
4768	44	11/08/88	02Q	1.017	42.30	89.10	2.11	75.70	165.00	2.18	0.00	305.00	0.00	1.18	8.52	MTT	+
4768	44	02/13/90	U03	0.755	0.00	187.00	0.00	0.00	315.00	0.00	0.00 >	320.00	0.00	0.00 >	2.66	MTT	-
4769	44	11/08/88	02R	0.954	44.00	94.80	2.15	77.80	169.00	2.18	0.00	305.00	0.00	1.22 >	8.82	MTT	+
4769	44	02/13/90	U03	0.755	0.00	97.40	0.00	0.00	172.00	0.00	0.00	308.00	0.00	0.00 >	3.15	MTT	-
4785	46	01/24/89	OFZ	1.129	1.29	4.18	3.25	2.27	13.10	5.78	0.00 >	320.00	0.00	1.84 >	10.37	MTT	+
4785	46	09/13/89	RLP	0.490	0.68	9.27	13.55	1.56	22.10	14.16	0.00 >	32.00	0.00	5.94 >	27.84	MTT	+
4785	46	11/01/90	ZX0	1.081	0.00	1.55	0.00	0.00	6.71	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
4796	46	01/24/89	OG4	1.080	3.99	38.80	9.73	6.57	95.50	14.50	0.00 >	320.00	0.00	5.90	25.60	MTT	+
4796	46	09/13/89	RLQ	0.539	1.00	60.30	60.33	1.49	88.70	59.53	3.05 >	100.00 >	32.78	40.51 >	60.74	MTT	+
4796	61	11/29/89	SQO	0.916	5.91	195.00	32.99	22.70	320.00	14.11	0.00 >	320.00	0.00	8.60 >	37.48	MTT	+
4855	48	02/21/89	OQT	0.598	2.77	112.00	40.50	4.79	200.00	41.70	15.50 >	320.00 >	20.70	23.40 >	59.97	MTT	+
4855	48	09/13/89	RLT	0.615	4.91 >	320.00 >	65.23	11.10 >	320.00 >	28.79	28.80 >	320.00 >	11.12 >	28.79 >	62.18	MTT	+
4855	61	11/29/89	SQR	0.975	6.27	190.00	30.31	14.10	280.00	19.86	62.20 >	320.00 >	5.14	13.47 >	44.23	MTT	+
4855	48	12/06/90	1PQ	1.032	7.17 >	100.00 >	13.94	13.60 >	100.00 >	7.35	29.40 >	100.00 >	3.4 >	7.35 >	35.99	MTT	+
4871	46	01/16/89	OAR	0.960	0.00	282.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	5.41	MTT	-
4871	61	11/29/89	SQS	0.939	60.70	756.00	12.44	196.00 >	1000.00 >	5.09	0.00 >	1000.00	0.00	3.85	21.64	MTT	+
4978	51	03/13/89	P00	0.873	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4978	27	12/05/89	SRW	0.770	100.00	559.00	5.59	153.00	857.00	5.59	0.00 >	1000.00	0.00	3.64	21.45	MTT	+
4984	51	03/13/89	P0R	0.887	27.30	19.10	0.70	0.00	55.20	0.00	0.00 >	320.00	0.00	0.00	3.11	MTT	+
4984	51	10/10/89	S1U	1.087	4.82	13.40	2.78	7.52	21.20	2.81	0.00	80.60	0.00	1.78	5.98	MTT	+
4984	51	12/14/89	SXR	0.842	21.70	19.50	0.90	0.00	29.00	0.00	0.00 >	100.00	0.00	0.00 >	4.52	MTT	+
4992	51	03/13/89	P0V	0.707	249.00	309.00	1.24	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.90	MTT	+
4992	61	11/29/89	SQT	1.017	148.00	490.00	3.30	249.00	660.00	2.65	0.00	966.00	0.00	1.96	11.74	MTT	+
4996	51	03/13/89	P0X	0.886	0.00	292.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4996	51	10/10/89	S1X	1.085	152.00	320.00	2.10	232.00 >	320.00 >	1.38	0.00 >	320.00	0.00	1.38 >	4.44	MTT	+
5035	48	02/27/89	OSF	0.974	5.21	12.80	2.46	0.00	21.70	0.00	0.00	86.40	0.00	0.00	3.02	MTT	+
5035	48	10/10/89	S1Y	1.134	0.62	0.32	0.51	1.72	6.26	3.65	0.00	9.69	0.00	0.19	11.29	MTT	+
5053	48	02/27/89	OSK	0.955	0.00	39.60	0.00	0.00	66.50	0.00	0.00	262.00	0.00	0.00	0.00	MTT	-
5053	48	10/10/89	S1Z	1.029	38.10	77.30	2.03	56.60 >	100.00 >	1.77	0.00 >	100.00	0.00	1.37 >	5.79	MTT	+
5053	48	01/18/90	TFU	0.976	0.00	92.70	0.00	0.00	167.00	0.00	0.00	305.00	0.00	0.00	1.07	MTT	-

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5058	48	02/27/89	OSL	0.881	138.00 >	320.00 >	2.32	310.00 >	320.00 >	1.03	0.00 >	320.00	0.00 >	1.03 >	8.39	MTT	+
5058	48	10/10/89	S1Z	1.029	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.37	MTT	-
5058	62	12/05/89	SRQ	0.993	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	3.81	MTT	-
5058	48	12/20/89	T15	0.992	566.00 >	1000.0 >	1.77	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	5.65	MTT	+
5058	GABSN	02/08/90	TWI	0.857	234.00 >	1000.0 >	4.27	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	10.60	MTT	+
5072	48	02/28/89	OTZ	0.724	134.00	88.00	0.66	207.00 >	320.00 >	1.54	0.00 >	320.00	0.00	0.42 >	3.42	MTT	+
5072	48	09/27/89	RS7	0.935	0.00	139.00	0.00	0.00	215.00	0.00	0.00 >	320.00	0.00	0.00	0.25	MTT	-
5072	48	10/03/89	RUM	0.895	0.00	47.70	0.00	0.00	152.00	0.00	0.00	977.00	0.00	0.00	0.00	MTT	-
5121	56	06/21/89	QHH	0.623	33.40	155.00	4.64	48.20	210.00	4.36	93.00	309.00	3.32	3.22	20.58	MTT	+
5121	56	08/08/89	R21	0.749	21.50	155.00	7.22	41.10	210.00	5.11	91.50	309.00	3.38	3.78	22.70	MTT	+
5121	56	11/01/90	ZX1	1.111	52.10 >	320.00 >	6.14	111.00 >	320.00 >	2.88	288.00 >	320.00 >	1.11 >	2.88 >	19.41	MTT	+
5138	57	07/11/89	QPM	0.830	41.40	8.95	0.22	55.60 >	320.00 >	5.76	94.30 >	320.00 >	3.39	0.16 >	30.37	MTT	+
5138	57	08/16/89	R6Z	0.542	72.20	574.00	7.95	131.00	827.00	6.33	293.00 >	1000.00 >	3.42	4.39	23.50	MTT	+
5138	65	04/26/90	VO1	0.561	147.00 >	1000.0 >	6.82	215.00 >	1000.00 >	4.65	0.00 >	1000.00	0.00 >	4.65 >	20.59	MTT	+
5142	57	07/11/89	QPO	1.007	0.00	11.80	0.00	0.00	36.20	0.00	0.00	98.60	0.00	0.00 >	1.47	MTT	-
5142	57	08/16/89	R70	0.463	36.70	155.00	4.23	56.10	210.00	3.74	0.00	309.00	0.00	2.76	15.95	MTT	+
5405	66	05/08/90	VZ3	0.808	0.00 <	1.00	0.00	0.00 <	1.00	0.00	0.00	7.91	0.00	0.00	0.00	MTT	-
5405	66	07/06/90	X9V	0.739	0.12	0.53	4.26	0.17	0.79	4.62	0.30	9.07	29.84	3.09	16.46	MTT	+
5483	66	05/08/90	VZ5	0.835	0.47	1.69	3.57	0.85	2.66	3.13	0.00	91.50	0.00	1.99 >	8.04	MTT	+
5483	66	07/18/90	XKD	0.667	0.04	0.18	3.99	0.07	0.26	3.64	0.00	9.03	0.00	2.52 >	10.78	MTT	+
5484	53	12/12/89	SVX	0.849	204.00 >	1000.0 >	4.90	405.00 >	1000.00 >	2.47	914.00 >	1000.00 >	1.09 >	2.47 >	18.89	MTT	+
5484	53	12/14/89	SXI	0.872	126.00	518.00	4.10	226.00	715.00	3.17	0.00 >	1000.00	0.00	2.29	13.48	MTT	+
5484	66	05/08/90	VZ5	0.835	103.00	283.00	2.74	237.00 >	320.00 >	1.35	0.00 >	320.00	0.00	1.19 >	7.97	MTT	+
5485	53	12/14/89	SXJ	0.864	14.30	28.30	1.98	25.80 >	32.00 >	1.24	0.00 >	32.00	0.00	1.10 >	5.44	MTT	+
5485	66	05/08/90	VZ6	0.935	0.00	15.80	0.00	0.00	21.60	0.00	0.00	32.00	0.00	0.00	0.92	MTT	-
5485	66	07/18/90	XKD	0.667	0.00	5.07	0.00	0.00	6.94	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
5489	66	05/08/90	VZ7	0.927	166.00 >	320.00 >	1.93	282.00 >	320.00 >	1.14	0.00 >	320.00	0.00 >	1.14 >	6.14	MTT	+
5489	66	07/06/90	XC5	0.880	0.00	561.00	0.00	0.00	915.00	0.00	0.00 >	1000.00	0.00	0.00 >	6.26	MTT	-
5489	66	11/07/90	ZZE	0.726	0.00	1430.0	0.00	0.00	2210.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	-
5495	53	04/18/89	PKC	0.798 <	1.00	2.63 >	2.63	1.42	5.75	4.04	0.00	25.10	0.00	1.85 >	11.51	MTT	+
5495	53	12/14/89	SXM	0.960	6.84 >	32.00 >	4.68	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00 >	13.21	MTT	+
5495	66	05/08/90	VZ9	0.874	11.90	44.80	3.77	27.90	71.30	2.56	0.00 >	100.00	0.00	1.60	7.68	MTT	+
5495	66	07/18/90	XKE	0.875	13.70	30.60	2.24	30.10	54.10	1.80	0.00	95.40	0.00	1.02	4.02	MTT	+
5497	53	04/18/89	PKD	0.788	14.70	166.00	11.30	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	17.62	MTT	+
5497	53	12/20/89	T19	0.947	119.00	544.00	4.57	221.00	767.00	3.48	0.00 >	1000.00	0.00	2.46	16.05	MTT	+
5497	65	05/01/90	VRS	0.942	269.00	306.00	1.14	0.00	550.00	0.00	0.00	981.00	0.00	0.00	0.09	MTT	+
5497	66	05/08/90	VZA	0.887	249.00	282.00	1.13	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.23	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5503	53	04/18/89	PKG	0.703	7.87	76.10	9.68	25.60	154.00	6.03	0.00	295.00	0.00	2.98	17.26	MTT	+
5503	48	02/13/90	U05	0.770	71.00	155.00	2.18	0.00	210.00	0.00	0.00	309.00	0.00	0.00 >	11.07	MTT	+
5503	66	05/08/90	VZC	0.881	55.20	71.20	1.29	0.00	140.00	0.00	0.00	302.00	0.00	0.00	1.44	MTT	+
5515	53	04/18/89	PKM	0.639	5.02	34.20	6.81	11.20	58.40	5.20	0.00	163.00	0.00	3.04	21.27	MTT	+
5515	53	01/18/90	TFW	1.095	66.10	49.70	0.75	0.00	74.40	0.00	0.00	309.00	0.00	0.00	4.83	MTT	+
5515	66	05/10/90	W1J	0.935	0.00	53.90	0.00	0.00	82.70	0.00	0.00	300.00	0.0	0.00	1.91	MTT	-
5515	53	11/01/90	ZX2	0.775	0.00	64.70	0.00	0.00	97.40	0.00	0.00	297.00	0.00	0.00 >	8.75	MTT	-
5532	56	06/14/89	QDK	0.988	156.00 >	320.00 >	2.05	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	7.33	MTT	+
5532	56	08/09/89	R3P	0.818	46.80	492.00	10.51	172.00	663.00	3.85	0.00	973.00	0.00	2.85 >	21.79	MTT	+
5535	56	06/14/89	QDM	0.967	105.00	294.00	2.79	204.00 >	320.00 >	1.57	0.00 >	320.00	0.00	1.44 >	5.90	MTT	+
5535	56	08/09/89	R3Q	0.774	0.00	497.00	0.00	0.00	717.00	0.00	0.00 >	1000.00	0.00	0.00 >	6.55	MTT	-
5538	56	06/14/89	QDN	0.953	224.00 >	320.00 >	1.43	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.37	MTT	+
5538	56	08/09/89	R3R	0.866	144.00	372.00	2.58	207.00	587.00	2.84	0.00	974.00	0.00	1.80 >	10.49	MTT	+
5539	56	06/14/89	QDO	0.970 <	1.00	5.66 >	5.66	1.38	9.28	6.72	3.09	100.00	32.40	4.10 >	18.67	MTT	+
5539	56	08/09/89	R3R	0.866	0.55	5.27	9.61	1.34	7.35	5.49	3.20	94.30	29.48	3.94 >	23.28	MTT	+
5539	56	11/01/90	ZX2	0.775	1.10	2.90	2.64	0.00	6.00	0.00	0.00 >	32.00	0.00	0.00	9.06	MTT	+
5580	54	05/03/89	PY8	0.486 <	320.00 >	100000 >	313.00 <	320.00 >	100000 >	313.00 <	320.00 >	100000 >	313.00 >	313.00 >	95.79	MTT	+
5580	54	05/03/89	PY8	0.486 <	0.32 >	100.00 >	313.00 <	0.32 >	100.00 >	313.00 <	0.32 >	100.00 >	313.00 >	313.00 >	79.97	MTT	+
5580	54	05/11/89	Q56	0.655 <	320.00 >	100000 >	313.00 <	320.00 >	100000 >	313.00	0.00 >	100000	0.00 >	313.00 >	75.69	MTT	+
5580	54	05/11/89	Q56	0.655	8.77 >	100.00 >	11.40	17.00 >	100.00 >	5.87	0.00 >	100.00	0.00 >	5.87 >	26.11	MTT	+
5601	62	12/05/89	SRR	0.806	0.00	627.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.43	MTT	-
5601	GABSN	02/08/90	TWJ	0.769	521.00	3200.0	6.14	1430.00 >	3200.00 >	2.23	0.00 >	3200.00	0.00	2.23 >	17.12	MTT	+
5601	67	05/31/90	WGU	0.929	0.00	228.00	0.00	0.00	806.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.06	MTT	-
5601	62/67	11/01/90	ZX3	0.810	850.00	622.00	0.73	0.00	1690.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	+
5643	57	07/06/89	QMC	0.937	151.00	10.00	0.07	230.00	282.00	1.23	0.00 >	320.00	0.00	0.04 >	0.68	MTT	+
5643	57	08/16/89	R75	0.631	0.00 <	1.00	0.00	0.00	32.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5643	65	05/01/90	VRU	0.942	0.00	42.40	0.00	0.00	66.00	0.00	0.00	241.00	0.00	0.00	0.00	MTT	-
5695	57	07/18/89	QT4	0.800 <	1.00	6.41 >	6.41	1.79	9.62	5.38	0.00 >	320.00	0.00	3.58 >	16.14	MTT	+
5695	57	08/22/89	R8V	0.605	4.91 >	32.00 >	6.52	21.70 >	32.00 >	1.47	0.00 >	32.00	0.00 >	1.47 >	18.09	MTT	+
5695	57	11/01/90	ZX3	0.810	0.00	16.50	0.00	0.00	23.50	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
5905	61	10/31/89	SAC	0.787	4.75	12.60	2.65	7.06	19.10	2.70	0.00	30.70	0.00	1.78 >	8.02	MTT	+
5905	61	01/30/90	TN1	0.969	1.79	2.28	1.27	3.20	4.04	1.26	0.00	9.40	0.00	0.71 >	2.45	MTT	+
5906	61	10/31/89	SAC	0.787	1.41	4.25	3.01	2.12	15.00	7.08	0.00	31.30	0.00	2.00	11.52	MTT	+
5906	61	01/30/90	TN2	1.132	2.02	0.81	0.40	0.00	3.20	0.00	0.00	9.32	0.00	0.00	0.19	MTT	+
5997	61	11/07/89	SES	0.919 <	1.00	18.30 >	18.34	3.51	75.30	21.47	0.00 >	320.00	0.00	5.23 >	25.75	MTT	+
5997	61	11/01/90	ZX4	0.960	1.94	4.79	2.47	0.00	13.70	0.00	0.00 >	100.00	0.00	0.00 >	3.51	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5998	61	11/07/89	SES	0.919	< 1.00	4.77 >	4.77	1.08	22.20	20.56	0.00 >	320.00	0.00	4.41 >	14.27	MTT	+
5998	61	02/01/90	TOR	0.849	0.92	32.00	34.82	1.69 >	32.00 >	18.94	0.00 >	32.00	0.00	18.94 >	41.36	MTT	+
5998	61	02/08/90	TWA	0.956	1.42	7.73	5.44	2.80	22.80	8.15	0.00 >	32.00	0.00	2.77	10.47	MTT	+
6195	62	01/11/90	TAO	1.066	124.00 >	320.00 >	2.58	170.00 >	320.00 >	1.88	300.00 >	320.00 >	1.07 >	1.88 >	11.80	MTT	+
6195	62	10/31/90	ZUX	0.880	45.70	490.00	10.73	129.00	660.00	5.12	292.00	966.00	3.31	3.80 >	29.00	MTT	+
6195	62	12/06/90	1PR	0.916	73.80	485.00	6.57	142.00	657.00	4.61	304.00	966.00	3.17	3.40	23.98	MTT	+
6196	62	01/11/90	TAO	1.066	134.00 >	320.00 >	2.39	179.00 >	320.00 >	1.79	302.00 >	320.00 >	1.06 >	1.79 >	10.08	MTT	+
6196	62	10/31/90	ZUX	0.880	134.00	290.00	2.17	179.00	521.00	2.91	302.00	952.00	3.15	1.62 >	10.13	MTT	+
6199	62	01/11/90	TAQ	0.865	42.50	159.00	3.73	56.60	217.00	3.84	94.50 >	320.00 >	3.39	2.80 >	13.49	MTT	+
6199	62	10/31/90	ZUY	0.972	63.10	157.00	2.49	0.00	222.00	0.00	0.00	796.00	0.00	0.00	4.89	MTT	+
6202	62	01/11/90	TAR	0.830	148.00 >	320.00 >	2.16	219.00 >	320.00 >	1.46	0.00 >	320.00	0.00 >	1.46 >	7.56	MTT	+
6202	62	10/31/90	ZUY	0.972	239.00	446.00	1.86	0.00	630.00	0.00	0.00	963.00	0.00	0.00 >	6.82	MTT	+
6203	62	01/11/90	TAS	0.853	42.50	174.00	4.10	56.60	249.00	4.40	94.50 >	320.00 >	3.39	3.08	16.40	MTT	+
6203	62	10/31/90	ZUZ	0.791	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00	2.83	MTT	-
6204	62	01/11/90	TAS	0.853	13.40	49.00	3.66	17.90	66.00	3.69	30.20	96.60	3.20	2.74	14.73	MTT	+
6204	62	10/31/90	ZUZ	0.791	0.00	42.70	0.00	0.00	61.80	0.00	0.00	96.20	0.00	0.00	1.22	MTT	-
6206	62	01/11/90	TAT	0.776	43.90	155.00	3.53	60.30	210.00	3.48	0.00	309.00	0.00	2.57	12.46	MTT	+
6206	62	10/31/90	ZV0	0.725	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00 >	0.20	MTT	-
6207	62	01/11/90	TAU	0.825	129.00 >	320.00 >	2.48	175.00 >	320.00 >	1.83	301.00 >	320.00 >	1.06 >	1.83 >	10.75	MTT	+
6207	62	10/31/90	ZV0	0.725	134.00	490.00	3.66	179.00	660.00	3.69	302.00	966.00	3.20	2.74 >	18.18	MTT	+
6214	62	01/16/90	TCH	0.998	38.70 >	320.00 >	8.27	121.00 >	320.00 >	2.64	290.00 >	320.00 >	1.10 >	2.64 >	25.51	MTT	+
6214	62	11/01/90	ZX4	0.960	58.80	520.00	8.85	136.00	720.00	5.29	294.00 >	1000.00 >	3.40	3.82 >	29.31	MTT	+
6219	62	01/16/90	TCK	1.082	54.30 >	320.00 >	5.90	107.00 >	320.00 >	3.00	287.00 >	320.00 >	1.12 >	3.00 >	23.56	MTT	+
6219	62	11/01/90	ZX5	0.841	36.70 >	320.00 >	8.71	87.10 >	320.00 >	3.67	282.00 >	320.00 >	1.13 >	3.67 >	28.64	MTT	+
6225	62	01/16/90	TCN	0.971	134.00 >	320.00 >	2.39	179.00 >	320.00 >	1.79	302.00 >	320.00 >	1.06 >	1.79 >	12.08	MTT	+
6225	62	11/01/90	ZX5	0.841	125.00	463.00	3.70	171.00	642.00	3.75	301.00	964.00	3.21	2.70 >	18.51	MTT	+
6234	62	12/05/89	SRS	0.916	0.00	755.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
6234	GABSN	02/08/90	TWK	0.827	1080.0 >	3200.0 >	2.98	2670.00 >	3200.00 >	1.20	0.00 >	3200.00	0.00 >	1.20 >	10.07	MTT	+
6234	67	05/31/90	WGV	0.894	0.00	1230.0	0.00	0.00	2680.00	0.00	0.00 >	3200.00	0.0	0.00 >	0.03	MTT	-
6234	67	11/01/90	ZX6	0.989	2780.0	1920.0	0.69	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	+
6369	63	02/27/90	U7B	0.875	25.40	49.00	1.93	0.00	66.00	0.00	0.00	96.60	0.00	0.00	3.42	MTT	+
6369	63	03/20/90	UOL	1.018	15.20	42.00	2.76	28.30	61.40	2.17	0.00	96.10	0.00	1.49	5.16	MTT	+
6369	63	11/01/90	ZX6	0.989	0.00	41.40	0.00	0.00	60.90	0.00	0.00	96.10	0.00	0.00	0.49	MTT	-
6413	66	05/10/90	W1R	0.948	0.00	19.70	0.00	0.00	49.80	0.00	0.00	262.00	0.00	0.00	0.00	MTT	-
6413	66	07/06/90	XC8	0.718	11.70	85.10	7.25	32.00	158.00	4.94	0.00	304.00	0.00	2.66 >	17.63	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6477	66	05/15/90	W3Y	0.888	0.00	13.10	0.00	0.00	40.70	0.00	0.00	96.30	0.00	0.00	0.00	MTT	-
6477	66	07/11/90	XEE	0.806	12.90	52.20	4.06	22.70	72.50	3.19	0.00	251.00	0.00	2.30 >	9.27	MTT	+
6617	64	04/19/90	VFK	0.878	510.00	909.00	1.78	814.00 >	1000.00 >	1.23	0.00 >	1000.00	0.00	1.12 >	2.49	MTT	+
6617	64	06/27/90	X4G	1.037	0.00	779.00	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	0.20	MTT	-
6724	67	06/21/90	WZC	0.728	2.08	35.10	16.83	3.96	163.00	41.15	9.44 >	320.00 >	33.91	8.87	35.50	MTT	+
6724	67	07/12/90	XGA	0.919	1.97	41.30	20.99	3.97	173.00	43.66	0.00 >	320.00	0.00	10.40	32.56	MTT	+
6942	69	07/24/90	XQJ	0.800	14.70 >	320.00 >	21.72	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	20.77	MTT	+
6942	69	10/24/90	ZNT	1.001	33.40	148.00	4.44	95.90	205.00	2.14	0.00	309.00	0.00	1.55 >	16.04	MTT	+
6946	69	07/26/90	XTA	0.765	127.00 >	320.00 >	2.53	172.00 >	320.00 >	1.86	301.00 >	320.00 >	1.06 >	1.86 >	16.70	MTT	+
6946	69	10/24/90	ZNV	0.931	134.00 >	320.00 >	2.39	182.00 >	320.00 >	1.76	316.00 >	320.00 >	1.01 >	1.76 >	10.70	MTT	+
6986	68	06/21/90	WYJ	0.779	235.00	220.00	0.93	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
6986	68	08/09/90	XZT	0.807	134.00	492.00	3.68	179.00	663.00	3.71	302.00	973.00	3.22	2.75 >	16.01	MTT	+
7045	69	08/02/90	XYB	0.899	170.00	173.00	1.02	288.00 >	320.00 >	1.11	0.00 >	320.00	0.00	0.60 >	0.52	MTT	+
7045	69	09/27/90	Z43	0.827	207.00	243.00	1.18	0.00	498.00	0.00	0.00	969.00	0.00	0.00 >	0.66	MTT	+
7051	72	08/30/90	YCR	1.041	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7051	72	10/03/90	Z72	1.019	490.00	471.00	0.96	749.00 >	1000.00 >	1.34	0.00 >	1000.00	0.00	0.63 >	2.09	MTT	+
7083	72	08/31/90	YEX	1.007	51.20	50.90	0.99	95.20	144.00	1.51	0.00	309.00	0.00	0.53	0.87	MTT	+
7083	72	10/03/90	Z78	0.747	47.10	126.00	2.67	83.30	191.00	2.29	0.00	307.00	0.00	1.51 >	7.55	MTT	+
7083	72	10/25/90	ZQ6	0.902	61.10	88.70	1.45	0.00	192.00	0.00	0.00 >	320.00	0.00	0.00	1.19	MTT	+
7085	72	08/31/90	YEY	0.976	15.30	21.80	1.43	0.00	44.00	0.00	0.00 >	100.00	0.00	0.00 >	5.24	MTT	+
7085	72	10/03/90	Z79	0.656	17.60	40.70	2.32	0.00	84.30	0.00	0.00	308.00	0.00	0.00 >	5.72	MTT	+
7085	72	10/25/90	ZQ7	0.811	11.90	32.00	2.69	24.60	65.30	2.65	0.00 >	100.00	0.00	1.30	7.29	MTT	+
7087	72	08/31/90	YEZ	0.997	4.54	8.79	1.94	8.11	30.00	3.70	0.00 >	100.00	0.00	1.08 >	8.05	MTT	+
7087	72	10/03/90	Z7A	0.767	14.90	29.00	1.94	0.00	94.10	0.00	0.00 >	100.00	0.00	0.00 >	8.08	MTT	+
7087	72	10/25/90	ZQ8	0.743	5.31	25.70	4.84	0.00	100.00	0.00	0.00 >	100.00	0.00	0.00	10.98	MTT	+
7319	70	08/15/90	Y3S	0.776	4.33	8.37	1.93	10.00	18.40	1.84	0.00 >	32.00	0.00	0.84 >	5.48	MTT	+
7319	70	09/13/90	YT0	0.787	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
7321	70	08/15/90	Y3T	0.753	13.40	59.40	4.42	20.70	86.80	4.19	0.00 >	320.00	0.00	2.87 >	14.47	MTT	+
7321	70	09/13/90	YT1	0.817	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7375	70	08/23/90	Y7V	0.855	177.00	93.20	0.53	313.00 >	320.00 >	1.02	0.00 >	320.00	0.00	0.30 >	0.55	MTT	+
7375	70	09/20/90	YV4	0.749	226.00	26.50	0.12	0.00	555.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	+
7433	70	08/30/90	YC0	1.049	15.50	41.00	2.65	26.00	73.10	2.81	0.00 >	320.00	0.00	1.58	5.08	MTT	+
7433	70	10/03/90	Z70	0.958	16.50	37.60	2.27	32.00	65.40	2.05	0.00 >	320.00	0.00	1.17	3.39	MTT	+
7445	73	09/20/90	YXG	0.870	559.00 >	1000.0 >	1.79	978.00 >	1000.00 >	1.02	0.00 >	1000.00	0.00 >	1.02 >	2.68	MTT	+
7445	73	10/25/90	ZQ8	0.769	1340.0 >	3200.0 >	2.39	1790.00 >	3200.00 >	1.79	3020.0 >	3200.00 >	1.06 >	1.79 >	8.72	MTT	+

Table 12 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7461	73	09/20/90	YXM	0.701	0.00	64.60	0.00	0.00	98.60	0.00	0.00 >	320.00	0.00	0.00 >	0.27	MTT	-
7461	73	10/31/90	ZUS	0.866	53.70	22.80	0.42	90.20	158.00	1.76	0.00	304.00	0.00	0.25 >	1.85	MTT	+
7910	74	10/11/90	ZEZ	0.825	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.10	MTT	-
7910	75	11/07/90	ZZ9	0.689	1490.0 >	3200.0 >	2.15	2220.00 >	3200.00 >	1.44	0.00 >	3200.00	0.00 >	1.44 >	7.46	MTT	+
7911	74	10/11/90	ZEZ	0.825	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	4.13	MTT	-
7911	75	11/07/90	ZZ9	0.689	121.00	629.00	5.21	238.00	938.00	3.95	0.00 >	3200.00	0.00	2.65 >	15.09	MTT	+

* = This value is a virus rating (VR) rather than a TAI. The VR is a measurement of selective antiviral activity that takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound similar to TAI. TAI is more accurate with MTT measurements.

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

$IC_{25,50,95}$ = (Viral) inhibitory concentration 25%, 50% and 95% = The drug concentration (µg/ml) that inhibited viral CPE by 25%, 50% or 95% calculated by using a regression analysis for semilog curve fitting.

$TC_{25,50,95}$ = (Cell) toxicity concentration 25%. 50% and 95% = The drug concentration (µg/ml) that reduced cell viability by 25%, 50% or 95%.

$AI_{25,50,95}$ = Antiviral Index = A single point ratio of the antiviral and anticellular effect of the compound, calculated with 25%, 50% or 95% reduction values (calculated by dividing the $TC_{25,50,95}$ by the $IC_{25,50,95}$).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, µg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

ACT = Activity = A "+" denotes a test that produced ≥25% reduction in CPE. A "-" denotes an inactive test (i.e. ≤25% reduction in CPE).

4.1.5 Venezuelan Equine Encephalomyelitis Virus (VE):

The number of single drug tests carried out against VE during this contract period is summarized in yearly increments in **Figure 24**. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

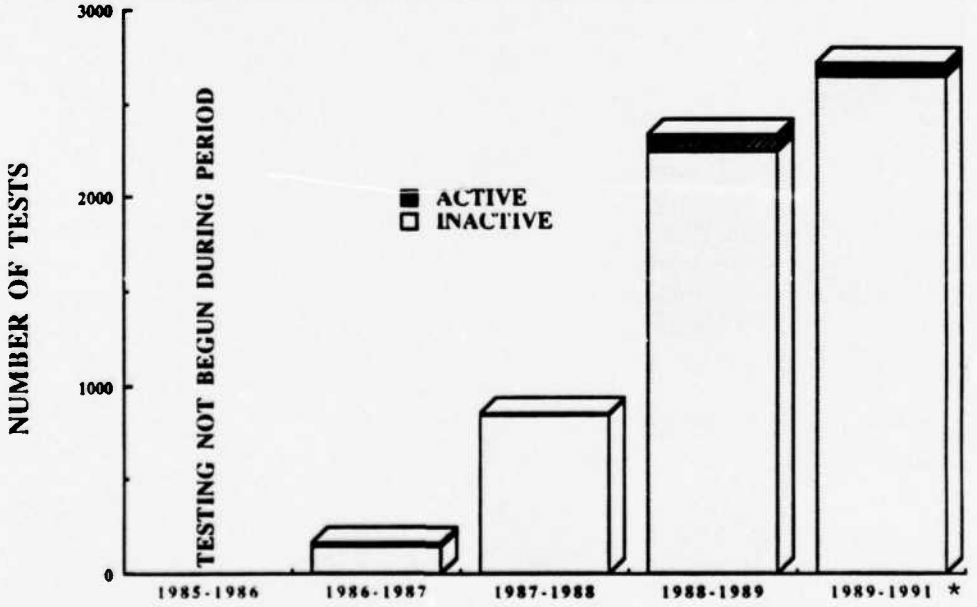
1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since November, 1988, MTT based-antiviral assay format.

A total of 7319 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Selenazofurin (AVS-0253) was tested in each standard virus rating (VR) CPE-inhibition assay as a positive control compound. Results of these positive controls (VR tests) were used as a guideline to assess the quality of each assay.

After the testing was converted to the MTT-assay format, we performed a total of 406 control compound assays with Selenazofurin during the last 26 months of the contract period. During this time 684 tests were internal (+ + +) virus load, cell load, and other quality control tests. Four hundred thirty-eight (438) tests were considered unsatisfactory based on the criteria of the quality controls set during this reporting period. The rest, totaling 4756 were actual single drug MTT-assays. The total number of MTT-assays (6284) tested during the last two years represents a 224% increase (improvement) in the total testing output as compared to the total of 1937 tests performed during the first 3 years of this contract.

Out of the 6067 accepted single drug tests, 193 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 3.0% of the tested compounds having *in vitro* antiviral activity against PT-virus. The remainder, 6058 compounds (97%), were considered inactive with both assay protocols **(Figure 24)**.

IN VITRO PRIMARY SCREEN: NUMBER OF COMPOUNDS FOUND ACTIVE AGAINST VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS DURING THE CONTRACT PERIOD



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	0	19	8	89	77	193
Number Inactive	0	148	846	2242	2638	5874
Yearly Total (Accepted Single Drug Tests)	**0**	**167**	**854**	**2331**	**2715**	**6067**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 24

4.1.5.1 VE-Quality Controls: Two positive control compounds (Selenazofurin and 2-Thio-6 Azauridine) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds was compared to that of the positive control compounds. Compounds with equal to of better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.1.5.1.1 Antiviral Activity of Selenazofurin vs VE Virus: A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0253 (Selenazofurin) is presented in **Figure 25-A** for 220 tests performed during November, 1989 through January, 1991.

Control Compound-Antiviral Performance: Selenazofurin (AVS-0253) has been the sole control compound against VE in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Selenazofurin) are illustrated in **Figure 25-A**.

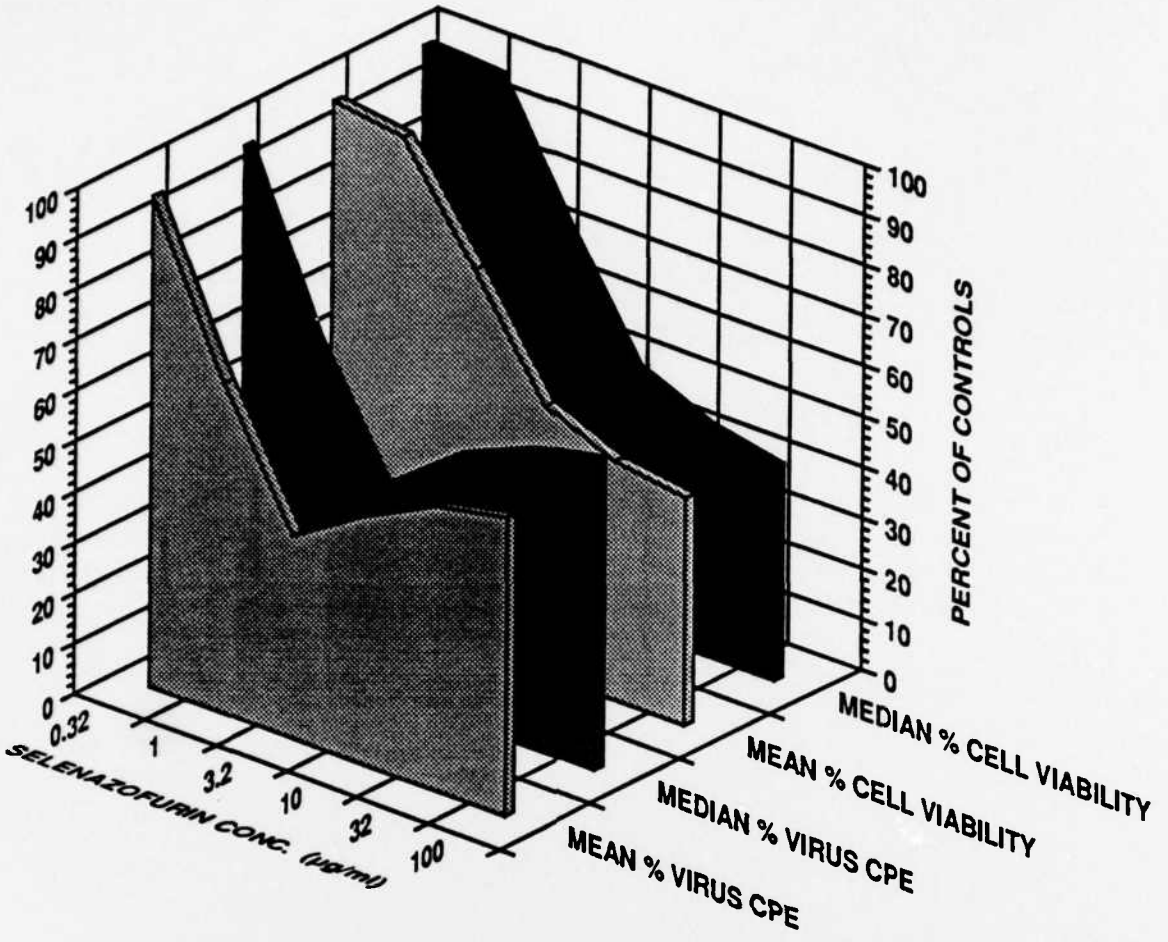
The 220 control tests performed with Selenazofurin gave a mean Total Antiviral Index (TAI) of 17.10% (SD ± 14.12) and the median value was 13.13%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~0.00 - 64.88% during this period. The mean Selectivity Index (SI) was 4.52 (SD ± 9.59) and the median SI value was 1.75, indicating poor antiviral selectivity for Selenazofurin and it ranged from ~0 - 88.38% during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean Antiviral Index 25% (AI_{25}) value was 9.25 (SD ± 16.22). The median AI_{25} value was 4.42 (range 0.3 - 137.38). The mean Antiviral Index 50% (AI_{50}) was 28.03 (SD ± 41.56) with a median of 7.92 (range 0 - 254.46). The mean Antiviral Index 95% (AI_{95}) was 1.7 (SD ± 10.12) with a median value of 0 (range 0 - 109.79). This indicates that the control compound, Selenazofurin, does not consistently reach 95% antiviral reduction levels.

The mean Antiviral Inhibitory Concentration 25% (IC_{25}) was 0.87 μg/ml (SD ± 0.53). The median IC_{25} value was 0.71 μg/ml (range 0.22 - 5.52 μg/ml). The mean Antiviral Inhibitory Concentration 50% (IC_{50}) was 1.44 μg/ml (SD ± 1.28). The median IC_{50} value was 1.40 μg/ml (range = 0 - 10.00 μg/ml). The mean Antiviral Inhibitory Concentration 95% (IC_{95}) could not be attained with Selenazofurin versus Venezuelan Equine Encephalomyelitis Virus. This discrepancy indicates that the control compound Selenazofurin does not consistently reach 50 or 95% reduction levels.

The average maximum antiviral inhibitory level of 220 Selenazofurin tests (Figure 25-A) was reached at 3.2 μg/ml of the compound with 60% antiviral effect. Further increase of the drug concentration does not improve its antiviral activity. Maximum antiviral effect (~60%) was found with a simultaneous ~20 - 25% cytotoxic suppression. Above the 10 μg/ml concentration the antiviral protection levels off to ~40% reduction level at 100 μg/ml while simultaneously the Selenazofurin becomes maximally toxic (~60%).

SELENAZOFURIN -- VS -- VE VIRUS



CONCENTRATION (µg/ml)

	% Viral CPE						% Cell Viability					
Conc.(µg/ml)	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**0.32**	**1**	**3.2**	**10**	**32**	**100**
Mean	97	65	40	49	56	59	98	96	75	53	47	45
Median	98	65	41	52	58	61	100	99	74	51	45	42
Std. Dev.	0.05	0.16	0.16	0.13	0.11	0.10	0.04	0.07	0.14	0.13	0.11	0.11

Figure 25-A
Average Antiviral and Cytotoxicity Values for 220 Positive Control Compound Tests

4.1.5.1.2 Maximum Antiviral Effect of Selenazofurin vs VE Virus (VE): Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Selenazofurin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 26-A) depicts the distribution of the maximum antiviral reduction values of all 220 control compound assays for Selenazofurin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 61.0% (SD ± 15.13) reduction levels. The maximum reduction levels vary from 31 - 100% but remain quite consistently around the median of 60%. The assay control values give a relatively broad, bell-shaped distribution curve. This indicates quite a consistent day-to-day performance of the control compound in the VE-MTT assay.

During this period the positive control compound performance criteria for Selenazofurin versus the VE virus was set at 25% reduction level. All assays in which Selenazofurin did not meet this accepted quality control level (≥25%) were rejected (i.e., 161 unsatisfactory tests).

Since Selenazofurin is only marginally active against VE virus,better quality control compounds are needed. However, regardless of the poor performance of the VE quality control drug Selenazofurin, around 323 different compounds have equal or better antiviral activity against VE virus than AVS-0253. Some of these could certainly be used as a better *in vitro* antiviral control compound in this large-scale antiviral screening program.

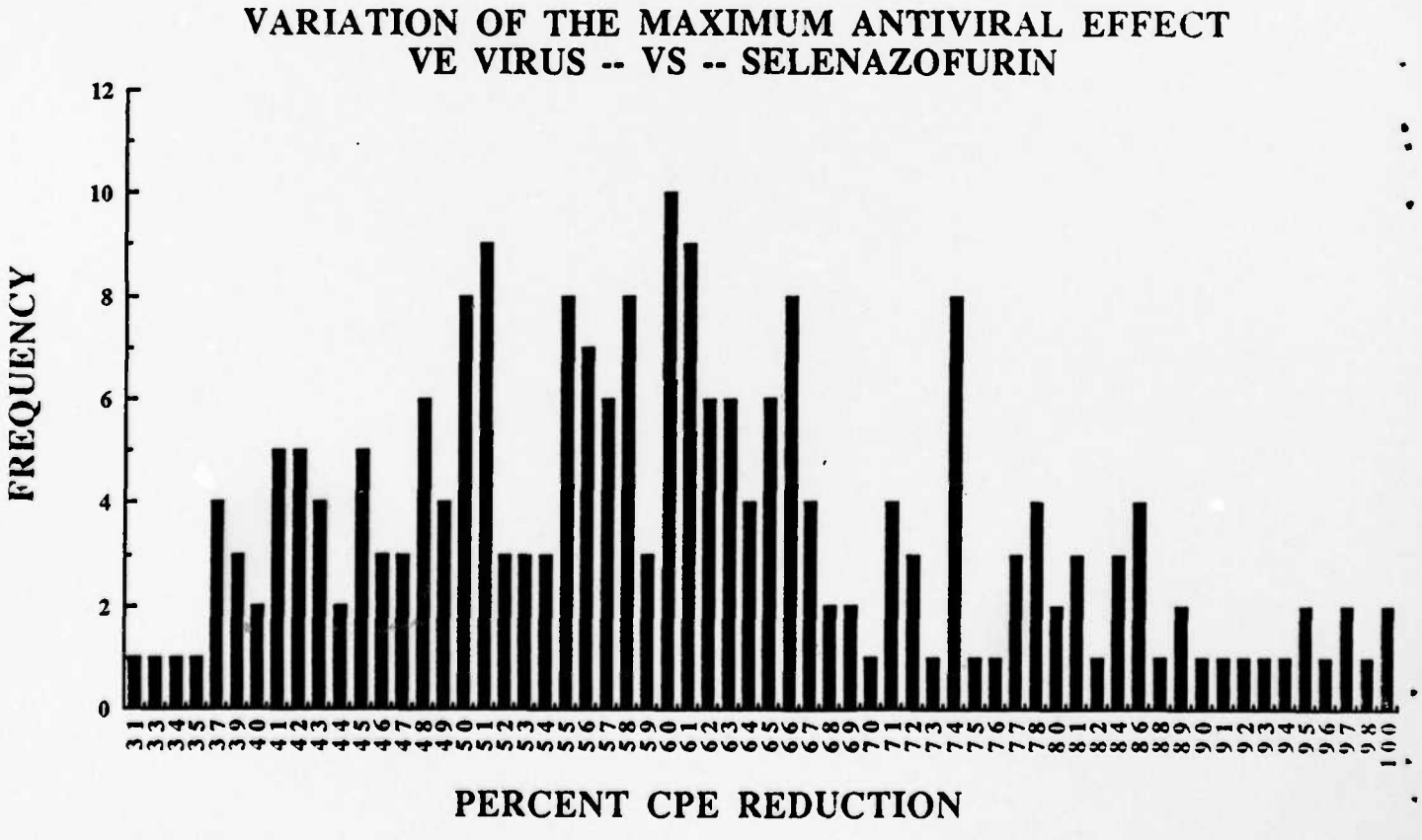


Figure 26-A
Maximum Antiviral CPE Reduction (%).
Summary of 220 Control Tests.

4.1.5.1.3 Cellular Cytotoxicity of Selenazofurin vs VE Virus:

VE-Control Compound-Cytotoxicity Performance: The 220 cytotoxicity values of the positive control compound Selenazofurin are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 6.03 μg/ml (SD ± 9.44) and the median was 3.11 μg/ml (range of <0.32 - 90.3 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 36.53 μg/ml (SD ± 39.24) and the median was 13.3 μg/ml (range of 2.15 - >100 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value cannot be attained with Selenazofurin versus Venezuelan Equine Encephalomyelitis Virus.

As can be seen from **Figure 25-A**, the toxicity starts to become measurable above the concentration of 1.0 μg/ml and the maximum toxicity has not been reached at 100 μg/ml.

When the cytotoxicity reaches around 50% (10 μg/ml), the control compound (Selenazofurin) has reached close to its maximum toxicity. After 3.2 μg/ml the antiviral protection of Selenazofurin starts to decrease down to ~40%. Selenazofurin becomes maximally toxic between 10 - 100 μg/ml. The highest Selenazofurin concentration tested in these assays was 100 μg/ml.

Selenazofurin has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} and TC_{50} toxicity can be achieved with relative consistency at 100 μg/ml. A peculiar feature of the control compound is that the cytotoxicity levels off after reaching its maximum cytotoxic value (±50%) at 10 μg/ml and continues at that stationary level at increasing drug concentrations.

4.1.5.1.4 VE-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Selenazofurin): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in Figures 27-A, 28-A and 29-A.

VE-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 220 control assays is plotted in Figure 27-A. The results indicate that the cell O.D. readings reached a mean 1.160 (SD ± 0.150) with a median of 1.150 (range of 0.845 - 1.579). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

VE-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 220 control assays is presented in Figure 28-A. The results indicate that the average virus load O.D. reading is 0.038 (SD ± 0.037) with a median of 0.029 (range of 0.012 - 0.229). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

VE-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 220 control assays is provided in Figure 29-A. The results indicate that the average differential O.D. reading is 1.122 (SD ± 0.149) with a median of 1.116 (range 0.691 - 1.520). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 82% measurement accuracy.

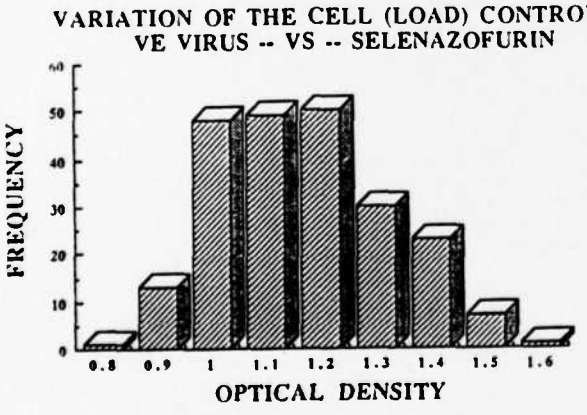


Figure 27-A

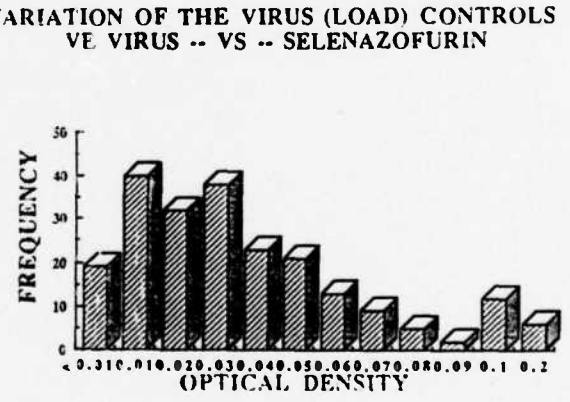


Figure 28-A

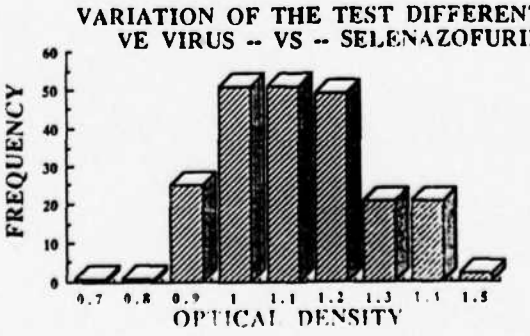


Figure 29-A

4.1.5.1.1 **Antiviral Activity of AVS-6724 (2-Thio-6-Azauridine) vs VE Virus:** A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in **Figure 25-B** for 42 tests performed during November, 1989 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible second control compound against VE in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of this second positive control drug are illustrated in **Figure 25-B**.

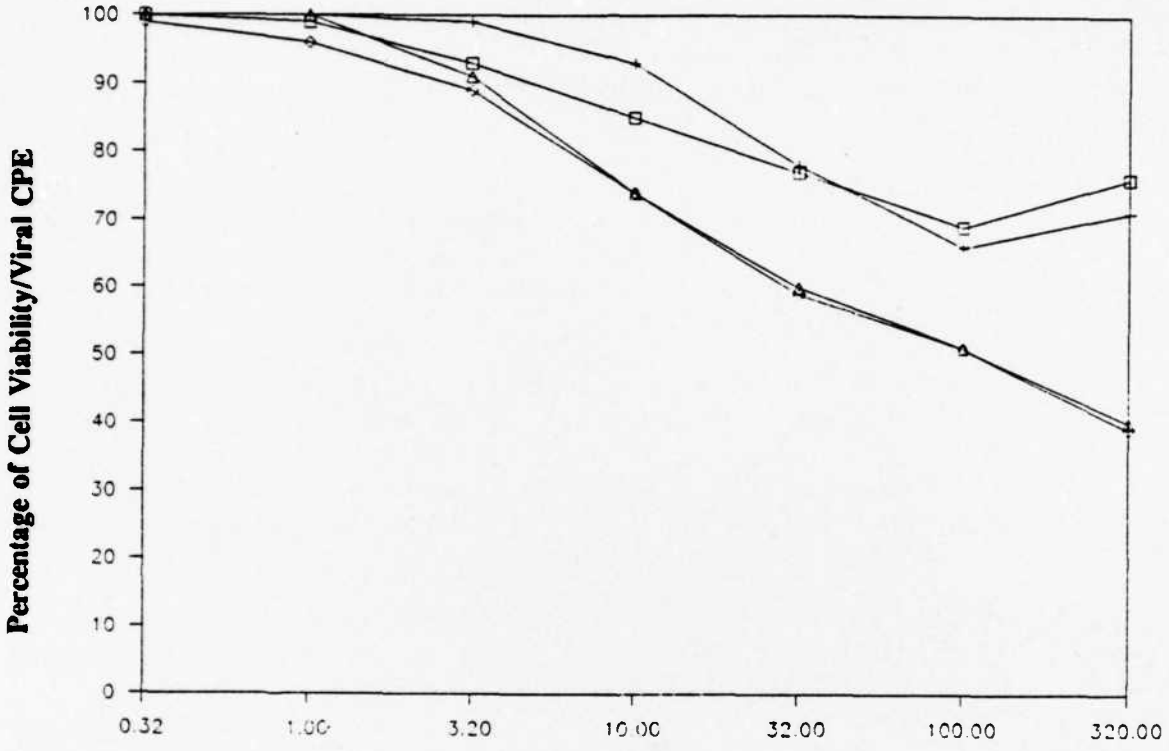
The 42 control tests performed with 2-Thio-6-Azauridine gave a mean **Total Antiviral Index** (TAI) of 2.50% (SD ± 6.40) and the median value was 0.17%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~0.00 - 26.84% during this period. The mean **Selectivity Index (SI)** was 0.51 (SD ± 1.60) and the median SI value was 0, indicating poor antiviral selectivity for 2-Thio-6-Azauridine and it ranged from ~0 - 7.43 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25% (AI_{25})** value was 1.10 (SD ± 2.50). The median AI_{25} value was 0.23 (range 0 - 12.49). The mean **Antiviral Index 50% (AI_{50})** was 5.70 (SD ± 20.10) with a median of 0 (range 0 - 110.48). The mean **Antiviral Index 95% (AI_{95})** was 2.47 (SD ± 16.00) with a median value of 0 (range 0 - 103.62). This indicates that the control compound, 2-Thio-6-Azauridine, does not consistently reach 50 or 95% antiviral reduction levels.

The mean **Antiviral Inhibitory Concentration 25% (IC_{25})** was 21.40 μg/ml (SD ± 36.0). The median IC_{25} value was 8.40 μg/ml (range 0 - 19.7 μg/ml). The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 5.60 μg/ml (SD ± 15.60). The median IC_{50} value was 0 μg/ml (range = 0 - 68.4 μg/ml). The mean **Antiviral Inhibitory Concentration 95% (IC_{95})** could not be attained with 2-Thio-6-Azauridine versus Venezuelan Equine Encephalomyelitis Virus. This discrepancy indicates that the control compound 2-Thio-6-Azauridine does not consistently reach 50 or 95% reduction levels.

The average maximum antiviral inhibitory level of 42 2-Thio-6-Azauridine tests **(Figure 25-B)** was reached at 100 μg/ml of the compound with 30% antiviral effect. Further increase of the drug concentration does not improve its antiviral activity. Maximum antiviral effect (~36%) was found with a simultaneous ~50% cytotoxic suppression. Above the 100 μg/ml concentration the antiviral protection levels off to ~20% reduction level at 320 μg/ml while simultaneously the 2-Thio-6-Azauridine becomes maximally toxic (~60%).

2-THIO-6-AZAURIDINE - VE VIRUS



	% Viral CPE							% Cell Viability						
Conc.(μg/ml)	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**320**	**0.32**	**1**	**3.2**	**10**	**32**	**100**	**320**
Mean	100	99	93	85	77	69	76	99	96	89	74	59	51	39
Median	100	100	99	93	78	66	71	100	100	91	74	60	51	40
Std. Dev.	0.01	0.01	0.19	0.2	0.18	0.14	0.12	.02	0.05	0.11	0.12	0.10	0.08	0.07

Figure 25-B
Average Antiviral and Cytotoxicity Values for 42 Positive Control Compound Tests

4.1.5.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs VE Virus (VE): Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (**Figure 26-B**) depicts the distribution of the maximum antiviral reduction values of all 42 control compound assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 36% (SD ± 20.00) reduction levels. The maximum reduction levels vary from 9 - 98% but remain quite consistently around the median of 35%. The assay control values give a relatively broad, bell-shaped distribution curve. This indicates quite a consistent day-to-day performance of the control compound in the VE-MTT assay.

Recommendations:

Based upon the data obtained in parallel studies with Selenazofurin, we do not recommend that 2-Thio-6-Azauridine (AVS-6724) be used as a second control compound against the VE virus. Its overall performance is not as good as that obtained with the present control compound, Selenazofurin. 2-Thio-6-Azauridine is cytotoxic at lower drug concentrations than the observed antiviral effect (see **Figure 25-B**).

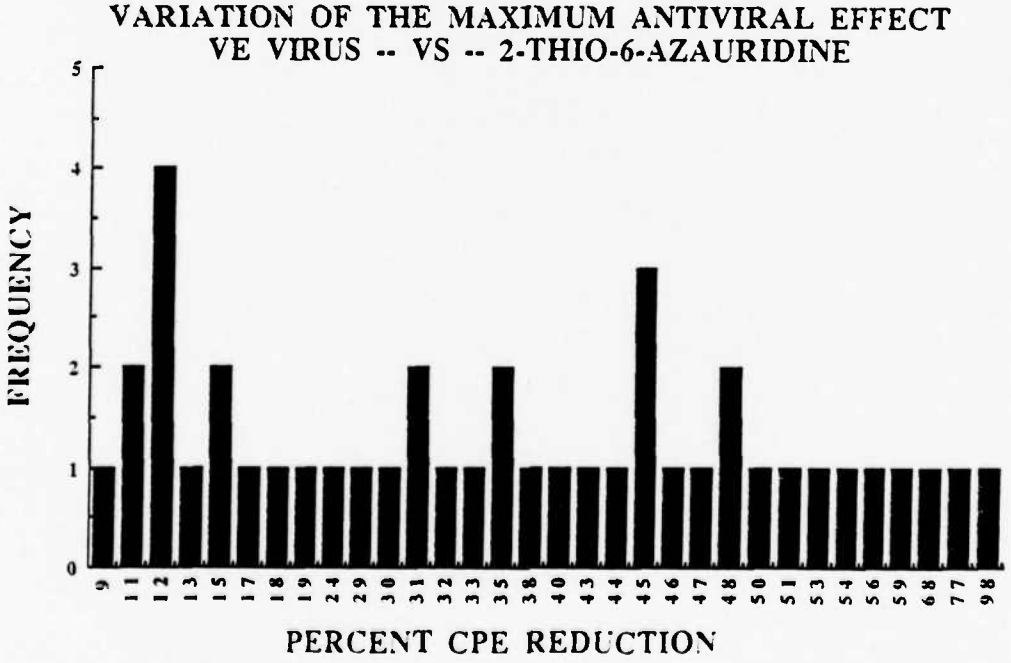


Figure 26-B
Maximum Antiviral CPE Reduction (%).
Summary of 42 Control Tests.

4.1.5.1.3 **Cellular Cytotoxicity of 2-Thio-6-Azauridine vs VE Virus:**

VE-Control Compound-Cytotoxicity Performance: The 42 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell Toxic Concentration 25% (TC_{25}) was 13.10 μg/ml (SD ± 9.50) and the median was 9.80 μg/ml (range of < 1.58 - 38.50 μg/ml). The mean cell Toxic Concentration 50% (TC_{50}) value was 89.30 μg/ml (SD ± 45.20) and the median was 100 μg/ml (range of 9.65 - 247.00 μg/ml). The mean cell Toxic Concentration 95% (TC_{95}) value cannot be attained with 2-Thio-6-Azauridine versus Venezuelan Equine Encephalomyelitis Virus.

As can be seen from Figure 25-B, the toxicity starts to become measurable above the concentration of 1.0 μg/ml and the maximum toxicity has not been reached at 320 μg/ml.

When the cytotoxicity reaches around 50% (100 μg/ml), the control compound (2-Thio-6-Azauridine) has not reached its maximum toxicity. After 100 μg/ml the antiviral protection of 2-Thio-6-Azauridine starts to decrease down to ~20%. 2-Thio-6-Azauridine becomes maximally toxic at 320 μg/ml. The highest 2-Thio-6-Azauridine concentration tested in these assays was 320 μg/ml.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} and TC_{50} toxicity can be achieved with relative consistency at 320 μg/ml. As can be seen from Figure 25-B, 2-Thio-6-Azauridine, is cytotoxic at lower drug concentrations than its antiviral activity.

4.1.5.1.4 **VE-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine):** The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991 is presented in **Figures 27-B, 28-B, and 29-B.**

VE-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 42 control assays is plotted in **Figure 27-B.** The results indicate that the cell O.D. readings reached a mean 1.140 (SD ± 0.130) with a median of 1.150 (range of 0.800 - 1.430). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

VE-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 42 control assays is presented in **Figure 28-B.** The results indicate that the average virus load O.D. reading is 0.050 (SD ± 0.090) with a median of 0.020 (range of 0.030 - 0.470). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

VE-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 42 control assays is provided in **Figure 29-B.** The results indicate that the average differential O.D. reading is 1.100 (SD ± 0.150) with a median of 1.100 (range 0.751 - 1.415). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 90% measurement accuracy.

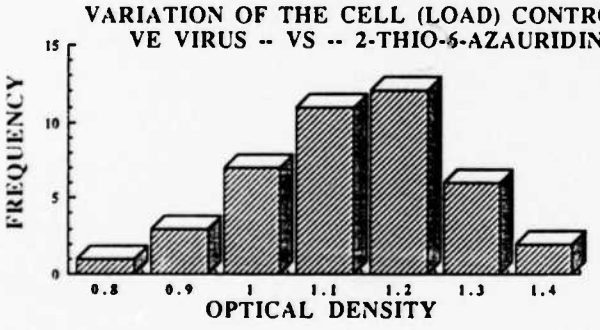


Figure 27-B

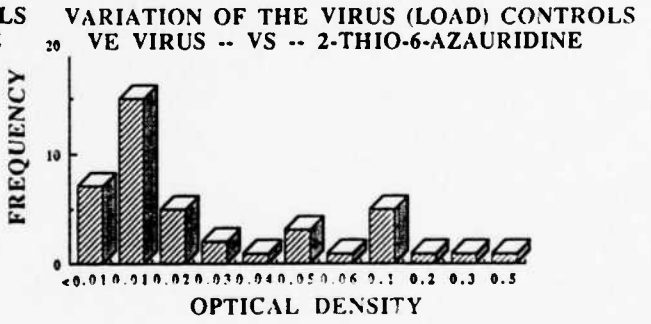


Figure 28-B

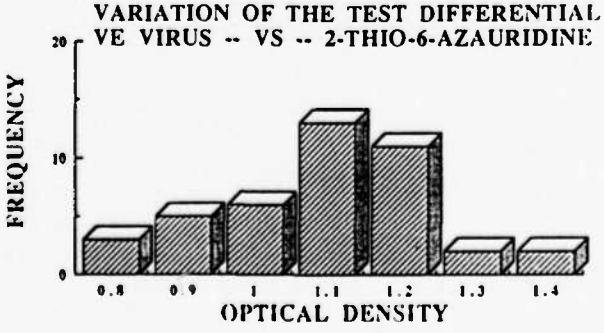


Figure 29-B

4.1.5.2 VE-Antiviral Activity Results:

New Drugs with 95% Antiviral Reduction Levels: Out of the 6067 actual single drug tests, 15 new compounds demonstrated excellent antiviral activity, having antiviral reduction values of equal to or better than 95%. This represents around 0.2% of the test compounds being active at this excellent reduction level. These compounds are summarized in Table 13 according to the highest Total Antiviral Index (TAI). Compound AVS-4051 demonstrated the best *in vitro* promise, having a TAI of 87% and Selectivity Index (SI) of 313. Six other compounds, AVS-2318, 5906, 2506, 1841, 2960 and 5072, demonstrated good antiviral activity with TAI's of 50, 35,33,32,28 and 2790, respectively, and SI values of 19, 8.9, 9.4, 0.14, 0.31, and 5.0.

It is worthwhile to note that compounds received in shipment number 62 were mostly colored (Table 13). Therefore those compounds appearing in the 95% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 13

AVS Compounds Active Against Venezuelan Equine Encephalomyelitis Virus (VE) at AI_{95} Level

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
VE	4051	37	09/11/89	1.008	< 0.03	> 10.00	> 312.50	> 312.50	> 86.80
VE	2318	13	09/11/89	0.848	0.94	> 10.00	> 10.68	> 19.40	> 49.94
VE	5906	61	11/03/89	0.897	9.42	96.60	10.25	8.87	34.69
VE	2506	64	03/13/90	1.049	2.83	> 320.00	> 113.17	> 9.35	> 33.39
VE	1841	33	10/06/89	0.598	288.00	> 320.00	> 1.11	0.14	> 31.88
VE	2960	27	10/05/90	1.095	875.00	> 1000.00	> 1.14	0.31	> 28.46
VE	5072	48	03/03/89	0.956	264.00	> 320.00	> 1.21	> 4.77	> 27.35
VE	6071	62	01/09/90	1.053	9.59	88.20	9.19	4.04	19.59
VE	7085	72	10/26/90	1.268	96.80	> 100.00	> 1.03	> 3.93	> 18.41
VE	6532	66	05/25/90	0.912	94.40	> 320.00	> 3.39	0.01	17.29
VE	8513	76	12/21/90	1.069	941.00	3090.00	3.28	2.84	> 14.49
VE	5121	56	11/02/90	1.165	300.00	> 320.00	> 1.07	> 1.88	> 13.87
VE	2453	18	09/08/89	0.889	9.85	> 32.00	> 3.25	2.64	12.09
VE	2581	65	04/13/90	1.236	309.00	> 320.00	> 1.04	> 1.79	> 7.94
VE	3171	29	05/15/89	1.131	97.00	> 100.00	> 1.03	0.26	> 6.74

New Drugs with 50% Antiviral Reduction Levels: Out of the 6067 actual single drug tests, 156 new compounds demonstrated good antiviral activity, having antiviral reduction values equal to or better than 50%. This represents around 2.6% of the test compounds being active at this good antiviral reduction level. These compounds are summarized in Table 14 according to the highest **Total Antiviral Index (TAI)**. AVS-5580 and 0111 demonstrated the best TAI's of 47% and SI's of 1780 and 15, respectively. Seven other compounds demonstrated moderate antiviral activity, having TAI's that ranged from 31 - 40% and SI's from 3 - 29. The rest (147 compounds) showed marginal antiviral activity with TAI's that ranged from < 1 to 13% and SI's from < 1 to 2.

It is worthwhile to note (Table 14) that compounds received in shipment number 62 were mostly colored. Therefore those compounds appearing in the 50% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 14

AVS Compounds Active Against Venezuelan Equine Encephalomyelitis Virus (VE) at AI_{50} Level

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
VE	5580	54	05/03/89	1.459	56.20 >	100000 >	1780.00 >	1780.0 >	46.70
VE	0111	9	12/08/89	1.145	14.50 >	1000.00 >	69.19	15.22 >	46.69
VE	5543	56	08/11/89	1.436	0.20 >	32.00 >	157.45	3.31 >	39.55
VE	6218	62	12/07/90	1.180	20.90 >	320.00 >	15.29 >	15.29 >	39.49
VE	0053	64	03/09/90	1.183	10.50 >	320.00 >	30.42	28.68 >	39.34
VE	5609	57	06/26/89	0.975	2.88 >	320.00 >	111.00	6.02 >	36.18
VE	5643	57	08/18/89	1.000	37.70 >	320.00 >	8.48 >	8.48 >	35.52
VE	0217	61	12/01/89	1.169	19.90 >	320.00 >	16.04	14.66 >	32.97
VE	0148	2	08/25/89	0.795	0.02 >	3.20 >	158.70	4.80 >	31.26
VE	2320	13	09/11/89	0.848	7.22	157.00	21.80	6.39 >	28.83
VE	2591	65	04/13/90	1.151	84.00	924.00	11.00	6.50	25.69
VE	3377	65	04/20/90	1.182	29.30 >	320.00 >	10.94 >	10.94 >	24.94
VE	2433	17	09/11/89	0.631	52.30	222.00	4.25	3.08	23.90
VE	7048	69	08/03/90	1.092	48.40	210.00	4.34	3.20 >	23.46
VE	6788	67	07/13/90	1.189	596.00 >	1000.00 >	1.68 >	1.68 >	22.89
VE	1829	32	10/06/89	0.609	27.80 >	320.00 >	11.51 >	11.51 >	21.97
VE	2503	21	09/08/89	1.216	0.68 >	10.00 >	14.82	6.18 >	21.71
VE	4742	44	09/15/89	0.805	19.30 >	320.00 >	16.58	0.38 >	21.61
VE	5497	53	04/17/89	0.950	354.00 >	320.00 >	0.90 >	0.90 >	20.90
VE	0124	64	03/09/90	1.158	25.00 >	320.00 >	12.81	3.28 >	20.48
VE	5040	45	01/05/90	1.095	72.90	899.00	12.34	4.17	20.36
VE	5714	58	10/09/89	0.988	1.49	6.38	4.28	3.04	20.06
VE	4871	46	01/16/89	0.802	50.90 >	320.00 >	6.29	3.99 >	19.83
VE	5197	58	10/09/89	1.010	21.90	164.00	7.46	4.04	19.73
VE	6489	66	05/18/90	1.245	2.70	66.90	24.77	16.26 >	19.55
VE	5724	58	10/09/89	1.055	204.00 >	1000.00 >	4.90 >	4.90 >	19.40
VE	2573	65	04/13/90	1.160	220.00 >	1000.00 >	4.55	3.72 >	19.00
VE	7116	70	09/14/90	0.903	91.80 >	1000.00 >	10.90 >	10.90 >	18.37
VE	5384	54	05/01/89	0.795	17.90	66.70	3.73	2.72 >	18.03
VE	2590	19	09/08/89	1.069	211.00 >	320.00 >	1.52 >	1.52 >	17.85
VE	5119	56	08/07/89	1.123	24.50 >	100.00 >	4.08	3.08	17.35
VE	5138	57	08/18/89	1.070	179.00	711.00	3.97	2.88 >	17.32
VE	3802	67	07/13/90	1.139	0.23 >	10.00 >	42.52	2.58 >	17.25
VE	5198	58	10/09/89	1.010	19.30	84.90	4.41	3.01 >	17.11
VE	2275	12	09/11/89	0.944	51.20	284.00	5.55	2.65 >	16.91
VE	5383	54	05/01/89	0.794	64.60	211.00	3.27	2.41 >	16.70
VE	6906	69	07/19/90	0.863	17.20	60.90	3.54	2.40 >	16.44
VE	6029	61	11/10/89	1.123	86.50 >	320.00 >	3.70 >	3.70 >	16.40
VE	0230	1	08/25/89	0.781	20.10 >	100.00 >	4.98	2.56 >	16.03
VE	5485	53	12/15/89	1.238	7.90 >	32.00 >	4.05	3.58 >	15.90
VE	1159	52	08/25/89	0.652	64.20	283.00	4.41	2.99	15.49
VE	6837	68	06/15/90	1.151	85.00	215.00	2.53	1.85	15.32
VE	8318	76	12/14/90	0.465	592.00	2240.00	3.78	2.73	15.27
VE	2631	65	07/06/90	1.033	193.00	732.00	3.79	2.63 >	15.16
VE	5997	61	11/10/89	1.014 <	1.00	57.50 >	57.50 >	3.20 >	14.84
VE	230	1	12/12/88	1.299	8.67 >	100.00 >	11.50	2.54	13.79
VE	5175	58	10/09/89	1.000	20.40	59.90	2.94	1.93 >	13.52
VE	3378	65	04/20/90	1.139	17.90 >	320.00 >	17.89	0.44	13.41
VE	7087	72	10/26/90	1.074	20.70 >	100.00 >	4.83	1.93 >	13.41
VE	8397	76	01/08/91	1.054	667.00	1690.00	2.54	1.41 >	13.41
VE	4770	44	11/08/88	1.117	59.90	210.00	3.50	2.59	13.39
VE	8601	76	01/11/91	0.993	24.70	124.00	5.05	2.86	12.94
VE	4769	44	11/08/88	1.117	59.60	205.00	3.45	2.49	12.90
VE	3611	32	11/03/88	1.285	1.91	25.70	13.40	2.49 >	12.83
VE	6315	63	10/05/90	0.967	6.38	21.10	3.31	2.44 >	12.72
VE	6482	66	05/18/90	1.200	59.60	198.00	3.32	2.29	12.59
VE	5385	54	05/01/89	0.795	26.20	65.60	2.50	1.82 >	12.33
VE	6521	66	05/25/90	0.999	8.09 >	320.00 >	39.57	27.38 >	12.30
VE	7031	69	08/03/90	0.849	76.90 >	320.00 >	4.16	2.86	12.26
VE	6943	69	09/07/90	0.793	80.60	320.00	3.97	2.61	12.16
VE	3584	32	09/11/89	1.117	72.60	285.00	3.93	2.45	11.91

Table 14 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
VE	5691	57	08/18/89	1.091	200.00	734.00	3.67	2.35	11.62
VE	1019	28	08/25/89	0.781	0.55 >	1.00 >	1.83 >	1.83 >	11.45
VE	3392	65	07/20/90	1.077	179.00 >	320.00 >	1.79 >	1.79 >	11.39
VE	0646	2	08/25/89	0.866	0.79 >	3.20 >	4.06	1.18 >	11.20
VE	2585	65	04/13/90	1.063	189.00 >	320.00 >	1.70 >	1.70 >	11.17
VE	6311	63	02/16/90	1.298	72.80 >	320.00 >	4.40	1.06 >	11.06
VE	4892	46	01/17/89	0.894	273.00 >	320.00 >	1.17	0.24 >	10.89
VE	1850	32	10/06/89	0.716	77.00 >	100.00 >	1.30 >	1.30 >	10.87
VE	5457	54	05/02/89	1.072	15.70	48.40	3.08	0.48 >	10.84
VE	2582	65	04/13/90	1.063	598.00 >	1000.00 >	1.67 >	1.67 >	10.76
VE	7086	72	10/26/90	1.074	21.70 >	100.00 >	4.61	0.64 >	10.69
VE	7047	69	08/03/90	1.092	283.00 >	320.00 >	1.13	0.89 >	10.60
VE	5176	58	10/09/89	1.000	79.20	200.00	2.52	1.69	10.40
VE	7017	69	07/27/90	1.003	197.00 >	320.00 >	1.62 >	1.62 >	10.35
VE	8511	76	12/21/90	1.103	2380.00 >	3200.00 >	1.35 >	1.35 >	10.34
VE	4919	46	01/31/89	1.004	97.00	310.00	3.20	1.67	10.31
VE	4747	44	12/15/89	1.200	32.00	73.50	2.30	1.65 >	10.10
VE	0206	4	12/08/89	1.272	268.00	841.00	3.14	1.79	9.99
VE	5998	61	02/09/90	0.975	4.97	23.30	4.69	1.67	9.94
VE	7083	72	10/26/90	1.152	93.50 >	320.00 >	3.42	2.06 >	9.89
VE	8212	75	11/30/90	1.127	2390.00 >	3200.00 >	1.34 >	1.34 >	9.72
VE	2716	22	09/08/89	1.367	8.43 >	10.00 >	1.19 >	1.19 >	9.60
VE	4768	44	11/08/88	1.224	64.90	194.00	2.98	2.01	9.53
VE	2600	65	04/13/90	1.151	495.00 >	1000.00 >	2.02	1.68 >	9.35
VE	8315	76	12/14/90	1.175	729.00	1960.00	2.70	1.85 >	9.33
VE	4852	48	02/21/89	1.006	47.80	9.55	0.20	0.08	9.32
VE	8396	76	01/08/91	1.041	1000.00	1400.00	1.40	0.60 >	9.28
VE	7009	69	07/27/90	1.107	190.00 >	320.00 >	1.69	1.69 >	9.19
VE	7032	69	08/03/90	0.849	273.00 >	320.00 >	1.17 >	1.17 >	9.14
VE	5058	48	01/05/90	1.095	675.00 >	1000.00 >	1.48	1.48 >	9.13
VE	8398	76	01/08/91	1.054	661.00	1990.00	3.01	0.45 >	8.64
VE	3935	65	07/06/90	0.977	69.40	175.00	2.52	1.48	8.59
VE	5531	56	08/11/89	1.293	80.20	291.00	3.63	2.14	8.50
VE	6986	68	08/10/90	1.133	227.00	520.00	2.29	1.25	8.26
VE	1215	27	10/06/89	0.795	100.00	268.00	2.68	1.37	8.01
VE	6321	63	02/16/90	1.110	18.40	50.90	2.77	1.30	7.92
VE	5905	61	11/03/89	0.897	7.41	19.20	2.60	1.68	7.83
VE	3038	28	09/08/89	1.414	0.70 >	3.20 >	4.56	0.41 >	7.76
VE	2989	27	04/14/89	0.883	27.10	63.40	2.34	1.06	7.65
VE	8400	76	01/08/91	1.052	3200.00 >	3200.00 >	1.00	0.40 >	7.59
VE	7016	69	09/07/90	0.861	216.00	576.00	2.67	1.65 >	7.34
VE	7403	70	09/28/90	1.042	2960.00 >	3200.00 >	1.08 >	1.08 >	7.34
VE	0346	2	05/09/89	0.879	2.76	17.70	6.42	0.83 >	7.21
VE	6994	68	06/22/90	1.394	203.00 >	320.00 >	1.58 >	1.58 >	7.11
VE	3688	32	11/10/88	0.747	287.00 >	320.00 >	1.11 >	1.11 >	6.84
VE	2572	65	04/13/90	1.160	221.00 >	320.00 >	1.45 >	1.45 >	6.81
VE	5541	56	06/16/89	1.276	100.00	26.50	0.27	0.07 >	6.72
VE	7444	73	10/26/90	1.103	2150.00 >	3200.00 >	1.49	1.49 >	6.53
VE	5379	54	05/01/89	0.943	6.84	20.00	2.92	0.41 >	6.48
VE	7386	70	09/28/90	0.988	2100.00 >	3200.00 >	1.52 >	1.52 >	6.34
VE	5854	60	10/20/89	1.140	62.60 >	320.00 >	5.12 <	0.02 >	6.22
VE	2902	26	04/14/89	1.201	70.00	155.00	2.21	0.89	6.14
VE	8270	76	12/14/90	1.190	2450.00 >	3200.00 >	1.30	0.84 >	5.90
VE	6140	62	01/04/90	0.911	7.56	22.60	2.99	1.17	5.77
VE	5094	56	06/19/89	1.410	73.10	156.00	2.13	1.14	4.52
VE	5495	53	04/17/89	0.957	24.90	8.76	0.35	0.20 >	4.46
VE	2543	21	09/08/89	1.020	30.00	73.00	2.44	1.46	4.43
VE	2544	20	12/20/88	1.115	2.60	6.20	2.38	1.28	4.34
VE	6309	63	02/16/90	1.170	198.00 >	320.00 >	1.62	1.12 >	4.27
VE	8696	76	01/25/91	1.103	271.00 >	320.00 >	1.18 >	1.18 >	4.23
VE	5489	66	05/11/90	1.248	305.00 >	320.00 >	1.05 >	1.05 >	3.93
VE	5142	57	07/10/89	1.103	81.10	161.00	1.98	1.04	3.31
VE	3559	31	03/28/89	1.022	71.40	193.00	2.71	1.20	3.25
VE	8374	76	12/14/90	1.174	957.00	1780.00	1.86	1.02	3.14

Table 14 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
VE	8241	75	11/20/90	1.074	1990.00 >	3200.00 >	1.61	0.35 >	3.12
VE	6412	66	05/11/90	1.323	91.60	157.00	1.71	0.90	3.06
VE	5907	61	02/02/90	1.335	458.00	100.00	0.22	0.10 >	2.91
VE	6477	66	05/18/90	1.182	24.90	57.90	2.33	0.56	2.91
VE	6659	64	04/06/90	1.280	261.00 >	320.00 >	1.23	0.82 >	2.83
VE	8395	76	01/08/91	1.041	2780.00 >	3200.00 >	1.15	0.29 >	2.83
VE	8221	75	11/20/90	1.108	19.90	62.20	3.13 <	0.50	2.79
VE	7059	72	08/28/90	1.294	179.00	64.00	0.36	1.79 >	2.53
VE	7460	73	11/02/90	1.097	26.50 >	32.00 >	1.21	0.79 >	2.29
VE	4409	44	12/13/88	1.206	252.00 >	320.00 >	1.27	0.87 >	2.15
VE	3160	29	04/28/89	0.967	23.00 >	32.00 >	1.39	0.27 >	1.91
VE	0113	1	05/22/89	0.623	92.50 >	320.00 >	3.46	0.33 >	1.87
VE	7911	75	11/09/90	1.057	2390.00 >	3200.00 >	1.34	0.27 >	1.87
VE	6993	68	06/22/90	1.342	296.00 >	320.00 >	1.08	0.74 >	1.78
VE	5070	48	03/03/89	0.958	232.00	97.00	0.42	0.26 >	1.63
VE	6791	67	07/13/90	1.170	24.50	4.35	0.18	0.10	1.54
VE	6070	62	01/09/90	1.053	8.56	13.70	1.60	0.47	1.16
VE	5393	54	05/02/89	1.045	9.45	2.91	0.31	0.20 >	1.09
VE	3560	31	03/28/89	1.022	287.00 >	320.00 >	1.12	0.40 >	0.75
VE	3164	29	04/28/89	0.937	32.00	37.10	1.16	0.30 >	0.68
VE	6739	64	03/09/90	1.158	249.00 >	320.00 >	1.28	0.27 >	0.63
VE	3322	65	04/20/90	1.291	10.00	9.69	0.97	0.58 >	0.60
VE	6310	63	02/16/90	1.298	32.00	31.00	0.97	0.09	0.58
VE	3980	36	09/11/89	1.141	100.00 >	100.00 >	1.00	0.32 >	0.40
VE	4998	51	03/14/89	0.983	249.00 >	320.00 >	1.28	0.11	0.36
VE	4999	51	03/14/89	0.983	88.50	2.48	0.03	0.02 >	0.22
VE	5690	57	07/17/89	0.883	306.00 >	320.00 >	1.05	0.21 >	0.10
VE	6373	63	03/02/90	1.122	278.00	308.00	1.11	0.24 >	0.08
VE	2430	17	03/17/89	0.990	24.80	59.30	2.39	1.21 >	0.00
VE	5528	56	06/12/89	1.168	7.84 >	320.00 >	40.80	0.86 >	15.38
VE	5531	56	06/12/89	1.225	240.00 >	320.00 >	1.33	0.97 >	2.55

New Drugs with 25% Antiviral Reduction Levels: Of the 6067 actual single drug tests, 356 new compounds demonstrated moderate antiviral activity, having antiviral reduction values equal to or better than 25%. This represents around 6% of the test compounds being active at this marginal antiviral reduction level.

In general, when compared to the 95% and 50% antiviral activity categories, the compounds in this (25%) category do not appear to have any significant antiviral promise and probably do not need to be presently confirmed any further.

4.1.5.3 Confirmatory Assays:

Some of the compounds were sent to us in more than one separate drug shipment. These compounds were tested more than once. Data from the confirmatory assays are summarized in **Table 15**. If a compound showed $\geq$50% reduction in CPE during this contract period, then it was considered a candidate for confirmatory testing. The confirmatory tests are from active compounds picked up by both the VR and MTT assay testing . Out of 131 confirmatory tests, 85 compounds were confirmed active during this reporting period and the remaining 46 compounds gave conflicting results. The criteria for activity is that the confirmatory test has to show $\geq$25% reduction in CPE. Failure to confirm the activity in these compounds was probably due to differences during the assay conditions:

1) In confirmatory assays the concentration range is adjusted to a more accurate semilog scale to maximize the TAI window.

2) Differences in the "differential" of the two runs can cause the compound to read positive or negative, falsely. The variability in the differential can cause false positive or negative bias to be introduced into the calculations, thus reflecting the variability in the maximum activity of the compound.

3) The metabolic rate, cell and virus load/well, age, and passage number of the cells may cause the above observed variability in the confirmatory results.

4) Problems associated with stability and storage of the compound (i.e., different lot numbers, solubility, light sensitivity, hygroscopic, etc.).

5) Problems associated with technical execution of large numbers of plates by different technicians.

During this reporting period the overall confirmatory rate against VE was 65%. The conflicting results should be retested at a later date based on the availability of the compound.

4.1.5.4 Recommendations of VE-Actives Based Upon the *In Vitro* Results with MTT Assay (Vero Cells)

Based upon the *in vitro* results with the MTT assay (Vero cells) we recommend the following:

1) Compounds with the highest TAI in the 95% activity category that have confirmed results with the exception of "colored" compounds should receive the highest priority for further profile studies and *in vivo* animal testing.

2) Compounds with the highest TAI in the 50% activity category that have confirmed results with the exception of "colored" compounds should receive the next highest priority for further profile studies and *in vivo* animal testing.

Table 15

Confirmatory Assays for Compounds Active Against Venezuelan Equine Encephalomyelitis (VE)

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
** VIRUS VE																	
0053	64	03/09/90	UGB	1.183	4.96	302.00	60.82	10.50 >	320.00 >	30.42	0.00 >	320.00	0.00	28.68 >	39.34	MTT	+
0053	64	05/04/90	VTM	1.521	1.69	20.00	11.83	6.84	146.00	21.27	0.00 >	320.00	0.00	2.92 >	20.28	MTT	+
0053	64	10/05/90	Z9F	1.064	2.47	9.06	3.67	0.00	24.90	0.00	0.00 >	320.00	0.00	0.00 >	9.08	MTT	+
0111	42	05/09/89	QQG	0.956	10.80	24.90	2.30	29.50	74.50	2.52	0.00 >	320.00	0.00	0.84	6.28	MTT	+
0111	42	08/25/89	RAC	0.761	9.16	46.60	5.08	21.00 >	100.00 >	4.76	0.00 >	100.00	0.00	2.22 >	18.41	MTT	+
0111	9	12/08/89	SU2	1.138	12.00	90.60	7.57	19.80 >	1000.00 >	50.57	0.00 >	1000.00	0.00	4.58 >	29.87	MTT	+
0111	9	12/08/89	STT	1.145	8.02	220.00	27.43	14.50 >	1000.00 >	69.19	0.00 >	1000.00	0.00	15.22 >	46.69	MTT	+
0113	1	05/22/89	Q5K	0.623	48.40	30.80	0.64	92.50 >	320.00 >	3.46	0.00 >	320.00	0.00	0.33 >	1.87	MTT	+
0113	1	08/25/89	RAC	0.761	69.20	72.50	1.05	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	1.45	MTT	+
0124	64	03/09/90	UGF	1.158	15.50	82.00	5.29	25.00 >	320.00 >	12.81	0.00 >	320.00	0.00	3.28 >	20.48	MTT	+
0124	64	05/04/90	VTO	1.391	12.40	28.30	2.29	22.40	93.80	4.19	0.00 >	1000.00	0.00	1.26	9.64	MTT	+
0124	69	07/20/90	XKH	0.966	14.40	51.70	3.58	24.00	141.00	5.87	0.00 >	1000.00	0.00	2.15 >	11.24	MTT	+
0148	2	08/25/89	RAD	0.795	0.01	0.10	7.36	0.02 >	3.20 >	158.70	0.00 >	3.20	0.00	4.80 >	31.26	MTT	+
0148	67	06/01/90	WE5	0.958	0.18	0.21	1.17	0.00	0.94	0.00	0.00 >	3.20	0.00	0.00	0.00	MTT	+
0148	2/67	10/05/90	Z9G	1.129	1.25	0.47	0.38	0.00	2.47	0.00	0.00 >	10.00	0.00	0.00 >	0.07	MTT	+
0206	5	05/14/87	---	NA	- 100.00	320.00	- 3.20	6.00 >	320.00 >	2.40	0.00 >	320.00	0.00	2.40	1.00[a]	CPE	+
0206	5	05/09/89	QOH	0.903	199.00	198.00	0.99	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
0206	4	12/08/89	SS9	1.114	173.00	272.00	1.57	0.00	611.00	0.00	0.00 >	1000.00	0.00	0.00	3.03	MTT	+
0206	4	12/08/89	SS0	1.272	127.00	479.00	3.77	268.00	841.00	3.14	0.00 >	1000.00	0.00	1.79	9.99	MTT	+
0206	67	06/01/90	WE5	0.958	80.30	124.00	1.54	0.00	272.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.04	MTT	+
0217	33	04/17/89	PLV	1.004	16.10	57.10	3.53	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	10.09	MTT	+
0217	61	12/01/89	SQW	1.169	12.70	293.00	23.09	19.90 >	320.00 >	16.04	0.00 >	320.00	0.00	14.66 >	32.97	MTT	+
0646	2	08/25/89	RAH	0.866	0.44	0.93	2.13	0.79 >	3.20 >	4.06	0.00 >	3.20	0.00	1.18 >	11.20	MTT	+
0646	67	06/01/90	WE6	0.964	0.50	0.31	0.62	0.00	0.80	0.00	0.00 >	3.20	0.00	0.00	0.00	MTT	+
1019	28	08/25/89	RAI	0.781	0.35 >	1.00 >	2.86	0.55 >	1.00 >	1.83	0.00 >	1.00	0.00 >	1.83 >	11.45	MTT	+
1019	28	03/09/90	UDF	1.411	1.20	2.20	1.83	2.33	47.70	20.47	0.00 >	100.00	0.00	0.94	9.20	MTT	+
1215	27	04/14/89	PIV	1.227	0.00	83.60	0.00	0.00	209.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
1215	27	10/06/89	RTW	0.795	52.30	137.00	2.61	100.00	268.00	2.68	0.00 >	320.00	0.00	1.37	8.01	MTT	+
1829	32	04/03/89	P8V	1.042	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.15	MTT	-
1829	32	10/06/89	RU2	0.609	2.64 >	320.00 >	121.39	27.80 >	320.00 >	11.51	0.00 >	320.00	0.00 >	11.51 >	21.97	MTT	+
1829	67	06/01/90	WH0	0.987	0.00	927.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	2.99	MTT	-
1841	33	10/06/89	RU3	0.598	4.39	2.79	0.64	19.60 >	320.00 >	16.36	288.00 >	320.00 >	1.11	0.14 >	31.88	MTT	+
1841	62	01/19/90	TG4	1.003	264.00	490.00	1.86	0.00	660.00	0.00	0.00	966.00	0.00	0.00	3.73	MTT	+
1841	65	04/13/90	V9B	1.201	0.00	238.00	0.00	0.00	433.00	0.00	0.00	943.00	0.00	0.00	1.99	MTT	-
1850	32	10/06/89	RU4	0.716	42.50 >	100.00 >	2.35	77.00 >	100.00 >	1.30	0.00 >	100.00	0.00 >	1.30 >	10.87	MTT	+
1850	67	06/01/90	WH0	0.987	0.00	131.00	0.00	0.00	348.00	0.00	0.00 >	1000.00	0.00	0.00	0.21	MTT	-

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2275	12	03/17/89	P4T	1.050	0.00	51.70	0.00	0.00	99.40	0.00	0.00 >	100.00	0.00	0.00	2.62	MTT	-
2275	12	09/11/89	REH	0.944	25.50	136.00	5.31	51.20	284.00	5.55	0.00 >	320.00	0.00	2.65 >	16.91	MTT	+
2275	67	06/01/90	WH4	0.987	0.00	113.00	0.00	0.00	218.00	0.00	0.00 >	320.00	0.00	0.00 >	0.31	MTT	-
2318	13	03/17/89	P4V	1.040	0.36	0.25	0.69	1.00	1.44	1.44	0.00 >	10.00	0.00	0.25 >	0.42	MTT	+
2318	13	09/11/89	REI	0.848 <	0.03 >	10.00 >	312.50	0.52 >	10.00 >	19.40	0.94 >	10.00 >	10.68 >	19.40 >	49.94	MTT	+
2318	67	06/01/90	WH4	0.987	0.56	0.31	0.56	0.00	2.22	0.00	0.00 >	10.00	0.00	0.00 >	0.10	MTT	+
2318	67	07/13/90	XGK	1.079	1.21	4.17	3.45	2.05 >	10.00 >	4.87	0.00 >	10.00	0.00	2.03 >	14.40	MTT	+
2320	13	03/17/89	P4W	1.067	0.68	8.93	13.10	0.00	22.70	0.00	0.00 >	100.00	0.00	0.00 >	13.05	MTT	+
2320	13	09/11/89	REI	0.848 <	1.00	46.20 >	46.17	7.22	157.00	21.80	0.00 >	320.00	0.00	6.39 >	28.83	MTT	+
2320	65	04/13/90	V9D	1.171 <	1.00	8.30 >	8.30	1.53	28.50	18.55	0.00 >	320.00	0.00	5.41 >	15.87	MTT	+
2320	65	07/06/90	XA7	1.019 <	1.00	17.00 >	17.04	6.14	54.70	8.91	0.00 >	320.00	0.00	2.78 >	17.17	MTT	+
2320	65	07/20/90	XKT	1.113	1.84	24.70	13.41	8.27	83.00	10.04	0.00 >	320.00	0.00	2.98 >	15.07	MTT	+
2433	17	03/17/89	P58	0.950	51.40 >	100.00 >	1.95	87.90 >	100.00 >	1.14	0.00 >	100.00	0.00 >	1.14 >	0.00	MTT	+
2433	17	09/11/89	REL	0.631	7.40	161.00	21.78	52.30	222.00	4.25	0.00 >	320.00	0.0	3.08	23.90	MTT	+
2433	65	04/13/90	V9D	1.171	133.00	236.00	1.77	222.00 >	320.00 >	1.44	0.00 >	320.00	0.00	1.07 >	3.43	MTT	+
2433	65	07/06/90	XA8	1.026	0.00	75.10	0.00	0.00	188.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.32	MTT	-
2453	18	09/08/89	RG5	0.889	3.45	13.30	3.85	5.02	20.70	4.13	9.85 >	32.00 >	3.25	2.64	12.09	MTT	+
2453	64	03/13/90	UJ7	0.995	22.20	17.60	0.80	0.00	25.30	0.00	0.00	89.90	0.00	0.00	1.57	MTT	+
2453	64	05/04/90	VTY	1.260	9.16	11.60	1.27	0.00	19.70	0.00	0.00	71.70	0.00	0.00 >	0.41	MTT	+
2503	21	03/31/89	PGJ	1.059	0.18	0.28	1.51	0.00	2.10	0.00	0.00 >	3.20	0.00	0.00	2.33	MTT	+
2503	21	09/08/89	RG6	1.216	0.40	4.17	10.38	0.68 >	10.00 >	14.82	0.00 >	10.00	0.00	6.18 >	21.71	MTT	+
2503	67	06/01/90	WH5	1.009	0.73	0.54	0.74	0.00	2.65	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	+
2503	67	07/13/90	XGL	1.139	1.81	2.18	1.20	0.00	6.75	0.00	0.00 >	10.00	0.00	0.00	0.67	MTT	+
2503	67	10/05/90	Z9H	1.107	4.97	1.30	0.26	0.00	6.60	0.00	0.00 >	32.00	0.00	0.00 >	0.01	MTT	+
2506	21	09/08/89	RG7	1.020	1.03	6.37	6.18	2.26 >	10.00 >	4.42	0.00 >	10.00	0.00	2.81 >	13.28	MTT	+
2506	64	03/13/90	UJ8	1.049 <	1.00	9.35 >	9.35 <	1.00	80.60 >	80.57	2.83 >	320.00 >	113.17 >	9.35 >	33.39	MTT	+
2506	64	05/04/90	VTY	1.260 <	1.00	2.90 >	2.90 <	1.00	19.80 >	19.78	0.00 >	320.00	0.00 >	2.90 >	14.16	MTT	+
2544	20	12/20/88	07S	1.115	1.60	3.30	2.10	2.60	6.20	2.40	0.00	27.00	0.00	1.30	4.34	MTT	+
2544	20	03/21/89	P92	0.873	0.00	4.00	0.00	0.00	7.30	0.00	0.00	29.00	0.00	0.00	0.00	MTT	-
2573	57	06/26/89	QJ3	1.058	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.24	MTT	-
2573	65	04/13/90	V9E	1.160	140.00	817.00	5.81	220.00 >	1000.00 >	4.55	0.00 >	1000.00	0.00	3.72 >	19.00	MTT	+
2582	19	09/08/89	RGB	0.951	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
2582	65	04/13/90	V9G	1.063	342.00 >	1000.0 >	2.92	598.00 >	1000.00 >	1.67	0.00 >	1000.00	0.00 >	1.67 >	10.76	MTT	+
2590	19	09/08/89	RGC	1.069	7.33 >	320.00 >	43.66	211.00 >	320.00 >	1.52	0.00 >	320.00	0.00 >	1.52 >	17.85	MTT	+
2590	65	04/13/90	V9H	1.159	187.00	852.00	4.57	443.00 >	1000.00 >	2.26	0.00 >	1000.00	0.00	1.92 >	12.00	MTT	+
2591	19	09/08/89	RGC	1.069	70.60 >	320.00 >	4.53	152.00 >	320.00 >	2.11	0.00 >	320.00	0.00 >	2.11 >	8.35	MTT	+
2591	65	04/13/90	V9I	1.151	51.90	547.00	10.54	84.00	924.00	11.00	0.00 >	1000.00	0.00	6.50	25.69	MTT	+

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2631	19	09/08/89	RGD	0.716	112.00 >	320.00 >	2.85	181.00 >	320.00 >	1.77	0.00 >	320.00	0.00 >	1.77 >	13.37	MTT	+
2631	65	04/20/90	VDS	1.248	128.00 >	320.00 >	2.50	193.00 >	320.00 >	1.66	0.00 >	320.00	0.00 >	1.66 >	10.00	MTT	+
2631	65	07/06/90	XA9	1.033	112.00	508.00	4.55	193.00	732.00	3.79	0.00 >	1000.00	0.00	2.63 >	15.16	MTT	+
2716	46	01/23/89	ODY	1.214	1.40	3.40	2.43	2.67	8.40	3.15	0.00	93.60	0.00	1.27 >	6.03	MTT	+
2716	22	09/08/89	RHZ	1.367	2.41 >	10.00 >	4.14	8.43 >	10.00 >	1.19	0.00 >	10.00	0.00 >	1.19 >	9.60	MTT	+
2902	26	04/14/89	PII	1.201	44.90	62.20	1.39	70.00	155.00	2.21	0.00	322.00	0.00	0.89	6.14	MTT	+
2902	26	09/08/89	RI1	1.421	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.05	MTT	-
2960	27	04/14/89	PIZ	1.162	36.80 >	320.00 >	8.70	73.70 >	320.00 >	4.34	276.00 >	320.00 >	1.16 >	4.34 >	2.64	MTT	+
2960	27	09/08/89	RI4	1.440	73.30	24.70	0.34	167.00 >	320.00 >	1.91	0.00 >	320.00	0.00	0.15 >	6.82	MTT	+
2960	27	10/05/90	Z9I	1.095	23.00	26.30	1.15	84.30 >	1000.00 >	11.87	875.00 >	1000.00 >	1.14	0.31 >	28.46	MTT	+
2980	48	02/07/89	OLD	1.039	2.40	0.23	0.10	0.00	1.80	0.00	0.00 >	3.20	0.00	0.00	0.11	MTT	+
2980	48	03/10/89	OZT	0.953	0.00	1.10	0.00	0.00	2.40	0.00	0.00 >	3.20	0.00	0.00	0.00	MTT	-
2980	25	04/07/89	PE2	0.931	12.00	1.50	0.13	100.00	2.60	0.30	0.00 >	320.00	0.00	0.01 >	0.01	MTT	+
2980	25	09/08/89	RI5	1.371	5.70	0.76	0.13	0.00	1.70	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	+
3038	53	04/10/89	PEF	0.835 <	1.00 <	1.00	1.00	0.00 <	1.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
3038	28	04/14/89	PJE	0.854	0.07 <	0.03 <	0.45	0.00	0.17	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	+
3038	28	09/08/89	RI6	1.414	0.26	0.29	1.10	0.70 >	3.20 >	4.56	0.00 >	3.20	0.00	0.41 >	7.76	MTT	+
3171	29	05/15/89	Q1N	1.131	33.00	12.40	0.38	48.50 >	100.00 >	2.06	97.00 >	100.00 >	1.03	0.26 >	6.74	MTT	+
3171	29	12/08/89	SU0	1.125	18.60	30.40	1.63	38.00 >	100.00 >	2.63	0.00 >	100.00	0.00	0.80 >	9.87	MTT	+
3315	30	12/07/88	029	1.293	10.00	44.00	4.40	19.00 >	320.00 >	17.00	0.00 >	320.00	0.00	2.40 >	17.94	MTT	+
3315	30	09/08/89	RI7	1.433	0.00	26.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3377	65	04/20/90	VE0	1.182	9.09 >	320.00 >	35.19	29.30 >	320.00 >	10.94	0.00 >	320.00	0.00 >	10.94 >	24.94	MTT	+
3377	65	10/05/90	Z9J	1.143	0.00	27.40	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3584	32	11/03/88	OD2	1.169	21.70	61.10	2.82	80.50 >	100.00 >	1.24	0.00 >	100.00	0.00	0.76 >	6.35	MTT	+
3584	32	04/17/89	PLR	1.002	62.90	235.00	3.73	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	8.17	MTT	+
3584	32	09/11/89	RJQ	1.117	44.10	178.00	4.03	72.60	285.00	3.93	0.00 >	320.00	0.00	2.45	11.91	MTT	+
3611	32	11/03/88	OD8	1.285 <	1.00	4.77 >	4.77	1.91	25.70	13.40	0.00 >	320.00	0.00	2.49 >	12.83	MTT	+
3611	32	03/09/90	UDF	1.411	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3611	67	06/01/90	WH6	1.029	0.00	681.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
3688	32	11/10/88	04A	0.747	168.00 >	320.00 >	1.91	287.00 >	320.00 >	1.11	0.00 >	320.00	0.00 >	1.11 >	6.84	MTT	+
3688	32	12/15/89	SYM	1.238	0.00	272.00	0.00	0.00	508.00	0.00	0.00	979.00	0.00	0.00	0.00	MTT	-
3802	58	08/04/89	R00	1.165 <	0.10 <	0.10 -	1.00	0.00	0.31	0.00	0.00 >	32.00	0.00	0.00	0.18	MTT	+
3802	35	09/11/89	RJS	1.233	0.10	0.25	2.65	0.19 >	10.00 >	52.25	0.00 >	10.00	0.00	1.33 >	12.01	MTT	+
3802	67	06/01/90	WH7	0.964	0.18	0.21	1.16	0.00	0.77	0.00	0.00 >	10.00	0.00	0.00	0.74	MTT	+
3802	67	07/13/90	XGL	1.139	0.15	0.61	3.96	0.23 >	10.00 >	42.52	0.00 >	10.00	0.00	2.58 >	17.25	MTT	+
3935	35	09/11/89	RJU	1.180	44.60	41.20	0.92	0.00	87.10	0.00	0.00	299.00	0.00	0.00	0.00	MTT	+
3935	65	04/27/90	VKG	1.313	47.10	72.30	1.54	76.30	148.00	1.94	0.00	303.00	0.00	0.95	3.04	MTT	+
3935	65	07/06/90	XAB	0.977	39.30	103.00	2.62	69.40	175.00	2.52	0.00	306.00	0.00	1.48	8.59	MTT	+

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4051	37	09/11/89	RJW	1.008	< 0.03	> 10.00	> 312.50	< 0.03	> 10.00	> 312.50	< 0.03	> 10.00	> 312.50	> 312.50	> 86.80	MTT	+
4051	67	06/01/90	WH7	0.964	0.00	4.92	0.00	0.00	6.63	0.00	0.00	9.73	0.00	0.00	0.00	MTT	-
4051	67	10/05/90	Z7R	1.170	0.00	5.19	0.00	0.00	7.46	0.00	0.00	28.70	0.00	0.00	0.00	MTT	-
4051	37	10/05/90	Z9L	1.234	0.00	0.41	0.00	0.00	0.63	0.00	0.00	1.88	0.00	0.00	> 0.10	MTT	-
4051	37	10/05/90	Z9K	1.102	0.00	4.65	0.00	0.00	6.46	0.00	0.00	100.00	0.00	0.00	> 0.03	MTT	-
4742	44	04/03/89	P8T	0.994	9.58	9.68	1.01	58.00	> 320.00	> 5.52	0.00	> 320.00	0.00	0.17	> 9.62	MTT	+
4742	44	09/15/89	RKZ	0.805	5.91	7.32	1.24	19.30	> 320.00	> 16.58	0.00	> 320.00	0.0	0.38	> 21.61	MTT	+
4742	44	10/05/90	Z9L	1.234	0.00	16.10	0.00	0.00	25.10	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
4768	44	11/08/88	ODC	1.224	45.20	130.00	2.88	64.90	194.00	2.98	0.00	307.00	0.00	2.01	9.53	MTT	+
4768	44	02/16/90	U1J	1.108	179.00	157.00	0.88	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 0.02	MTT	+
4769	44	11/08/88	ODD	1.117	43.10	148.00	3.44	59.60	205.00	3.45	0.00	309.00	0.00	2.49	12.90	MTT	+
4769	44	02/16/90	U1J	1.108	0.00	74.50	0.00	0.00	166.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
4770	44	11/08/88	ODD	1.117	43.50	155.00	3.56	59.90	210.00	3.50	0.00	309.00	0.00	2.59	13.39	MTT	+
4770	44	03/09/90	UDH	1.320	0.00	80.00	0.00	0.00	165.00	0.00	0.00	310.00	0.00	0.00	0.11	MTT	-
4852	48	02/21/89	OQB	1.006	22.80	3.88	0.17	47.80	9.55	0.20	0.00	> 320.00	0.00	0.08	9.32	MTT	+
4852	48	03/09/90	UDH	1.320	0.00	191.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.23	MTT	-
4871	46	01/16/89	OBF	0.802	16.20	203.00	12.50	50.90	> 320.00	> 6.29	0.00	> 320.00	0.00	3.99	> 19.83	MTT	+
4871	61	12/01/89	SR5	1.153	24.60	405.00	16.46	63.40	> 1000.00	> 15.77	0.00	> 1000.00	0.00	6.39	19.09	MTT	+
4892	46	01/17/89	OD3	0.894	15.70	64.50	4.12	273.00	> 320.00	> 1.17	0.00	> 320.00	0.00	0.24	> 10.89	MTT	+
4892	46	03/09/90	UDI	1.316	0.00	87.30	0.00	0.00	171.00	0.00	0.00	317.00	0.00	0.00	0.00	MTT	-
4919	46	01/31/89	OI5	1.004	44.90	162.00	3.60	97.00	310.00	3.20	0.00	> 320.00	0.00	1.67	10.31	MTT	+
4919	61	12/01/89	SR6	1.083	52.40	116.00	2.22	0.00	250.00	0.00	0.00	> 320.00	0.00	0.00	4.30	MTT	+
5040	62	12/08/89	SS2	1.343	191.00	425.00	2.23	0.00	861.00	0.00	0.00	> 1000.00	0.00	0.00	2.73	MTT	+
5040	45	01/05/90	T1I	1.095	43.00	304.00	7.06	72.90	899.00	12.34	0.00	> 1000.00	0.00	4.17	20.36	MTT	+
5040	GABSN	02/09/90	TWU	0.933	123.00	137.00	1.11	0.00	482.00	0.00	0.00	> 3200.00	0.00	0.00	> 0.35	MTT	+
5058	48	05/23/89	Q77	1.000	269.00	223.00	0.83	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	+
5058	62	12/08/89	SS3	1.350	351.00	935.00	2.66	758.00	> 1000.00	> 1.32	0.00	> 1000.00	0.00	1.23	> 6.06	MTT	+
5058	48	01/05/90	T1I	1.095	252.00	1000.0	3.98	675.00	> 1000.00	> 1.48	0.00	> 1000.00	0.00	1.48	> 9.13	MTT	+
5058	62	02/09/90	TWV	0.970	225.00	518.00	2.30	0.00	827.00	0.00	0.00	> 1000.00	0.00	0.00	4.35	MTT	+
5070	48	03/03/89	OVI	0.958	141.00	59.20	0.42	232.00	97.00	0.42	0.00	> 320.00	0.00	0.26	> 1.63	MTT	+
5070	48	10/02/89	RUZ	1.011	0.00	106.00	0.00	0.00	179.00	0.00	0.00	311.00	0.00	0.00	0.03	MTT	-
5070	65	04/27/90	VMA	1.368	0.00	52.40	0.00	0.00	94.90	0.00	0.00	301.00	0.00	0.00	0.00	MTT	-
5072	48	03/03/89	OVJ	0.956	40.70	> 320.00	> 7.87	67.00	> 320.00	> 4.77	264.00	> 320.00	> 1.21	> 4.77	> 27.35	MTT	+
5072	48	10/02/89	RUZ	1.011	54.10	810.00	14.95	138.00	> 1000.00	> 7.26	0.00	> 1000.00	0.00	5.88	> 24.06	MTT	+
5072	48	10/06/89	RTN	0.390	179.00	267.00	1.49	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 3.10	MTT	+
5094	56	06/19/89	QFE	1.410	48.40	83.50	1.73	73.10	156.00	2.13	0.00	304.00	0.00	1.14	4.52	MTT	+
5094	56	08/07/89	R1L	1.154	65.70	59.80	0.91	0.00	98.50	0.00	0.00	298.00	0.00	0.00	0.00	MTT	+

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5119	56	06/23/89	QH4	0.677	35.90	92.70	2.59	0.00	215.00	0.00	0.00 >	320.00	0.00	0.00	7.86	MTT	+
5119	56	08/07/89	R1N	1.123	10.70	75.60	7.07	24.50 >	100.00 >	4.08	0.00 >	100.00	0.00	3.08	17.35	MTT	+
5119	65	04/27/90	VMB	1.397	0.00	50.50	0.00	0.00	71.50	0.00	0.00 >	320.00	0.00	0.00 >	4.18	MTT	-
5121	56	06/23/89	QH5	0.590	0.00	69.80	0.00	0.00	120.00	0.00	0.00	300.00	0.00	0.00	0.30	MTT	-
5121	56	08/07/89	R1O	1.069	0.00	173.00	0.00	0.00	247.00	0.00	0.00 >	320.00	0.00	0.00	0.40	MTT	-
5121	56	11/02/90	ZWL	1.165	124.00 >	320.00 >	2.58	170.00 >	320.00 >	1.88	300.00 >	320.00 >	1.07 >	1.88 >	13.87	MTT	+
5138	57	07/10/89	QPY	1.145	251.00 >	320.00 >	1.27	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.90	MTT	+
5138	57	08/18/89	R7C	1.070	110.00	515.00	4.68	179.00	711.00	3.97	0.00 >	1000.00	0.00	2.88 >	17.32	MTT	+
5138	65	04/27/90	VMC	1.261	273.00 >	1000.0 >	3.66	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	11.49	MTT	+
5142	57	07/10/89	QQ0	1.103	50.50	84.30	1.67	81.10	161.00	1.98	0.00	304.00	0.00	1.04	3.31	MTT	+
5142	57	08/18/89	R7D	1.116	57.20	49.00	0.86	0.00	127.00	0.00	0.00	301.00	0.00	0.00	0.18	MTT	+
5175	58	07/24/89	QVE	0.703	17.90	5.54	0.31	0.00	8.48	0.00	0.00	92.60	0.00	0.00	0.00	MTT	+
5175	58	10/09/89	RYP	1.000	8.67	39.40	4.54	20.40	59.90	2.94	0.00	96.70	0.00	1.93 >	13.52	MTT	+
5175	65	04/27/90	VMD	1.383	15.90	8.87	0.56	0.00	35.80	0.00	0.00	93.60	0.00	0.00	0.00	MTT	+
5176	58	07/24/89	QVE	0.703	259.00	17.30	0.07	0.00	92.20	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
5176	58	10/09/89	RYP	1.000	38.10	134.00	3.52	79.20	200.00	2.52	0.00	317.00	0.00	1.69	10.40	MTT	+
5176	65	04/27/90	VME	1.343	67.70	106.00	1.57	0.00	187.00	0.00	0.00	622.00	0.00	0.00	1.09	MTT	+
5197	58	07/28/89	QY2	1.439	54.20	44.40	0.82	91.90	127.00	1.38	0.00	301.00	0.00	0.48	0.48	MTT	+
5197	58	10/09/89	RYU	1.010	14.80	88.70	5.99	21.90	164.00	7.46	0.00	307.00	0.00	4.04	19.73	MTT	+
5197	58	10/05/90	Z9M	1.101	57.30	66.00	1.15	0.00	100.00	0.00	0.00	298.00	0.00	0.00	0.43	MTT	+
5198	58	07/28/89	QY2	1.439	53.20	32.00	0.60	88.50	140.00	1.58	0.00	302.00	0.00	0.36	0.93	MTT	+
5198	58	10/09/89	RYU	1.010	13.80	57.90	4.20	19.30	84.90	4.41	0.00	295.00	0.00	3.01 >	17.11	MTT	+
5379	54	05/01/89	PVM	0.943	3.78	2.83	0.75	6.84	20.00	2.92	0.00	75.70	0.00	0.41 >	6.48	MTT	+
5379	54	06/09/89	Q7Q	1.056	0.00	1.50	0.00	0.00	3.07	0.00	0.00 >	3.20	0.00	0.00	0.00	MTT	-
5383	54	05/01/89	PVO	0.794	35.30	156.00	4.41	64.60	211.00	3.27	0.00	311.00	0.00	2.41 >	16.70	MTT	+
5383	54	06/06/89	Q9N	0.941	0.00	66.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
5384	54	05/01/89	PVP	0.795	8.75	48.60	5.56	17.90	66.70	3.73	0.00	99.30	0.00	2.72 >	18.03	MTT	+
5384	54	06/06/89	Q9O	0.874	0.00	34.70	0.00	0.00	57.10	0.00	0.00	97.30	0.00	0.00	0.00	MTT	-
5384	65	04/27/90	VMF	1.346	15.90	21.80	1.37	27.00	50.70	1.88	0.00	95.10	0.00	0.81	2.32	MTT	+
5385	54	05/01/89	PVP	0.795	12.90	47.70	3.70	26.20	65.60	2.50	0.00	97.90	0.00	1.82 >	12.33	MTT	+
5385	54	06/06/89	Q9O	0.874	0.00	32.20	0.00	0.00	57.50	0.00	0.00	103.00	0.00	0.00	0.65	MTT	-
5393	54	05/02/89	PX4	1.045 <	1.00	1.87 >	1.87	9.45	2.91	0.31	0.00 >	320.00	0.00	0.20 >	1.09	MTT	+
5393	1	06/06/89	Q9J	0.901	0.00	5.88	0.00	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	-
5457	54	05/02/89	PXB	1.072	1.79	7.53	4.21	15.70	48.40	3.08	0.00	155.00	0.00	0.48 >	10.84	MTT	+
5457	54	06/06/89	Q9Q	0.900	14.60	5.79	0.40	32.00	15.30	0.48	0.00	94.70	0.00	0.18 >	2.09	MTT	+

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5485	53	12/15/89	SYM	1.238	5.03	28.30	5.63	7.90 >	32.00 >	4.05	0.00 >	32.00	0.00	3.58 >	15.90	MTT	+
5485	66	05/11/90	VZL	1.390	5.28	12.90	2.44	9.34	24.80	2.66	0.00 >	320.00	0.00	1.38	4.86	MTT	+
5485	66	07/20/90	XKU	0.992	3.20	6.74	2.11	0.00	17.30	0.00	0.00 >	100.00	0.00	0.00	4.97	MTT	+
5489	66	05/11/90	VZM	1.248	171.00 >	320.00 >	1.87	305.00 >	320.00 >	1.05	0.00 >	320.00	0.00 >	1.05 >	3.93	MTT	+
5489	66	[illegible]/06/90	XCK	0.991	710.00	633.00	0.89	0.00	973.00	0.00	0.00 >	1000.00	0.00	0.00	0.42	MTT	+
5489	66	[illegible]/09/90	ZZU	1.059	773.00	1390.0	1.80	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	2.26	MTT	+
5495	53	04/17/89	PJI	0.957	1.55	4.90	3.17	24.90	8.76	0.35	0.00	89.30	0.00	0.20 >	4.46	MTT	+
5495	53	12/15/89	SYP	1.553	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00 >	0.05	MTT	-
5495	66	05/11/90	VZO	1.234	72.90	24.10	0.33	0.00	62.20	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	+
5495	66	07/20/90	XKV	1.050	93.10	27.40	0.29	0.00	66.90	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	+
5497	53	04/17/89	PJJ	0.950	22.70 >	320.00 >	14.10	354.00 >	320.00 >	0.90	0.00 >	320.00	0.00 >	0.90 >	20.90	MTT	+
5497	53	01/05/90	T1M	1.030	494.00	735.00	1.49	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	5.21	MTT	+
5497	65	05/04/90	VTG	1.418	0.00	433.00	0.00	0.00	651.00	0.00	0.00 >	1000.00	0.00	0.00 >	2.70	MTT	-
5497	66	05/11/90	VZP	1.271	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.25	MTT	-
5528	56	08/11/89	R2Y	1.387	0.00	19.20	0.00	0.00	30.60	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
5528	56	06/12/89	QBT	1.168	4.92	6.79	1.38	7.84 >	320.00 >	40.80	0.00 >	320.00	0.00	0.86 >	15.38	MTT	+
5531	56	08/11/89	R2Z	1.293	50.70	172.00	3.39	80.20	291.00	3.63	0.00 >	320.00	0.00	2.14	8.50	MTT	+
5531	56	06/12/89	QBV	1.225	149.00	234.00	1.57	240.00 >	320.00 >	1.33	0.00 >	320.00	0.00	0.97 >	2.55	MTT	+
5541	56	06/16/89	QD1	1.276	4.86	7.21	1.49	100.00	26.50	0.27	0.00 >	320.00	0.00	0.07 >	6.72	MTT	+
5541	56	08/11/89	R32	1.275	100.00	42.20	0.42	0.00	84.70	0.00	0.00	293.00	0.00	0.00	0.00	MTT	+
5543	56	06/16/89	QD2	1.260	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.21	MTT	-
5543	56	08/11/89	R33	1.436	0.10	0.67	6.72	0.20 >	32.00 >	157.45	0.00 >	32.00	0.00	3.31 >	39.55	MTT	+
5543	65	05/04/90	VTH	1.355	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
5543	56	10/05/90	Z9N	1.029	13.90	17.60	1.26	0.00	28.20	0.00	0.00 >	100.00	0.00	0.00 >	2.37	MTT	+
5609	57	06/26/89	QJ6	0.975	1.70	17.30	10.20	2.88 >	320.00 >	111.00	0.00 >	320.00	0.00	6.02 >	36.18	MTT	+
5609	65	05/04/90	VTI	1.347	0.00	73.20	0.00	0.00	164.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5609	57	10/05/90	Z90	1.105	0.00	54.10	0.00	0.00	93.70	0.00	0.00 >	320.00	0.00	0.00 >	0.61	MTT	-
5643	57	07/07/89	QHO	0.405	0.00	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.70	MTT	-
5643	57	08/18/89	R7I	1.000	8.65 >	320.00 >	37.01	37.70 >	320.00 >	8.48	0.00 >	320.00	0.00 >	8.48 >	35.52	MTT	+
5643	65	05/04/90	VTI	1.347	0.00	229.00	0.00	0.00	598.00	0.00	0.00 >	1000.00	0.00	0.00	0.74	MTT	-
5690	57	07/17/89	QTD	0.883	175.00	62.90	0.36	306.00 >	320.00 >	1.05	0.00 >	320.00	0.00	0.21 >	0.10	MTT	+
5690	57	08/18/89	R7K	1.091	260.00	73.50	0.28	0.00	190.00	0.00	0.00	908.00	0.00	0.00	0.00	MTT	+
5691	57	07/17/89	QTE	1.056	320.00	100.00	0.31	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
5691	57	08/18/89	R7K	1.091	141.00	469.00	3.32	200.00	734.00	3.67	0.00 >	1000.00	0.00	2.35	11.52	MTT	+

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5714	58	07/31/89	QZ2	0.916	0.00	3.46	0.00	0.00	5.67	0.00	0.00	9.65	0.00	0.00	0.00	MTT	-
5714	58	10/02/89	RV9	1.007	1.49	4.33	2.90	2.54	6.22	2.45	0.00	9.62	0.00	1.71	7.15	MTT	+
5714	58	10/09/89	RYA	0.988	0.87	4.53	5.22	1.49	6.38	4.28	0.00	9.70	0.00	3.04	20.06	MTT	+
5714	58	10/05/90	Z90	1.105	0.00	4.27	0.00	0.00	6.18	0.00	0.00	9.62	0.00	0.00 >	0.83	MTT	-
5724	58	07/31/89	QZ7	1.158	0.00	126.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5724	58	10/09/89	RYB	1.055	71.00 >	1000.0 >	14.08	204.00 >	1000.00 >	4.90	0.00 >	1000.00	0.00 >	4.90 >	19.40	MTT	+
5854	60	10/20/89	S45	1.140	24.60 <	1.00 <	0.04	62.60 >	320.00 >	5.12	0.00 >	320.00	0.00 <	0.02 >	6.22	MTT	+
5854	60	02/02/90	TPF	1.129	0.00	6.35	0.00	0.00	14.40	0.00	0.00	92.60	0.00	0.00	0.00	MTT	-
5905	61	11/03/89	SBO	0.897	4.50	12.40	2.77	7.41	19.20	2.60	0.00	31.50	0.00	1.68	7.83	MTT	+
5905	61	02/02/90	TNE	1.271	1.96	2.41	1.23	0.00	4.76	0.00	0.00	26.00	0.00	0.00	1.51	MTT	+
5906	61	11/03/89	SBO	0.897	4.11	49.00	11.93	5.52	66.00	11.95	9.42	96.60	10.25	8.87	34.69	MTT	+
5906	61	02/02/90	TNF	1.335	1.32	6.60	4.98	1.82	13.10	7.18	0.00	30.50	0.00	3.62	17.83	MTT	+
5907	61	11/03/89	SBP	0.953	192.00	32.00	0.17	0.00	75.60	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
5907	61	02/02/90	TNF	1.335	211.00	46.90	0.22	458.00	100.00	0.22	0.00 >	1000.00	0.00	0.10 >	2.91	MTT	+
5997	61	11/10/89	SFV	1.014 <	1.00	3.20 >	3.20 <	1.00	57.50 >	57.50	0.00 >	320.00	0.00 >	3.20 >	14.84	MTT	+
5997	61	11/02/90	ZWO	1.091	16.40	5.31	0.32	0.00	25.70	0.00	0.00 >	100.00	0.00	0.00 >	0.42	MTT	+
5998	61	11/10/89	SFV	1.014 <	1.00	1.55 >	1.55 <	1.00	8.43 >	8.43	0.00 >	320.00	0.00 >	1.55 >	7.49	MTT	+
5998	61	02/02/90	TP4	1.152	1.31	2.36	1.81	2.76 >	32.00 >	11.61	0.00 >	32.00	0.00	0.86 >	9.32	MTT	+
5998	61	02/09/90	TWN	0.975	2.08	8.30	4.00	4.97	23.30	4.69	0.00 >	32.00	0.00	1.67	9.94	MTT	+
6029	61	11/10/89	SHX	1.123	47.20 >	320.00 >	6.78	86.50 >	320.00 >	3.70	0.00 >	320.00	0.00 >	3.70 >	16.40	MTT	+
6029	61	02/02/90	TP5	1.103	108.00	447.00	4.15	0.00	644.00	0.00	0.00	1000.00	0.00	0.00	7.22	MTT	+
6218	62	01/19/90	TCW	1.506	0.00	257.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6218	62	12/07/90	10K	1.180	13.20 >	320.00 >	24.26	20.90 >	320.00 >	15.29	0.00 >	320.00	0.00 >	15.29 >	39.49	MTT	+
6309	63	02/16/90	U37	1.170	120.00	221.00	1.85	198.00 >	320.00 >	1.62	0.00 >	320.00	0.00	1.12 >	4.27	MTT	+
6309	63	03/23/90	UOU	1.428	75.20	71.20	0.95	0.00	183.00	0.00	0.00	918.00	0.00	0.00	0.00	MTT	+
6310	63	02/16/90	U38	1.298	5.12	2.79	0.54	32.00	31.00	0.97	0.00	259.00	0.00	0.09	0.58	MTT	+
6310	63	03/23/90	UOV	1.421	6.84	1.46	0.21	0.00	5.63	0.00	0.00	82.10	0.00	0.00	0.00	MTT	+
6311	63	02/16/90	U38	1.298	45.60	77.30	1.69	72.80 >	320.00 >	4.40	0.00 >	320.00	0.00	1.06 >	11.06	MTT	+
6311	63	03/23/90	UOV	1.421	57.30	66.00	1.15	0.00	241.00	0.00	0.00	948.00	0.00	0.00	1.12	MTT	+
6311	63	10/05/90	Z9P	0.967	61.10	57.50	0.94	0.00	156.00	0.00	0.00	838.00	0.00	0.00 >	0.53	MTT	+
6315	63	02/16/90	U3A	1.124	3.92	12.60	3.22	5.79	19.20	3.31	0.00	31.00	0.00	2.18	11.23	MTT	+
6315	63	03/23/90	UOW	1.385	5.42	14.40	2.65	9.19	20.40	2.22	0.00	31.30	0.00	1.56	5.68	MTT	+
6315	63	10/05/90	Z9P	0.967	4.38	15.60	3.55	6.38	21.10	3.31	0.00	31.10	0.00	2.44 >	12.72	MTT	+
6321	63	02/16/90	U3D	1.110	9.09	23.90	2.62	18.40	50.90	2.77	0.00	247.00	0.00	1.30	7.92	MTT	+
6321	63	03/16/90	UM3	1.122	5.02	14.90	2.96	9.09	22.00	2.42	0.00 >	100.00	0.00	1.63	7.41	MTT	+

Table 15 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6373	63	03/02/90	U8T	1.122	156.00	66.00	0.42	278.00	308.00	1.11	0.00 >	320.00	0.00	0.24 >	0.08	MTT	+
6373	63	03/23/90	UP1	1.408	169.00	100.00	0.59	0.00	373.00	0.00	0.00	973.00	0.00	0.00	0.02	MTT	+
6412	66	05/11/90	W25	1.323	53.00	82.00	1.55	91.60	157.00	1.71	0.00	316.00	0.00	0.90	3.06	MTT	+
6412	66	07/06/90	XCM	0.974	0.00	7.45	0.00	0.00	23.60	0.00	0.00 >	320.00	0.00	0.00 >	0.18	MTT	-
6477	66	05/18/90	W4D	1.182	11.30	14.00	1.23	24.90	57.90	2.33	0.00	274.00	0.00	0.56	2.91	MTT	+
6477	66	07/13/90	XEU	1.171	10.80	5.67	0.52	29.50	54.10	1.83	0.00	268.00	0.0	0.19	1.33	MTT	+
6482	66	05/18/90	W7E	1.200	35.50	137.00	3.85	59.60	198.00	3.32	0.00	308.00	0.00	2.29	12.59	MTT	+
6482	66	07/13/90	XEU	1.171	20.60	51.80	2.51	0.00	71.50	0.00	0.00	252.00	0.00	0.00	5.88	MTT	+
6489	66	05/18/90	W7I	1.245	1.59	43.90	27.60	2.70	66.90	24.77	0.00	241.00	0.00	16.26 >	19.55	MTT	+
6489	66	07/13/90	XEK	1.300 <	1.00	5.17 >	5.17	5.66	7.92	1.40	0.00	31.20	0.00	0.91 >	9.62	MTT	+
6521	66	05/25/90	W9K	0.999	4.99	221.00	44.37	8.09 >	320.00 >	39.57	0.00 >	320.00	0.00	27.38 >	12.30	MTT	+
6521	66	07/13/90	XEP	1.395	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	1.50	MTT	-
6532	66	05/25/90	W9Q	0.912	41.80	0.46	0.01	55.90	0.93	0.02	94.40 >	320.00 >	3.39	0.01	17.29	MTT	+
6532	66	07/06/90	XAJ	1.049	0.00	0.50	0.00	0.00	0.85	0.00	0.00 >	1.00	0.00	0.00	0.00	MTT	-
6724	67	06/08/90	WJS	1.020	4.14	5.01	1.21	8.43	83.00	9.85	0.00 >	320.00	0.00	0.59	3.71	MTT	+
6724	67	07/13/90	XGO	1.177	5.59	5.27	0.94	0.00	29.80	0.00	0.00 >	320.00	0.00	0.00	0.60	MTT	+
6724	67	11/16/90	17Q	1.041	0.00	8.00	0.00	0.00	79.60	0.00	0.00 >	100.00	0.00	0.00 >	0.40	MTT	-
6739	64	03/09/90	UGL	1.158	88.50	68.20	0.77	249.00 >	320.00 >	1.28	0.00 >	320.00	0.00	0.27 >	0.63	MTT	+
6739	64	05/04/90	VU3	1.264	320.00	46.30	0.14	0.00	91.10	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
6788	67	06/08/90	WM0	1.022	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	9.19	MTT	-
6788	67	07/13/90	XGU	1.189	132.00 >	1000.0 >	7.56	596.00 >	1000.00 >	1.68	0.00 >	1000.00	0.00 >	1.68 >	22.89	MTT	+
6791	67	06/15/90	WQ6	1.169	91.90	47.90	0.52	0.00	76.20	0.00	0.00 >	320.00	0.00	0.00	0.02	MTT	+
6791	67	07/13/90	XGV	1.170	15.60	2.38	0.15	24.50	4.35	0.18	0.00	9.54	0.00	0.10	1.54	MTT	+
6837	68	06/15/90	WQH	1.151	21.30	157.00	7.39	85.00	215.00	2.53	0.00	318.00	0.00	1.85	15.32	MTT	+
6837	68	08/03/90	XYM	1.109	29.00	158.00	5.44	0.00	216.00	0.00	0.00	320.00	0.00	0.00	12.65	MTT	+
6906	69	07/19/90	XN3	0.863	6.18	41.40	6.70	17.20	60.90	3.54	0.00	96.10	0.00	2.40 >	16.44	MTT	+
6906	69	09/07/90	YK6	0.886	10.90	26.20	2.39	23.10	48.70	2.11	0.00	95.80	0.00	1.14 >	8.68	MTT	+
6943	69	07/27/90	XQY	1.058	0.00	230.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.57	MTT	-
6943	69	09/07/90	YL7	0.793	49.30	210.00	4.26	80.60	320.00	3.97	0.00	932.00	0.00	2.61	12.16	MTT	+
6986	68	06/22/90	WZR	1.442	87.70	222.00	2.53	208.00 >	320.00 >	1.54	0.00 >	320.00	0.00	1.07 >	6.48	MTT	+
6986	68	08/10/90	XYZ	1.133	129.00	283.00	2.20	227.00	520.00	2.29	0.00	970.00	0.00	1.25	8.26	MTT	+
6993	68	06/22/90	WZU	1.342	153.00	219.00	1.43	296.00 >	320.00 >	1.08	0.00 >	320.00	0.00	0.74 >	1.78	MTT	+
6993	68	08/10/90	XZ1	1.139	134.00	146.00	1.09	0.00	291.00	0.00	0.00	938.00	0.00	0.00 >	1.53	MTT	+
6994	68	06/22/90	WZV	1.394	140.00 >	320.00 >	2.28	203.00 >	320.00 >	1.58	0.00 >	320.00	0.00 >	1.58 >	7.11	MTT	+
6994	68	08/10/90	XZ2	1.099	0.00	353.00	0.00	0.00	627.00	0.00	0.00 >	1000.00	0.00	0.00	0.92	MTT	-

Table 15 (Cont'd)

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7009	69	07/27/90	XTU	1.107	125.00	320.00	2.57	190.00 >	320.00 >	1.69	0.00 >	320.00	0.00	1.69 >	9.19	MTT	+
7009	69	09/07/90	YLB	0.896	237.00	128.00	0.54	0.00	500.00	0.00	0.00	950.00	0.00	0.00	0.03	MTT	+
7016	69	07/27/90	XTY	1.003	130.00	237.00	1.82	269.00 >	320.00 >	1.19	0.00 >	320.00	0.00	0.88 >	4.34	MTT	+
7016	69	09/07/90	YLD	0.861	135.00	355.00	2.63	216.00	576.00	2.67	0.00	974.00	0.00	1.65 >	7.34	MTT	+
7017	69	07/27/90	XTY	1.003	126.00 >	320.00 >	2.54	197.00 >	320.00 >	1.62	0.00 >	320.00	0.00 >	1.62 >	10.35	MTT	+
7017	69	09/07/90	YLD	0.861	245.00	363.00	1.48	0.00	575.00	0.00	0.00	958.00	0.00	0.00 >	0.85	MTT	+
7031	69	08/03/90	XWD	0.849	49.60	220.00	4.43	76.90 >	320.00 >	4.16	0.00 >	320.00	0.00	2.86	12.26	MTT	+
7031	69	09/07/90	YLF	0.840	0.00	31.20	0.00	0.00	178.00	0.00	0.00 >	320.00	0.00	0.00	0.87	MTT	-
7032	69	08/03/90	XWD	0.849	125.00 >	320.00 >	2.57	273.00 >	320.00 >	1.17	0.00 >	320.00	0.00 >	1.17 >	9.14	MTT	+
7032	69	09/07/90	YLG	0.989	607.00	582.00	0.96	0.00	843.00	0.00	0.00 >	1000.00	0.00	0.00	2.65	MTT	+
7047	69	08/03/90	XYJ	1.092	67.30	253.00	3.76	283.00 >	320.00 >	1.13	0.00 >	320.00	0.00	0.89 >	10.60	MTT	+
7047	69	09/14/90	YQS	0.851	0.00	141.00	0.00	0.00	200.00	0.00	0.00	308.00	0.00	0.00	0.97	MTT	-
7048	69	08/03/90	XYJ	1.092	10.00	155.00	15.50	48.40	210.00	4.34	0.00	309.00	0.00	3.20 >	23.46	MTT	+
7048	69	09/14/90	YQS	0.851	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00	1.97	MTT	-
7059	72	08/28/90	YDA	1.294	58.10	320.00	5.51	179.00	64.00	0.36	0.00 >	320.00	0.00	1.79 >	2.53	MTT	+
7059	72	10/05/90	Z7J	1.114	0.00	690.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.35	MTT	-
7059	72	10/26/90	ZP7	1.044	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.00	MTT	-
7083	72	08/28/90	YFC	1.263	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.04	MTT	-
7083	72	10/05/90	Z7N	1.103	39.20	80.60	2.06	73.80	168.00	2.28	0.00	314.00	0.00	1.09	4.52	MTT	+
7083	72	10/26/90	ZPC	1.152	53.50	192.00	3.59	93.50 >	320.00 >	3.42	0.00 >	320.00	0.00	2.06 >	9.89	MTT	+
7085	72	08/28/90	YFD	1.275	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	1.11	MTT	-
7085	72	10/05/90	Z7O	1.197	21.20	23.80	1.12	59.30	177.00	2.98	0.00 >	320.00	0.00	0.40	4.51	MTT	+
7085	72	10/26/90	ZPD	1.268	15.10 >	100.00 >	6.60	25.50 >	100.00 >	3.93	96.80 >	100.00 >	1.03 >	3.93 >	18.41	MTT	+
7086	72	08/28/90	YFD	1.275	0.00	68.30	0.00	0.00	130.00	0.00	0.00 >	320.00	0.00	0.00 >	0.46	MTT	-
7086	72	10/05/90	Z7O	1.197	24.90	6.78	0.27	0.00	15.70	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	+
7086	72	10/26/90	ZPE	1.074	6.04	13.90	2.30	21.70 >	100.00 >	4.61	0.00 >	100.00	0.00	0.64 >	10.69	MTT	+
7087	72	08/28/90	YFE	1.254	28.60	6.78	0.24	0.00	33.30	0.00	0.00	93.30	0.00	0.00	0.00	MTT	+
7087	72	10/05/90	Z7P	1.127	18.10	11.80	0.65	0.00	43.30	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	+
7087	72	10/26/90	ZPE	1.074	11.30	40.00	3.54	20.70 >	100.00 >	4.83	0.00 >	100.00	0.00	1.93 >	13.41	MTT	+
7116	70	08/10/90	Y12	1.038	622.00 >	1000.0 >	1.61	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	16.51	MTT	+
7116	70	09/14/90	YS2	0.903	53.60 >	1000.0 >	18.65	91.80 >	1000.00 >	10.90	0.00 >	1000.00	0.00 >	10.90 >	18.37	MTT	+
7386	70	08/24/90	Y8F	1.138	0.00	200.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
7386	70	09/28/90	Z2Q	0.988	1270.0 >	3200.0 >	2.52	2100.00 >	3200.00 >	1.52	0.00 >	3200.00	0.0 >	1.52 >	6.34	MTT	+
7403	70	08/24/90	Y9R	1.293	0.00	2.76	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
7403	70	09/28/90	Z2T	1.042	1550.0 >	3200.0 >	2.06	2960.00 >	3200.00 >	1.08	0.00 >	3200.00	0.00 >	1.08 >	7.34	MTT	+

Table 15 (Cont'd)

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7444	73	09/21/90	YWL	1.054	269.00	262.00	0.97	0.00	554.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.03	MTT	+
7444	73	10/24/90	ZPH	1.103	1110.0	3200.0	2.88	2150.00 >	3200.00 >	1.49	0.00 >	3200.00	0.00	1.49 >	6.53	MTT	+
7460	73	09/21/90	YWR	1.041	0.00	4.90	0.00	0.00	6.60	0.00	0.00	9.66	0.00	0.00	0.00	MTT	-
7460	73	11/02/90	ZV6	1.097	14.60	21.00	1.44	26.50 >	32.00 >	1.21	0.00 >	32.00	0.00	0.79 >	2.29	MTT	+
7911	74	10/12/90	ZFF	1.158	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.43	MTT	-
7911	75	11/09/90	ZZP	1.057	736.00	639.00	0.87	2390.00 >	3200.00 >	1.34	0.00 >	3200.00	0.00	0.27 >	1.87	MTT	+
7971	75	11/16/90	17E	1.056	1660.00	265.00	0.16	2870.00 >	3200.00 >	1.12	0.00 >	3200.00	0.00	0.09 >	2.74	MTT	+
7971	75	12/04/90	1M1	1.071	0.00	620.00	0.00	0.00	1060.00	0.00	0.00 >	3200.00	0.00	0.00 >	0.62	MTT	-
8212	75	11/16/90	17N	1.035	0.00	891.00	0.00	0.00	1260.00	0.00	0.00	1930.00	0.00	0.00 >	1.13	MTT	-
8212	75	11/30/90	11G	1.127	950.00 >	3200.0 >	3137	2390.00 >	3200.00 >	1.34	0.00 >	3200.00	0.00 >	1.34 >	9.72	MTT	+

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

$IC_{25,50,95}$ = (Viral) inhibitory concentration 25%, 50% and 95% = The drug concentration (µg/ml) that inhibited viral CPE by 25%, 50% or 95% calculated by using a regression analysis for semilog curve fitting.

$TC_{25,50,95}$ = (Cell) toxicity concentration 25%, 50% and 95% = The drug concentration (µg/ml) that reduced cell viability by 25%, 50% or 95%.

$AI_{25,50,95}$ = Antiviral Index = A single point ratio of the antiviral and anticellular effect of the compound, calculated with 25%, 50% or 95% reduction values (calculated by dividing the $TC_{25,50,95}$ by the $IC_{25,50,95}$).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, µg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

ACT = Activity = A "+" denotes a rest that produced ≥25% reduction in CPE. A "-" denotes an inactive test (i.e. ≤25% reduction in CPE).

4.1.6 Punta Toro Virus (PT):

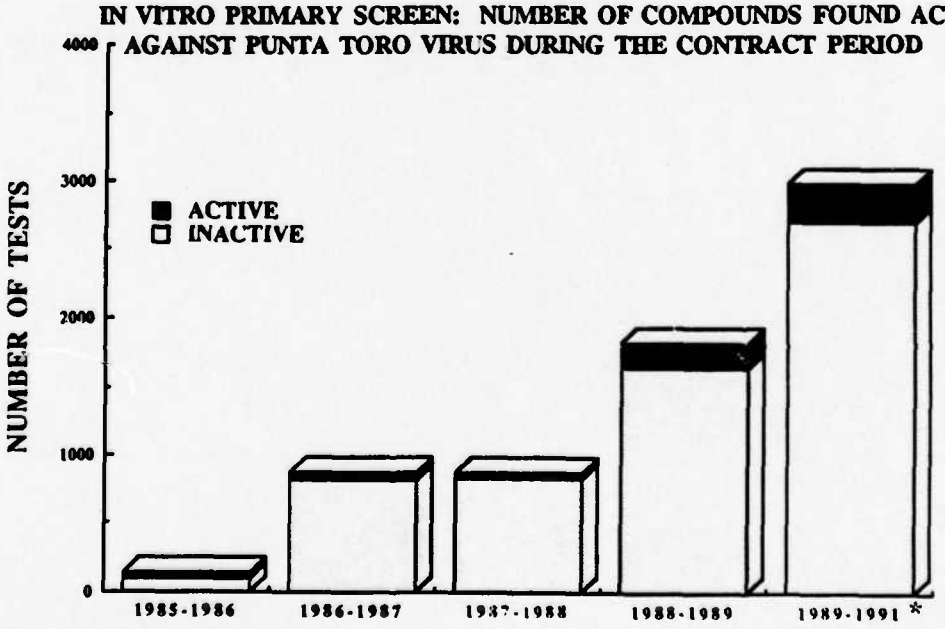
The number of single drug tests carried out against PT during this contract period is summarized in yearly increments in Figure 30. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since November, 1988, MTT based-antiviral assay format.

A total of 8221 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Ribavirin (AVS-0001) was tested in each standard virus rating (VR) CPE-inhibition assay as a positive control compound. Results of these positive control (VR tests) were used as a guideline to assess the quality of each assay.

After the testing was converted to the MTT-assay format, we performed a total of 406 control compound assays with Ribavirin during the last 26 months of the contract period. During this time 684 tests were internal (+++) virus load, cell load, and other quality control tests. Four hundred thirty-eight (438) tests were considered unsatisfactory based on the criteria of the quality controls set during this reporting period. The rest, totaling 4756 were actual single drug MTT-assays. The total number of MTT-assays (6284) tested during the last two years represents a 224% increase (improvement) in the total testing output as compared to the total of 1937 tests performed during the first 3 years of this contract.

Out of the 6693 accepted single drug tests, 635 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 9.5% of the tested compounds having *in vitro* antiviral activity against PT-virus. The remainder, 6058 compounds (90.5%), were considered inactive with both assay protocols (Figure 30).



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	35	59	37	187	282	600
Number Inactive	103	812	832	1564	2723	6034
Yearly Total (Accepted Single Drug Tests)	**138**	**871**	**869**	**1751**	**3005**	**6634**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 30

4.1.6.1 **PT-Quality Controls (MTT Assay):** Two positive control compounds (Ribavirin and 2-Thio-6 Azauridine) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to of better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.1.6.1.1 **Antiviral Activity of Ribavirin vs PT Virus:** A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0001 (Ribavirin) is presented in **Figure 31-A** for 242 tests performed during November, 1989 through January, 1991.

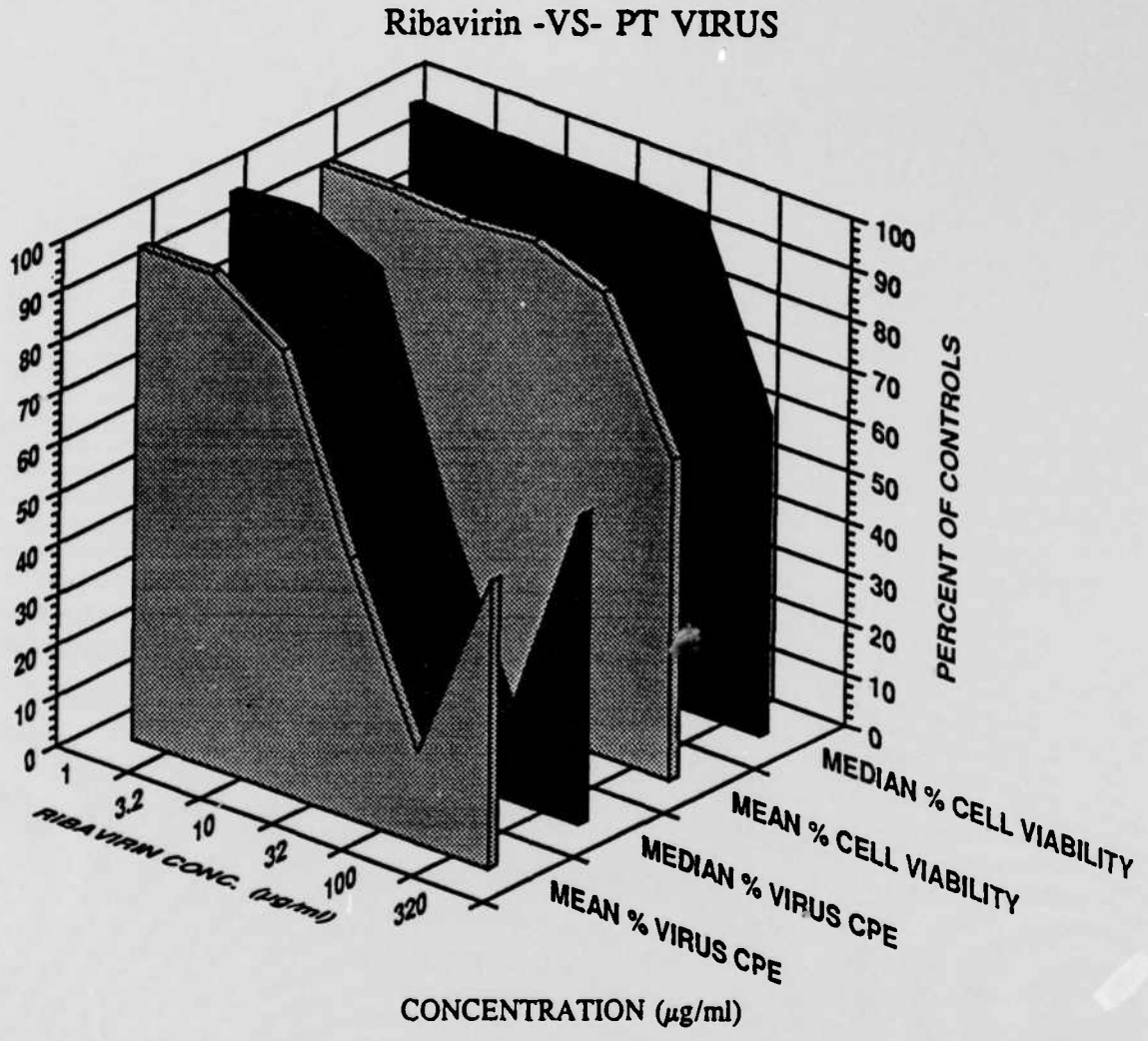
Control Compound-Antiviral Performance: Ribavirin (AVS-0001) has been the sole control compound against PT in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Ribavirin) are illustrated in **Figure 31-A**.

The 242 control tests performed with Ribavirin gave a mean **Total Antiviral Index** (TAI) of 27.37% (SD ± 12.56) and the median value was 26.49%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~(3 - 70)% during this period. The mean **Selectivity Index (SI)** was only 8.81 (SD ± 8.33) and the median SI value was 6.48, indicating moderate antiviral selectivity for Ribavirin against PT virus. The SI ranged from ~(0.01 - 57) during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25%** (AI_{25}) value was 19.39 (SD ± 31.54). The median AI_{25} value was 12.36 (range 0.02 - 320). The mean **Antiviral Index 50%** (AI_{50}) was 12.07 (SD ± 10.14) with a median of 8.76 (range 1.65 - 65.61). The mean **Antiviral Index 95%** (AI_{95}) was 1.87 (SD ± 2.98), with a median of 0 (range 0 - 12.74). This indicates that the control compound, Ribavirin, does not consistently reach 95% antiviral reduction levels.

The mean **Antiviral Inhibitory Concentration 25%** (IC_{25}) was 21.02 μg/ml (SD ± 13.40). The median IC_{25} value was 16.80 μg/ml (range = 1 - 72.9 μg/ml). The mean **Antiviral Inhibitory Concentration 50%** (IC_{50}) was 38.47 μg/ml (SD ± 24.69). The median IC_{50} value was 33.30 μg/ml (range = 3.0 - 194 μg/ml). The mean **Antiviral Inhibitory Concentration 95%** (IC_{95}) was 34.15 μg/ml (SD ± 50.26). The median IC_{95} value was 0 μg/ml (range from 0 - 320 μg/ml). This discrepancy indicates that the control compound Ribavirin does not consistently reach 95% reduction levels. During this reporting period, the highest starting concentration of Ribavirin (100 μg/ml)was increased from the previous high dose of 100 to 320 μg/ml to properly evaluate the maximum antiviral effect of Ribavirin.

The average maximum antiviral inhibitory level of 242 Ribavirin tests (**Figure 31-A**) was reached at 100 μg/ml of the compound with 85% antiviral effect. Maximum antiviral effect (~89%) was found with a simultaneous ~5% cytotoxic suppression. Above (100 μg/ml) concentration Ribavirin starts to lose its antiviral potency (~40%) at 320 μg/ml while simultaneously the Ribavirin becomes maximally toxic (~40%).



	% Viral CPE						% Cell Viability					
Conc.(μg/ml)	**1**	**3.2**	**10**	**32**	**100**	**320**	**1**	**3.2**	**10**	**32**	**100**	**320**
Mean	97	97	87	51	18	57	96	96	95	96	91	63
Median	99	100	94	51	16	61	99	98	98	98	97	62
Std. Dev.	0.05	0.07	0.17	0.28	0.18	0.26	0.06	0.05	0.05	0.05	0.12	0.19

Figure 31-A
Average Antiviral and Cytotoxicity Values for 242 Positive Control Compound Tests

4.1.6.1.3 Maximum Antiviral Effect of Ribavirin vs PT Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Ribavirin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 32-A) depicts the distribution of the maximum antiviral reduction values of all 242 control compound assays for Ribavirin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 85% (SD ± 15.14) reduction levels. The maximum reduction levels vary from 51 - 100% but remain quite consistently around the median of 89%. The assay control values give a shifted half-bell-shaped distribution curve toward the maximum 100% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the PT-MTT assay.

During this period the positive control compound performance criteria for Ribavirin versus the PT virus was set at 50% reduction level. All assays in which Ribavirin did not meet this accepted quality control level (≥50%) were rejected (i.e., 438 unsatisfactory tests).

Ribavirin is active *in vitro* against PT virus and functions as a reasonable quality control compound. On the other hand, regardless of the performance of the PT-quality control drug Ribavirin, around 282 other compounds have equal or better antiviral activity against PT virus than AVS-0001. (See 95% and 50% reduction summaries).

VARIATION OF THE MAXIMUM ANTIVIRAL EFFECT
PT VIRUS - VS - Ribavirin

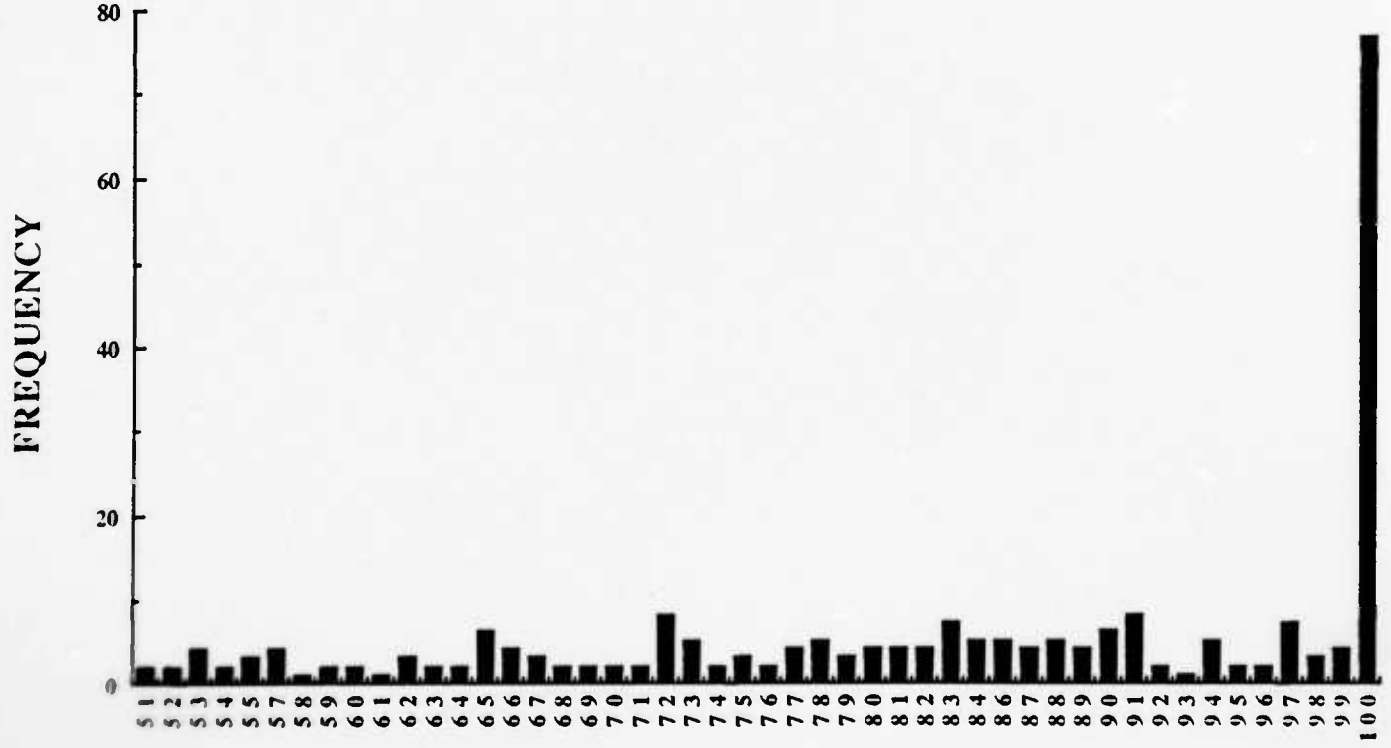


Figure 32-A
Maximum Antiviral CPE Reduction (%).
Summary of 242 Control Tests.

4.1.6.1.4 Cellular Cytotoxicity of Ribavirin vs PT Virus:

PT-Control Compound-Cytotoxicity Performance: The 242 cytotoxicity values of the positive control compound Ribavirin are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 225.78 μg/ml (SD ± 87.67) and the median was 241 μg/ml (range of 0.7 - 320 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 303.7 (SD ± 35.76) and the median was 320 μg/ml (range of 119-320 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value was 320 (SD ± 1.1) and the median was 320 (range of 307-320 μg/ml). This discrepancy indicates that the control compound Ribavirin does not consistently reach 95% cytotoxicity levels.

As can be seen from **Figure 31-A**, the toxicity starts to become measurable above the concentration of 100 μg/ml and the maximum toxicity has not been reached at 320 μg/ml. Further increase of the concentration of Ribavirin would be needed to properly evaluate the maximum cytotoxicity of Ribavirin.

Also **Figure 31-A**, indicates that when the cytotoxicity reaches ~0 - 5% at 100 μg/ml, the control compound (Ribavirin) has reached simultaneously its maximum antiviral effect (85%). The cytotoxic effect of Ribavirin is insignificant between 1 and 100 μg/ml. The maximum cytotoxicity reached ~40% at 320 μg/ml, which is the highest Ribavirin concentration tested.

Ribavirin has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} and TC_{50} toxicity could not be consistently achieved with the 100 μg/ml concentration of Ribavirin. Therefore, a readjustment to 320 μg/ml (as being the highest Ribavirin concentration tested) was done during this reporting period. However, at this concentration (320 μg/ml) the TC_{50} and TC_{95} cannot yet be measured consistently.

4.1.6.1.5 PT-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Ribavirin): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in **Figures 33-A, 34-A and 35-A.**

PT-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 242 control assays is plotted in **Figure 33-A.** The results indicate that the cell O.D. readings reached a mean of 1.110 (SD ± 0.160) with a median of 1.110 (range of 0.720 - 1.540). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

PT-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 242 control assays is presented in **Figure 34-A.** The results indicate that the average load O.D. reading is 0.330 (SD ± 0.170) with a median of 0.330 (range of 0.004 - 0.920). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

PT-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 242 control assays is provided in **Figure 35-A.** The results indicate that the average differential O.D. reading is 0.777 (SD ± 0.190) with a median of 0.774 (range 0.327 - 1.500). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 78% measurement accuracy.

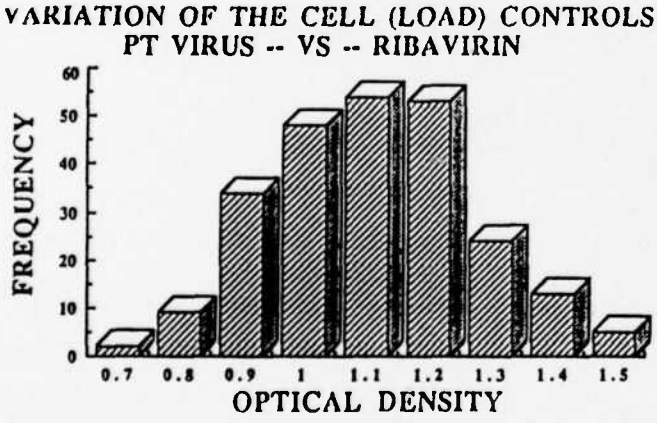


Figure 33-A

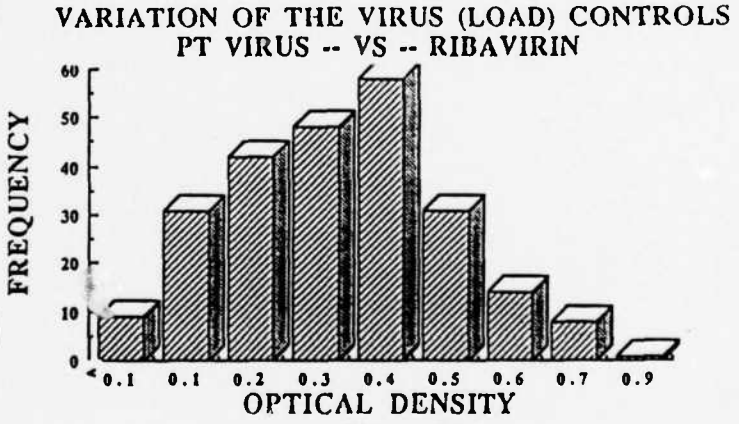


Figure 34-A

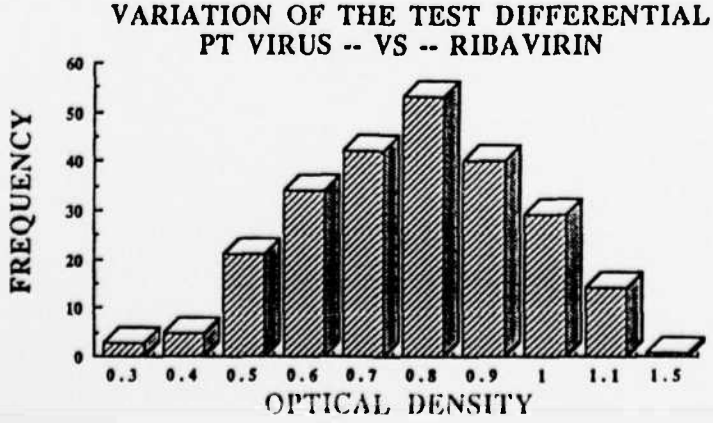


Figure 35-A

4.1.6.1.1 Antiviral Activity of AVS-6724 (2-Thio-6-Azauridine) vs PT Virus: A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in **Figure 31-B** for 44 tests performed during November, 1989 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible second control compound against PT in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of this second positive control drug are illustrated in **Figure 31-B**.

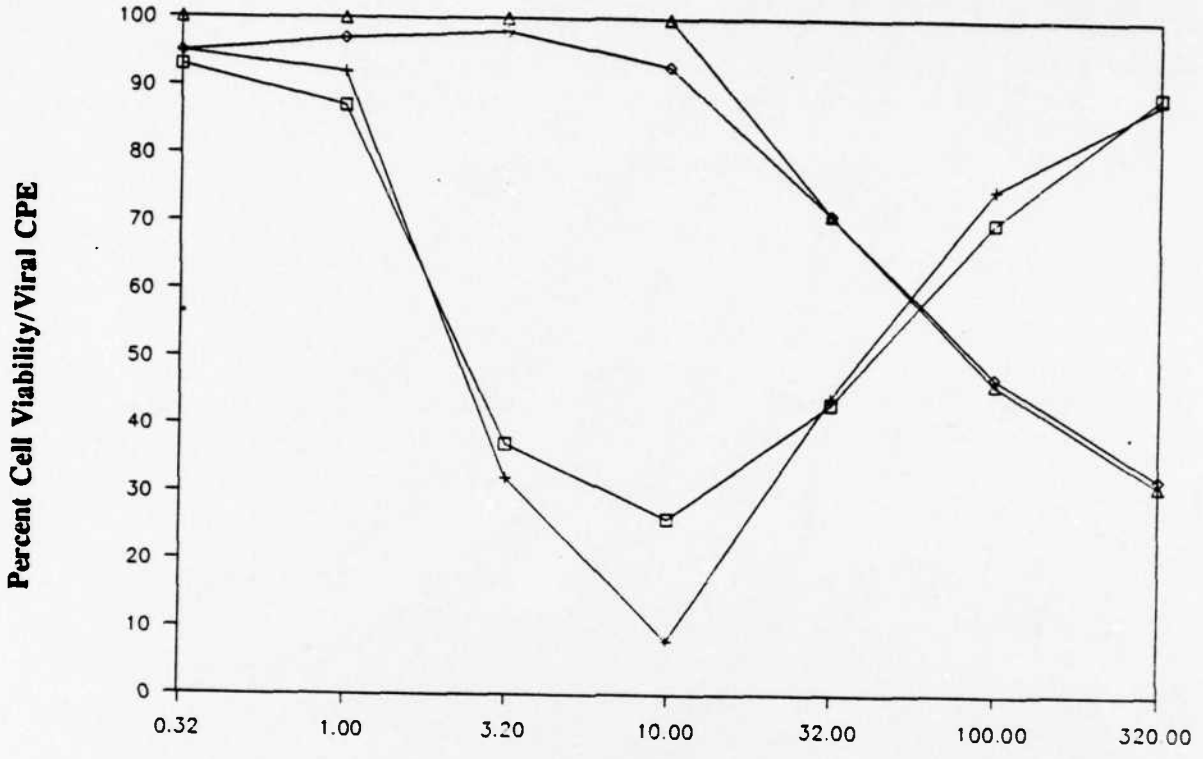
The 44 control tests performed with 2-Thio-6-Azauridine gave a mean **Total Antiviral Index** (TAI) of 36.00% (SD ± 15.20) and the median value was 34.90%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~11.54 - 69.30% during this period. The mean **Selectivity Index (SI)** was only 15.69 (SD ± 13.50) and the median SI value was 12.32, indicating moderate antiviral selectivity for 2-Thio-6-Azauridine against PT virus. The SI ranged from ~0 - 63.65 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25% (AI_{25})** value was 25.10 (SD ± 20.60). The median AI_{25} value was 18.70 (range 5.02 - 92.14). The mean **Antiviral Index 50% (AI_{50})** was 37.10 (SD ± 33.90) with a median of 33.40 (range 0 - 172.79). The mean **Antiviral Index 95% (AI_{95})** was 16.80 (SD ± 24.70), with a median of 10.70 (range 0 - 107.68). This indicates that the, 2-Thio-6-Azauridine, does not consistently reach 95% antiviral reduction levels.

The mean **Antiviral Inhibitory Concentration 25% (IC_{25})** was 1.85 μg/ml (SD ± 1.20). The median IC_{25} value was 1.40 μg/ml (range = 0.33 - 5.81 μg/ml). The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 3.10 μg/ml (SD ± 2.30). The median IC_{50} value was 2.20 μg/ml (range = 0 - 12.4 μg/ml). The mean **Antiviral Inhibitory Concentration 95% (IC_{95})** was 3.65 μg/ml (SD ± 3.90). The median IC_{95} value was 3.0 μg/ml (range from 0 - 9.6 μg/ml). This discrepancy indicates that the 2-Thio-6-Azauridine does not consistently reach 95% reduction levels. During this reporting period, the highest starting concentration of 2-Thio-6-Azauridine (320 μg/ml) was varied to properly evaluate the maximum antiviral effect of 2-Thio-6-Azauridine. The best window appears to be from a high concentration of 100 μg/ml to a low concentration of 0.320 μg/ml in six 1/2 $\log_{10}$ increments. See **Figure 31-B**. At this scale (0.32 - 100 μg/ml) all important antiviral (IC_{25}, IC_{50}, IC_{95} and TAI) parameters are measured as well as all important cytotoxicity parameters (TC_{25}, TC_{50}, except TC_{95}) as also indicated.

The average maximum antiviral inhibitory level of 44, 2-Thio-6-Azauridine, tests (**Figure 31-B**) was reached at 10 μg/ml of the compound with 90% antiviral effect. Maximum antiviral effect (~98%) was found with a simultaneous ~10% cytotoxic suppression. Above 10 μg/ml concentration 2-Thio-6-Azauridine starts to lose its antiviral potency (~10%) at 320 μg/ml, while simultaneously the 2-Thio-6-Azauridine becomes maximally toxic (~70%) with increasing cytotoxicity.

2-THIO-6-AZAURIDINE -VS- PT VIRUS



Conc.(μg/ml)	0.32	1	3.2	10	32	100	320	0.32	1	3.2	10	32	100	320
Mean	93	87	37	26	43	70	89	95	97	98	93	71	47	32
Median	95	92	32	8	44	75	88	100	100	100	100	71	46	31
Std. Dev.	0.07	0.19	0.32	0.19	0.22	0.18	0.10	.07	.06	0.05	0.11	0.17	0.11	0.04

Figure 31-B
Average Antiviral and Cytotoxicity Values for 44 Positive Control Compound Tests

4.1.6.1.3 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs PT Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 32-B) depicts the distribution of the maximum antiviral reduction values of all 44 control compound assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 88% (SD ± 16.40) reduction levels. The maximum reduction levels vary from 47 - 100% but remain quite consistently around the median of 99%. The assay control values give a shifted half-bell-shaped distribution curve toward the maximum 100% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the PT-MTT assay.

Recommendations:

Based upon the data obtained in parallel studies with Ribavirin, we recommend that 2-Thio-6-Azauridine (AVS #6724) will be used as a second control compound against PT virus. It's overall performance is slightly better than the present control, Ribavirin. It is readily available from Sigma Chemical Company, it is inexpensive and works at ~10-fold lower concentrations than Ribavirin.

VARIATION OF THE MAXIMUM ANTIVIRAL EFFECT
PT VIRUS - VS - 2-THIO-6-AZAURIDINE

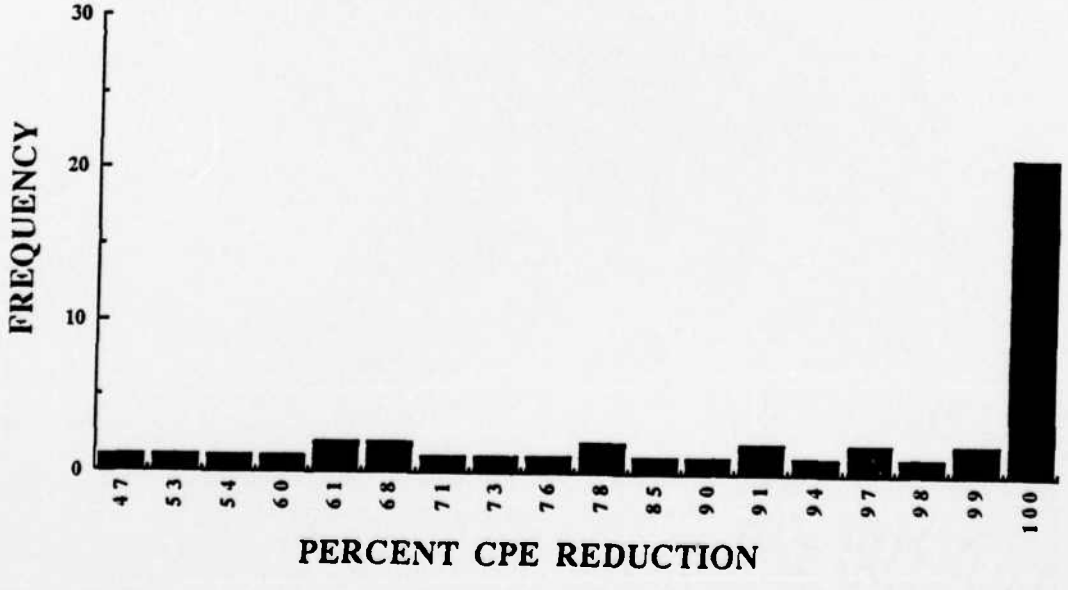


Figure 32-B
Maximum Antiviral CPE Reduction (%).
Summary of 44 Control Tests.

4.1.6.1.4 **Cellular Cytotoxicity of 2-Thio-6-Azauridine vs PT Virus:**

PT-Control Compound-Cytotoxicity Performance: The 44 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 35.60 μg/ml (SD ± 22.9) and the median was 28.7 μg/ml (range of 7.63 - 87.9 μg/ml). The mean cell **Toxic Concentration 50%** (TC_{50}) value was 78.8 (SD ± 27.4) and the median was 90.1 μg/ml (range of 22.3 - 120 μg/ml). The mean cell **Toxic Concentration 95%** (TC_{95}) value was 155 (SD ± 96.4) and the median was 100 (range of 100 - 320 μg/ml). This discrepancy indicates that the control compound 2-Thio-6-Azauridine does not consistently reach 95% cytotoxicity levels.

As can be seen from **Figure 31-B**, the toxicity starts to become measurable above the concentration of 10 μg/ml and the maximum toxicity has not been reached at 320 μg/ml. Further increase of the concentration of 2-Thio-6-Azauridine would be needed to properly evaluate the maximum cytotoxicity of 2-Thio-6-Azauridine.

Also **Figure 31-B**, indicates that when the cytotoxicity reaches ~0 - 10% at ~10 μg/ml. The control compound (2-Thio-6-Azauridine) has reached simultaneously its maximum antiviral effect (90%). The cytotoxic effect of 2-Thio-6-Azauridine is insignificant between 1 and 10 μg/ml. The maximum cytotoxicity reached ~70% at 320 μg/ml, which is the highest 2-Thio-6-Azauridine concentration tested.

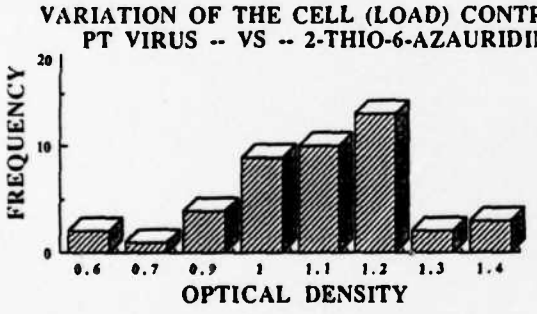
2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} and TC_{50} toxicity could be consistently achieved with the 100 μg/ml concentration of 2-Thio-6-Azauridine. Therefore, an adjustment to 320 μg/ml as being the highest 2-Thio-6-Azauridine concentration tested.

4.1.6.1.5 **PT-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine:** The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991 is presented in **Figures 33-B, 34-B, and 35-B.**

Second PT-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 44 control assays is plotted in **Figure 33-B.** The results indicate that the cell O.D. readings reached a mean of 1.100 (SD ± 0.170) with a median of 1.130 (range of 0.610 - 1.440). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

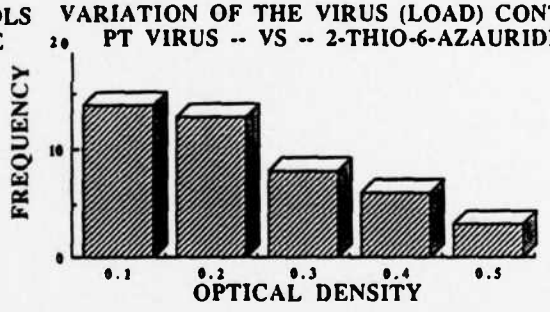
Second PT-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 44 control assays is presented in **Figure 34-B.** The results indicate that the average load O.D. reading is 0.230 (SD ± 0.130) with a median of 0.210 (range of 0.060 - 0.540). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

Second PT-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 44 control assays is provided in **Figure 35-B.** The results indicate that the average differential O.D. reading is 0.860 (SD ± 0.200) with a median of 0.880 (range 0.199 - 1.253). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 86% measurement accuracy.



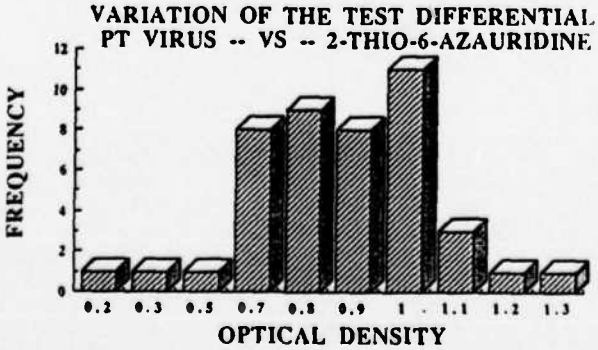
Variation of the Cell (Load) Controls
PT Virus -- VS --2-Thio-6-Azauridine

Figure 33-B



Variation of the Virus (Load) Controls
PT Virus -- VS -- 2-Thio-6-Azauridine

Figure 34-B



Variation of the Test Differential
PT Virus -- VS -- 2-Thio-6-Azauridine

Figure 35-B

4.1.6.2 **PT-Antiviral Activity Results:**

New Drugs with 95% Antiviral Reduction Levels: Out of the 6693 actual single drug tests, 107 new compounds demonstrated excellent antiviral activity, having antiviral reduction values of equal to or better than 95%. This represents around 1.6% of the test compounds being active at this excellent reduction level. These compounds are summarized in **Table 16** according to the highest **Total Antiviral Index (TAI)**. Compound AVS-5580 demonstrated the greatest *in vitro* promise, having a TAI of 96% and **Selectivity Index (SI)** of >320. The next fourteen compounds, AVS-6229, 2309, 4848, 4855, 5546, 6176, 3802, 6197, 0217, 6219, 8353, 6195, 4863 and 1644, demonstrated excellent antiviral activity with TAI's greater than 50% and SI values that ranged from 19 - 222. Fourteen other compounds demonstrated good antiviral activity, having TAI's from 40 - 49% and SI's from 9 - 41. The rest (78 compounds) had only moderate antiviral activity with TAI's ranging from 10 - 39% and SI's of <1 to 11.

It is worthwhile to note that compounds received in shipment number 62 were mostly colored **(Table 16)**. Therefore those compounds appearing in the 95% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 16

AVS Compounds Active Against Punta Toro Virus (PT) at AI_{95} Level

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
PT	5580	54	05/03/89	0.392	7.26 >	100000 >	13800.0 >	100000 >	96.40
PT	6229	62	01/16/90	0.983 <	1.00 >	320.00 >	320.00 >	221.58 >	77.54
PT	2309	53	04/11/89	0.701	16.80 >	320.00 >	19.10	53.10 >	65.81
PT	4848	48	02/22/89	0.429	71.50 >	320.00 >	4.47 >	104.00 >	64.54
PT	4855	48	02/22/89	0.470	16.80	328.00	19.50	20.50 >	60.96
PT	5546	56	06/14/89	0.898	7.96 >	320.00 >	40.20 >	151.00	60.74
PT	6176	62	01/09/90	0.636	143.00 >	320.00 >	2.23 >	32.84 >	60.59
PT	3802	67	07/12/90	0.704	0.84 >	10.00 >	11.95 >	42.71 >	59.40
PT	6197	62	01/11/90	0.792	44.30 >	320.00 >	7.22 >	21.34 >	57.01
PT	0217	61	12/06/89	0.610	123.00 >	320.00 >	2.61 >	22.96 >	56.19
PT	6219	62	01/16/90	0.931	144.00 >	320.00 >	2.22 >	21.52 >	53.82
PT	8353	75	11/29/90	0.934	31.60 >	320.00 >	10.14 >	19.05 >	53.70
PT	6195	62	01/11/90	0.851	168.00 >	320.00 >	1.90 >	19.85 >	51.70
PT	4863	48	02/22/89	0.405	27.80 >	320.00 >	11.50	129.00 >	50.97
PT	1644	64	05/03/90	0.886	79.60 >	1000.00 >	12.56	26.49	50.83
PT	5494	53	04/18/89	0.550	29.40 >	100.00 >	3.40	40.90 >	48.61
PT	4871	61	12/06/89	0.800	239.00 >	1000.00 >	4.18 >	22.14 >	48.44
PT	6178	62	01/09/90	0.607	88.40 >	320.00 >	3.62 >	11.81 >	46.18
PT	6202	62	01/11/90	0.763	90.50 >	320.00 >	3.54 >	8.69 >	45.62
PT	5138	57	07/11/89	0.554	89.00 >	320.00 >	3.59 >	10.50 >	44.37
PT	6218	62	01/16/90	0.777	30.10 >	320.00 >	10.63	17.51 >	44.15
PT	5780	59	01/23/90	0.824	71.50	318.00	4.44	17.99	43.57
PT	6175	62	01/09/90	0.636	95.40 >	320.00 >	3.36 >	9.77 >	43.48
PT	5058	48	02/28/89	0.548	320.00 >	320.00 >	1.00 >	12.00 >	42.55
PT	7084	72	10/25/90	0.796	9.31	95.80	10.28	12.88 >	42.40
PT	5067	48	03/01/89	0.886	90.00 >	320.00 >	3.56 >	9.19 >	41.88
PT	3494	33	04/19/89	0.744	9.79	96.40	9.85	12.20	41.87
PT	5601	GABSN	02/08/90	0.744	846.00 >	3200.00 >	3.78	14.77 >	40.14
PT	5040	45	12/20/89	0.627	83.70 >	1000.00 >	11.95	14.55	39.83
PT	5497	53	04/18/89	0.672	89.80 >	320.00 >	3.56 >	9.38 >	39.16
PT	5053	48	02/28/89	0.452	10.00	285.00	28.50	9.88	39.13
PT	3586	32	04/19/89	0.711	29.00 >	320.00 >	11.00	0.27	37.49
PT	5515	53	04/18/89	0.761	28.40	97.20	3.42	3.58 >	37.37
PT	6184	62	01/09/90	0.654	93.20 >	320.00 >	3.43 >	6.47 >	37.10
PT	5511	53	04/18/89	0.545	3.02 >	320.00 >	106.00 >	179.00	36.92
PT	5137	57	07/11/89	0.554	89.00	309.00	3.47	5.51 >	36.88
PT	7092	72	10/25/90	0.999	1030.00 >	1000.00 >	0.97 >	10.67 >	36.77

Table 16 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
PT	2275	53	04/11/89	0.743	90.90 >	320.00 >	3.52	4.01 >	35.79
PT	3592	51	03/07/89	0.859	88.60 >	320.00 >	3.61	6.84	35.74
PT	6194	62	01/11/90	0.733	90.90 >	320.00 >	3.52	7.49 >	34.27
PT	6209	62	01/16/90	1.045	94.20 >	320.00 >	3.40 >	5.79 >	34.03
PT	7087	72	10/25/90	0.808	9.03 >	100.00 >	11.07	6.67 >	33.38
PT	4796	61	12/06/89	0.922	30.90 >	320.00 >	10.35	10.03	32.83
PT	6208	62	01/16/90	1.115	94.00 >	320.00 >	3.40 >	5.94 >	32.42
PT	7910	75	11/06/90	0.828	892.00 >	3200.00 >	3.59	9.05 >	32.26
PT	6217	62	01/16/90	0.777	94.40 >	320.00 >	3.39 >	5.69 >	31.74
PT	6211	62	01/16/90	1.022	92.60 >	320.00 >	3.46	6.40 >	30.64
PT	6223	62	01/16/90	0.951	298.00 >	320.00 >	1.08 >	2.07 >	30.15
PT	6205	62	01/11/90	0.785	222.00 >	320.00 >	1.44 >	5.92 >	30.06
PT	2506	64	03/13/90	0.919	9.43 >	320.00 >	33.94	6.68	29.71
PT	7083	72	10/25/90	0.853	85.70	315.00	3.68	6.21 >	29.69
PT	5998	61	02/01/90	0.523	3.02 >	32.00 >	10.61	9.75	29.64
PT	0206	4	12/05/89	0.627	280.00 >	1000.00 >	3.57	6.83	29.55
PT	6224	62	01/16/90	0.951	293.00 >	320.00 >	1.09 >	2.41 >	29.55
PT	5484	53	12/14/89	0.844	313.00	973.00	3.11	4.48 >	29.33
PT	5691	57	07/19/89	0.548	94.50 >	320.00 >	3.39 >	5.66 >	28.90
PT	2563	48	02/07/89	1.002	0.91 >	3.20 >	3.51	4.51 >	28.54
PT	4609	48	12/05/89	0.722	0.10 >	1.00 >	10.55	5.22 >	28.27
PT	0360	48	02/07/89	0.992	0.09	2.93	32.00	4.50 >	28.15
PT	5940	60	11/30/89	0.715	28.50	96.60	3.39	4.90	27.95
PT	6204	62	01/11/90	0.755	29.00	98.60	3.40	4.15 >	27.69
PT	6391	63	03/22/90	1.082	286.00 >	1000.00 >	3.50	4.95	27.54
PT	4425	44	03/29/89	0.789	29.50	103.00	3.49	2.20 >	27.43
PT	6207	62	01/11/90	0.841	279.00 >	320.00 >	1.15 >	4.09 >	26.05
PT	6580	64	03/15/90	0.333	93.90 >	320.00 >	3.41	4.62 >	25.97
PT	6220	62	12/05/90	0.834	295.00 >	1000.00 >	3.39	4.46 >	25.64
PT	2811	48	02/07/89	0.862	0.09 >	1.00 >	11.30	5.49	25.35
PT	7940	75	11/08/90	0.777	320.00	962.00	3.01	5.50 >	25.33
PT	6444	63	03/01/90	0.504	278.00 >	320.00 >	1.15 >	4.04 >	24.65
PT	7032	69	07/31/90	0.501	293.00 >	320.00 >	1.09 >	2.41 >	24.46
PT	4939	51	03/07/89	0.912	9.14	84.50	9.25	2.49 >	24.44
PT	4592	48	03/01/89	0.968	29.70 >	100.00 >	3.37	3.17	24.18
PT	7418	70	08/23/90	0.828	277.00 >	320.00 >	1.16 >	4.02 >	23.86
PT	5997	61	11/01/90	0.861	3.02 >	100.00 >	33.16	4.41 >	23.56
PT	5350	53	04/12/89	1.185	29.50	276.00	9.35	1.75	23.36
PT	6064	62	12/21/89	0.544	285.00 >	320.00 >	1.12 >	3.20 >	23.26
PT	2980	48	02/08/89	0.686	2.77 >	3.20 >	1.16 >	4.10 >	23.21
PT	4071	62	12/05/89	0.669	320.00 >	1000.00 >	3.13	4.35 >	22.39
PT	6200	62	01/11/90	0.801	302.00 >	320.00 >	1.06 >	1.79 >	22.36
PT	5495	53	04/18/89	0.550	2.71	189.00	69.80 >	3.71 >	22.03
PT	0361	48	02/07/89	0.911	0.03	0.57	19.20	3.93 >	21.60
PT	2906	53	04/11/89	0.593	94.50 >	320.00 >	3.39	2.51	21.14
PT	6226	62	01/16/90	0.973	291.00 >	320.00 >	1.10 >	2.55 >	20.41
PT	2812	48	02/07/89	0.837	0.01 >	0.01 >	1.11 >	2.87 >	19.34
PT	4822	48	11/28/89	0.403	31.10 >	320.00 >	10.28	3.49	18.49
PT	6988	68	09/13/90	1.027	316.00 >	1000.00 >	3.17	3.53 >	18.27
PT	8378	76	12/13/90	0.992	295.00	970.00	3.29	3.18	17.44
PT	6196	62	01/11/90	0.851	298.00 >	320.00 >	1.07	0.06 >	17.11
PT	4452	44	07/07/89	0.691	100.00 >	320.00 >	3.20	3.58	17.09
PT	6225	62	01/16/90	0.973	300.00 >	320.00 >	1.07 >	1.92 >	16.91
PT	6335	63	03/15/90	0.264	2950.00 >	3200.00 >	1.08 >	2.22 >	16.87
PT	3612	32	11/03/88	0.634	293.00 >	320.00 >	1.09 >	2.45 >	15.95
PT	3450	32	04/19/89	0.716	29.70	95.80	3.22	1.71	15.85
PT	7023	69	09/06/90	0.964	902.00 >	1000.00 >	1.11 >	2.82 >	15.55
PT	2979	27	04/19/89	0.515	9.28	92.60	9.99	1.36	14.81
PT	7039	69	07/31/90	0.520	300.00 >	320.00 >	1.07 >	2.18 >	14.69
PT	7022	69	09/06/90	0.971	97.30	313.00	3.22	3.00	14.68
PT	4844	48	02/21/89	0.531	299.00 >	320.00 >	1.07 >	1.98 >	14.30
PT	4070	48	02/08/89	0.678	2.97 >	3.20 >	1.08 >	2.11 >	14.01

Table 16 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
PT	7445	73	10/25/90	0.834	3010.00 >	3200.00 >	1.06 >	1.82 >	13.49
PT	6748	64	03/15/90	0.339	289.00 >	320.00 >	1.11	0.87 >	13.42
PT	6212	62	01/16/90	1.022	300.00 >	320.00 >	1.07 >	1.94 >	12.18
PT	6192	62	01/11/90	0.793	302.00 >	320.00 >	1.06 >	1.79 >	12.12
PT	5121	56	11/01/90	1.087	300.00 >	320.00 >	1.07 >	1.88 >	10.68
PT	4765	44	11/08/88	0.511	100.00	310.00	3.10	0.18	10.13
PT	6198	62	01/11/90	0.792	302.00 >	320.00 >	1.06 >	1.79 >	10.08
PT	4843	48	02/21/89	0.377	299.00 >	320.00 >	1.07 >	2.00 >	9.93

New Drugs with 50% Antiviral Reduction Levels: Out of the 6693 actual single drug tests, 364 new compounds demonstrated good antiviral activity, having antiviral reduction values equal to or better than 50%. This represents around 5.4% of the test compounds being active at this good antiviral reduction levels. These compounds are summarized in Table 17 according to the highest Total Antiviral Index (TAI). Four compounds (AVS-0303, 4851, 2320 and 4861) demonstrated the best TAI of >50% and SI is that ranged from 37 - 217. Sixteen (16) other compounds demonstrated moderate antiviral activity, having TAI's from 30 - 47% and SI's from 5 - 239. The rest (344 compounds) showed marginal antiviral activity with TAI's from 0.2 to 29% and SI's from >1 to 95.

It is worthwhile to note (Table 17) that compounds received in shipment number 62 were mostly colored. Therefore those compounds appearing in the 50% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 17

AVS Compounds Active Against Punta Toro Virus (PT) at AI_{50} Level

Virus	AVS No.	Ship-ment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
PT	0303	46	01/24/89	0.807	4.25 >	320.00 >	75.20 >	75.20 >	59.26
PT	4851	48	02/22/89	0.591	1.47 >	320.00 >	217.00 >	217.00 >	53.33
PT	2320	53	04/11/89	0.689	2.56	172.00	67.30	36.50 >	52.20
PT	4861	48	02/22/89	0.401	6.80 >	320.00 >	47.10 >	47.10 >	50.93
PT	4849	48	02/22/89	0.435	1.34 >	320.00 >	239.00 >	239.00 >	47.35
PT	4827	48	02/14/89	0.337	12.70 >	320.00 >	25.10 >	25.10 >	43.84
PT	5242	52	03/08/89	0.798	14.50 >	320.00 >	22.00 >	22.00 >	42.33
PT	5496	53	04/18/89	0.672	6.61 >	100.00 >	15.10 >	15.10 >	40.80
PT	5451	53	04/18/89	0.425	2.52	76.90	30.60	19.10	37.54
PT	4829	48	02/14/89	0.409	10.00 >	320.00 >	32.00 >	32.00 >	36.95
PT	6942	69	07/24/90	0.760	14.90 >	320.00 >	21.45 >	21.45 >	36.84
PT	5924	60	01/23/90	0.670	0.61 >	10.00 >	16.34 >	16.34 >	36.45
PT	6945	69	07/26/90	0.742	16.50 >	320.00 >	19.44	11.80 >	36.17
PT	1019	28	03/06/90	0.958	1.59	96.20	60.63	15.12 >	35.94
PT	6943	69	07/24/90	0.760	60.60 >	320.00 >	5.28 >	5.28 >	32.49
PT	3181	29	05/17/89	0.335	1.65 >	100.00 >	60.40	56.00	31.66
PT	5498	53	04/18/89	0.628	30.00 >	320.00 >	10.70 >	10.70 >	31.59
PT	1217	52	03/15/89	0.881	19.20	269.00	14.00	7.21	31.42
PT	1214	52	03/15/89	0.721	20.50	211.00	10.30	5.74 >	30.66
PT	5186	58	10/04/89	0.588	38.20	763.00	19.98	10.31	29.76
PT	0111	9	12/07/89	0.772	22.50	830.00	36.85	11.42 >	29.33
PT	4850	48	02/22/89	0.435	2.30	243.00	106.00	58.30 >	29.33
PT	6603	64	04/18/90	0.902	90.70 >	1000.00 >	11.03 >	11.03 >	29.32
PT	5241	52	03/08/89	0.721	61.60 >	320.00 >	5.20 >	5.20 >	29.23
PT	7301	70	09/13/90	1.027	60.60 >	1000.00 >	16.49	10.00 >	28.98
PT	5910	61	11/29/89	0.681	6.36 >	320.00 >	50.34	37.65	28.65
PT	2720	22	04/21/89	0.463	1.00 >	100.00 >	100.00	67.70	28.46
PT	6745	64	03/08/90	0.669	51.30	210.00	4.10	3.02 >	28.40
PT	5869	60	01/23/90	0.696	61.10	758.00	12.41	7.69	28.34
PT	7116	70	09/13/90	0.957	81.90 >	1000.00 >	12.21	9.53 >	28.25
PT	4897	46	01/31/89	0.848	17.30	170.00	9.81	5.27	27.87
PT	6714	67	07/12/90	0.660	42.30	585.00	13.85	8.95	27.79
PT	5048	48	02/28/89	0.524	8.69 >	320.00 >	36.80 >	36.80	27.34
PT	4763	44	12/12/89	0.778	32.00 >	1000.00 >	31.25	0.23 >	27.27
PT	6412	66	07/06/90	0.561	6.01	74.70	12.43	8.81 >	26.81
PT	5855	60	01/23/90	0.688	74.80	813.00	10.87	7.57	26.73
PT	6186	62	01/11/90	0.661	10.00	221.00	22.09	16.04 >	26.26
PT	8377	76	12/13/90	0.827	37.30	255.00	6.85	4.43 >	26.15
PT	7303	70	09/13/90	0.645	159.00	985.00	6.19	3.87	25.87
PT	5075	48	03/01/89	1.023	48.10 >	320.00 >	6.65 >	6.65 >	25.83
PT	1992	56	06/14/89	0.870	57.70 >	320.00 >	5.54	4.17 >	25.78
PT	8234	75	11/20/90	1.169	1.14	100.00	87.88	16.22 >	25.09
PT	3180	29	05/17/89	0.335	0.71 >	100.00 >	141.00	94.90 >	24.92
PT	8702	76	01/22/91	0.768	10.00 >	320.00 >	32.00 >	32.00 >	24.65
PT	2907	26	09/07/89	0.546	20.20	210.00	10.38	6.50 >	24.44

Table 17 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
PT	6501	66	05/17/90	0.567	16.20	66.00	4.08	3.03 >	24.26
PT	4978	27	12/05/89	0.782	144.00	864.00	6.02	3.65 >	24.04
PT	4943	51	03/07/89	0.594	1.79	22.20	12.40	6.49 >	24.01
PT	4785	46	01/12/89	0.929 <	1.00	29.10 >	29.10 >	7.19 >	23.97
PT	8240	75	11/20/90	1.077	182.00	1990.00	10.91	6.40 >	23.54
PT	6174	62	01/09/90	0.789	136.00 >	320.00 >	2.35 >	2.35 >	23.53
PT	4106	37	02/24/89	0.269	0.07 >	0.32 >	4.25 >	4.25 >	23.24
PT	4942	51	03/07/89	0.594	68.40	252.00	3.68	1.93 >	23.05
PT	3964	33	03/22/89	0.706	2.68	24.50	9.16	4.58 >	22.98
PT	7439	73	10/25/90	0.837	153.00	638.00	4.16	2.96 >	22.77
PT	3819	65	07/17/90	0.594	27.00	188.00	6.97	4.06 >	22.75
PT	6473	66	07/10/90	0.523	8.61	171.00	19.91	11.31 >	22.68
PT	4934	51	03/07/89	0.828	2.43	20.50	8.43	4.48 >	22.59
PT	5060	48	02/28/89	0.559	262.00 >	320.00 >	1.22 >	1.22 >	22.52
PT	0124	64	03/08/90	0.746	57.80 >	320.00 >	5.53	3.84	22.45
PT	7349	70	08/16/90	0.935	218.00 >	1000.00 >	4.60	3.93 >	22.45
PT	5794	59	11/29/89	0.880	5.27	130.00	24.74	5.15 >	22.31
PT	6177	62	01/09/90	0.607	247.00 >	320.00 >	1.29	1.15 >	22.19
PT	8228	75	11/20/90	1.052	56.60	426.00	7.52	4.14 >	22.15
PT	6477	66	06/06/90	0.732	8.92	62.50	7.01	4.56 >	22.06
PT	0148	2/67	10/04/90	1.514	0.29	2.90	9.99	4.88 >	22.01
PT	3621	32	12/20/89	0.673	63.40	528.00	8.33	4.66	21.94
PT	5201	58	07/26/89	0.469	78.10 >	320.00 >	4.10 >	4.10 >	21.90
PT	8218	75	11/20/90	1.037	183.00	841.00	4.59	3.14	21.70
PT	5033	48	02/28/89	0.539	55.60	150.00	2.70	1.10	21.68
PT	5230	52	03/15/89	0.847	72.70	259.00	3.56	1.23	21.64
PT	6422	66	07/06/90	0.569	49.10	241.00	4.91	3.48	21.64
PT	4739	64	03/08/90	0.676	7.89	61.10	7.75	4.95 >	21.56
PT	8355	76	12/20/90	0.776	16.90	149.00	8.82	3.64 >	21.43
PT	5262	52	03/21/89	0.679	7.38	226.00	30.60	14.90	21.37
PT	7085	72	10/25/90	0.796	12.40	64.60	5.23	3.34 >	21.13
PT	6828	68	08/02/90	0.641	129.00	767.00	5.95	4.22	20.67
PT	7308	70	09/13/90	0.645	168.00 >	1000.00 >	5.95	4.20	20.67
PT	3169	29	05/16/89	0.521	8.13	98.70	12.10	8.04	20.60
PT	4875	46	12/20/89	0.634	77.60 >	1000.00 >	12.88	9.51 >	20.53
PT	5251	52	03/14/89	0.643	24.60	55.00	2.24	1.32 >	20.48
PT	4985	51	03/14/89	0.680	3.05	149.00	48.70	20.60	20.36
PT	4809	46	01/17/89	1.026	42.50	301.00	7.07	3.53 >	20.27
PT	3064	28	04/21/89	0.576	5.03	22.90	4.56	3.28	20.24
PT	4459	45	11/23/88	0.620	76.00 >	320.00 >	4.21 >	4.21 >	20.21
PT	8511	76	12/19/90	0.669	658.00 >	3200.00 >	4.86 >	4.86 >	20.21
PT	8701	76	01/22/91	0.755	39.40 >	320.00 >	8.13 >	8.13 >	20.17
PT	6497	66	05/17/90	0.549	4.83	40.40	8.35	4.72 >	20.04
PT	8237	75	11/20/90	0.982	194.00 >	3200.00 >	16.54	4.39 >	20.03
PT	7003	69	07/26/90	0.725	144.00 >	320.00 >	2.22 >	2.22 >	19.93
PT	8259	76	12/11/90	0.772	128.00 >	3200.00 >	24.94	4.68	19.80
PT	8233	75	11/20/90	1.169	367.00 >	3200.00 >	8.72	0.75 >	19.73
PT	8499	75	11/29/90	0.915	74.70 >	320.00 >	4.29	3.06 >	19.70
PT	4107	37	02/24/89	0.226	0.30 >	0.32 >	1.08 >	1.08 >	19.43
PT	5450	53	04/12/89	1.091	4.47	27.40	6.14	3.57 >	19.39
PT	6977	68	08/02/90	0.607	28.90	210.00	7.27	5.37	19.33
PT	1654	46	01/24/89	0.803	6.23 >	320.00 >	51.30	1.06 >	19.28
PT	5069	48	11/28/89	0.535	41.20	204.00	4.94	3.41 >	19.26
PT	8352	75	11/29/90	0.934	1.31	8.03	6.13	4.25 >	19.06
PT	8229	75	11/20/90	1.047	236.00	1450.00	6.16	3.05 >	18.87
PT	8281	75	11/28/90	0.873	54.10	191.00	3.53	1.80 >	18.48
PT	7449	71	07/31/90	0.557	71.30	184.00	2.58	1.63 >	18.38
PT	6102	62	12/28/89	0.960	106.00 >	320.00 >	3.02 >	3.02 >	18.35
PT	6107	62	12/28/89	0.988	19.10	148.00	7.76	3.28	18.32
PT	4241	46	01/24/89	0.976	3.99	23.20	5.81	3.51 >	18.23
PT	5283	52	01/09/90	0.639	8.22	210.00	25.56	3.13	18.23
PT	6210	62	01/16/90	1.045	85.00 >	320.00 >	3.77 >	3.77 >	18.16
PT	4715	43	12/13/88	0.809	212.00 >	320.00 >	1.51 >	1.51 >	18.14
PT	5131	56	06/27/89	0.790	2.21	21.10	9.57	7.00 >	18.02

Table 17 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Differntl.	IC 50	TC 50	AI 50	SI	TAI
PT	6837	68	08/02/90	0.641	27.30	198.00	7.23	4.94	17.74
PT	7057	72	10/25/90	0.908	72.90 >	320.00 >	4.39	3.54 >	17.70
PT	5483	66	07/17/90	0.496 <	0.03	0.27 >	8.33 >	5.73 >	17.43
PT	7086	72	10/25/90	0.808	6.06	28.30	4.67	3.16 >	17.33
PT	6445	63	03/01/90	0.504	22.60	66.00	2.92	2.17 >	17.14
PT	5643	57	08/16/89	0.753	52.70	280.00	5.32	3.61	16.92
PT	3678	32	11/10/88	0.661	1.46 >	10.00 >	6.86	3.92 >	16.77
PT	6978	68	06/21/90	0.858	172.00 >	320.00 >	1.86 >	1.86 >	16.74
PT	6417	66	07/06/90	0.650	9.75	882.00	90.49	5.95 >	16.72
PT	3168	29	05/16/89	0.521	3.02 >	100.00 >	33.10 >	33.10 >	16.63
PT	6362	63	02/22/90	0.548	395.00 >	320.00 >	0.81 >	0.81 >	16.63
PT	0919	52	03/15/89	0.721	65.70	186.00	2.83	1.59 >	16.54
PT	3588	32	04/19/89	0.706	15.90	63.50	3.99	2.44 >	16.51
PT	8376	76	12/13/90	0.827	17.30	110.00	6.37	3.84 >	16.33
PT	5501	53	04/18/89	0.818	3.08	65.30	21.20	15.60 >	16.20
PT	2318	67	07/12/90	0.619	0.69 >	10.00 >	14.52	4.21	16.14
PT	5072	48	03/01/89	1.023	22.60	159.00	7.01	3.23 >	16.07
PT	2604	19	12/21/88	0.791	25.50 >	100.00 >	3.91 >	3.91 >	16.02
PT	6979	68	09/13/90	0.994	199.00	660.00	3.31	2.46	15.96
PT	6191	62	01/11/90	0.793	196.00 >	320.00 >	1.63	1.49 >	15.81
PT	4222	48	02/08/89	0.691	155.00 >	320.00 >	2.07 >	2.07 >	15.77
PT	4995	51	03/14/89	0.838	6.03	18.60	3.09	1.12	15.77
PT	6873	69	09/05/90	0.765	81.30	213.00	2.61	1.85 >	15.68
PT	8271	76	12/12/90	0.910	198.00	694.00	3.50	2.56 >	15.67
PT	4860	48	02/21/89	0.444	285.00 >	320.00 >	1.12 >	1.12 >	15.55
PT	7434	70	10/02/90	0.970	198.00	642.00	3.24	2.34 >	15.47
PT	6442	63	03/01/90	0.583	100.00	239.00	2.39	1.70	15.38
PT	6482	66	07/10/90	0.588	22.50	66.30	2.95	2.18	15.38
PT	2503	21	11/28/89	0.503	0.64 >	10.00 >	15.73	4.46	15.35
PT	4527	47	02/01/89	1.121	5.01	24.70	4.92	2.31 >	15.02
PT	6903	69	07/19/90	0.766	222.00 >	320.00 >	1.44 >	1.44 >	14.78
PT	5035	48	02/28/89	0.702	6.66	21.50	3.23	1.35	14.70
PT	1980	27	05/16/89	0.385	2.59 >	100.00 >	38.50	28.30	14.44
PT	6031	61	11/09/89	0.746	82.30	262.00	3.18	2.20	14.42
PT	7414	70	08/23/90	0.800	202.00	986.00	4.88	3.16	14.40
PT	4590	61	12/06/89	0.855	0.53	2.62	4.91	2.46	14.26
PT	8224	75	11/20/90	1.173	189.00	779.00	4.13	1.70 >	14.25
PT	7055	72	10/25/90	0.843	63.00	210.00	3.33	2.46 >	14.18
PT	7072	72	10/25/90	0.783	206.00	646.00	3.13	2.27 >	14.09
PT	6249	1P	11/14/89	0.925	72.50	269.00	3.71	2.55	14.05
PT	7399	70	09/27/90	1.001	188.00	804.00	4.27	2.74	13.90
PT	7042	69	07/31/90	0.503	70.60	208.00	2.94	2.15	13.81
PT	5503	53	02/13/90	0.582	100.00	210.00	2.10	1.55	13.80
PT	5207	58	11/30/89	0.917	9.12	20.30	2.23	1.58 >	13.75
PT	4853	48	02/22/89	0.454	1.73	7.72	4.46	2.52 >	13.74
PT	6029	61	02/01/90	0.532	60.60	210.00	3.47	2.56	13.65
PT	7094	72	10/25/90	0.999	63.80	269.00	4.21	2.67 >	13.64
PT	6160	62	01/04/90	0.775	5.83	18.10	3.10	1.91 >	13.46
PT	2453	18	11/28/89	0.465	5.90	20.30	3.44	2.45	13.44
PT	1774	56	06/14/89	0.779	300.00 >	320.00 >	1.07 >	1.07 >	13.43
PT	7033	69	07/31/90	0.553	61.00	241.00	3.95	2.79	13.42
PT	5905	61	11/29/89	0.624	5.66	19.20	3.40	2.27	13.22
PT	4795	46	01/12/89	0.885	69.00	275.00	3.99	2.16	13.19
PT	8312	76	12/12/90	0.885	718.00	1870.00	2.61	1.69	13.14
PT	7484	73	10/30/90	0.914	181.00	711.00	3.92	2.84	13.00
PT	8263	76	12/11/90	0.660	47.90	164.00	3.42	1.63	13.00
PT	4770	44	11/08/88	0.541	60.10	202.00	3.35	2.37	12.94
PT	6970	68	08/02/90	0.607	27.70	167.00	6.04	3.35	12.85
PT	4825	48	02/14/89	0.475	68.40	240.00	3.51	1.57	12.84
PT	8358	76	12/20/90	0.937	54.90	204.00	3.71	2.53	12.83
PT	4919	61	12/06/89	0.764	53.10	189.00	3.56	2.33 >	12.69
PT	1355	64	05/03/90	0.758	231.00	1000.00	4.33	2.85 >	12.66
PT	4278	61	12/06/89	0.787	9.75	51.60	5.30	2.51	12.66
PT	4769	44	11/08/88	0.541	58.20	192.00	3.30	2.20	12.63

Table 17 (Cont'd)

Virus	AVS No.	Ship-ment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
PT	5191	58	11/30/89	0.920	0.93	6.33	6.78	4.74 >	12.54
PT	2290	71	07/31/90	0.555	496.00 >	320.00 >	0.65 >	0.65 >	12.52
PT	7430	70	09/27/90	0.651	289.00	660.00	2.28	1.69 >	12.44
PT	2450	18	11/28/89	0.465	20.80 >	100.00 >	4.81	2.56	12.40
PT	4281	61	12/06/89	0.787	2.35	12.00	5.11	2.93	12.39
PT	6904	69	07/19/90	0.718	24.30	66.00	2.72	2.02 >	12.37
PT	6601	64	04/18/90	0.823	204.00	897.00	4.40	2.59 >	12.31
PT	4891	46	12/20/89	0.634	0.24	0.68	2.87	2.11	12.16
PT	2151	52	03/15/89	0.881	80.90	314.00	3.88	1.82	12.14
PT	6436	66	07/06/90	0.559	24.20	63.80	2.63	1.89	12.11
PT	8219	75	11/20/90	1.092	163.00	363.00	2.22	1.14 >	12.09
PT	5837	59	11/30/89	0.850	24.40	61.40	2.52	1.72 >	12.03
PT	6236	GABSN	02/08/90	0.756	3080.00 >	3200.00 >	1.04 >	1.04 >	12.02
PT	1736	45	11/16/88	0.665	82.10 >	320.00 >	3.90	3.63 >	12.01
PT	6379	63	02/27/90	0.724	217.00 >	320.00 >	1.47 >	1.47 >	11.96
PT	5482	66	05/08/90	0.737	21.00	86.40	4.12	2.64 >	11.78
PT	7935	75	11/08/90	0.927	157.00	609.00	3.88	2.53	11.71
PT	6234	GABSN	02/08/90	0.814	1600.00 >	3200.00 >	2.00 >	2.00 >	11.69
PT	6041	61	11/09/89	0.668	282.00 >	320.00 >	1.13 >	1.13 >	11.64
PT	6753	67	07/12/90	0.658	255.00 >	1000.00 >	3.91	3.40	11.59
PT	5500	53	04/18/89	0.818	1.90	6.44	3.38	2.34 >	11.57
PT	8260	76	12/11/90	0.772	239.00 >	1000.00 >	4.18	3.04 >	11.53
PT	0053	64	03/08/90	0.977	100.00	265.00	2.65	1.79 >	11.49
PT	7373	70	09/18/90	0.948	201.00	614.00	3.05	2.09 >	11.39
PT	6337	63	03/20/90	0.945	19.70	67.40	3.42	2.52	11.38
PT	4753	44	12/14/89	0.844	2.92	17.50	6.01	3.53	11.34
PT	4992	61	12/06/89	0.764	200.00	638.00	3.19	2.28	11.34
PT	4757	44	12/14/89	0.821	299.00	660.00	2.21	1.64 >	11.33
PT	6071	62	12/21/89	0.485	6.58	21.50	3.26	2.39	11.30
PT	3112	28	04/25/89	0.854	8.70	19.00	2.19	1.38 >	11.29
PT	7488	73	10/30/90	1.045	370.00 >	1000.00 >	2.70	2.09 >	11.23
PT	6182	62	01/09/90	0.612	160.00 >	320.00 >	2.00 >	2.00 >	11.11
PT	8272	76	12/12/90	0.963	766.00 >	3200.00 >	4.18	2.43 >	11.10
PT	6213	62	01/16/90	1.076	21.40	62.30	2.92	1.96	11.00
PT	5136	57	07/11/89	0.606	81.90	210.00	2.56	1.89	10.99
PT	5452	53	04/18/89	0.693	5.47	18.30	3.34	1.08 >	10.97
PT	7415	70	08/23/90	0.800	170.00 >	320.00 >	1.88 >	1.88 >	10.97
PT	6842	68	08/22/90	0.769	56.60	143.00	2.53	1.36	10.93
PT	7942	75	11/08/90	0.898	203.00	482.00	2.37	1.27	10.91
PT	3491	65	04/17/90	0.732	190.00 >	320.00 >	1.69 >	1.69 >	10.82
PT	8250	76	12/11/90	0.887	75.60	359.00	4.75	2.67	10.68
PT	6075	62	12/21/89	0.465	68.40	207.00	3.02	2.19 >	10.65
PT	6201	62	12/05/90	0.912	192.00 >	320.00 >	1.66 >	1.66 >	10.57
PT	6443	63	03/01/90	0.583	77.10 >	320.00 >	4.15	2.72 >	10.57
PT	2573	57	06/27/89	0.531	286.00 >	320.00 >	1.12 >	1.12 >	10.54
PT	6583	64	03/15/90	0.289	320.00 >	320.00 >	1.00 >	1.00 >	10.54
PT	6011	61	02/01/90	0.523	275.00	623.00	2.26	1.43	10.47
PT	0002	46	01/24/89	0.760	187.00 >	320.00 >	1.71 >	1.71 >	10.46
PT	5189	58	11/30/89	0.894	0.85 >	3.20 >	3.77 >	3.77 >	10.46
PT	4768	44	11/08/88	0.505	66.80	187.00	2.80	1.78	10.27
PT	8374	76	12/13/90	0.955	566.00	1890.00	3.34	2.18	10.26
PT	3613	32	11/08/88	0.493	61.40 >	320.00 >	5.21	0.09 >	10.23
PT	4105	48	02/08/89	0.679	7.37	22.00	2.99	1.51	10.07
PT	1159	52	08/23/89	0.697	60.40	204.00	3.38	2.18	10.02
PT	5917	60	01/23/90	0.734	2.68	7.83	2.92	2.00	9.97
PT	5520	56	06/14/89	0.914	236.00 >	320.00 >	1.35 >	1.35 >	9.91
PT	4075	65	05/15/90	0.721	97.80 >	320.00 >	3.27	2.56 >	9.82
PT	7469	73	10/30/90	1.024	185.00	603.00	3.25	2.06	9.82
PT	5128	56	06/27/89	0.588	10.00	21.00	2.10	1.55 >	9.53
PT	1733	45	11/22/88	0.931	69.80	210.00	3.01	2.22	9.52
PT	7930	75	11/08/90	0.945	691.00	2410.00	3.49	2.24	9.51
PT	6127	62	12/28/89	0.930	19.40	58.30	3.01	1.84	9.48
PT	7944	75	11/08/90	0.844	534.00	2000.00	3.75	0.17	9.48
PT	4591	63	02/13/90	0.615	0.01	0.03	3.33	2.30 >	9.47

Table 17 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
PT	5538	56	08/09/89	0.658	256.00	663.00	2.59	1.92	9.41
PT	6584	64	04/18/90	0.792	631.00 >	1000.00 >	1.59 >	1.59 >	9.27
PT	6449	63	03/01/90	0.587	264.00 >	320.00 >	1.21 >	1.21 >	9.14
PT	5448	53	04/12/89	1.092	5.82	19.80	3.41	1.34	9.08
PT	1337	67	05/30/90	0.589	79.00	234.00	2.96	2.11	9.02
PT	5988	61	12/01/89	0.636	7.49	22.80	3.05	2.12	8.96
PT	5765	59	01/23/90	0.765	257.00 >	320.00 >	1.25 >	1.25 >	8.86
PT	8328	76	12/13/90	0.873	258.00	642.00	2.49	1.80	8.67
PT	5539	56	08/09/89	0.658	2.30	7.32	3.18	2.14	8.62
PT	7049	69	09/11/90	1.144	601.00 >	1000.00 >	1.66 >	1.66 >	8.53
PT	7040	69	07/31/90	0.520	71.40	305.00	4.27	2.48	8.47
PT	7945	75	12/04/90	1.204	854.00	1570.00	1.84	0.98 >	8.47
PT	4800	46	01/17/89	0.966	245.00 >	320.00 >	1.31 >	1.31 >	8.45
PT	6181	62	01/09/90	0.612	320.00 >	320.00 >	1.00 >	1.00 >	8.43
PT	3374	31	12/20/88	0.993	84.40 >	100.00 >	1.18 >	1.18 >	8.37
PT	6839	68	08/22/90	0.849	75.90	225.00	2.97	2.14	8.37
PT	1750	45	11/23/88	0.722	202.00 >	320.00 >	1.58 >	1.58 >	8.26
PT	8251	76	12/11/90	0.701	91.80	296.00	3.23	2.16	8.21
PT	4383	43	12/14/88	0.669	194.00 >	320.00 >	1.65 >	1.65 >	8.17
PT	3550	31	03/29/89	0.895	94.70 >	100.00 >	1.06 >	1.06 >	7.99
PT	6521	66	07/10/90	0.595	250.00 >	320.00 >	1.28 >	1.28 >	7.95
PT	8230	75	11/20/90	1.047	707.00 >	1000.00 >	1.41	0.68 >	7.90
PT	8270	76	12/12/90	0.910	735.00	1870.00	2.55	1.65 >	7.85
PT	2543	21	11/28/89	0.480	68.40 >	100.00 >	1.46 >	1.46 >	7.77
PT	6722	67	06/05/90	0.714	203.00 >	320.00 >	1.57 >	1.57 >	7.77
PT	6440	63	03/01/90	0.527 <	1.00	9.51 >	9.51 >	1.88 >	7.67
PT	7074	72	10/25/90	0.853	320.00	660.00	2.06	1.26 >	7.64
PT	3560	31	03/29/89	0.895	279.00 >	320.00 >	1.15	0.64 >	7.60
PT	6730	67	06/05/90	0.636	173.00 >	320.00 >	1.84	0.39 >	7.56
PT	3425	32	04/19/89	0.515	30.50	46.90	1.54	0.83	7.45
PT	2579	19	11/28/89	0.394	281.00 >	320.00 >	1.14 >	1.14 >	7.38
PT	7487	73	10/30/90	1.063	212.00	622.00	2.93	1.08	7.34
PT	2575	57	12/05/90	0.936	235.00	940.00	4.00	1.87 >	7.31
PT	5842	60	11/30/89	0.776	97.80	251.00	2.56	1.79 >	7.19
PT	2590	65	04/12/90	0.565	227.00	821.00	3.62	1.65	7.15
PT	3565	32	04/05/89	0.704	7.79	19.40	2.49	1.65	7.06
PT	6983	68	06/21/90	0.810	187.00 >	320.00 >	1.71 >	1.71 >	7.06
PT	4277	42	11/28/89	0.340	7.90 >	10.00 >	1.27 >	1.27 >	7.04
PT	1850	67	05/31/90	0.715	189.00	497.00	2.63	0.40 >	7.03
PT	5835	59	11/29/89	0.606	299.00	300.00	1.00	0.67	7.02
PT	4424	44	03/29/89	0.789	30.00	60.60	2.02	1.07 >	6.96
PT	6062	62	12/21/89	0.384	205.00 >	320.00 >	1.56 >	1.56 >	6.86
PT	7424	70	08/23/90	0.888	185.00 >	320.00 >	1.73 >	1.73 >	6.82
PT	6976	68	09/13/90	1.011	72.70	173.00	2.38	1.38	6.67
PT	7048	69	09/11/90	1.198	76.40	165.00	2.16	1.19 >	6.56
PT	4223	63	02/13/90	0.598	0.26	0.61	2.37	1.08	6.39
PT	5525	56	06/14/89	0.854	270.00 >	320.00 >	1.18 >	1.18 >	6.38
PT	2580	19	11/28/89	0.394	8.14 >	10.00 >	1.23 >	1.23 >	6.35
PT	6607	64	04/18/90	0.576	9.06	18.50	2.05	1.29 >	6.28
PT	6138	62	12/28/89	0.521	20.60	59.50	2.89	0.36	6.23
PT	6374	63	03/20/90	0.706	259.00 >	320.00 >	1.23 >	1.23 >	6.15
PT	8698	76	01/22/91	0.858	24.60	83.80	3.41	1.76	6.12
PT	3107	28	04/25/89	0.873	28.00	38.20	1.37	0.77 >	6.11
PT	0347	62	01/18/90	0.898	2.59	6.45	2.49	1.54 >	6.04
PT	4611	65	05/15/90	0.725	133.00 >	320.00 >	2.41	0.12 >	5.88
PT	6861	68	08/02/90	0.640	320.00	710.00	2.22	1.57	5.88
PT	8373	76	12/13/90	1.049	978.00 >	3200.00 >	3.27	1.02 >	5.76
PT	6103	62	12/28/89	0.960	9.19	20.20	2.19	1.55	5.71
PT	6055	62	12/21/89	0.459 <	1.00	3.71 >	3.71 >	1.92 >	5.60
PT	8309	76	12/12/90	1.075	1920.00 >	3200.00 >	1.66 >	1.66 >	5.48
PT	6222	62	01/16/90	1.037	239.00 >	320.00 >	1.34	1.14 >	5.45
PT	6221	62	01/16/90	1.037	255.00 >	320.00 >	1.26	0.50 >	5.38
PT	7405	70	08/23/90	0.873	247.00 >	320.00 >	1.29 >	1.29 >	5.36
PT	5823	59	11/29/89	0.785	94.60	186.00	1.96	0.96	5.35

Table 17 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
PT	7375	70	08/21/90	0.872	90.90 >	320.00 >	3.52	0.14 >	5.19
PT	8332	76	12/13/90	0.951	245.00	531.00	2.17	1.21	5.18
PT	7385	70	08/21/90	0.873	82.20	184.00	2.24	1.42	5.16
PT	6189	62	01/11/90	0.745	224.00 >	320.00 >	1.43	0.45 >	5.09
PT	5489	66	05/08/90	0.676	263.00 >	320.00 >	1.22 >	1.22 >	5.04
PT	6843	68	08/22/90	0.769	72.00	175.00	2.43	1.13	4.98
PT	7408	70	08/23/90	0.882	305.00 >	320.00 >	1.05 >	1.05 >	4.96
PT	3561	31	03/29/89	0.919	300.00 >	320.00 >	1.07 >	1.07 >	4.87
PT	6180	62	01/09/90	0.588	238.00 >	320.00 >	1.34 >	1.34 >	4.84
PT	6308	63	02/15/90	0.464	9.30	19.50	2.10	1.42	4.81
PT	3098	28	04/25/89	0.868	28.30	42.60	1.50	0.82 >	4.79
PT	5818	59	11/29/89	0.714	74.90	110.00	1.48	0.69 >	4.76
PT	7047	69	08/02/90	0.676	85.50	194.00	2.27	1.53	4.58
PT	5506	53	04/18/89	0.689	31.30	59.50	1.90	1.26	4.42
PT	8311	76	12/12/90	0.953	819.00	1830.00	2.23	0.01	4.39
PT	2363	64	03/13/90	0.913	29.80	78.80	2.64	0.28	4.15
PT	5459	54	05/05/89	0.561	9.57	24.90	2.60	1.16 >	4.09
PT	6334	63	02/20/90	0.956	77.60	182.00	2.34	0.41	4.07
PT	7485	73	10/30/90	1.063	235.00	723.00	3.08	0.87	3.96
PT	7004	69	09/06/90	1.082	308.00	550.00	1.78	0.90	3.89
PT	3110	28	04/25/89	0.953	25.20	46.30	1.84	0.99 >	3.87
PT	7406	70	09/27/90	1.038	320.00	443.00	1.38	0.75	3.63
PT	4074	48	12/07/89	0.894 <	1.00	2.71 >	2.71 >	1.69 >	3.55
PT	5003	45	03/01/89	1.112	305.00 >	320.00 >	1.05 >	1.05 >	3.53
PT	7071	72	10/25/90	1.089	246.00	495.00	2.01	0.94 >	3.39
PT	7320	70	09/13/90	0.915	320.00	456.00	1.43	0.76	3.35
PT	6792	67	06/12/90	0.716	3.10	5.77	1.86	1.12	3.31
PT	8541	76	01/03/91	0.808	28.30	59.50	2.10	0.03	3.27
PT	8349	75	11/29/90	0.890	293.00 >	320.00 >	1.09	0.64 >	3.13
PT	3589	32	04/19/89	0.706	26.10	30.80	1.18	0.78	3.04
PT	8330	76	12/13/90	0.873	2730.00 >	3200.00 >	1.17	1.09 >	3.04
PT	8236	75	11/20/90	1.187	94.00	320.00	3.40	0.62	2.95
PT	7417	70	08/23/90	0.934	254.00 >	320.00 >	1.26 >	1.26 >	2.94
PT	4864	65	05/15/90	0.725	267.00 >	320.00 >	1.20	0.34 >	2.93
PT	6243	1P	11/14/89	0.803	840.00 >	1000.00 >	1.19	1.14 >	2.85
PT	7925	75	11/08/90	0.943	2430.00 >	3200.00 >	1.32	0.79 >	2.83
PT	8366	76	12/13/90	0.932	260.00	477.00	1.84	0.76	2.73
PT	8685	76	01/22/91	0.801	100.00	181.00	1.81	1.11	2.73
PT	7383	70	08/21/90	0.873	245.00 >	320.00 >	1.31	1.07 >	2.68
PT	7391	70	08/21/90	0.994	80.00	185.00	2.31	0.40	2.54
PT	5005	45	03/01/89	1.078	320.00 >	320.00 >	1.00 >	1.00 >	2.48
PT	2572	65	04/12/90	0.562	306.00 >	320.00 >	1.05 >	1.05 >	2.47
PT	6923	69	07/24/90	0.717	299.00 >	320.00 >	1.07 >	1.07 >	2.39
PT	8368	76	12/13/90	1.020	300.00	720.00	2.40	0.82	2.39
PT	7350	70	08/16/90	0.935	930.00 >	1000.00 >	1.08	0.94 >	2.28
PT	8375	76	12/13/90	0.955	301.00	531.00	1.77	0.74	2.28
PT	7379	70	09/18/90	0.877	919.00 >	1000.00 >	1.09	1.09 >	2.25
PT	7410	70	08/23/90	0.899	320.00 >	320.00 >	1.00 >	1.00 >	2.16
PT	8318	76	12/12/90	1.047	2360.00 >	3200.00 >	1.35	0.33 >	2.15
PT	6560	66	07/10/90	0.577	888.00 >	1000.00 >	1.13	0.79 >	2.02
PT	5983	61	02/01/90	0.563	9.38	16.30	1.74	0.88	1.97
PT	8262	76	12/11/90	0.779	855.00 >	1000.00 >	1.17	0.90 >	1.82
PT	6153	62	01/04/90	0.622	1.00	2.10	2.10	1.55 >	1.68
PT	8372	76	12/13/90	1.049	1000.00 >	3200.00 >	3.20	0.44	1.68
PT	7368	70	08/16/90	0.949	919.00 >	1000.00 >	1.09	0.74 >	1.23
PT	7017	69	09/06/90	0.937	289.00	460.00	1.59	0.54	1.22
PT	7011	69	09/06/90	1.003	892.00 >	1000.00 >	1.12	0.63 >	1.21
PT	7386	70	08/21/90	0.853	938.00 >	1000.00 >	1.07	0.78 >	1.20
PT	7403	70	08/23/90	0.832	978.00 >	1000.00 >	1.02	0.69 >	0.85
PT	3101	28	04/25/89	0.847	32.00	39.40	1.23	0.66 >	0.66
PT	5405	53	03/28/89	0.816 <	1.00	1.73 >	1.73 ~	1.00 >	0.62
PT	6215	62	01/16/90	0.962	239.00	100.00	0.42	0.12 >	0.25
PT	3105	28	04/25/89	0.861	32.00	35.90	1.12	0.67	0.24

New Drugs with 25% Antiviral Reduction Levels: Of the 6693 actual single drug tests, 560 new compounds demonstrated moderate antiviral activity, having antiviral reduction values equal to or better than 25%. This represents around 8.4% of the test compounds being active at this marginal antiviral reduction level. In general, when compared to the 95% and 50% antiviral activity categories, the compounds in this (25%) category do not appear to have any significant antiviral promise and probably do not need to be presently confirmed any further.

4.1.6.3. **Confirmatory Assays:**

Some of the compounds were sent to us in more than one separate drug shipment. These compounds were tested more than once. Data from the confirmatory assays are summarized in **Table 18**. If a compound showed >50% reduction in CPE during this contract period, then it was considered a candidate for confirmatory testing. The confirmatory tests are from active compounds picked up by both the VR and MTT assay testing. Out of 326 confirmatory tests, 214 compounds were confirmed active during this reporting period and the remaining 112 compounds gave conflicting results. The criteria for activity is that the confirmatory test has to show ≥25% reduction in CPE. Failure to confirm the activity in these compounds was probably due to differences during the assay conditions:

1) In confirmatory assays the concentration range is adjusted to a more accurate semilog scale to maximize the TAI window.

2) Differences in the "differential" of the two runs can cause the compound to read positive or negative, falsely. The variability in the differential can cause false positive or negative bias to be introduced into the calculations, thus reflecting the variability in the maximum activity of the compound.

3) The metabolic rate, cell and virus load/well, age, and passage number of the cells may cause the above observed variability in the confirmatory results.

4) Problems associated with stability and storage of the compound (i.e., different lot numbers, solubility, light sensitivity, hygroscopic, etc.).

5) Problems associated with technical execution of large numbers of plates by different technicians.

During this reporting period the overall confirmatory rate against PT was 66%. The conflicting results should be retested at a later date based on the availability of the compound.

4.1.6.4 **Recommendations of PT-Actives Based Upon the *In Vitro* Results with MTT Assay (Vero Cells).**

Based upon the *in vitro* results with the MTT assay (Vero cells) we recommend the following:

1) Compounds with the highest TAI in the 95% activity category that have confirmed results with the exception of "colored" compounds should receive the highest priority for further profile studies and *in vivo* animal testing.

2) Compounds with the highest TAI in the 50% activity category that have confirmed results with the exception of "colored" compounds should receive the next highest priority for further profile studies and *in vivo* animal testing.

Table 18

Confirmatory Assays for Compounds Active Against Punta Toro (PT)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
** VIRUS PT																	
0002	46	01/24/89	OEO	0.760	130.00	> 320.00	> 2.46	187.00	> 320.00	> 1.71	0.00	> 320.00	0.00	> 1.71	> 10.46	MTT	+
0002	46	12/20/89	TOA	0.437	572.00	> 1000.0	> 1.75	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	> 5.28	MTT	+
0015	1	09/19/86	---	NA	0.32	> 320.00	1000.00	18.20	> 320.00	17.60	~ 100.00	> 320.00	3.20	17.60	4.30[a]	CPE	+
0015	1	05/12/87	---	NA	16.00	66.00	4.10	37.94	100.00	2.64	~ 100.00	> 320.00	3.20	2.60	0.00[a]	CPE	+
0033	2	10/17/86	---	NA	16.00	66.00	4.10	32.00	100.00	3.10	~ 100.00	> 100.00	1.00	3.20	1.20[a]	CPE	+
0033	2	05/20/88	---	NA	0.00	32.00	0.00	0.00	32.00	0.00	0.00	32.00	0.00	0.00	> 0.30[a]	CPE	-
0053	64	03/08/90	UEN	0.977	51.60	179.00	3.47	100.00	265.00	2.65	0.00	> 320.00	0.00	1.79	> 11.49	MTT	+
0053	64	05/01/90	VSD	0.630	0.00	28.70	0.00	0.00	105.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
0053	64	10/04/90	Z9T	1.500	21.10	42.40	2.01	0.00	71.20	0.00	0.00	> 320.00	0.00	0.00	2.43	MTT	+
0065	2	10/23/86	---	NA	10.00	32.00	3.20	16.00	~ 10.00	0.60	~ 100.00	10.00	0.10	2.00	2.00[a]	CPE	+
0065	53	03/28/89	PDA	0.818	0.00	3.50	0.00	0.00	> 7.50	0.00	0.00	> 100.00	0.00	0.00	4.20	MTT	-
0068	1	09/19/86	---	NA	~ 1.00	32.00	32.00	2.40	32.00	13.30	~ 10.00	32.00	3.20	13.30	2.40[a]	CPE	+
0068	1	11/18/86	---	NA	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	0.30[a]	CPE	-
0068	1	08/21/87	---	NA	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	0.00[a]	CPE	-
0068	1	09/21/87	---	NA	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	0.03[a]	CPE	-
0084	1	09/19/86	---	NA	320.00	> 100.00	0.31	66.40	320.00	4.82	> 320.00	> 320.00	1.00	4.80	1.90[a]	CPE	+
0084	1	05/23/89	Q5V	0.833	0.00	34.50	0.00	0.00	66.00	0.00	0.00	> 320.00	0.00	0.00	1.12	MTT	-
0084	1	08/23/89	RBD	0.695	0.00	93.20	0.00	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	0.31	MTT	-
0084	67	05/30/90	WEJ	0.706	0.00	67.60	0.00	0.00	175.00	0.00	0.00	864.00	0.00	0.00	0.00	MTT	-
0094	1	09/19/86	---	NA	1.00	> 320.00	320.00	10.00	> 320.00	32.00	0.00	> 320.00	0.00	32.00	3.00[a]	CPE	+
0094	1	11/18/86	---	NA	0.00	66.00	0.00	0.00	100.00	0.00	0.00	> 320.00	0.00	0.00	0.70[a]	CPE	-
0094	1	05/12/87	---	NA	60.00	160.00	2.67	130.00	320.00	2.46	320.00	> 320.00	1.00	1.23	0.00[a]	CPE	+
0094	1	08/21/87	---	NA	0.00	66.00	0.00	0.00	100.00	0.00	0.00	> 320.00	0.00	0.00	0.05[a]	CPE	-
0094	1	09/18/87	---	NA	0.00	160.00	0.00	0.00	320.00	0.00	0.00	> 320.00	0.00	0.00	0.00[a]	CPE	-
0094	1	05/04/88	---	NA	0.00	16.00	0.00	0.00	32.00	0.00	0.00	> 320.00	0.00	0.00	0.00[a]	CPE	-
0094	1	05/20/88	---	NA	0.00	16.00	0.00	0.00	32.00	0.00	0.00	> 100.00	0.00	0.00	0.00[a]	CPE	-
0094	1	11/30/89	5NL	0.850	91.90	> 100.00	> 1.09	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	> 1.15	MTT	-
0094	65	04/10/90	V87	0.646	0.00	517.00	0.00	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	0.00	MTT	-
0094	1	11/01/90	ZXR	1.044	157.00	660.00	4.20	0.00	1600.00	0.00	0.00	> 3200.00	0.00	0.00	5.58	MTT	-
0095	2	10/23/86	---	NA	10.00	100.00	10.00	16.00	~ 320.00	20.00	~ 100.00	320.00	3.20	6.20	1.90[a]	CPE	+
0095	2	05/20/88	---	NA	0.00	10.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00[a]	CPE	-
0095	46	01/24/89	OEP	0.788	0.00	111.00	0.00	0.00	237.00	0.00.	0.00	> 320.00	0.00	0.00	4.20	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
0111	42	05/10/89	Q18	0.808	0.00	112.00	0.00	0.00	265.00	0.00	0.00 >	320.00	0.00	0.00 >	1.02	MTT	-
0111	42	08/23/89	RBF	0.687	0.00	88.70	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	2.95	MTT	-
0111	9	12/07/89	SUF	0.856	24.50	183.00	7.46	0.00	563.00	0.00	0.00 >	1000.00	0.00	0.00	10.24	MTT	+
0111	9	12/07/89	SU6	0.772	13.00	257.00	19.76	22.50	830.00	36.85	0.00 >	1000.00	0.00	11.42 >	29.33	MTT	+
0113	1	09/19/86	---	NA	1.00	32.00	32.00	3.20	32.00	10.00	0.00	32.00	0.00	10.00	2.00[a]	CPE	+
0113	1	08/21/87	---	NA	0.00 >	32.00	0.00	0.00	66.00	0.00	0.00 ~	100.00	0.00	0.00	0.00[a]	CPE	-
0113	1	09/21/87	---	NA	0.00 >	32.00	0.00	0.00	66.00	0.00	0.00 ~	100.00	0.00	0.00	0.07[a]	CPE	-
0113	1	06/13/88	---	NA	0.00	16.00	0.00	0.00	32.00	0.00	0.00	100.00	0.00	0.00	0.00[a]	CPE	-
0113	1	05/23/89	Q5W	0.810	0.00	49.00	0.00	0.00	66.00	0.00	0.00	96.60	0.00	0.00	0.00	MTT	-
0113	1	08/23/89	R8F	0.687	0.00	39.30	0.00	0.00	59.50	0.00	0.00	96.00	0.00	0.00	0.00	MTT	-
0124	64	03/08/90	UER	0.746	40.00	222.00	5.56	57.80 >	320.00 >	5.53	0.00 >	320.00	0.00	3.84	22.45	MTT	+
0124	64	05/01/90	VSF	0.741	0.00	50.30	0.00	0.00	83.00	0.00	0.00 >	1000.00	0.00	0.00	1.44	MTT	-
0124	69	07/17/90	XKY	0.586	0.00	181.00	0.00	0.00	278.00	0.00	0.00 >	1000.00	0.00	0.00	3.96	MTT	-
0136	4	10/27/86	---	NA	14.00 >	320.00	22.90	73.00 >	320.00	4.38	0.00 >	320.00	0.00	4.38	1.50[a]	CPE	+
0136	4	05/31/88	---	NA	130.00	56.80	0.44	171.50	86.00	0.50	220.00 >	275.00	1.25	0.33	0.55[a]	CPE	+
0136	4	05/20/88	---	NA	0.00	56.80	0.00	0.00	86.00	0.00	0.00 >	275.00	0.00	0.00	0.09[a]	CPE	-
0148	2	10/21/86	---	NA <	0.32	100.00	313.00 <	0.32	210.00	656.00	1.00	320.00	320.00	1000.00	6.30[a]	CPE	+
0148	2	08/21/87	---	NA	0.21	0.32	1.50	0.32	1.00	3.20	1.00 >	1.00 >	1.00	3.20	0.40[a]	CPE	+
0148	2	08/23/89	RBG	0.646	0.44	3.04	6.89	0.66 >	3.20 >	4.86	0.00 >	3.20	0.00	4.61 >	18.23	MTT	+
0148	67	05/30/90	WEK	0.667	0.22	0.76	3.40	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00	3.89	MTT	+
0148	2/67	10/04/90	Z9U	1.514	0.16	1.42	8.94	0.29	2.90	9.99	0.00 >	10.00	0.00	4.88 >	22.01	MTT	+
0197	5	10/30/86	---	NA	12.00 >	320.00	26.70	73.00 >	320.00	4.40	0.00 >	320.00	0.00	4.40	1.70[a]	CPE	+
0197	5	05/18/88	---	NA	66.00 >	320.00	4.90	134.60 >	320.00	2.40	0.00 >	320.00	0.00	2.40	1.50[a]	CPE	+
0200	2	10/21/86	---	NA	6.80	66.00	9.70	15.60	100.00	6.41 ~	100.00 >	100.00	1.00	6.40	2.10[a]	CPE	+
0200	2	05/20/88	---	NA	66.00	16.00	0.24	85.00	32.00	0.38	0.00 >	100.00	0.00	0.38	0.35[a]	CPE	+
0200	2	08/23/89	RBG	0.646	0.00	56.70	0.00	0.00	82.50	0.00	0.00 >	100.00	0.00	0.00	0.02	MTT	-
0202	4	10/28/86	---	NA	10.00	210.00	21.00	141.00	320.00	2.27 ~	320.00 >	320.00	1.00	2.30	1.90[a]	CPE	+
0202	4	05/20/88	---	NA	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
0206	5	10/28/86	---	NA ~	32.00 >	320.00	10.00	43.00 >	320.00	7.40 ~	320.00 >	320.00	1.00 >	7.40	2.70[a]	CPE	+
0206	5	10/30/86	---	NA ~	32.00	320.00	10.00	57.00 >	320.00	5.60	320.00 >	320.00	1.00	5.70	1.40[a]	CPE	+
0206	5	05/10/89	Q19	0.699	46.00 >	320.00 >	6.95	84.40 >	320.00 >	3.79	0.00 >	320.00	0.00 >	3.79 >	19.78	MTT	+
0206	4	12/05/89	SSZ	0.782	35.70	464.00	13.00	70.30	791.00	11.25	0.00 >	1000.00	0.00	6.60	25.19	MTT	+
0206	4	12/05/89	SSQ	0.627	42.30	578.00	13.68	84.60	871.00	10.29	280.00 >	1000.00 >	3.57	6.83	29.55	MTT	+
0206	67	05/30/90	WEK	0.667	54.80	247.00	4.50	93.80	585.00	6.24	0.00 >	1000.00	0.00	2.63	8.69	MTT	+
0215	1	10/03/86	---	NA	1.00	2.30	2.30	2.20	3.20	1.45 ~	32.00	320.00	10.00	1.50	2.70[a]	CPE	+
0215	1	09/24/87	---	NA	0.51	0.66	1.29	0.70	1.00	1.43 ~	3.20	100.00	31.30	1.40	2.35[a]	CPE	+
0215	1	08/23/89	RBH	0.747	0.00	0.94	0.00	0.00	2.20	0.00	0.00 >	10.00	0.00	0.00 >	0.27	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25		TC 25	AI 25	IC 50		TC 50	AI 50	IC 95		TC 95	AI 95	SI	TAI	Assay Type	ACT
0217	33	04/19/89	PN4	0.739	10.60	>	320.00 >	30.10	22.90	>	320.00 >	14.00	0.00	>	320.00	0.00 >	14.00 >	38.83	MTT	+
0217	61	12/06/89	SQ6	0.610	4.16	>	320.00 >	76.85	13.90	>	320.00 >	22.96	123.00	>	320.00 >	2.61 >	22.96 >	56.19	MTT	+
0272	1	10/03/86	---	NA	~ 0.32		3.20	10.00	1.00	~	100.00	100.00	10.00		100.00	10.00	3.20	2.30[a]	CPE	+
0272	1	06/01/88	---	NA	0.32		1.00	3.10	0.50	>	10.00	20.00	~ 3.20	>	10.00	3.10	2.00	2.00[a]	CPE	+
0272	41	05/10/89	Q19	0.699	0.00		0.60	0.00	0.00		0.87	0.00	0.00	>	100.00	0.00	0.00 >	0.07	MTT	-
0303	46	01/24/89	OEQ	0.807	< 1.00	>	320.00 >	320.00	4.25	>	320.00 >	75.20	0.00	>	320.00	0.00 >	75.20 >	59.26	MTT	+
0303	62	01/18/90	TEY	0.941	15.90		20.40	1.28	0.00		100.00	0.00	0.00	>	320.00	0.00	0.00	2.49	MTT	+
0347	41	05/10/89	Q1A	0.754	0.23		5.59	24.20	0.00		7.99	0.00	0.00	>	32.00	0.00	0.00 >	16.85	MTT	+
0347	62	01/18/90	TE2	0.898	1.07		3.99	3.72	2.59		6.45	2.49	0.00		25.20	0.00	1.54 >	6.04	MTT	+
0360	48	02/07/89	OKL	0.992	0.02		0.18	9.21	0.04		0.44	10.80	0.09		2.93	32.00	4.50 >	28.15	MTT	+
0360	2	08/23/89	RBJ	0.736	0.06		0.20	3.44	0.00		0.29	0.00	0.00	>	1.00	0.00	0.00	6.96	MTT	+
0360	2	11/01/90	ZXR	1.044	0.75		0.52	0.70	0.00		0.95	0.00	0.00	>	1.00	0.00	0.00	0.00	MTT	+
0361	2	12/21/87	---	NA	~ 0.10	>	0.32	3.20	0.20	>	0.32	1.70	0.00	>	0.32	0.00 >	1.60	1.10[a]	CPE	+
0361	2	03/01/88	---	NA	~ 0.032		0.10	3.10	0.04		0.32	8.00	0.10	~	0.32	3.20	2.40	1.00[a]	CPE	+
0361	48	02/07/89	OKM	0.911	0.01		0.05	6.82	0.01		0.08	5.76	0.03		0.57	19.20	3.93 >	21.60	MTT	+
0361	2	08/23/89	RBK	0.735	0.00		0.06	0.00	0.00		0.08	0.00	0.00		0.29	0.00	0.00 >	0.60	MTT	-
0361	48	02/13/90	UOA	0.603	0.02		0.06	2.47	0.00		0.08	0.00	0.00		0.29	0.00	0.00 >	5.09	MTT	+
0361	2	11/01/90	ZXS	1.043	0.00		0.05	0.00	0.00		0.08	0.00	0.00	>	0.32	0.00	0.00	0.07	MTT	-
0919	52	03/15/89	P46	0.721	3.05		105.00	34.30	65.70		186.00	2.83	0.00		332.00	0.00	1.59 >	16.54	MTT	+
0919	52	12/14/89	SYF	0.723	100.00		150.00	1.50	0.00		207.00	0.00	0.00		309.00	0.00	0.00 >	5.57	MTT	+
1019	28	08/23/89	RBL	0.691	0.53	>	1.00 >	1.88	0.90	>	1.00 >	1.11	0.00	>	1.00	0.00 >	1.11 >	4.41	MTT	+
1019	28	03/06/90	UC6	0.958	1.03		24.00	23.19	1.59		96.20	60.63	0.00	>	100.00	0.00	15.12 >	35.94	MTT	+
1089	5	11/14/86	---	NA	0.61		2.20	3.61	0.90		3.20	3.60	~ 3.20		320.00	100.00	3.60	3.40[a]	CPE	+
1089	5	05/18/88	---	NA	0.87		0.22	0.25	1.42		0.32	0.23	~ 10.00	>	32.00	3.20	0.20	1.90[a]	CPE	+
1215	27	08/28/87	---	NA	~ 32.00		100.00	3.10	69.00	>	320.00	4.60	0.00	>	320.00	0.00	1.40	1.00[a]	CPE	+
1215	53	03/28/89	PDB	0.731	2.00		114.00	58.00	30.00		218.00	7.20	0.00	>	320.00	0.00	3.80 >	31.88	MTT	+
1215	27	08/29/89	RD6	0.525	0.00		73.00	0.00	0.00		188.00	0.00	0.00	>	320.00	0.00	0.00	0.00	MTT	-
1217	52	03/15/89	P47	0.881	12.40		138.00	11.20	19.20		269.00	14.00	0.00	>	320.00	0.00	7.21	31.42	MTT	+
1217	52	12/12/89	SW6	0.866	25.90		320.00	12.36	61.10	>	320.00 >	5.24	0.00	>	320.00	0.00	5.24 >	18.60	MTT	+
1337	33	08/29/89	RD9	0.488	19.70	>	32.00 >	1.63	0.00	>	32.00	0.00	0.00	>	32.00	0.00	0.00 >	4.01	MTT	+
1337	62	01/18/90	TF0	1.067	77.30		135.00	1.75	0.00		215.00	0.00	0.00	>	320.00	0.00	0.00	1.47	MTT	+
1337	64	03/13/90	UJI	0.889	0.00		0.86	0.00	0.00	>	320.00	0.00	0.00	>	320.00	0.00	0.00	0.00	MTT	-
1337	65	04/12/90	V9P	0.586	0.00		175.00	0.00	0.00		320.00	0.00	0.00	>	1000.00	0.00	0.00	0.00	MTT	-
1337	64	05/03/90	VWQ	0.758	0.00	>	320.00	0.00	0.00	>	320.00	0.00	0.00	>	320.00	0.00	0.00	0.00	MTT	-
1337	67	05/30/90	WEN	0.589	50.30		167.00	3.32	79.00		234.00	2.96	0.00		840.00	0.00	2.11	9.02	MTT	+

[a] Southern Research Institute

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25		TC 25		AI 25	IC 50		TC 50		AI 50	IC 95		TC 95		AI 95	SI		TAI	Assay Type	ACT
1355	64	03/13/90	UJJ	0.791	94.20	>	320.00	>	3.40	205.00	>	320.00	>	1.56	0.00	>	320.00		0.00	>	1.56	>	10.11	MTT	+
1355	64	05/03/90	VWQ	0.758	151.00		660.00		4.38	231.00		1000.00		4.33	0.00	>	1000.00		0.00		2.85	>	12.66	MTT	+
1644	64	03/13/90	UJK	0.837	20.80	>	320.00	>	15.38	44.70	>	320.00	>	7.15	211.00	>	320.00	>	1.5	>	7.15	>	32.44	MTT	+
1644	64	05/03/90	VWR	0.886	13.90		559.00		40.13	21.10		799.00		37.82	79.60	>	1000.00	>	12.56		26.49		50.83	MTT	+
1644	64	11/01/90	ZXS	1.043	15.80		55.90		3.55	24.80		87.40		3.52	0.00		811.00		0.00		2.25		9.90	MTT	+
1654	46	01/24/89	OER	0.803	2.94		6.60		2.24	6.23	>	320.00	>	51.30	0.00	>	320.00		0.00		1.06	>	19.28	MTT	+
1654	53	08/29/89	RDA	0.527	42.50		3.20		0.08	0.00	>	320.00		0.00	0.00	>	320.00		0.00		0.00		7.15	MTT	+
1654	67	05/30/90	WEP	0.696	5.66		21.50		3.80	0.00		95.80		0.00	0.00	>	320.00		0.00		0.00		2.47	MTT	+
1736	45	11/16/88	OOW	0.665	47.50		298.00		6.28	82.10	>	320.00	>	3.90	0.00	>	320.00		0.00		3.63	>	12.01	MTT	+
1736	45	12/07/89	SUB	0.882	105.00		146.00		1.39	0.00		616.00		0.00	0.00	>	1000.00		0.00		0.00	>	1.96	MTT	+
1774	56	06/14/89	QC8	0.779	173.00	>	320.00	>	1.85	300.00	>	320.00	>	1.07	0.00	>	320.00		0.00	>	1.07	>	13.43	MTT	+
1774	56	08/08/89	R2L	0.650	211.00	>	320.00	>	1.52	0.00	>	320.00		0.00	0.00	>	320.00		0.00		0.00	>	7.23	MTT	+
1841	53	03/28/89	PDC	0.767	3.00		260.00		86.00	8.80	>	320.00	>	36.00	0.00	>	320.00		0.00		30.00	>	40.04	MTT	+
1841	33	08/29/89	RDD	0.567	0.00		61.00		0.00	0.00	>	320.00	>	0.00	0.00	>	320.00		0.00		0.00	>	0.03	MTT	-
1850	53	04/11/89	PFJ	0.595	0.80		73.00		88.00	9.70	>	100.00	>	10.00	0.00	>	100.00		0.00		7.50	>	32.53	MTT	+
1850	32	08/29/89	RDE	0.489	0.00		74.50		0.00	0.00	>	100.00		0.00	0.00	>	100.00		0.00		0.00	>	4.32	MTT	-
1850	67	05/31/90	WHF	0.715	42.10		74.50		1.77	189.00		497.00		2.63	0.00	>	1000.00		0.00		0.40	>	7.03	MTT	+
1973	1	10/09/86	---	NA	6.20		66.00		10.70	19.20		100.00		5.20	-		100.00		320.00		3.20		5.20	1.60[a]	CPE	+
1973	1	08/30/89	RF2	0.607	0.00		27.30		0.00	0.00		55.00		0.00	0.00	>	100.00		0.00		0.00		0.00	MTT	-
1973	67	05/31/90	WHG	0.676	100.00		25.10		0.00	0.00		47.10		0.00	0.00		95.70		0.00		0.00		0.00	MTT	-
1974	1	10/09/86	---	NA	-		3.60		100.00	27.80		14.20		100.00	7.00	-	32.00		100.00		3.10		7.00	1.70[a]	CPE	+
1974	1	08/30/89	RF2	0.607	0.00		11.40		0.00	0.00		43.30		0.00	0.00		94.30		0.00		0.00		0.00	MTT	-
1974	67	05/31/90	WHH	0.714	0.00		49.00		0.00	0.00		127.00		0.00	0.00		301.00		0.00		0.00		0.00	MTT	-
1975	1	10/09/86	---	NA	2.80		320.00		114.00	10.50		320.00		30.50	-		100.00	>	320.00		3.20		30.50	2.70[a]	CPE	+
1975	1	08/21/87	---	NA	0.00		16.00		0.00	0.00		32.00		0.00	0.00	>	32.00		0.00		0.00		0.00[a]	CPE	-
1975	56	06/14/89	QC9	0.870	0.00		86.40		0.00	0.00		210.00		0.00	0.00	>	320.00		0.00		0.00	>	5.70	MTT	-
1980	1	10/17/86	---	NA	5.50	>	320.00		58.20	227.00	>	320.00		1.41	0.00	>	320.00		0.00	>	1.40		1.70[a]	CPE	+
1980	1	10/29/87	---	NA	0.00	>	320.00		0.00	0.00	>	320.00		0.00	0.00	>	320.00		0.00		0.00		0.00[a]	CPE	-
1980	27	05/16/89	Q2T	0.385	1.61		73.50		45.60	2.59	>	100.00		38.50	0.00	>	100.00		0.00		28.30		14.44	MTT	+
1992	3	10/21/86	---	NA	32.00		66.00		2.10	66.00		100.00		1.50	-		100.00		320.00		3.20		1.50	1.50[a]	CPE	+
1992	56	06/14/89	QC9	0.870	34.70		241.00		6.94	57.70	>	320.00	>	5.54	0.00	>	320.00		0.00		4.17	>	25.78	MTT	+
1992	56	08/08/89	R2M	0.594	42.70		238.00		5.56	67.20		433.00		6.45	0.00		943.00		0.00		3.54		11.19	MTT	+
2026	9	11/07/86	---	NA	-		3.20		100.00	31.30		17.30		100.00	5.80		0.00		100.00		0.00		5.80	1.80[a]	CPE	+
2026	9	06/01/88	---	NA	2.20		16.00		7.30	8.96		32.00		3.60	0.00		320.00		0.00		3.60		1.90[a]	CPE	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2034	9	11/05/86	---	NA	~ 3.20	6.60	2.10	6.80	10.00	1.50	~ 10.00	> 100.00	10.00	1.50	2.10[a]	CPE	+
2034	56	06/14/89	QCA	0.931	0.00	1.98	0.00	0.00	3.15	0.00	0.00	21.00	0.00	0.00 >	0.73[a]	CPE	-
2034	56	08/08/89	R2M	0.594	0.00	1.73	0.00	0.00	2.47	0.00	0.00	8.87	0.00	0.00 >	3.66	MTT	-
2138	5	11/07/86	---	NA	95.00 >	320.00	3.40	236.30 >	320.00	1.40	0.00 >	320.00	0.00 >	1.40	1.40[a]	CPE	+
2138	5	11/30/89	SNR	0.841	0.00	87.60	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.12	MTT	-
2138	5	05/31/90	WHI	0.794	0.00	433.00	0.00	0.00	691.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
2275	12	12/18/86	---	NA	10.00	320.00	32.00	41.00 >	320.00 >	7.80	0.00 >	320.00 >	0.00	7.80	2.10[a]	CPE	+
2275	53	04/11/89	PFK	0.743	4.02	155.00	38.60	38.70	295.00	7.62	90.90 >	320.00 >	3.52	4.01 >	35.79	MTT	+
2275	12	08/30/89	RF8	0.581	17.50	125.00	7.16	30.60	215.00	7.04	0.00 >	320.00	0.00	4.09	14.04	MTT	+
2275	67	05/31/90	WHJ	0.653	54.80	147.00	2.69	93.80	226.00	2.41	0.00 >	320.00	0.00	1.57	5.57	MTT	+
2290	11	02/01/86	---	NA	1.00	100.00	100.00	4.10	100.00	24.00	~ 100.00	32.00	0.32	24.20	1.00[a]	CPE	+
2290	11	08/21/87	---	NA	100.00	32.00	0.32	134.00	100.00	0.75	320.00 >	320.00 >	1.00	0.70	0.30[a]	CPE	+
2290	11	09/21/87	---	NA	66.00	66.00	1.00	80.00	100.00	1.30	320.00 >	320.00 >	1.00	1.20	0.60[a]	CPE	+
2290	65	04/12/90	V9R	0.582	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
2290	65	07/06/90	XAO	0.596	19.60	3.20	0.16	0.00	236.00	0.00	0.00 >	320.00	0.00	0.00	8.00	MTT	+
2290	71	07/31/90	XX0	0.555	27.40 >	320.00 >	11.70	496.00 >	320.00 >	0.65	0.00 >	320.00	0.00 >	0.65 >	12.52	MTT	+
2309	11	03/02/87	---	NA	~ 3.20	100.00	31.00	8.20 >	320.00 >	39.00	~ 100.00 >	320.00 >	3.20	12.00	3.30[a]	CPE	+
2309	11	08/21/87	---	NA	~ 3.20	320.00	100.00	8.90 >	320.00 >	36.00	0.00 >	320.00	0.00	36.00	2.90[a]	CPE	+
2309	53	04/11/89	PFL	0.701	3.57	280.00	78.50	5.27 >	320.00 >	60.70	16.80 >	320.00 >	19.10	53.10 >	65.81	MTT	+
2309	53	12/05/89	SSY	0.722	6.66	220.00	32.98	17.90	417.00	23.32	82.70 >	1000.00 >	12.09	12.27 >	40.27	MTT	+
2309	53	12/12/89	SW7	0.778	11.20	522.00	46.68	28.60	725.00	25.35	97.40 >	1000.00 >	10.27	18.27 >	50.58	MTT	+
2318	13	12/30/86	---	NA	~ 0.32	3.20	10.00	0.73 >	320.00	438.00	~ 1.00 >	320.00 >	320.00	4.40	4.40[a]	CPE	+
2318	53	04/11/89	PFL	0.701 <	1.00	1.50 >	1.50 <	1.00	3.65 >	3.65	0.00 >	320.00	0.00 >	1.50 >	2.76	MTT	+
2318	13	08/30/89	RF9	0.608	0.58	2.18	3.75	0.00	8.00	0.00	0.00 >	10.00	0.00	0.00	4.86	MTT	+
2318	67	05/31/90	WHJ	0.653	0.26	2.13	8.09	0.67	6.60	9.89	0.00 >	10.00	0.00	3.19 >	13.75	MTT	+
2318	67	07/12/90	XGY	0.619	0.42	2.90	6.88	0.69 >	10.00 >	14.52	0.00 >	10.00	0.00	4.21	16.14	MTT	+
2320	13	12/31/86	---	NA	3.20	32.00	10.00	18.00	32.00	1.80	0.00	320.00	0.00	1.80	1.80[a]	CPE	+
2320	53	04/11/89	PFM	0.689	1.38	93.50	67.80	2.56	172.00	67.30	0.00	315.00	0.00	36.50 >	52.20	MTT	+
2320	13	08/30/89	RF9	0.608	18.60	57.50	3.09	0.00	166.00	0.00	0.00	313.00	0.00	0.00	1.77	MTT	+
2320	65	04/12/90	V9S	0.610	0.00	7.23	0.00	0.00	61.30	0.00	0.00	268.00	0.00	0.00	0.00	MTT	-
2320	65	07/06/90	XAO	0.596	7.62	106.00	13.87	25.40	177.00	6.99	0.00	306.00	0.00	4.17	14.58	MTT	+
2320	65	07/17/90	XLA	0.519 <	1.00	167.00 >	167.07	6.74	234.00	34.74	0.00 >	320.00	0.00	24.79 >	40.18	MTT	+
2363	15	08/30/89	RFA	0.592	7.67	45.30	5.91	0.00	63.80	0.00	0.00	97.00	0.00	0.00	6.93	MTT	+
2363	64	03/13/90	UJM	0.913	12.40	8.30	0.67	29.80	78.80	2.64	0.00	289.00	0.00	0.28	4.15	MTT	+
2363	64	05/03/90	VWS	0.833	14.70	25.50	1.73	25.20	60.30	2.39	0.00	278.00	0.00	1.01	3.94	MTT	+
2453	18	11/28/89	SLE	0.465	3.86	14.40	3.74	5.90	20.30	3.44	0.00	30.80	0.00	2.45	13.44	MTT	+
2453	64	03/13/90	UJM	0.913	4.07	11.70	2.89	8.61	19.00	2.20	0.00	32.00	0.00	1.36	6.25	MTT	+
2453	64	05/03/90	VWT	0.795	0.00	9.46	0.00	0.00	17.10	0.00	0.00	31.10	0.00	0.00	0.00	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2503	53	04/11/89	PFM	0.689	< 1.00	1.82	> 1.82	< 1.00	4.40	> 4.40	0.00	> 320.00	0.00	> 1.82	> 3.91	MTT	+
2503	21	11/28/89	SLF	0.503	0.45	2.83	6.28	0.64	> 10.00	> 15.73	0.00	> 10.00	0.00	4.46	15.35	MTT	+
2503	67	05/31/90	WHK	0.791	0.49	1.62	3.29	0.76	4.11	5.41	0.00	> 10.00	0.00	2.13	7.06	MTT	+
2503	67	07/12/90	XGZ	0.704	0.49	4.09	8.35	0.75	> 10.00	> 13.35	0.00	> 10.00	0.00	5.46	14.41	MTT	+
2503	67	10/04/90	Z9V	1.051	0.30	1.50	4.98	0.60	3.07	5.09	0.00	> 32.00	0.00	2.49	> 15.06	MTT	+
2506	21	11/28/89	SLG	0.480	1.21	> 10.00	> 8.24	1.89	> 10.00	> 5.30	0.00	> 10.00	0.00	> 5.30	> 27.16	MTT	+
2506	64	03/13/90	UJN	0.919	2.07	26.00	12.57	3.89	86.40	22.18	9.43	> 320.00	> 33.94	6.68	29.71	MTT	+
2506	64	05/03/90	VWT	0.795	1.86	8.74	4.70	0.00	27.60	0.00	0.00	> 320.00	0.00	0.00	8.75	MTT	+
2563	48	02/07/89	OKN	1.002	0.21	1.77	8.50	0.39	> 3.20	> 8.14	0.91	> 3.20	> 3.51	4.51	> 28.54	MTT	+
2563	15	05/23/89	Q5Z	0.724	0.00	5.33	0.00	0.00	7.45	0.00	0.00	> 32.00	0.00	0.00	0.12	MTT	-
2563	21	11/28/89	SLH	0.491	1.57	4.41	2.81	2.51	8.19	3.26	0.00	> 10.00	0.00	1.76	9.32	MTT	+
2563	48	12/05/89	SSW	0.733	0.00	> 3.20	0.00	0.00	> 3.20	0.00	0.00	> 3.20	0.00	0.00	> 0.31	MTT	-
2563	15/21	11/01/90	ZXU	1.116	0.21	0.73	3.54	0.77	1.56	2.03	0.00	10.00	0.00	0.95	8.65	MTT	+
2573	57	06/27/89	QK3	0.531	161.00	> 320.00	> 1.98	286.00	> 320.00	> 1.12	0.00	> 320.00	0.00	> 1.12	> 10.54	MTT	+
2573	65	04/12/90	V9T	0.562	160.00	396.00	2.47	255.00	> 1000.00	> 3.91	0.00	> 1000.00	0.00	1.55	4.96	MTT	+
2575	57	06/27/89	QK3	0.531	0.00	273.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
2575	57	12/05/90	1PY	0.936	153.00	440.00	2.87	235.00	940.00	4.00	0.00	> 1000.00	0.00	1.87	> 7.31	MTT	+
2580	19	11/28/89	SLJ	0.394	5.10	> 10.00	> 1.96	8.14	> 10.00	> 1.23	0.00	> 10.00	0.00	> 1.23	> 6.35	MTT	+
2580	65	04/12/90	V9U	0.570	0.00	22.40	0.00	0.00	44.30	0.00	0.00	94.40	0.00	0.00	0.00	MTT	-
2580	19	12/05/90	1PY	0.936	5.72	27.40	4.79	0.00	51.40	0.00	0.00	95.10	0.00	0.00	6.09	MTT	+
2590	19	11/28/89	SLL	0.506	2.17	283.00	130.48	0.00	> 320.00	0.00	0.00	> 320.00	0.0	0.00	> 23.47	MTT	+
2590	65	04/12/90	V9W	0.565	151.00	374.00	2.48	227.00	821.00	3.62	0.00	> 1000.00	0.00	1.65	7.15	MTT	+
2604	19	12/21/88	088	0.791	10.00	> 100.00	> 10.00	25.50	> 100.00	> 3.91	0.00	> 100.00	0.00	> 3.91	> 16.02	MTT	+
2604	19	11/28/89	SLM	0.509	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	> 2.49	MTT	-
2604	19	12/05/90	1Q0	0.906	0.00	51.00	0.00	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	> 0.26	MTT	-
2716	22	05/27/89	---	NA	1.00	10.00	10.00	27.00	~ 100.00	37.00	32.00	100.00	3.10	3.70	2.00[a]	CPE	+
2716	22	05/25/88	---	NA	~ 3.20	10.00	3.10	7.20	> 32.00	> 4.40	0.00	> 32.00	0.00	1.40	1.00[a]	CPE	+
2716	46	01/24/89	OES	0.976	26.00	11.00	0.40	0.00	30.00	0.00	0.00	93.00	0.00	0.00	2.16	MTT	+
2720	22	04/21/89	P01	0.463	0.01	67.70	11200	1.00	> 100.00	> 100.00	0.00	> 100.00	0.00	67.70	28.46	MTT	+
2720	65	04/17/90	VE9	0.758	0.00	514.00	0.00	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	0.00	MTT	-
2743		04/28/87	---	NA	21.00	100.00	5.00	32.00	320.00	10.00	100.00	> 320.00	> 3.20	10.00	0.80[a]	CPE	+
2743		08/21/87	---	NA	66.00	100.00	1.50	118.00	320.00	2.70	320.00	> 320.00	> 1.00	2.70	0.40[a]	CPE	+
2812	32	03/01/88	---	NA	~ 0.003	0.03	10.00	0.007	~ 0.032	4.60	0.00	0.032	0.00	4.60	1.00[a]	CPE	+
2812	48	02/07/89	OKR	0.837	0.00	> 0.01	> 5.31	0.00	> 0.01	> 2.87	0.01	> 0.01	> 1.11	> 2.87	> 19.34	MTT	+
2812	61	12/06/89	SQ8	0.814	0.00	0.02	4.83	0.01	0.03	4.58	0.00	0.10	0.00	3.05	> 13.37	MTT	+
2812	61	12/05/90	1Q1	0.912	0.00	< 0.32	0.00	0.00	< 0.32	0.00	0.00	< 0.32	0.00	0.00	0.00	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2906	53	04/11/89	PFN	0.593	42.50	142.00	3.33	56.60	261.00	4.61	94.50 >	320.00 >	3.39	2.51	21.14	MTT	+
2906	26	09/07/89	RIR	0.807	0.00	51.40	0.00	0.00	194.00	0.00	0.00 >	320.00	0.00	0.00	1.52	MTT	-
2907	26	09/07/89	RIS	0.546	13.40	131.00	9.79	20.20	210.00	10.38	0.00 >	320.00	0.00	6.50 >	24.44	MTT	+
2907	64	03/13/90	UJN	0.919	0.00	28.90	0.00	0.00	154.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
2979	48	02/08/89	OLU	0.729	1.57	1.75	1.11	0.00	3.82	0.00	0.00	27.40	0.00	0.00	3.15	MTT	+
2979	27	04/19/89	PMT	0.515	3.25	6.41	1.97	4.73	9.62	2.03	9.28	92.60	9.99	1.36	14.81	MTT	+
2979	25	09/07/89	RIU	0.572	8.72	6.39	0.73	0.00	13.50	0.00	0.00	100.00	0.00	0.00	0.00	MTT	+
2980	25	12/21/87	---	NA <	0.32	3.20 >	10.00	0.30 ~	32.00 ~	107.00	3.20	32.00	10.00	10.00	2.80[a]	CPE	+
2980	25	03/01/88	---	NA ~	0.32	3.20	10.00	0.40 ~	3.20 ~	8.00	1.00	3.20	3.20	7.70	1.50[a]	CPE	+
2980	25	05/25/88	---	NA ~	0.32	1.00 ~	3.10	0.40 ~	10.00 ~	25.00	1.00	10.00	10.00	2.70	1.70[a]	CPE	+
2980	48	02/08/89	OLV	0.686	0.42 >	3.20 >	7.61	0.78 >	3.20 >	4.10	2.77 >	3.20 >	1.16 >	4.10 >	23.21	MTT	+
2980	25	09/07/89	RIV	0.532	0.39	1.25	3.23	0.59	2.02	3.43	0.00	10.00	0.00	2.11	11.88	MTT	+
2980	61	12/06/89	SQH	0.832	0.19	2.28	12.22	0.43 >	3.20 >	7.43	0.00 >	3.20	0.00	5.29	24.37	MTT	+
3374	31	12/20/88	07N	0.993	46.00 >	100.00 >	2.17	84.40 >	100.00 >	1.18	0.00 >	100.00	0.00 >	1.18 >	8.37	MTT	+
3374	65	04/17/90	VEF	0.628	0.00	485.00	0.00	0.00	657.00	0.00	0.00	966.00	0.00	0.00	1.93	MTT	-
3425	32	04/19/89	PMT	0.515	16.60	25.30	1.52	30.50	46.90	1.54	0.00	94.70	0.00	0.83	7.45	MTT	+
3425	32	04/21/89	PAA	0.947	14.30	21.50	1.50	0.00	34.60	0.00	0.00	93.50	0.00	0.00	4.46	MTT	+
3450	32	04/19/89	PMX	0.716	10.60	26.20	2.47	15.30	48.70	3.18	29.70	95.80	3.22	1.71	15.85	MTT	+
3450	32	04/21/89	PAE	0.873	10.00	49.20	4.92	26.40	66.30	2.52	0.00	97.30	0.00	1.87 >	15.28	MTT	+
3491	65	04/17/90	VEJ	0.732	88.50 >	320.00 >	3.62	190.00 >	320.00 >	1.69	0.00 >	320.00	0.00 >	1.69 >	10.82	MTT	+
3491	65	07/06/90	XAS	0.670	0.00	62.20	0.00	0.00	137.00	0.00	0.00	302.00	0.00	0.00 >	0.81	MTT	-
3494	33	04/19/89	PN6	0.744	2.00	46.30	23.20	3.79	64.20	16.90	9.79	96.40	9.85	12.20	41.87	MTT	+
3494	33	12/20/89	TOB	0.572	6.50 >	100.00 >	15.39	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	10.42	MTT	+
3565	32	04/05/89	PC4	0.704	4.99	12.90	2.58	7.79	19.40	2.49	0.00	31.20	0.00	1.65	7.06	MTT	+
3565	32	04/19/89	PMY	0.769	0.00 >	0.32	0.00	0.00 >	0.32	0.00	0.00 >	0.32	0.00	0.00	2.66	MTT	-
3586	32	11/03/88	OCU	0.555	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00	0.00	MTT	-
3586	32	04/19/89	PN1	0.711	4.62	2.10	0.46	7.68	229.00	29.80	29.00 >	320.00 >	11.00	0.27	37.49	MTT	+
3586	32	01/18/90	TF3	0.783	3.89	32.00	8.22	0.00	210.00	0.00	0.00 >	320.00	0.00	0.00	14.64	MTT	+
3588	32	11/03/88	OCV	0.614	0.00	10.80	0.00	0.00	32.00	0.00	0.00 >	100.00	0.00	0.00	0.62	MTT	-
3588	32	04/19/89	PN2	0.706	7.18	38.90	5.42	15.90	63.50	3.99	0.00	276.00	0.00	2.44 >	16.51	MTT	+
3589	32	11/03/88	OCV	0.614	0.00	21.00	0.00	0.00	66.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
3589	32	04/19/89	PN2	0.706	14.70	20.40	1.38	26.10	30.80	1.18	0.00	222.00	0.00	0.78	3.04	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
3592	ABEBE	01/12/89	QA6	1.001	21.70	104.00	4.80	83.90	184.00	2.19	0.00	328.00	0.00	1.24 >	19.63	MTT	+
3592	51	03/07/89	QWV	0.859	8.55	189.00	22.10	27.70 >	320.00 >	11.60	88.60 >	320.00 >	3.61	6.84	35.74	MTT	+
3592	51	11/28/89	SLR	0.677	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	4.36	MTT	-
3592	61	12/06/89	SQ8	0.814	46.70 >	1000.0 >	21.43	283.00 >	1000.00 >	3.53	0.00 >	1000.00	0.00 >	3.53 >	17.75	MTT	+
3592	65	05/15/90	W59	0.751	45.40 >	320.00 >	7.04	94.30 >	320.00 >	3.39	0.00 >	320.00	0.00 >	3.39 >	19.84	MTT	+
3612	32	11/03/88	OCZ	0.634	67.50 >	320.00 >	4.74	131.00 >	320.00 >	2.45	293.00 >	320.00 >	1.09 >	2.45 >	15.95	MTT	+
3612	32	12/05/89	SSX	0.802	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.35	MTT	-
3612	32	10/30/90	ZVV	0.944	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.15	MTT	-
3621	32	11/09/88	03R	0.674	0.00	165.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3621	32	12/20/89	TOC	0.673	33.70	296.00	8.78	63.40	528.00	8.33	0.00	953.00	0.00	4.66	21.94	MTT	+
3802	35	11/28/89	SLS	0.641	0.13	1.69	13.25	0.19 >	10.00 >	53.83	0.00 >	10.00	0.00	9.08 >	30.31	MTT	+
3802	67	05/31/90	WHM	0.846	0.14	0.27	1.89	0.30 >	10.00 >	33.22	0.00 >	10.00	0.00	0.88 >	4.07	MTT	+
3802	67	07/12/90	XGZ	0.704	0.15 >	10.00 >	65.93	0.23 >	10.00 >	42.71	0.84 >	10.00 >	11.95 >	42.71 >	59.40	MTT	+
3819	65	05/15/90	W5A	0.754	51.90	77.90	1.50	0.00	153.00	0.00	0.00 >	320.00	0.00	0.00	4.61	MTT	+
3819	65	07/17/90	XL9	0.594	11.50	109.00	9.54	27.00	188.00	6.97	0.00 >	320.00	0.00	4.06 >	22.75	MTT	+
3964	33	03/01/89	OUR	0.887	7.06	37.80	5.36	12.10	77.30	6.39	0.00	148.00	0.0	3.13 >	14.28	MTT	+
3964	33	03/22/89	PBD	0.706	0.54	12.30	22.60	2.68	24.50	9.16	0.00 >	32.00	0.00	4.58 >	22.98	MTT	+
4070	35	04/12/88	---	NA <	0.32	3.20	10.00	1.50 ~	32.00 ~	21.00	10.00	32.00	3.20	2.10	1.85[a]	CPE	+
4070	48	02/08/89	OLW	0.678	1.05 >	3.20 >	3.06	1.52 >	3.20 >	2.11	2.97 >	3.20 >	1.08 >	2.11 >	14.01	MTT	+
4070	48	12/07/89	SUD	0.723	0.96	6.42	6.71	2.46	12.40	5.06	0.00	80.60	0.00	2.61	13.05	MTT	+
4071	62	12/05/89	SSR	0.669	70.20	590.00	8.40	136.00	860.00	6.34	320.00 >	1000.00 >	3.13	4.35 >	22.39	MTT	+
4071	62	01/18/90	TF2	0.817	141.00	485.00	3.45	249.00	715.00	2.87	0.00 >	1000.00	0.00	1.95	9.98	MTT	+
4071	62	02/08/90	TVD	0.859	139.00	456.00	3.29	218.00	656.00	3.00	0.00 >	1000.00	0.00	2.09	8.61	MTT	+
4074	48	02/08/89	OLY	0.718	0.01 >	0.03 >	4.37	0.00 >	0.03	0.00	0.00 >	0.03	0.00	0.00 >	6.49	MTT	+
4074	48	12/07/89	SUE	0.894 <	1.00	1.69 >	1.69 <	1.00	2.71 >	2.71	0.00	26.50	0.00 >	1.69 >	3.55	MTT	+
4074	48	02/13/90	U0D	0.699	0.00	0.67	0.00	0.00	1.16	0.00	0.00	9.66	0.00	0.00	1.98	MTT	-
4075	65	05/15/90	W5E	0.721	55.90	250.00	4.47	97.80 >	320.00 >	3.27	0.00 >	320.00	0.00	2.56 >	9.82	MTT	+
4075	65	07/06/90	XCU	0.565	0.00	91.50	0.00	0.00	344.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
4223	62	01/18/90	TF3	0.783 <	1.00 <	1.00 ~	1.00	0.00 <	1.00	0.00	0.00	2.85	0.00	0.00	0.00	MTT	+
4223	62	02/06/90	TRM	0.628	0.00 >	1.00	0.00	0.00 >	1.00	0.00	0.00 >	1.00	0.00	0.00 >	3.36	MTT	-
4223	63	02/13/90	U07	0.598	0.13	0.28	2.16	0.26	0.61	2.37	0.00 >	1.00	0.00	1.08	6.39	MTT	+
4240	39	05/11/88	---	NA ~	3.20	32.00 ~	10.00	8.50 ~	100.00 ~	12.00	32.00	100.00	3.10	3.70	1.40[a]	CPE	+
4240	53	04/11/89	PFO	0.615	4.10	8.80	2.20	5.50	17.00	3.00	94.00	31.00	3.30	1.60	15.74	MTT	+
4241	39	05/11/88	---	NA ~	3.20	10.00 ~	3.10	4.90 ~	100.00 ~	20.00	32.00	100.00	3.10	2.00	1.50[a]	CPE	+
4241	46	01/24/89	OES	0.976	1.60	14.00	8.60	4.00	23.00	5.80	0.00	87.00	0.00	3.50 >	18.24	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4275		04/13/88	---	NA	3.20	0.32	0.10	320.00 ≤	0.32	0.001	>320.00 >	320.00 >	1.00	0.001	1.30[a]	CPE	+
4275		06/07/88	---	NA	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00	0.00[a]	CPE	-
4277	42	11/28/89	SM3	0.340	5.03 >	10.00 >	1.99	7.90 >	10.00 >	1.27	0.00 >	10.00	0.00 >	1.27 >	7.04	MTT	+
4277	65	05/15/90	W5J	0.731	6.52	17.60	2.70	0.00	25.30	0.00	0.00	87.90	0.00	0.00	5.41	MTT	+
4277	65	07/06/90	XCV	0.545	0.00	13.50	0.00	0.00	22.40	0.00	0.00	85.20	0.00	0.00	0.00	MTT	-
4278	42	11/28/89	SM4	0.505	4.17	18.30	4.38	0.00	28.70	0.00	0.00 >	32.00	0.00	0.00 >	15.70	MTT	+
4278	61	12/06/89	SQ9	0.787	5.18	24.50	4.72	9.75	51.60	5.30	0.00 >	100.00	0.00	2.51	12.66	MTT	+
4278	61	11/01/90	ZXW	0.885	5.73	17.60	3.08	0.00	25.30	0.00	0.00	94.60	0.00	0.00	7.32	MTT	+
4281	42	11/28/89	SM5	0.385	2.35	6.40	2.72	0.00	9.73	0.00	0.00 >	10.00	0.00	0.00 >	5.31	MTT	+
4281	61	12/06/89	SQ9	0.787	1.49	6.90	4.62	2.35	12.00	5.11	0.00 >	32.00	0.00	2.93	12.39	MTT	+
4281	61	11/01/90	ZXX	1.037	3.20	5.57	1.74	0.00	8.27	0.00	0.00 >	32.00	0.00	0.00	2.65	MTT	+
4452	44	07/07/89	QP1	0.691	41.60	204.00	4.90	56.90	308.00	5.40	100.00 >	320.00 >	3.20	3.58	17.09	MTT	+
4452	44	08/16/89	R81	0.768	37.70	145.00	3.85	62.60	270.00	4.31	0.00 >	320.00	0.00	2.32	10.02	MTT	+
4527	47	02/01/89	OJN	1.121	1.79	11.60	6.47	5.01	24.70	4.92	0.00	90.60	0.00	2.31 >	15.02	MTT	+
4527	47	02/06/90	TRN	0.635	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	1.03	MTT	-
4527	47	02/13/90	U0E	0.648	0.00	91.50	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
4527	63	02/13/90	U08	0.588	5.07	18.90	3.72	9.30	27.70	2.98	0.00	94.30	0.00	2.03	8.93	MTT	+
4590	48	03/01/89	QUO	0.998	1.14	2.72	2.39	2.55	5.98	2.34	0.00	26.80	0.00	1.07 >	8.63	MTT	+
4590	42	11/28/89	SM7	0.353	0.00	2.57	0.00	0.00	5.82	0.00	0.00 >	10.00	0.00	0.00 >	2.20	MTT	-
4590	61	12/06/89	SQA	0.855	0.25	1.31	5.30	0.53	2.62	4.91	0.00	9.13	0.00	2.46	14.26	MTT	+
4590	48	02/06/90	TRN	0.635	1.22	5.14	4.20	2.30	8.18	3.55	0.00 >	10.00	0.00	2.23 >	12.80	MTT	+
4590	63	02/13/90	U08	0.588	1.64	5.82	3.54	2.81	8.43	3.00	0.00 >	10.00	0.00	2.07	8.44	MTT	+
4592	48	03/01/89	QUP	0.968	10.50	48.10	4.60	15.20	88.40	5.82	29.70 >	100.00 >	3.37	3.17	24.18	MTT	+
4592	42	11/28/89	SM7	0.353	0.00	22.60	0.00	0.00	59.60	0.00	0.00 >	100.00	0.00	0.00 >	0.89	MTT	-
4592	61	12/06/89	SQA	0.855	4.97	43.30	8.72	9.50	83.80	8.83	0.00 >	100.00	0.00	4.56	19.51	MTT	+
4592	48	02/06/90	TRO	0.701	11.30	45.10	3.98	24.90	77.80	3.13	0.00 >	100.00	0.00	1.81	9.83	MTT	+
4592	63	02/13/90	U09	0.615	0.00	7.06	0.00	0.00	12.80	0.00	0.00	57.50	0.00	0.00 >	4.95	MTT	-
4609	48	03/01/89	QUQ	0.979 <	0.32 <	0.32 ~	1.00 <	0.32	0.60 >	1.88	0.00	3.01	0.00 ~	1.00 >	0.45	MTT	+
4609	48	03/01/89	QUQ	0.979	0.04 >	0.10 >	2.27	0.00 >	0.10	0.00	0.00 >	0.10	0.00	0.00 >	9.97	MTT	+
4609	48	12/05/89	SSY	0.722	0.02	0.22	11.43	0.04	0.43	10.02	0.10 >	1.00 >	10.55	5.22 >	28.27	MTT	+
4609	63	02/13/90	U0A	0.603	0.04	0.16	3.90	0.07	0.25	3.54	0.00	0.89	0.00	2.21	12.35	MTT	+
4611	65	05/15/90	W5L	0.725	14.60	16.50	1.13	133.00 >	320.00 >	2.41	0.00 >	320.00	0.00	0.12 >	5.88	MTT	+
4611	65	07/06/90	XCW	0.586	0.00	21.70	0.00	0.00	278.00	0.00	0.00	953.00	0.00	0.00	0.00	MTT	-
4739	44	07/07/89	QP2	0.713	0.00	17.30	0.00	0.00	46.00	0.00	0.00	94.60	0.00	0.00	0.00	MTT	-
4739	44	08/16/89	R81	0.768	0.00	21.70	0.00	0.00	50.30	0.00	0.00	95.90	0.0	0.00	0.00	MTT	-
4739	64	03/08/90	UEU	0.676 <	1.00	39.10 >	39.06	7.89	61.10	7.75	0.00	144.00	0.00	4.95 >	21.56	MTT	+
4739	64	05/03/90	VWU	0.779	10.40	32.00	3.09	25.00	54.70	2.19	0.00	95.50	0.00	1.28	6.89	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4765	44	11/08/88	031	0.511	41.20	10.00	0.24	56.60	202.00	3.56	100.00	310.00	3.10	0.18	10.13	MTT	+
4765	44	02/13/90	U0F	0.634	10.00	22.80	2.28	0.00	61.60	0.00	0.00	290.00	0.00	0.00	2.74	MTT	+
4768	44	11/08/88	032	0.505	36.90	119.00	3.23	66.80	187.00	2.80	0.00	309.00	0.00	1.78	10.27	MTT	+
4768	44	02/13/90	U0G	0.636	0.00	104.00	0.00	0.00	194.00	0.00	0.00 >	320.00	0.00	0.00	1.38	MTT	-
4769	44	11/08/88	033	0.541	35.90	128.00	3.57	58.20	192.00	3.30	0.00	307.00	0.00	2.20	12.63	MTT	+
4769	44	02/13/90	U0G	0.636	0.00	124.00	0.00	0.00	189.00	0.00	0.00	307.00	0.00	0.00	4.18	MTT	-
4770	44	11/08/88	033	0.541	38.80	143.00	3.67	60.10	202.00	3.35	0.00	308.00	0.00	2.37	12.94	MTT	+
4770	44	03/06/90	UC8	0.918	0.00	95.00	0.00	0.00	169.00	0.00	0.00	305.00	0.00	0.00	2.31	MTT	-
4785	46	01/12/89	09N	0.929 <	1.00	7.19 >	7.19 <	1.00	29.10 >	29.10	0.00 >	320.00	0.00 >	7.19 >	23.97	MTT	+
4785	46	11/28/89	SM9	0.456	0.48	4.37	9.10	0.00	11.80	0.00	0.00 >	32.00	0.00	0.00 >	13.78	MTT	+
4785	46	11/01/90	ZXX	1.037	0.70	4.02	5.73	1.50	12.10	8.08	0.00 >	32.00	0.00	2.68	14.58	MTT	+
4795	46	01/12/89	09S	0.885	37.10	149.00	4.02	69.00	275.00	3.99	0.00 >	320.00	0.00	2.16	13.19	MTT	+
4795	46	11/28/89	SMA	0.481	55.30	150.00	2.71	95.70	207.00	2.16	0.00	309.00	0.00	1.57	6.27	MTT	+
4796	46	01/12/89	09S	0.885 <	1.00	21.70 >	21.70	1.58	73.60	46.60	0.00 >	320.00	0.00	13.80 >	30.97	MTT	+
4796	46	11/28/89	SMA	0.481	13.50 >	100.00 >	7.40	19.00 >	100.00 >	5.26	0.00 >	100.00	0.00 >	5.26 >	22.50	MTT	+
4796	61	12/06/89	SQB	0.922	7.89	142.00	17.99	14.20	273.00	19.28	30.90 >	320.00 >	10.35	10.03	32.83	MTT	+
4809	46	01/17/89	OC0	1.026	14.40	150.00	10.40	42.50	301.00	7.07	0.00 >	320.00	0.00	3.53 >	20.27	MTT	+
4809	46	11/28/89	SMB	0.403	0.00	181.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4822	48	02/01/89	OJS	1.240	2.94	38.60	13.20	4.76	59.40	12.50	0.00	96.70	0.00	8.12	34.34	MTT	+
4822	48	11/28/89	SMB	0.403	11.70	57.80	4.95	16.60	83.50	5.04	31.10 >	320.00 >	10.28	3.49	18.49	MTT	+
4822	48	12/14/89	SYE	0.791	19.40	49.00	2.52	0.00	66.00	0.00	0.00	96.60	0.00	0.00	4.94	MTT	+
4825	48	02/14/89	OMR	0.475	42.50	107.00	2.52	68.40	240.00	3.51	0.00 >	320.00	0.00	1.57	12.84	MTT	+
4825	48	11/28/89	SMC	0.340	0.00	134.00	0.00	0.00	227.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4825	61	12/06/89	SQB	0.922	23.00	71.80	3.13	0.00	188.00	0.00	0.00 >	1000.00	0.00	0.00	4.84	MTT	+
4827	48	02/14/89	OMS	0.337	4.43 >	320.00 >	72.20	12.70 >	320.00 >	25.10	0.00 >	320.00	0.00 >	25.10 >	43.84	MTT	+
4827	48	11/28/89	SMC	0.340	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.21	MTT	-
4827	61	12/06/89	SQC	0.791	151.00	835.00	5.52	289.00 >	1000.00 >	3.47	0.00 >	1000.00	0.00	2.89 >	13.52	MTT	+
4829	48	02/14/89	OMT	0.409	2.28 >	320.00 >	140.00	10.00 >	320.00 >	32.00	0.00 >	320.00	0.00 >	32.00 >	36.95	MTT	+
4829	48	11/28/89	SMD	0.444	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.72	MTT	-
4843	48	02/21/89	OPG	0.377	113.00 >	320.00 >	2.83	160.00 >	320.00 >	2.00	299.00 >	320.00 >	1.07 >	2.00 >	9.93	MTT	+
4843	48	02/13/90	U0H	0.679	0.00	88.70	0.00	0.00	479.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
4844	48	02/21/89	OPH	0.531	115.00 >	320.00 >	2.79	161.00 >	320.00 >	1.98	299.00 >	320.00 >	1.07 >	1.98 >	14.30	MTT	+
4844	48	02/13/90	U0H	0.679	0.00	524.00	0.00	0.00	767.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4848	48	02/22/89	OPT	0.429	1.28 >	320.00 >	250.00	3.09 >	320.00 >	104.00	71.50 >	320.00 >	4.47 >	104.00 >	64.54	MTT	+
4848	48	11/30/89	SNN	0.951	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	1.24	MTT	-
4848	61	12/06/89	SQC	0.791	283.00	3.20	0.01	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.73	MTT	+
4849	48	02/22/89	OPU	0.435 <	1.00 >	320.00 >	320.00	1.34 >	320.00 >	239.00	0.00 >	320.00	0.00 >	239.00 >	47.35	MTT	+
4849	48	11/30/89	SNN	0.951	74.30	9.24	0.12	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.17	MTT	+
4849	61	12/06/89	SQD	0.903	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
4850	48	02/22/89	OPU	0.435 <	1.00	134.00 >	134.00	2.30	243.00	106.00	0.00 >	320.00	0.00	58.30 >	29.33	MTT	+
4850	48	11/30/89	SNO	0.901	0.00	126.00	0.00	0.00	234.00	0.00	0.00 >	320.00	0.00	0.00 >	5.31	MTT	-
4851	48	02/22/89	OPV	0.591 <	1.00 >	320.00 >	320.00	1.47 >	320.00 >	217.00	0.00 >	320.00	0.00 >	217.00 >	53.33	MTT	+
4851	48	11/30/89	SNO	0.901	56.60 >	320.00 >	5.66	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	17.29	MTT	+
4851	61	12/06/89	SQD	0.903	0.00	100.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
4853	48	02/22/89	OPW	0.454 <	1.00	4.36 >	4.36	1.73	7.72	4.46	0.00	29.30	0.00	2.52 >	13.74	MTT	+
4853	48	11/30/89	SNP	0.858	5.53 >	10.00 >	1.81	9.57 >	10.00 >	1.04	0.00 >	10.00	0.00 >	1.04 >	2.36	MTT	+
4855	48	02/22/89	OPX	0.470 <	1.00	104.00 >	104.00	5.08	184.00	36.20	16.80	328.00	19.50	20.50 >	60.96	MTT	+
4855	48	11/28/89	SMD	0.444	8.55	159.00	18.62	14.10	218.00	15.47	29.50 >	320.00 >	10.85	11.28 >	41.05	MTT	+
4855	61	12/06/89	SQE	0.853	8.97 >	320.00 >	35.67	15.30 >	320.00 >	20.93	56.60 >	320.00 >	5.66 >	20.93 >	53.71	MTT	+
4855	48	12/05/90	1Q2	0.856	3.00 >	100.00 >	33.30	11.90 >	100.00 >	8.41	142.00 >	100.00 >	0.71 >	8.41 >	33.70	MTT	+
4861	48	02/22/89	OPZ	0.401 <	1.00 >	320.00 >	320.00	6.80 >	320.00 >	47.10	0.00 >	320.00	0.00 >	47.10 >	50.93	MTT	+
4861	48	11/30/89	SNP	0.858	120.00 >	320.00 >	2.68	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.17	MTT	+
4861	61	12/06/89	SQE	0.853	143.00	8.64	0.06	481.00 >	1000.00 >	2.08	0.00 >	1000.00	0.00	0.02 >	6.60	MTT	+
4863	48	02/22/89	OQO	0.405 <	1.00	140.00 >	140.00	1.09	256.00	235.00	27.80 >	320.00 >	11.50	129.00 >	50.97	MTT	+
4863	48	11/28/89	SME	0.442	32.00	245.00	7.65	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	10.19	MTT	+
4864	46	01/17/89	OC2	0.930	294.00	274.00	0.93	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.69	MTT	+
4864	65	05/15/90	W5M	0.725	140.00	90.90	0.65	267.00 >	320.00 >	1.20	0.00 >	320.00	0.0	0.34 >	2.93	MTT	+
4864	65	07/06/90	XCW	0.586	24.90	13.70	0.55	978.00	259.00	0.27	0.00 >	1000.00	0.00	0.01	0.00	MTT	+
4871	46	01/17/89	OC3	0.904	21.20	189.00	8.91	44.60 >	320.00 >	7.17	0.00 >	320.00	0.00	4.23	21.31	MTT	+
4871	61	12/06/89	SQF	0.800	21.90 >	1000.0 >	45.57	45.20 >	1000.00 >	22.14	239.00 >	1000.00 >	4.18 >	22.14 >	48.44	MTT	+
4875	46	01/19/89	OD6	1.354	56.60 >	320.00 >	5.66	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	13.61	MTT	+
4875	46	12/20/89	TOE	0.634	35.20	738.00	20.99	77.60 >	1000.00 >	12.88	0.00 >	1000.00	0.00	9.51 >	20.53	MTT	+
4891	46	01/19/89	ODE	1.267 <	1.00	1.76 >	1.76	0.00	3.93	0.00	0.00	9.39	0.00	0.00 >	0.87	MTT	+
4891	46	12/20/89	TOE	0.634	0.12	0.50	4.14	0.24	0.68	2.87	0.00	1.37	0.00	2.11	12.16	MTT	+
4897	46	01/31/89	OHT	0.848	10.40	91.40	8.77	17.30	170.00	9.81	0.00	312.00	0.00	5.27	27.87	MTT	+
4897	46	11/30/89	SNQ	0.820	49.40	130.00	2.64	97.30	194.00	1.99	0.00	307.00	0.00	1.34	5.06	MTT	+
4897	61	12/06/89	SQF	0.800	7.81	10.00	1.28	21.70	161.00	7.39	0.00	304.00	0.00	0.46 >	15.05	MTT	+
4919	46	02/01/89	OJH	1.003	0.00	102.00	0.00	0.00	185.00	0.00	0.00	335.00	0.00	0.00	2.46	MTT	-
4919	61	12/06/89	SQG	0.764	30.50	124.00	4.05	53.10	189.00	3.56	0.00	307.00	0.00	2.33 >	12.69	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4934	51	03/07/89	OWX	0.828	1.13	10.90	9.63	2.43	20.50	8.43	0.00	83.00	0.00	4.48 >	22.59	MTT	+
4934	51	11/28/89	SMH	0.577	0.00	13.10	0.00	0.00	20.00	0.00	0.00 >	32.00	0.00	0.00 >	1.92	MTT	-
4934	51	12/14/89	SY7	0.844	0.00	11.90	0.00	0.00	19.90	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
4939	51	03/07/89	OWZ	0.912	1.53	10.10	6.58	4.05	20.40	5.05	9.14	84.50	9.25	2.49 >	24.44	MTT	+
4939	51	11/28/89	SMI	0.602	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	1.42	MTT	-
4939	51	12/14/89	SY7	0.844	0.00	9.15	0.00	0.00	17.00	0.00	0.00	30.80	0.00	0.00	0.00	MTT	-
4942	51	03/07/89	OX1	0.594	10.00	132.00	13.20	68.40	252.00	3.68	0.00 >	320.00	0.00	1.93 >	23.05	MTT	+
4942	51	11/28/89	SMI	0.602	0.00	58.60	0.00	0.00	85.10	0.00	0.00	289.00	0.00	0.00 >	1.21	MTT	-
4943	51	03/07/89	OX1	0.594 <	1.00	11.60 >	11.60	1.79	22.20	12.40	0.00	247.00	0.00	6.49 >	24.01	MTT	+
4943	51	11/28/89	SMJ	0.656	0.00	12.00	0.00	0.00	28.70	0.00	0.00 >	32.00	0.00	0.00	3.27	MTT	-
4978	51	03/14/89	P1X	0.660	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4978	27	12/05/89	SSZ	0.782	30.40	524.00	17.22	144.00	864.00	6.02	0.00 >	1000.00	0.00	3.65 >	24.04	MTT	+
4985	51	03/14/89	P20	0.680	1.66	62.90	37.80	3.05	149.00	48.70	0.00	303.00	0.00	20.60	20.36	MTT	+
4985	51	11/28/89	SML	0.638	35.60	155.00	4.35	61.00	210.00	3.44	0.00	309.00	0.00	2.54 >	18.22	MTT	+
4992	51	03/14/89	P24	0.746	320.00	181.00	0.57	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	4.08	MTT	+
4992	61	12/06/89	SQG	0.764	134.00	457.00	3.42	200.00	638.00	3.19	0.00	964.00	0.00	2.28	11.34	MTT	+
4995	51	03/14/89	P25	0.838	1.76	6.72	3.81	6.03	18.60	3.09	0.00	265.00	0.00	1.12	15.77	MTT	+
4995	51	11/28/89	SMN	0.675	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.10	MTT	-
5035	48	02/28/89	OT1	0.702	2.03	9.00	4.43	6.66	21.50	3.23	0.00	90.30	0.00	1.35	14.70	MTT	+
5035	48	11/28/89	SMO	0.622	0.00	19.30	0.00	0.00	28.60	0.00	0.00 >	32.00	0.00	0.00	1.74	MTT	-
5040	45	03/01/89	OVA	1.066	36.30 >	320.00 >	8.81	61.60 >	320.00 >	5.20	0.00 >	320.00	0.00 >	5.20 >	19.13	MTT	+
5040	62	12/05/89	SSS	0.675	205.00	650.00	3.17	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	5.37	MTT	+
5040	45	12/20/89	TOF	0.627	11.50	304.00	26.34	20.90	660.00	31.62	83.70 >	1000.00 >	11.95	14.55	39.83	MTT	+
5040	GABSN	02/08/90	TVE	0.786	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	4.08	MTT	-
5048	48	02/28/89	OT4	0.524	5.27 >	320.00 >	60.70	8.69 >	320.00 >	36.80	0.00 >	320.00	0.00 >	36.80	27.34	MTT	+
5048	48	11/28/89	SMO	0.622	77.60	267.00	3.44	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	6.52	MTT	+
5053	48	02/28/89	OT6	0.452	2.35	42.60	18.10	4.31	75.20	17.40	10.00	285.00	28.50	9.88	39.13	MTT	+
5053	48	11/28/89	SMP	0.592	29.00 >	100.00 >	3.44	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	9.89	MTT	+
5053	48	01/18/90	TF4	0.831	0.00	58.40	0.00	0.00	93.10	0.00	0.00	296.00	0.00	0.00 >	4.93	MTT	-
5058	48	02/28/89	OT7	0.548	5.80 >	320.00 >	55.10	26.60 >	320.00 >	12.00	320.00 >	320.00 >	1.00 >	12.00 >	42.55	MTT	+
5058	48	11/28/89	SMP	0.592	72.60 >	320.00 >	4.41	133.00 >	320.00 >	2.41	293.00 >	320.00 >	1.09 >	2.41 >	19.28	MTT	+
5058	62	12/05/89	SST	0.663	179.00 >	1000.0 >	5.59	453.00 >	1000.00 >	2.21	0.00 >	1000.00	0.00 >	2.21 >	15.38	MTT	+
5058	48	12/20/89	TOF	0.627	46.80	1000.0	21.37	134.00 >	1000.00 >	7.48	0.00 >	1000.00	0.00	7.48 >	27.23	MTT	+
5058	62	02/08/90	TVF	0.826	266.00 >	1000.0 >	3.76	501.00 >	1000.00 >	2.00	0.00 >	1000.00	0.00 >	2.00 >	10.11	MTT	+
5060	48	02/28/89	OT8	0.559	6.84 >	320.00 >	46.80	262.00 >	320.00 >	1.22	0.00 >	320.00	0.00 >	1.22 >	22.52	MTT	+
5060	62	12/07/89	SU8	0.850	75.20	715.00	9.50	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	9.08	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5067	48	03/01/89	QUK	0.886	8.55 >	320.00 >	37.40	34.80 >	320.00 >	9.19	90.00 >	320.00 >	3.56 >	9.19 >	41.88	MTT	+
5067	48	11/28/89	SMQ	0.535	34.20 >	320.00 >	9.35	79.10 >	320.00 >	4.05	280.00 >	320.00 >	1.14 >	4.05 >	26.85	MTT	+
5067	48	12/14/89	SYF	0.723	89.70 >	1000.0 >	11.14	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	17.81	MTT	+
5067	48	12/20/89	TOG	0.643	13.50	640.00	47.40	35.70 >	1000.00 >	28.04	0.00 >	1000.00	0.00	17.94	25.92	MTT	+
5069	48	03/01/89	QUL	0.828	26.10	97.70	3.75	52.30	181.00	3.46	0.00 >	320.00	0.00	1.87	17.90	MTT	+
5069	48	11/28/89	SMQ	0.535	18.70	140.00	7.52	41.20	204.00	4.94	0.00	317.00	0.00	3.41 >	19.26	MTT	+
5069	48	11/30/89	SNT	0.935	95.70	180.00	1.89	0.00	315.00	0.00	0.00	943.00	0.00	0.00	1.70	MTT	+
5072	48	03/01/89	QUN	1.023	10.30	73.10	7.09	22.60	159.00	7.01	0.00	313.00	0.00	3.23 >	16.07	MTT	+
5072	48	11/30/89	SNJ	0.914	79.60	53.00	0.67	0.00	93.50	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+
5072	48	11/30/89	SNU	0.952	0.00	89.80	0.00	0.00	279.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
5075	48	03/01/89	QUN	1.023	23.90 >	320.00 >	13.40	48.10 >	320.00 >	6.65	0.00 >	320.00	0.0 >	6.65 >	25.83	MTT	+
5075	48	11/30/89	SNK	0.850	88.10 >	320.00 >	3.63	190.00 >	320.00 >	1.69	0.00 >	320.00	0.00 >	1.69 >	11.92	MTT	+
5075	48	11/30/89	SNV	0.952	147.00	791.00	5.37	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	10.41	MTT	+
5075	65	04/26/90	VMQ	0.551	0.00	561.00	0.00	0.00	835.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.40	MTT	-
5121	56	07/03/89	QIH	0.817	5.24	108.00	20.70	12.30	179.00	14.60	0.00	306.00	0.00	8.82 >	26.06	MTT	+
5121	56	08/08/89	R2R	0.576	9.22	155.00	16.81	27.10	210.00	7.75	0.00	309.00	0.00	5.72 >	18.62	MTT	+
5121	56	11/01/90	ZXY	1.087	124.00 >	320.00 >	2.58	170.00 >	320.00 >	1.88	300.00 >	320.00 >	1.07 >	1.88 >	10.68	MTT	+
5128	56	06/27/89	QJW	0.588	5.38	15.50	2.88	10.00	21.00	2.10	0.00	30.90	0.00	1.55 >	9.53	MTT	+
5128	56	08/15/89	R6A	0.565	0.00	14.80	0.00	0.00	20.50	0.00	0.00	30.90	0.00	0.00	0.00	MTT	-
5136	57	07/11/89	QQL	0.606	40.20	155.00	3.86	81.90	210.00	2.56	0.00	309.00	0.00	1.89	10.99	MTT	+
5136	57	08/15/89	R6G	0.619	0.00	7.09	0.00	0.00	145.00	0.00	0.00	303.00	0.00	0.00	0.00	MTT	-
5137	57	07/11/89	QQM	0.554	4.75	155.00	32.70	28.10	210.00	7.47	89.00	309.00	3.47	5.51 >	36.88	MTT	+
5137	57	08/16/89	R82	0.771	54.20	108.00	2.00	91.90	179.00	1.95	0.00	306.00	0.00	1.18	3.52	MTT	+
5138	57	07/11/89	QQM	0.554	10.00 >	320.00 >	32.00	30.60 >	320.00 >	10.50	89.00 >	320.00 >	3.59 >	10.50 >	44.37	MTT	+
5138	57	08/16/89	R82	0.771	57.90	530.00	9.15	105.00	740.00	7.07	286.00 >	1000.00 >	3.49	5.07	24.34	MTT	+
5138	65	04/26/90	VMR	0.592	55.90 >	1000.0 >	17.88	97.80 >	1000.00 >	10.23	284.00 >	1000.00 >	3.52 >	10.23 >	30.99	MTT	+
5186	58	07/25/89	QWJ	0.362	45.10	296.00	6.57	63.60 >	320.00 >	5.03	0.00 >	320.00	0.00	4.66	16.09	MTT	+
5186	58	10/04/89	RXC	0.588	19.70	394.00	20.03	38.20	763.00	19.98	0.00 >	1000.00	0.00	10.31	29.76	MTT	+
5186	65	04/26/90	VMT	0.526	0.00	151.00	0.00	0.00	279.00	0.00	0.00 >	1000.00	0.00	0.00	0.11	MTT	-
5189	58	07/26/89	QXM	0.751	0.00	1.55	0.00	0.00	2.10	0.00	0.00	3.09	0.00	0.00 >	0.11	MTT	-
5189	58	11/30/89	SNZ	0.894	0.47 >	3.20 >	6.73	0.85 >	3.20 >	3.77	0.00 >	3.20	0.00 >	3.77 >	10.46	MTT	+
5191	58	07/26/89	QXN	0.814	0.00	1.73	0.00	0.00	4.04	0.00	0.00	9.40	0.00	0.00 >	0.02	MTT	-
5191	58	11/30/89	SOO	0.920	0.53	4.42	8.37	0.93	6.33	6.78	0.00	9.77	0.00	4.74 >	12.54	MTT	+
5201	58	07/26/89	QXS	0.469	22.80 >	320.00 >	14.04	78.10 >	320.00 >	4.10	0.00 >	320.00	0.00 >	4.10 >	21.90	MTT	+
5201	58	11/30/89	SO6	1.009	0.00	390.00	0.00	0.00	683.00	0.00	0.00 >	1000.00	0.00	0.00 >	8.26	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5207	58	07/26/89	QXV	0.421	0.00	4.11	0.00	0.00	9.77	0.00	0.00	29.80	0.00	0.00	0.00	MTT	-
5207	58	11/30/89	SO2	0.917	4.22	14.40	3.42	9.12	20.30	2.23	0.00	30.80	0.00	1.58 >	13.75	MTT	+
5241	52	03/08/89	OZA	0.721	33.60 >	320.00 >	9.53	61.60 >	320.00 >	5.20	0.00 >	320.00	0.00 >	5.20 >	29.23	MTT	+
5241	52	12/14/89	SYD	0.866	47.90	370.00	7.72	121.00	580.00	4.78	0.00	958.00	0.00	3.05	19.06	MTT	+
5242	52	03/08/89	OZB	0.798	5.21 >	320.00 >	61.40	14.50 >	320.00 >	22.00	0.00 >	320.00	0.00 >	22.00 >	42.33	MTT	+
5242	52	12/20/89	TOG	0.643	8.39 >	1000.0 >	119.16	684.00 >	1000.00 >	1.46	0.00 >	1000.00	0.00 >	1.46 >	31.75	MTT	+
5283	52	03/21/89	P79	0.656	5.21	7.53	1.44	0.00	183.00	0.00	0.00 >	320.00	0.00	0.00	5.95	MTT	+
5283	52	01/09/90	T7X	0.639	3.06	25.70	8.40	8.22	210.00	25.56	0.00 >	320.00	0.00	3.13	18.23	MTT	+
5350	53	04/12/89	PHT	1.185	8.08	25.00	3.10	14.30	62.50	4.38	29.50	276.00	9.35	1.75	23.36	MTT	+
5350	53	01/18/90	TF5	0.778	11.10	25.20	2.27	0.00	70.60	0.00	0.00	288.00	0.00	0.00	3.56	MTT	+
5405	53	03/28/89	PD2	0.816 <	1.00 <	1.00 ~	1.00 <	1.00	1.73 >	1.73	0.00	6.11	0.00 ~	1.00 >	0.62	MTT	+
5405	66	05/08/90	VZX	0.653	0.00 <	1.00	0.00	0.00 <	1.00	0.00	0.00	3.20	0.00	0.00	0.00	MTT	-
5405	66	07/06/90	XAT	0.701	0.00	0.48	0.00	0.00	0.76	0.00	0.00	7.38	0.00	0.00 >	0.91	MTT	-
5450	53	04/12/89	PHS	1.091	1.96	16.00	8.12	4.47	27.40	6.14	0.00 >	320.00	0.00	3.57 >	19.39	MTT	+
5450	65	04/26/90	VMV	0.526	0.00	8.57	0.00	0.00	25.90	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
5450	65	07/06/90	XCX	0.596	4.90	12.80	2.61	7.49	19.70	2.64	0.00	43.30	0.00	1.71	5.60	MTT	+
5452	53	04/18/89	PKQ	0.693	1.30	5.89	4.52	5.47	18.30	3.34	0.00 >	320.00	0.00	1.08 >	10.97	MTT	+
5452	65	04/26/90	VMV	0.526	0.00	5.79	0.00	0.00	19.40	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5459	54	05/05/89	PZ7	0.561	5.53	11.10	2.01	9.57	24.90	2.60	0.00	92.40	0.00	1.16 >	4.09	MTT	+
5459	54	06/07/89	QA2	0.662	0.00	5.40	0.00	0.00	11.80	0.00	0.00	87.90	0.00	0.00	0.00	MTT	-
5482	53	03/28/89	PD4	0.732	27.10 >	320.00 >	11.80	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	10.51	MTT	+
5482	66	05/08/90	VZY	0.737	13.80	55.50	4.03	21.00	86.40	4.12	0.00 >	320.00	0.00	2.64 >	11.78	MTT	+
5482	66	07/06/90	XCY	0.534	0.00	7.14	0.00	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00	5.24	MTT	-
5483	53	03/28/89	PD4	0.732 <	1.00	2.24 >	2.24 <	1.00	5.34 >	5.34	0.00	100.00	0.00 >	2.24 >	3.54	MTT	+
5483	66	05/08/90	VZZ	0.646 <	0.32	3.02 >	9.45	0.54	18.60	34.67	0.00 >	100.00	0.00	5.64 >	15.99	MTT	+
5483	66	07/17/90	XLB	0.496 <	0.03	0.18 >	5.73 <	0.03	0.27 >	8.33	0.00	8.00	0.00 >	5.73 >	17.43	MTT	+
5484	53	12/12/89	SWA	0.751	23.30 >	1000.0 >	42.99	123.00 >	1000.00 >	8.12	0.00 >	1000.00	0.00 >	8.12 >	36.80	MTT	+
5484	53	12/14/89	SY8	0.844	43.80	492.00	11.22	110.00	663.00	6.04	313.00	973.00	3.11	4.48 >	29.33	MTT	+
5484	66	05/08/90	VZZ	0.646	42.10 >	320.00 >	7.61	113.00 >	320.00 >	2.83	288.00 >	320.00 >	1.11 >	2.83 >	24.96	MTT	+
5489	66	05/08/90	W01	0.676	161.00 >	320.00 >	1.99	263.00 >	320.00 >	1.22	0.00 >	320.00	0.00 >	1.22 >	5.04	MTT	+
5489	66	07/06/90	XCZ	0.591	247.00	360.00	1.46	0.00	693.00	0.00	0.00 >	1000.00	0.00	0.00 >	6.56	MTT	+
5495	53	04/18/89	PKR	0.550 <	1.00	3.71 >	3.71 <	1.00	6.42 >	6.42	2.71	189.00	69.80 >	3.71 >	22.03	MTT	+
5495	53	12/14/89	SYC	0.786	6.29 >	32.00 >	5.09	14.40 >	32.00 >	2.23	0.00 >	32.00	0.00 >	2.23 >	18.86	MTT	+
5495	66	05/08/90	W03	0.795	10.20	29.10	2.87	14.90	71.40	4.79	29.60 >	100.00 >	3.37	1.96	15.69	MTT	+
5495	66	07/17/90	XLC	0.530 <	0.32	49.00 >	153.13	7.20	66.00	9.17	0.00	96.60	0.0	6.81 >	18.32	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5497	53	04/18/89	PKS	0.672	< 1.00	> 320.00	> 320.00	34.10	> 320.00	> 9.38	89.80	> 320.00	> 3.56	> 9.38	> 39.16	MTT	+
5497	53	12/20/89	TOJ	0.523	17.10	499.00	29.15	29.40	736.00	25.05	281.00	> 1000.00	> 3.56	17.01	36.76	MTT	+
5497	65	05/01/90	VS7	0.684	90.90	214.00	2.35	0.00	454.00	0.00	0.00	955.00	0.00	0.00	2.25	MTT	+
5497	66	05/08/90	W04	0.634	102.00	> 320.00	> 3.13	179.00	> 320.00	> 1.79	0.00	> 320.00	0.00	> 1.79	> 13.47	MTT	+
5498	53	04/18/89	PKT	0.628	17.30	> 320.00	> 18.50	30.00	> 320.00	> 10.70	0.00	> 320.00	0.00	> 10.70	> 31.59	MTT	+
5498	53	12/14/89	SYA	0.902	51.70	660.00	12.77	0.00	1000.00	0.00	0.00	> 1000.00	0.00	0.00	13.80	MTT	+
5498	66	05/08/90	W05	0.464	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	3.19	MTT	-
5500	53	04/18/89	PKU	0.818	1.29	4.47	3.47	1.90	6.44	3.38	0.00	10.00	0.00	2.34	> 11.57	MTT	+
5500	66	05/08/90	W05	0.464	< 1.00	1.31	> 1.31	0.00	2.30	0.00	0.00	> 320.00	0.00	0.00	> 0.26		+
5500	66	07/06/90	XAU	0.651	0.00	3.96	0.00	0.00	> 10.00	0.00	0.00	> 10.00	0.00	0.00	0.00	MTT	-
5501	53	04/18/89	PKU	0.818	1.21	48.00	39.80	3.08	65.30	21.20	0.00	96.50	0.00	15.60	> 16.20	MTT	+
5501	66	05/08/90	W06	0.584	0.00	42.30	0.00	0.00	62.00	0.00	0.00	97.60	0.00	0.00	> 2.01	MTT	-
5501	66	07/06/90	XD1	0.561	0.00	17.00	0.00	0.00	41.40	0.00	0.00	94.10	0.00	0.00	0.00	MTT	-
5503	53	04/18/89	PKV	0.553	17.30	84.40	4.88	30.00	162.00	5.39	0.00	300.00	0.00	2.82	8.43	MTT	+
5503	53	02/13/90	U0I	0.582	23.70	155.00	6.54	100.00	210.00	2.10	0.00	309.00	0.00	1.55	13.80	MTT	+
5503	66	05/08/90	W06	0.584	0.00	88.70	0.00	0.00	164.00	0.00	0.00	307.00	0.00	0.00	> 2.45	MTT	-
5511	53	04/18/89	PKZ	0.545	1.34	> 320.00	> 239.00	1.79	> 320.00	> 179.00	3.02	> 320.00	> 106.00	> 179.00	36.92	MTT	+
5511	53	01/18/90	TF5	0.778	0.00	510.00	0.00	0.00	788.00	0.00	0.00	> 1000.00	0.00	0.00	> 0.84	MTT	-
5511	66	05/10/90	W2D	0.756	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 0.01	MTT	-
5515	53	04/18/89	PL1	0.761	< 1.00	33.00	> 33.00	9.22	55.90	6.07	28.40	97.20	3.42	3.58	> 37.37	MTT	+
5515	53	01/18/90	TF6	0.778	5.66	23.80	4.20	14.20	44.10	3.11	0.00	98.80	0.00	1.68	12.87	MTT	+
5515	66	05/10/90	W2D	0.756	0.00	29.00	0.00	0.00	64.50	0.00	0.00	> 320.00	0.00	0.00	0.04	MTT	-
5515	53	11/01/90	ZXZ	1.123	24.40	57.50	2.36	0.00	84.10	0.00	0.00	289.00	0.00	0.00	4.82	MTT	+
5520	56	06/14/89	QCD	0.914	132.00	> 320.00	> 2.42	236.00	> 320.00	> 1.35	0.00	> 320.00	0.00	> 1.35	> 9.91	MTT	+
5520	56	08/08/89	R2U	0.624	0.00	9.32	0.00	0.00	65.40	0.00	0.00	272.00	0.00	0.00	0.00	MTT	-
5525	56	06/14/89	QCG	0.854	147.00	> 320.00	> 2.17	270.00	> 320.00	> 1.18	0.00	> 320.00	0.00	> 1.18	> 6.38	MTT	+
5525	56	08/08/89	R2V	0.606	0.00	188.00	0.00	0.00	310.00	0.00	0.00	942.00	0.00	0.00	0.00	MTT	-
5538	56	06/14/89	QEB	0.725	207.00	> 320.00	> 1.55	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 10.01	MTT	+
5538	56	08/09/89	R4H	0.658	146.00	492.00	3.36	256.00	663.00	2.59	0.00	973.00	0.00	1.92	9.41	MTT	+
5539	56	06/14/89	QEC	0.821	0.00	0.71	0.00	0.00	7.50	0.00	0.00	100.00	0.00	0.00	0.04	MTT	-
5539	56	08/09/89	R4H	0.658	1.49	4.92	3.30	2.30	7.32	3.18	0.00	90.30	0.00	2.14	8.62	MTT	+
5539	56	11/01/90	ZXZ	1.123	0.71	1.81	2.53	2.30	3.01	1.31	0.00	> 32.00	0.00	0.79	5.18	MTT	+
5546	56	06/14/89	QEF	0.898	1.39	> 320.00	> 230.00	2.11	> 320.00	> 151.00	7.96	> 320.00	> 40.20	> 151.00	60.74	MTT	+
5546	56	08/09/89	R4J	0.759	0.00	518.00	0.00	0.00	715.00	0.00	0.00	> 1000.00	0.00	0.00	1.06	MTT	-
*5580	54	05/03/89	PYE	0.392	< 1.00	> 100000	> 100000	< 1.00	> 100000	> 100000	7.26	> 100000	> 13800	> 100000	> 96.40	MTT	+
5580	54	05/03/89	PYE	0.392	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	> 100.00	0.00	0.00	0.48	MTT	-

*Concentration for this compound was expressed in International Units (IU).

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5601	62	12/05/89	SSU	0.835	145.00	547.00	3.78	294.00 >	1000.00 >	3.40	0.00 >	1000.00	0.00	1.86	6.43	MTT	+
5601	GABSN	02/08/90	TVG	0.744	78.30	2900.0	36.98	196.00 >	3200.00 >	16.32	846.00 >	3200.00 >	3.78	14.77 >	40.14	MTT	+
5601	67	05/31/90	WHO	0.613	217.00	715.00	3.29	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	6.03	MTT	+
5601	62/67	11/01/90	ZYO	0.907	114.00	1680.0	14.71	166.00	2630.00	15.85	0.00 >	3200.00	0.00	10.14	35.07	MTT	+
5643	57	07/06/89	QNC	0.799	69.10 >	320.00 >	4.63	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	9.80	MTT	+
5643	57	08/16/89	R8B	0.753	19.70	190.00	9.67	52.70	280.00	5.32	0.00 >	320.00	0.00	3.61	16.92	MTT	+
5643	65	05/01/90	VS9	0.623	0.00	8.30	0.00	0.00	167.00	0.00	0.00	920.00	0.00	0.00	0.00	MTT	-
5691	57	07/19/89	QTQ	0.548	42.50 >	320.00 >	7.52	56.60 >	320.00 >	5.66	94.50 >	320.00 >	3.39 >	5.66 >	28.90	MTT	+
5691	57	08/16/89	R8A	0.753	118.00	188.00	1.59	0.00	471.00	0.00	0.00 >	1000.00	0.00	0.00	0.88	MTT	+
5765	59	11/29/89	SMT	0.976	0.00	192.00	0.00	0.00	292.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5765	59	01/23/90	TGN	0.765	117.00 >	320.00 >	2.73	257.00 >	320.00 >	1.25	0.00 >	320.00	0.00 >	1.25 >	8.86	MTT	+
5780	59	11/29/89	SMW	0.785	6.49	157.00	24.23	39.90	215.00	5.38	91.20	318.00	3.48	3.94	30.39	MTT	+
5780	59	01/23/90	TGP	0.824	5.00	157.00	31.44	8.75	215.00	24.54	71.50	318.00	4.44	17.99	43.57	MTT	+
5818	59	11/29/89	SN9	0.714	49.00	52.00	1.06	74.90	110.00	1.48	0.00 >	320.00	0.00	0.69 >	4.76	MTT	+
5818	59	01/30/90	TLJ	0.666	91.90	150.00	1.63	0.00	238.00	0.00	0.00 >	320.00	0.00	0.00	1.87	MTT	+
5823	59	11/29/89	SNB	0.785	47.20	90.60	1.92	94.60	186.00	1.96	0.00 >	320.00	0.00	0.96	5.35	MTT	+
5823	59	01/30/90	TLJ	0.666	0.00	97.40	0.00	0.00	196.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5842	60	11/30/89	SOC	0.776	55.90	175.00	3.13	97.80	251.00	2.56	0.00 >	320.00	0.00	1.79 >	7.19	MTT	+
5842	60	01/23/90	TGP	0.824	0.00	170.00	0.00	0.00	244.00	0.00	0.00	882.00	0.00	0.00	0.59	MTT	-
5855	60	11/03/89	SE2	0.798	42.80 >	320.00 >	7.47	83.10 >	320.00 >	3.85	0.00 >	320.00	0.00 >	3.85 >	18.47	MTT	+
5855	60	01/23/90	TGR	0.688	42.80	566.00	13.24	74.80	813.00	10.87	0.00 >	1000.00	0.00	7.57	26.73	MTT	+
5869	60	11/03/89	SE9	0.722	55.60 >	320.00 >	5.76	133.00 >	320.00 >	2.41	0.00 >	320.00	0.00 >	2.41 >	18.81	MTT	+
5869	60	01/23/90	TGS	0.696	39.90	470.00	11.77	61.10	758.00	12.41	0.00 >	1000.00	0.0	7.69	28.34	MTT	+
5905	61	11/29/89	SAS	0.624	2.94	12.80	4.36	5.66	19.20	3.40	0.00	30.70	0.00	2.27	13.22	MTT	+
5905	61	01/30/90	TLL	0.725	1.97	2.41	1.22	0.00	4.43	0.00	0.00	9.44	0.00	0.00	2.99	MTT	+
5910	61	11/29/89	SAU	0.681	4.51	239.00	53.06	6.36 >	320.00 >	50.34	0.00 >	320.00	0.00	37.65	28.65	MTT	+
5910	61	01/30/90	TLN	0.646	4.71	240.00	50.93	8.07 >	320.00 >	39.68	0.00 >	320.00	0.00	29.76 >	7.58	MTT	+
5917	60	11/30/89	SOK	0.815	0.00	3.20	0.00	0.00	5.47	0.00	0.00	9.55	0.00	0.00 >	0.03	MTT	-
5917	60	01/23/90	TGU	0.734	1.42	5.37	3.77	2.68	7.83	2.92	0.00 >	10.00	0.00	2.00	9.97	MTT	+
5924	60	11/30/89	SON	0.706	0.00	3.86	0.00	0.00	5.94	0.00	0.00	9.67	0.00	0.00	0.00	MTT	-
5924	60	01/23/90	TGX	0.670	0.40 >	10.00 >	25.32	0.61 >	10.00 >	16.34	0.00 >	10.00	0.00 >	16.34 >	36.45	MTT	+
5940	60	11/30/89	SOX	0.715	4.22	49.00	11.62	10.00	66.00	6.60	28.50	96.60	3.39	4.90	27.95	MTT	+
5940	60	01/25/90	TJC	0.678	9.19	15.80	1.72	0.00	21.60	0.00	0.00	32.00	0.00	0.00	3.28	MTT	+

Table 18 (Cont'd)

AVS No.	Ship-ment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5983	61	12/01/89	SDT	0.473	6.01	6.60	1.10	0.00	13.40	0.00	0.00	30.50	0.00	0.00	0.02	MTT	+
5983	61	02/01/90	TNW	0.563	5.48	8.21	1.50	9.38	16.30	1.74	0.00	30.40	0.00	0.88	1.97	MTT	+
5997	61	11/07/89	SFI	0.636	0.00	7.12	0.00	0.00	20.50	0.00	0.00 >	320.00	0.00	0.00	0.07	MTT	-
5997	61	11/01/90	ZY1	0.861	1.31	7.79	5.93	1.77	25.10	14.17	3.02 >	100.00 >	33.16	4.41 >	23.56	MTT	+
5998	61	11/07/89	SFI	0.636	0.00	2.38	0.00	0.00	7.23	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5998	61	02/01/90	TNO	0.523	1.33	17.30	13.07	1.78 >	32.00 >	17.99	3.02 >	32.00 >	10.61	9.75	29.64	MTT	+
5998	61	02/08/90	TV7	0.823	1.36	13.30	9.81	1.87	30.00	16.04	0.00 >	32.00	0.00	7.13 >	29.21	MTT	+
6011	61	11/07/89	SFM	0.675	0.00	158.00	0.00	0.00	303.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6011	61	02/01/90	TNO	0.523	108.00	394.00	3.65	275.00	623.00	2.26	0.00 >	1000.00	0.00	1.43	10.47	MTT	+
6029	61	11/09/89	SHK	0.731	67.50	73.40	1.09	0.00	153.00	0.00	0.00	303.00	0.00	0.00 >	3.00	MTT	+
6029	61	02/01/90	TNP	0.532	41.40	155.00	3.74	60.60	210.00	3.47	0.00	309.00	0.00	2.56	13.65	MTT	+
6041	61	11/09/89	SHQ	0.668	129.00 >	320.00 >	2.49	282.00 >	320.00 >	1.13	0.00 >	320.00	0.00 >	1.13 >	11.64	MTT	+
6041	61	02/01/90	TNQ	0.572	100.00	635.00	6.35	0.00	950.00	0.00	0.00 >	1000.00	0.00	0.00	15.26	MTT	+
6195	62	01/11/90	TAB	0.851	4.38 >	320.00 >	73.07	16.10 >	320.00 >	19.85	168.00 >	320.00 >	1.90 >	19.85 >	51.70	MTT	+
6195	62	10/30/90	ZVR	1.007	112.00	490.00	4.38	159.00	660.00	4.16	298.00	966.00	3.24	3.09 >	22.19	MTT	+
6195	62	12/05/90	1Q3	0.870	121.00	490.00	4.04	168.00	660.00	3.94	300.00	966.00	3.22	2.92	15.81	MTT	+
6196	62	01/11/90	TAB	0.851	109.00	10.00	0.09	156.00 >	320.00 >	2.05	298.00 >	320.00 >	1.07	0.06 >	17.11	MTT	+
6196	62	10/30/90	ZVR	1.007	177.00	2.50	0.01	313.00	346.00	1.11	0.00	935.00	0.00	0.01	0.31	MTT	+
6200	62	01/11/90	TAD	0.801	7.52 >	320.00 >	42.55	179.00 >	320.00 >	1.79	302.00 >	320.00 >	1.06 >	1.79 >	22.36	MTT	+
6200	62	12/05/90	1Q3	0.870	170.00 >	320.00 >	1.89	288.00 >	320.00 >	1.11	0.00 >	320.00	0.00 >	1.11 >	7.49	MTT	+
6201	62	01/11/90	TAE	0.763	12.50 >	320.00 >	25.64	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	19.21	MTT	+
6201	62	12/05/90	1Q4	0.912	122.00 >	320.00 >	2.62	192.00 >	320.00 >	1.66	0.00 >	320.00	0.00 >	1.66 >	10.57	MTT	+
6202	62	01/11/90	TAE	0.763	12.90 >	320.00 >	24.85	36.80 >	320.00 >	8.69	90.50 >	320.00 >	3.54 >	8.69 >	45.62	MTT	+
6202	62	10/30/90	ZVS	0.903	134.00	440.00	3.29	179.00	626.00	3.50	302.00	963.00	3.19	2.46	13.51	MTT	+
6204	62	01/11/90	TAF	0.755	5.09	49.50	9.73	11.90	67.10	5.62	29.00	98.60	3.40	4.15 >	27.69	MTT	+
6204	62	10/30/90	ZVT	0.796	12.30	46.60	3.80	16.90	64.90	3.84	30.00	97.80	3.26	2.76 >	16.45	MTT	+
6207	62	01/11/90	TAH	0.841	36.20 >	320.00 >	8.84	78.20 >	320.00 >	4.09	279.00 >	320.00 >	1.15 >	4.09 >	26.05	MTT	+
6207	62	10/30/90	ZVU	1.019	134.00	400.00	2.99	181.00	600.00	3.31	312.00	960.00	3.07	2.21	12.07	MTT	+
6218	62	01/16/90	TC6	0.777	12.80	304.00	23.77	17.30 >	320.00 >	18.44	30.10 >	320.00 >	10.63	17.51 >	44.15	MTT	+
6218	62	12/05/90	1Q5	0.875	10.70	216.00	20.09	16.80 >	320.00 >	19.04	70.40 >	320.00 >	4.54	12.84 >	40.66	MTT	+
6219	62	01/16/90	TC7	0.931	4.21 >	320.00 >	75.94	14.90 >	320.00 >	21.52	144.00 >	320.00 >	2.22 >	21.52 >	53.82	MTT	+
6219	62	11/01/90	ZY2	0.953	82.00 >	320.00 >	3.90	141.00 >	320.00 >	2.27	295.00 >	320.00 >	1.09 >	2.27 >	17.57	MTT	+
6220	62	01/16/90	TC7	0.931	58.70 >	320.00 >	5.45	107.00 >	320.00 >	3.00	287.00 >	320.00 >	1.12 >	3.00 >	21.76	MTT	+
6220	62	12/05/90	1Q6	0.834	85.50	629.00	7.36	141.00	938.00	6.65	295.00 >	1000.00 >	3.39	4.46 >	25.64	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6225	62	01/16/90	TCA	0.973	120.00 >	320.00 >	2.66	166.00 >	320.00 >	1.92	300.00 >	320.00 >	1.07 >	1.92 >	16.91	MTT	+
6225	62	11/01/90	ZY2	0.953	134.00	490.00	3.66	179.00	660.00	3.69	302.00	966.00	3.20	2.74 >	15.38	MTT	+
6234	62	12/05/89	SSV	0.836	621.00 >	1000.0 >	1.61	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.45	MTT	+
6234	GABSN	02/08/90	TVH	0.814	505.00 >	3200.0 >	6.34	1600.00 >	3200.00 >	2.00	0.00 >	3200.00	0.00 >	2.00 >	11.69	MTT	+
6234	67	05/31/90	WHP	0.656	576.00	1440.0	2.50	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	4.19	MTT	+
6234	67	11/01/90	ZY3	0.900	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	0.60	MTT	-
6236	62	12/05/89	SSW	0.733	885.00 >	1000.0 >	1.13	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.76	MTT	+
6236	GABSN	02/08/90	TVI	0.756	1210.0 >	3200.0 >	2.65	3080.00 >	3200.00 >	1.04	0.00 >	3200.00	0.00 >	1.04 >	12.02	MTT	+
6236	67	05/31/90	WHQ	0.667	1570.0 >	3200.0 >	2.04	2690.00 >	3200.00 >	1.19	0.00 >	3200.00	0.00 >	1.19 >	3.45	MTT	+
6243	1P	11/14/89	SJ8	0.803	519.00	955.00	1.84	840.00 >	1000.00 >	1.19	0.00 >	1000.00	0.00	1.14 >	2.85	MTT	+
6243	1P	02/06/90	TRP	0.731	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	3.80	MTT	-
6249	1P	11/14/89	SJB	0.925	34.90	185.00	5.29	72.50	269.00	3.71	0.00 >	320.00	0.00	2.55	14.05	MTT	+
6249	1P	02/06/90	TRR	0.641	192.00	283.00	1.47	0.00	514.00	0.00	0.00	951.00	0.00	0.00 >	3.51	MTT	+
6308	63	02/15/90	U24	0.464	5.07	13.30	2.61	9.30	19.50	2.10	0.00	30.80	0.00	1.42	4.81	MTT	+
6308	63	03/15/90	UNB	0.310	75.20	36.40	0.48	0.00	73.40	0.00	0.00 >	100.00	0.0	0.00	1.83	MTT	+
6334	63	02/20/90	U3Z	0.956	45.80	32.00	0.70	77.60	182.00	2.34	0.00	309.00	0.00	0.41	4.07	MTT	+
6334	63	03/20/90	UPC	0.903	0.00	16.70	0.00	0.00	49.50	0.00	0.00	282.00	0.00	0.00 >	0.10	MTT	-
6335	63	02/20/90	U3Z	0.956	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.31	MTT	-
6335	63	03/15/90	UNE	0.264	776.00 >	3200.0 >	4.12	1440.00 >	3200.00 >	2.22	2950.0 >	3200.00 >	1.08 >	2.22 >	16.87	MTT	+
6337	63	02/20/90	U40	0.970	15.30	35.80	2.34	25.90	59.40	2.29	0.00	163.00	0.00	1.38	4.55	MTT	+
6337	63	03/20/90	UPD	0.945	13.90	49.70	3.57	19.70	67.40	3.42	0.00	99.30	0.00	2.52	11.38	MTT	+
6362	63	02/22/90	U5V	0.548	27.40 >	320.00 >	11.67	395.00 >	320.00 >	0.81	0.00 >	320.00	0.00 >	0.81 >	16.63	MTT	+
6362	63	03/20/90	UPE	0.797	188.00	608.00	3.23	0.00	896.00	0.00	0.00 >	1000.00	0.00	0.00 >	6.92	MTT	+
6374	63	02/27/90	U7R	0.740	86.70	198.00	2.28	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	3.30	MTT	+
6374	63	03/20/90	UPH	0.706	161.00 >	320.00 >	1.99	259.00 >	320.00 >	1.23	0.00 >	320.00	0.00 >	1.23 >	6.15	MTT	+
6379	63	02/27/90	U7T	0.724	118.00 >	320.00 >	2.70	217.00 >	320.00 >	1.47	0.00 >	320.00	0.00 >	1.47 >	11.96	MTT	+
6379	63	03/20/90	UPI	0.779	0.00	490.00	0.00	0.00	660.00	0.00	0.00	966.00	0.00	0.00	1.49	MTT	-
6391	63	03/01/90	U94	0.592	88.50 >	320.00 >	3.62	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.69	MTT	+
6391	63	03/22/90	URG	1.082	51.30	507.00	9.87	102.00	694.00	6.78	286.00 >	1000.00 >	3.50	4.95	27.54	MTT	+
6412	66	05/10/90	W2K	0.592	28.50	49.00	1.72	0.00	66.00	0.00	0.00	96.60	0.00	0.00 >	9.98	MTT	+
6412	66	07/06/90	XD1	0.561	3.28	52.90	16.14	6.01	74.70	12.43	0.00	268.00	0.00	8.81 >	26.81	MTT	+
6417	66	05/10/90	W2N	0.690	0.00	239.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	3.56	MTT	-
6417	66	07/06/90	XD2	0.650	5.18	58.00	11.20	9.75	882.00	90.49	0.00 >	1000.00	0.00	5.95 >	16.72	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6422	66	06/06/90	WOW	0.701	46.20	170.00	3.68	0.00	247.00	0.00	0.00 >	320.00	0.00	0.00 >	9.55	MTT	+
6422	66	07/06/90	XD4	0.569	18.40	171.00	9.27	49.10	241.00	4.91	0.00	845.00	0.00	3.48	21.64	MTT	+
6436	66	06/06/90	WP3	0.688	0.00	18.50	0.00	0.00	26.90	0.00	0.00	90.30	0.00	0.00 >	3.80	MTT	-
6436	66	07/06/90	XD5	0.559	12.90	45.70	3.55	24.20	63.80	2.63	0.00	96.40	0.00	1.89	12.11	MTT	+
6440	63	03/01/90	U99	0.527	< 1.00	1.88 >	1.88	< 1.00	9.51 >	9.51	0.00	88.20	0.00 >	1.88 >	7.67	MTT	+
6440	63	03/22/90	URH	1.066	0.38	1.00	2.62	0.00	4.80	0.00	0.00 >	10.00	0.00	0.00	5.27	MTT	+
6442	63	03/01/90	U9A	0.583	22.20	170.00	7.65	100.00	239.00	2.39	0.00 >	320.00	0.00	1.70	15.38	MTT	+
6442	63	03/22/90	URH	1.066	0.00	168.00	0.00	0.00	299.00	0.00	0.00 >	1000.00	0.00	0.00	0.13	MTT	-
6443	63	03/01/90	U9A	0.583	34.20	210.00	6.15	77.10 >	320.00 >	4.15	0.00 >	320.00	0.00	2.72 >	10.57	MTT	+
6443	63	03/22/90	URI	1.117	239.00	335.00	1.40	0.00	713.00	0.00	0.00 >	1000.00	0.00	0.00	0.21	MTT	+
6444	63	03/01/90	U9B	0.504	41.50 >	320.00 >	7.72	79.20 >	320.00 >	4.04	278.00 >	320.00 >	1.15 >	4.04 >	24.65	MTT	+
6444	63	03/22/90	URI	1.117	115.00	257.00	2.24	0.00	601.00	0.00	0.00 >	1000.00	0.00	0.00	3.44	MTT	+
6445	63	03/01/90	U9B	0.504	5.74	49.00	8.53	22.60	66.00	2.92	0.00	96.60	0.00	2.17 >	17.14	MTT	+
6445	63	03/22/90	URJ	1.044	0.00	8.87	0.00	0.00	50.00	0.00	0.00	95.00	0.00	0.00	0.33	MTT	-
6449	63	03/01/90	U9D	0.587	132.00 >	320.00 >	2.43	264.00 >	320.00 >	1.21	0.00 >	320.00	0.00 >	1.21 >	9.14	MTT	+
6449	63	03/22/90	URJ	1.044	0.00	363.00	0.00	0.00	633.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
6473	66	06/06/90	WP7	0.728	3.87	68.20	17.62	0.00	112.00	0.00	0.00	299.00	0.00	0.00 >	21.09	MTT	+
6473	66	07/10/90	XF8	0.523	4.07	97.40	23.94	8.61	171.00	19.91	0.00	305.00	0.00	11.31 >	22.68	MTT	+
6477	66	06/06/90	WP9	0.732	< 1.00	40.70 >	40.72	8.92	62.50	7.01	0.00	163.00	0.00	4.56 >	22.06	MTT	+
6477	66	07/10/90	XF9	0.588	1.93	42.70	22.15	20.70	65.10	3.15	0.00	220.00	0.00	2.07 >	21.27	MTT	+
6482	66	05/17/90	W7T	0.731	0.00	36.30	0.00	0.00	57.50	0.00	0.00	95.80	0.00	0.00	1.22	MTT	-
6482	66	07/10/90	XF9	0.588	11.40	49.20	4.30	22.50	66.30	2.95	0.00	97.30	0.00	2.18	15.38	MTT	+
6497	66	05/17/90	W81	0.549	2.35	22.80	9.71	4.83	40.40	8.35	0.00	94.00	0.00	4.72 >	20.04	MTT	+
6497	66	07/10/90	XF1	0.711	0.00	1.00	0.00	0.00	19.50	0.00	0.00	30.80	0.00	0.00	0.00	MTT	-
6501	66	05/17/90	W83	0.567	2.43	49.00	20.13	16.20	66.00	4.08	0.00	96.60	0.00	3.03 >	24.26	MTT	+
6501	66	07/10/90	XF3	0.571	5.33	49.00	9.20	21.70	66.00	3.04	0.00	96.60	0.00	2.26	18.05	MTT	+
6521	66	05/23/90	W92	0.733	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.97	MTT	-
6521	66	07/10/90	XF4	0.595	143.00 >	320.00 >	2.24	250.00 >	320.00 >	1.28	0.00 >	320.00	0.00 >	1.28 >	7.95	MTT	+
6560	66	05/24/90	WC8	0.790	201.00	0.96	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	4.82	MTT	+
6560	66	07/10/90	XF6	0.577	491.00	698.00	1.42	888.00 >	1000.00 >	1.13	0.00 >	1000.00	0.00	0.79 >	2.02	MTT	+
6580	64	03/15/90	UN4	0.333	12.70	168.00	13.18	36.30	236.00	6.49	93.90 >	320.00 >	3.41	4.62 >	25.97	MTT	+
6580	64	05/03/90	VWV	0.776	0.00	165.00	0.00	0.00	235.00	0.00	0.00 >	320.00	0.00	0.00	0.63	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6583	64	03/15/90	UN6	0.289	66.60	> 320.00	> 4.81	320.00	> 320.00	> 1.00	0.00	> 320.00	0.00	> 1.00	> 10.54	MTT	+
6583	64	05/03/90	VWW	0.756	0.00	> 1000.0	0.00	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	> 0.57	MTT	-
6584	64	04/18/90	VBR	0.792	344.00	> 1000.0	> 2.91	631.00	> 1000.00	> 1.59	0.00	> 1000.00	0.00	> 1.59	> 9.27	MTT	+
6584	64	06/26/90	X54	0.401	0.00	2630.0	0.00	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	0.00	MTT	-
6601	64	04/18/90	VC0	0.823	132.00	527.00	3.99	204.00	897.00	4.40	0.00	> 1000.00	0.00	2.59	> 12.31	MTT	+
6601	64	06/26/90	X57	0.472	0.00	1630.0	0.00	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	0.00	MTT	-
6603	64	04/18/90	VC1	0.902	40.20	> 1000.0	> 24.88	90.70	> 1000.00	> 11.03	0.00	> 1000.00	0.00	> 11.03	> 29.32	MTT	+
6603	64	06/26/90	X58	0.526	0.00	728.00	0.00	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	0.00	MTT	-
6607	64	04/18/90	VC3	0.576	4.88	11.70	2.39	9.06	18.50	2.05	0.00	30.90	0.0	1.29	> 6.28	MTT	+
6607	64	06/26/90	X5A	0.573	0.00	25.90	0.00	0.00	76.50	0.00	0.00	> 100.00	0.00	[illegible]	> 1.04	MTT	-
6714	67	06/05/90	WKH	0.630	45.40	> 320.00	> 7.04	94.30	> 320.00	> 3.39	0.00	> 320.00	0.00	> 3.39	> 21.14	MTT	+
6714	67	07/12/90	XH1	0.660	19.20	378.00	19.74	42.30	585.00	13.85	0.00	959.00	0.00	8.95	27.79	MTT	+
6722	67	06/05/90	WKL	0.714	139.00	> 320.00	> 2.30	203.00	> 320.00	> 1.57	0.00	> 320.00	0.00	> 1.57	> 7.77	MTT	+
6722	67	07/12/90	XH2	0.684	305.00	371.00	1.22	0.00	692.00	0.00	0.00	> 1000.00	0.00	0.00	0.13	MTT	+
6730	67	06/05/90	WKP	0.636	118.00	68.30	0.58	173.00	> 320.00	> 1.84	0.00	> 320.00	0.00	0.39	> 7.56	MTT	+
6730	67	07/12/90	XH3	0.658	0.00	210.00	0.00	0.00	608.00	0.00	0.00	> 1000.00	0.00	0.00	0.00	MTT	-
6745	64	03/08/90	UF0	0.669	4.68	155.00	33.13	51.30	210.00	4.10	0.00	309.00	0.00	3.02	> 28.40	MTT	+
6745	64	05/03/90	VX1	0.742	0.00	174.00	0.00	0.00	252.00	0.00	0.00	879.00	0.00	0.00	0.31	MTT	-
6748	64	03/15/90	UN8	0.339	42.50	100.00	2.35	115.00	> 320.00	> 2.77	289.00	> 320.00	> 1.11	0.87	> 13.42	MTT	+
6748	64	05/03/90	VX2	0.738	108.00	578.00	5.35	203.00	835.00	4.11	0.00	> 1000.00	0.00	2.85	14.42	MTT	+
6753	67	06/05/90	WKR	0.654	81.60	253.00	3.10	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	5.43	MTT	+
6753	67	07/12/90	XH3	0.658	160.00	868.00	5.43	255.00	> 1000.00	> 3.91	0.00	> 1000.00	0.00	3.40	11.59	MTT	+
6792	67	06/12/90	WR1	0.716	1.38	3.48	2.52	3.10	5.77	1.86	0.00	9.91	0.00	1.12	3.31	MTT	+
6792	67	07/12/90	XH9	0.690	2.30	3.96	1.72	0.00	7.10	0.00	0.00	27.90	0.00	0.00	1.07	MTT	+
6828	68	06/12/90	WR7	0.646	112.00	210.00	1.87	296.00	> 320.00	> 1.08	0.00	> 320.00	0.00	0.71	> 3.78	MTT	+
6828	68	08/02/90	XXK	0.641	60.00	544.00	9.06	129.00	767.00	5.95	0.00	> 1000.00	0.00	4.22	20.67	MTT	+
6828	68	09/11/90	YRB	1.207	182.00	> 320.00	> 1.76	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 3.83	MTT	+
6837	68	06/12/90	WRB	0.658	12.60	76.60	6.09	19.50	234.00	11.97	0.00	> 320.00	0.00	3.92	16.56	MTT	+
6837	68	08/02/90	XXK	0.641	14.10	135.00	9.57	27.30	198.00	7.23	0.00	310.00	0.00	4.94	17.74	MTT	+
6861	68	06/15/90	WSY	0.733	100.00	283.00	2.83	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	6.87	MTT	+
6861	68	08/02/90	XXM	0.640	152.00	502.00	3.31	320.00	710.00	2.22	0.00	> 1000.00	0.00	1.57	5.88	MTT	+
6861	68	09/11/90	YRE	1.195	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 0.90	MTT	-
6873	69	07/17/90	XKZ	0.718	39.40	> 320.00	> 8.13	93.30	> 320.00	> 3.43	0.00	> 320.00	0.00	> 3.43	> 14.37	MTT	+
6873	69	09/05/90	YKE	0.765	22.10	150.00	6.79	81.30	213.00	2.61	0.00	514.00	0.00	1.85	> 15.68	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6903	69	07/19/90	XNG	0.766	82.70	> 320.00	> 3.87	222.00	> 320.00	> 1.44	0.00	> 320.00	0.00	> 1.44	> 14.78	MTT	+
6903	69	09/05/90	YKK	0.767	0.00	202.00	0.00	0.00	346.00	0.00	0.00	935.00	0.00	0.00	> 1.63	MTT	-
6904	69	07/19/90	XNH	0.718	12.10	49.00	4.04	24.30	66.00	2.72	0.00	96.60	0.00	2.02	> 12.37	MTT	+
6904	69	09/05/90	YKK	0.767	0.00	30.40	0.00	0.00	53.40	0.00	0.00	95.30	0.00	0.00	> 0.03	MTT	-
6923	69	07/24/90	XR3	0.717	171.00	> 320.00	> 1.87	299.00	> 320.00	> 1.07	0.00	> 320.00	0.00	> 1.07	> 2.39	MTT	+
6923	69	09/06/90	YMV	1.055	881.00	502.00	0.57	0.00	806.00	0.00	0.00	> 1000.00	0.00	0.00	> 0.01	MTT	+
6942	69	07/24/90	XRD	0.760	4.84	> 320.00	> 66.08	14.90	> 320.00	> 21.45	0.00	> 320.00	0.00	> 21.45	> 36.84	MTT	+
6942	69	09/06/90	YMX	0.998	706.00	490.00	0.69	0.00	817.00	0.00	0.00	> 1000.00	0.00	0.00	2.61	MTT	+
6943	69	07/24/90	XRD	0.760	6.45	> 320.00	> 49.60	60.60	> 320.00	> 5.28	0.00	> 320.00	0.00	> 5.28	> 32.49	MTT	+
6943	69	09/06/90	YMY	0.921	43.50	378.00	8.69	75.20	585.00	7.78	0.00	959.00	0.00	5.03	16.64	MTT	+
6945	69	07/26/90	XU3	0.742	< 1.00	194.00	> 194.29	16.50	> 320.00	> 19.44	0.00	> 320.00	0.00	11.80	> 36.17	MTT	+
6945	69	09/06/90	YMZ	1.028	76.90	83.00	1.08	320.00	269.00	0.84	0.00	923.00	0.00	0.26	0.98	MTT	+
6970	68	06/21/90	X1K	0.782	15.40	80.60	5.24	0.00	151.00	0.00	0.00	303.00	0.00	0.00	> 11.78	MTT	+
6970	68	08/02/90	XXN	0.607	15.10	92.70	6.14	27.70	167.00	6.04	0.00	305.00	0.00	3.35	12.85	MTT	+
6970	68	09/13/90	YT8	1.011	0.00	45.30	0.00	0.00	82.30	0.00	0.00	291.00	0.00	0.00	0.00	MTT	-
6976	68	06/21/90	X1N	0.837	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00	0.00	MTT	-
6976	68	09/13/90	YT8	1.011	41.10	100.00	2.43	72.70	173.00	2.38	0.00	305.00	0.00	1.38	6.67	MTT	+
6977	68	06/21/90	X1N	0.837	53.40	155.00	2.90	0.00	210.00	0.00	0.00	309.00	0.00	0.00	8.51	MTT	+
6977	68	08/02/90	XXN	0.607	12.30	155.00	12.62	28.90	210.00	7.27	0.00	309.00	0.00	5.37	19.33	MTT	+
6977	68	09/13/90	YT9	0.958	45.70	97.00	2.12	82.70	171.00	2.07	0.00	305.00	0.00	1.17	4.99	MTT	+
6978	68	06/21/90	X10	0.858	60.30	> 320.00	> 5.31	172.00	> 320.00	> 1.86	0.00	> 320.00	0.00	> 1.86	> 16.74	MTT	+
6978	68	09/13/90	YU0	1.078	0.00	310.00	0.00	0.00	640.00	0.00	0.00	> 1000.00	0.00	0.00	> 0.58	MTT	-
6979	68	06/21/90	X10	0.858	70.60	> 320.00	> 4.53	164.00	> 320.00	> 1.95	0.00	> 320.00	0.00	> 1.95	> 15.06	MTT	+
6979	68	09/13/90	YU1	0.994	127.00	490.00	3.87	199.00	660.00	3.31	0.00	966.00	0.00	2.46	15.96	MTT	+
6983	68	06/21/90	X1Q	0.810	137.00	> 320.00	> 2.34	187.00	> 320.00	> 1.71	0.00	> 320.00	0.00	> 1.71	> 7.06	MTT	+
6983	68	09/13/90	YU1	0.994	175.00	454.00	2.59	306.00	732.00	2.39	0.00	> 1000.00	0.00	1.48	> 5.48	MTT	+
6988	68	06/21/90	X1T	0.842	44.10	290.00	6.57	60.70	> 320.00	> 5.27	0.00	> 320.00	0.00	4.77	> 23.20	MTT	+
6988	68	09/13/90	YU2	1.027	128.00	624.00	4.88	177.00	927.00	5.25	316.00	> 1000.00	> 3.17	3.53	> 18.27	MTT	+
7003	69	07/26/90	XU6	0.725	38.70	> 320.00	> 8.27	144.00	> 320.00	> 2.22	0.00	> 320.00	0.00	> 2.22	> 19.93	MTT	+
7003	69	09/06/90	YN0	1.082	60.90	71.40	1.17	179.00	479.00	2.68	0.00	958.00	0.00	0.40	4.07	MTT	+
7004	69	07/26/90	XU7	0.821	47.90	253.00	5.28	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	8.55	MTT	+
7004	69	09/06/90	YN0	1.082	121.00	276.00	2.29	308.00	550.00	1.78	0.00	> 1000.00	0.00	0.90	3.89	MTT	+
7011	69	07/26/90	XUA	0.750	179.00	> 320.00	> 1.79	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 2.11	MTT	+
7011	69	09/06/90	YN2	1.003	505.00	563.00	1.12	892.00	> 1000.00	> 1.12	0.00	> 1000.00	0.0	0.63	> 1.21	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7017	69	07/26/90	XUD	0.690	0.00	77.30	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7017	69	09/06/90	YN4	0.937	154.00	155.00	1.01	289.00	460.00	1.59	0.00	946.00	0.00	0.54	1.22	MTT	+
7022	69	07/26/90	XUG	0.678	44.50	84.30	1.89	0.00	168.00	0.00	0.00	308.00	0.00	0.00 >	3.14	MTT	+
7022	69	09/06/90	YN5	0.971	36.80	156.00	4.25	52.00	212.00	4.08	97.30	313.00	3.22	3.00	14.68	MTT	+
7023	69	07/31/90	XX3	0.609	100.00 >	320.00 >	3.20	306.00 >	320.00 >	1.05	0.00 >	320.00	0.00 >	1.05 >	4.33	MTT	+
7023	69	09/06/90	YN6	0.964	176.00 >	1000.0 >	5.67	355.00 >	1000.00 >	2.82	902.00 >	1000.00 >	1.11 >	2.82 >	15.55	MTT	+
7032	69	07/31/90	XX7	0.501	21.10 >	320.00 >	15.18	133.00 >	320.00 >	2.41	293.00 >	320.00 >	1.09 >	2.41 >	24.46	MTT	+
7032	69	09/06/90	YN7	0.953	52.80	394.00	7.45	93.40	599.00	6.41	0.00	967.00	0.00	4.22	15.67	MTT	+
7033	69	07/31/90	XX8	0.553	38.00	171.00	4.49	61.00	241.00	3.95	0.00 >	320.00	0.00	2.79	13.42	MTT	+
7033	69	09/11/90	YR3	1.211	0.00	179.00	0.00	0.00	289.00	0.00	0.00	921.00	0.00	0.00 >	0.30	MTT	-
7039	69	07/31/90	XXB	0.520	95.70 >	320.00 >	3.34	147.00 >	320.00 >	2.18	300.00 >	320.00 >	1.07 >	2.18 >	14.69	MTT	+
7039	69	09/11/90	YR4	1.085	548.00	887.00	1.62	938.00 >	1000.00 >	1.07	0.00 >	1000.00	0.00	0.95 >	2.28	MTT	+
7040	69	07/31/90	XXB	0.520	47.80	177.00	3.70	71.40	305.00	4.27	0.00 >	320.00	0.00	2.48	8.47	MTT	+
7040	69	09/11/90	YR5	1.122	179.00	267.00	1.49	320.00	493.00	1.54	0.00	949.00	0.00	0.83 >	2.07	MTT	+
7042	69	07/31/90	XXC	0.503	47.50	152.00	3.19	70.60	208.00	2.94	0.00	309.00	0.00	2.15	13.81	MTT	+
7042	69	09/11/90	YR5	1.122	0.00	154.00	0.00	0.00	228.00	0.00	0.00	821.00	0.00	0.00 >	0.40	MTT	-
7047	69	08/02/90	XXH	0.676	52.30	130.00	2.49	85.50	194.00	2.27	0.00	307.00	0.00	1.53	4.58	MTT	+
7047	69	09/11/90	YR7	1.198	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00 >	4.05	MTT	-
7048	69	08/02/90	XXH	0.676	72.20	91.50	1.27	0.00	169.00	0.00	0.00	305.00	0.00	0.00	0.70	MTT	+
7048	69	09/11/90	YR7	1.198	45.50	90.60	1.99	76.40	165.00	2.16	0.00	305.00	0.00	1.19 >	6.56	MTT	+
7049	69	08/02/90	XXI	0.686	83.30 >	320.00 >	3.84	266.00 >	320.00 >	1.20	0.00 >	320.00	0.00 >	1.20 >	7.94	MTT	+
7049	69	09/11/90	YR8	1.144	430.00 >	1000.0 >	2.33	601.00 >	1000.00 >	1.66	0.00 >	1000.00	0.00 >	1.66 >	8.53	MTT	+
7055	72	08/29/90	YDN	0.573	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00 >	2.21	MTT	-
7055	72	10/02/90	Z7W	0.994	0.00	111.00	0.00	0.00	181.00	0.00	0.00	306.00	0.00	0.00 >	1.04	MTT	-
7055	72	10/25/90	ZQF	0.843	42.90	155.00	3.62	63.00	210.00	3.33	0.00	309.00	0.00	2.46 >	14.18	MTT	+
7057	72	08/29/90	YDO	0.502	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	2.40	MTT	-
7057	72	10/02/90	Z7X	0.942	114.00	386.00	3.38	221.00	590.00	2.67	0.00	959.00	0.00	1.74 >	11.05	MTT	+
7057	72	10/25/90	ZQG	0.908	47.10	258.00	5.49	72.90 >	320.00 >	4.39	0.00 >	320.00	0.00	3.54 >	17.70	MTT	+
7071	72	08/30/90	YFL	0.655	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
7071	72	10/02/90	Z80	0.987	0.00	198.00	0.00	0.00	296.00	0.00	0.00	923.00	0.00	0.00 >	4.33	MTT	-
7071	72	10/25/90	ZQJ	1.089	136.00	232.00	1.70	246.00	495.00	2.01	0.00	959.00	0.00	0.94 >	3.39	MTT	+
7072	72	08/30/90	YFL	0.655	225.00 >	320.00 >	1.42	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	5.25	MTT	+
7072	72	10/02/90	Z80	0.987	100.00	329.00	3.29	0.00	553.00	0.00	0.00	955.00	0.00	0.00 >	12.05	MTT	+
7072	72	10/25/90	ZQK	0.783	119.00	469.00	3.93	206.00	646.00	3.13	0.00	965.00	0.00	2.27 >	14.09	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7074	72	08/30/90	YFM	0.700	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	4.24	MTT	-
7074	72	10/02/90	Z81	1.051	0.00	253.00	0.00	0.00	507.00	0.00	0.00	> 1000.00	0.00	0.00	> 3.10	MTT	-
7074	72	10/25/90	ZQL	0.853	163.00	402.00	2.47	320.00	660.00	2.06	0.00	> 1000.00	0.00	1.26	> 7.64	MTT	+
7083	72	08/30/90	YFR	0.751	52.10	52.10	1.00	0.00	124.00	0.00	0.00	300.00	0.00	0.00	2.34	MTT	+
7083	72	10/02/90	Z82	0.976	35.10	97.40	2.77	75.80	171.00	2.26	0.00	305.00	0.00	1.28	> 12.67	MTT	+
7083	72	10/25/90	ZQL	0.853	13.50	148.00	10.99	23.80	208.00	8.73	85.70	315.00	3.68	6.21	> 29.69	MTT	+
7084	72	08/30/90	YFR	0.751	4.02	8.30	2.07	9.07	27.00	2.98	0.00	100.00	0.00	0.92	> 6.82	MTT	+
7084	72	10/02/90	Z82	0.976	1.50	29.50	19.61	20.10	53.40	2.66	0.00	97.10	0.00	1.47	> 23.51	MTT	+
7084	72	10/25/90	ZQM	0.796	0.86	25.70	30.04	2.00	47.90	24.01	9.31	95.80	10.28	12.88	> 42.40	MTT	+
7085	72	08/30/90	YFS	0.811	0.00	16.60	0.00	0.00	25.80	0.00	0.00	93.40	0.00	0.00	> 6.23	MTT	-
7085	72	10/02/90	Z83	0.975	17.90	7.11	0.40	0.00	57.00	0.00	0.00	262.00	0.00	0.00	> 0.77	MTT	+
7085	72	10/25/90	ZQM	0.796	5.56	41.30	7.43	12.40	64.60	5.23	0.00	> 100.00	0.00	3.34	> 21.13	MTT	+
7086	72	08/30/90	YFS	0.811	7.59	7.66	1.01	0.00	16.40	0.00	0.00	78.80	0.00	0.00	> 1.88	MTT	+
7086	72	10/02/90	Z83	0.975	0.00	18.70	0.00	0.00	28.20	0.00	0.00	> 100.00	0.00	0.00	> 2.17	MTT	-
7086	72	10/25/90	ZQN	0.808	3.94	19.20	4.87	6.06	28.30	4.67	0.00	93.00	0.00	3.16	> 17.33	MTT	+
7087	72	08/30/90	YFT	0.640	4.21	7.09	1.68	0.00	29.90	0.00	0.00	> 100.00	0.00	0.00	2.91	MTT	+
7087	72	10/02/90	Z84	0.976	5.01	22.50	4.49	0.00	51.40	0.00	0.00	> 100.00	0.00	0.00	10.96	MTT	+
7087	72	10/25/90	ZQN	0.808	1.76	24.10	13.69	3.62	94.30	26.09	9.03	> 100.00	> 11.07	6.67	> 33.38	MTT	+
7092	72	09/05/90	YKA	0.714	211.00	> 320.00	> 1.52	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 7.04	MTT	+
7092	72	10/02/90	Z85	0.966	63.40	> 1000.0	> 15.77	146.00	> 1000.00	> 6.86	0.00	> 1000.00	0.00	> 6.86	> 31.69	MTT	+
7092	72	10/25/90	ZQO	0.999	24.80	> 1000.0	> 40.31	93.80	> 1000.00	> 10.67	1030.0	> 1000.00	> 0.97	> 10.67	> 36.77	MTT	+
7094	72	09/05/90	YKB	0.716	50.50	150.00	2.97	0.00	233.00	0.00	0.00	> 320.00	0.00	0.00	6.81	MTT	+
7094	72	10/02/90	Z85	0.966	88.10	166.00	1.89	0.00	233.00	0.00	0.00	800.00	0.00	0.00	> 7.45	MTT	+
7094	72	10/25/90	ZQO	0.999	41.50	171.00	4.12	63.80	269.00	4.21	0.00	924.00	0.00	2.67	> 13.64	MTT	+
7116	70	08/10/90	Y2B	0.651	113.00	895.00	7.92	0.00	> 1000.00	0.00	0.00	> 1000.00	0.0	0.00	10.83	MTT	+
7116	70	09/13/90	YTB	0.957	40.20	781.00	19.42	81.90	> 1000.00	> 12.21	0.00	> 1000.00	0.00	9.53	> 28.25	MTT	+
7301	70	08/10/90	Y2E	0.640	24.80	137.00	5.51	0.00	911.00	0.00	0.00	> 1000.00	0.00	0.00	8.67	MTT	+
7301	70	09/13/90	YTC	1.027	29.30	606.00	20.72	60.60	> 1000.00	> 16.49	0.00	> 1000.00	0.00	10.00	> 28.98	MTT	+
7303	70	08/10/90	Y2F	0.569	95.70	220.00	2.30	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	1.10	MTT	+
7303	70	09/13/90	YTD	0.645	20.70	616.00	29.76	159.00	985.00	6.19	0.00	> 1000.00	0.00	3.87	25.87	MTT	+
7308	70	08/10/90	Y2H	0.592	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 2.04	MTT	-
7308	70	09/13/90	YTD	0.645	100.00	706.00	7.06	168.00	> 1000.00	> 5.95	0.00	> 1000.00	0.00	4.20	20.67	MTT	+
7320	70	08/14/90	Y4K	0.421	88.50	119.00	1.34	0.00	186.00	0.00	0.00	307.00	0.00	0.00	0.50	MTT	+
7320	70	09/13/90	YTG	0.915	152.00	243.00	1.60	320.00	456.00	1.43	0.00	966.00	0.00	0.76	3.35	MTT	+
7349	70	08/16/90	Y6M	0.935	26.50	854.00	32.22	218.00	> 1000.00	> 4.60	0.00	> 1000.00	0.00	3.93	> 22.45	MTT	+
7349	70	09/18/90	YVQ	0.786	143.00	851.00	5.95	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	> 11.58	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7350	70	08/16/90	Y6M	0.935	507.00	876.00	1.73	930.00 >	1000.00 >	1.08	0.00 >	1000.00	0.00	0.94 >	2.28	MTT	+
7350	70	09/18/90	YVR	1.017	0.00	106.00	0.00	0.00	251.00	0.00	0.00	980.00	0.00	0.00	0.00	MTT	-
7368	70	08/16/90	Y6V	0.949	542.00	683.00	1.26	919.00 >	1000.00 >	1.09	0.00 >	1000.00	0.00	0.74 >	1.23	MTT	+
7368	70	09/18/90	YVW	0.883	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	2.01	MTT	-
7373	70	08/21/90	Y8O	0.950	148.00 >	320.00 >	2.16	223.00 >	320.00 >	1.43	0.00 >	320.00	0.00 >	1.43 >	4.26	MTT	+
7373	70	09/18/90	YVX	0.948	133.00	420.00	3.17	201.00	614.00	3.05	0.00	961.00	0.00	2.09 >	11.39	MTT	+
7375	70	08/21/90	Y8P	0.872	11.60	12.90	1.12	90.90 >	320.00 >	3.52	0.00 >	320.00	0.00	0.14 >	5.19	MTT	+
7375	70	09/18/90	YVY	1.000	3.20	17.90	5.58	0.00	84.90	0.00	0.00	917.00	0.00	0.00 >	4.81	MTT	+
7379	70	08/21/90	Y8R	0.953	156.00	137.00	0.88	290.00 >	320.00 >	1.10	0.00 >	320.00	0.00	0.47 >	1.48	MTT	+
7379	70	09/18/90	YW0	0.877	542.00	1000.0	1.84	919.00 >	1000.00 >	1.09	0.00 >	1000.00	0.00	1.09 >	2.25	MTT	+
7383	70	08/21/90	Y8T	0.873	152.00	261.00	1.72	245.00 >	320.00 >	1.31	0.00 >	320.00	0.00	1.07 >	2.68	MTT	+
7383	70	09/27/90	Z35	1.130	0.00	329.00	0.00	0.00	559.00	0.00	0.00	972.00	0.00	0.00	0.00	MTT	-
7385	70	08/21/90	Y8T	0.873	50.30	116.00	2.31	82.20	184.00	2.24	0.00	306.00	0.00	1.42	5.16	MTT	+
7385	70	09/27/90	Z35	1.130	0.00	69.80	0.00	0.00	145.00	0.00	0.00	303.00	0.00	0.00 >	0.18	MTT	-
7386	70	08/21/90	Y8U	0.853	548.00	728.00	1.33	938.00 >	1000.00 >	1.07	0.00 >	1000.00	0.00	0.78 >	1.20	MTT	+
7386	70	09/27/90	Z36	1.222	935.00	567.00	0.61	0.00	1220.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	+
7391	70	08/21/90	Y8W	0.994	45.80	32.00	0.70	80.00	185.00	2.31	0.00 >	320.00	0.00	0.40	2.54	MTT	+
7391	70	09/27/90	Z37	1.200	201.00	200.00	1.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.33	MTT	+
7399	70	08/23/90	YAY	0.934	161.00	66.00	0.41	259.00	703.00	2.71	0.00 >	1000.00	0.00	0.25	2.86	MTT	+
7399	70	09/27/90	Z38	1.001	131.00	516.00	3.93	188.00	804.00	4.27	0.00	2870.00	0.00	2.74	13.90	MTT	+
7403	70	08/23/90	YB0	0.832	559.00	676.00	1.21	978.00 >	1000.00 >	1.02	0.00 >	1000.00	0.00	0.69 >	0.85	MTT	+
7403	70	09/27/90	Z39	0.923	859.00	1060.0	1.23	0.00	1790.00	0.00	0.00	3110.00	0.00	0.00	4.60	MTT	+
7405	70	08/23/90	YB1	0.873	156.00 >	320.00 >	2.05	247.00 >	320.00 >	1.29	0.00 >	320.00	0.00 >	1.29 >	5.36	MTT	+
7405	70	09/27/90	Z39	0.923	0.00	527.00	0.00	0.00	735.00	0.00	0.00 >	1000.00	0.00	0.00	1.60	MTT	-
7406	70	08/23/90	YB2	0.964	151.00	217.00	1.44	248.00 >	320.00 >	1.29	0.00 >	320.00	0.00	0.88 >	2.20	MTT	+
7406	70	09/27/90	Z3A	1.038	149.00	241.00	1.62	320.00	443.00	1.38	0.00	944.00	0.00	0.75	3.63	MTT	+
7408	70	08/23/90	YB3	0.882	171.00 >	320.00 >	1.87	305.00 >	320.00 >	1.05	0.00 >	320.00	0.00 >	1.05 >	4.96	MTT	+
7408	70	09/27/90	Z3B	1.129	0.00	429.00	0.00	0.00	639.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
7410	70	08/23/90	YB4	0.899	175.00 >	320.00 >	1.83	320.00 >	320.00 >	1.00	0.00 >	320.00	0.00 >	1.00 >	2.16	MTT	+
7410	70	09/27/90	Z3C	0.709	0.00	563.00	0.00	0.00	806.00	0.00	0.00 >	1000.00	0.00	0.00 >	5.85	MTT	-
7414	70	08/23/90	YB6	0.800	134.00	639.00	4.76	202.00	986.00	4.88	0.00 >	1000.00	0.00	3.16	14.40	MTT	+
7414	70	09/27/90	Z3C	0.709	199.00	647.00	3.26	0.00	974.00	0.00	0.00 >	1000.00	0.00	0.00 >	7.97	MTT	+
7415	70	08/23/90	YB6	0.800	118.00 >	320.00 >	2.72	170.00 >	320.00 >	1.88	0.00 >	320.00	0.00 >	1.88 >	10.97	MTT	+
7415	70	09/27/90	Z3D	0.645	0.00	505.00	0.00	0.00	690.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7417	70	08/23/90	YB7	0.934	133.00 >	320.00 >	2.41	254.00 >	320.00 >	1.26	0.00 >	320.00	0.00 >	1.26 >	2.94	MTT	+
7417	70	09/27/90	Z3E	0.639	0.00	433.00	0.00	0.00	622.00	0.00	0.00	962.00	0.00	0.00 >	3.20	MTT	-
7418	70	08/23/90	YB8	0.828	45.00 >	320.00 >	7.10	79.60 >	320.00 >	4.02	277.00 >	320.00 >	1.16 >	4.02 >	23.86	MTT	+
7418	70	09/27/90	Z3E	0.639	0.00	492.00	0.00	0.00	663.00	0.00	0.00	973.00	0.00	0.00	1.34	MTT	-
7424	70	08/23/90	YBB	0.888	102.00 >	320.00 >	3.12	185.00 >	320.00 >	1.73	0.00 >	320.00	0.00 >	1.73 >	6.82	MTT	+
7424	70	09/27/90	Z3F	0.648	170.00	363.00	2.13	0.00	575.00	0.00	0.00	958.00	0.00	0.00 >	5.09	MTT	+
7430	70	08/29/90	YDH	0.513	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7430	70	09/27/90	Z3H	0.651	154.00	490.00	3.19	289.00	660.00	2.28	0.00	966.00	0.00	1.69 >	12.44	MTT	+
7434	70	08/29/90	YDJ	0.595	147.00 >	320.00 >	2.17	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	7.17	MTT	+
7434	70	10/02/90	Z7V	0.970	105.00	463.00	4.40	198.00	642.00	3.24	0.00	964.00	0.00	2.34 >	15.47	MTT	+
7439	73	09/20/90	YXS	1.235	0.00	251.00	0.00	0.00	516.00	0.00	0.00	979.00	0.00	0.00	0.00	MTT	-
7439	73	10/25/90	ZQP	0.837	20.40	453.00	22.26	153.00	638.00	4.16	0.00	970.00	0.00	2.96 >	22.77	MTT	+
7445	73	09/20/90	YXV	1.152	0.00	390.00	0.00	0.00	683.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
7445	73	10/25/90	ZQQ	0.834	1300.0 >	3200.0 >	2.46	1760.00 >	3200.00 >	1.82	3010.0 >	3200.00 >	1.0 >	1.82 >	13.49	MTT	+
7449	71	07/31/90	XX2	0.557	2.61	116.00	44.62	71.30	184.00	2.58	0.00	306.00	0.00	1.63 >	18.38	MTT	+
7449	71	09/11/90	YRA	1.233	100.00	119.00	1.19	0.00	216.00	0.00	0.00 >	320.00	0.00	0.00 >	5.52	MTT	+
7469	73	09/25/90	YZY	0.893	145.00 >	320.00 >	2.20	211.00 >	320.00 >	1.52	0.00 >	320.00	0.00 >	1.52 >	7.86	MTT	+
7469	73	10/30/90	ZVM	1.024	131.00	382.00	2.93	185.00	603.00	3.25	0.00	1000.00	0.00	2.06	9.82	MTT	+
7484	73	09/25/90	Z05	1.089	105.00	180.00	1.71	192.00	263.00	1.37	0.00 >	320.00	0.00	0.94 >	9.69	MTT	+
7484	73	10/30/90	ZVO	0.914	128.00	515.00	4.02	181.00	711.00	3.92	0.00 >	1000.00	0.00	2.84	13.00	MTT	+
7485	73	09/25/90	Z06	1.192	100.00	215.00	2.15	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.13	MTT	+
7485	73	10/30/90	ZVP	1.063	123.00	204.00	1.66	235.00	723.00	3.08	0.00 >	1000.00	0.00	0.87	3.96	MTT	+
7487	73	09/25/90	Z07	1.096	170.00	267.00	1.56	312.00 >	320.00 >	1.02	0.00 >	320.00	0.00	0.85 >	4.11	MTT	+
7487	73	10/30/90	ZVP	1.063	81.80	230.00	2.81	212.00	622.00	2.93	0.00 >	1000.00	0.00	1.08	7.34	MTT	+
7488	73	09/25/90	Z07	1.096	158.00 >	320.00 >	2.03	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	9.51	MTT	+
7488	73	10/30/90	ZVQ	1.045	39.50	773.00	19.55	370.00 >	1000.00 >	2.70	0.00 >	1000.00	0.00	2.09 >	11.23	MTT	+
7910	74	10/11/90	ZFV	1.085	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.25	MTT	-
7910	75	11/06/90	110	0.828	160.00	2900.0	18.09	320.00 >	3200.00 >	10.00	892.00 >	3200.00 >	3.59	9.05 >	32.26	MTT	+
7925	74	10/16/90	ZJL	1.123	0.00	155.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7925	75	11/08/90	13M	0.943	1130.0	1920.0	1.70	2430.00 >	3200.00 >	1.32	0.00 >	3200.00	0.00	0.79 >	2.83	MTT	+
7930	74	10/16/90	ZJO	0.950	0.00	160.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7930	75	11/08/90	130	0.945	470.00	1550.0	3.30	691.00	2410.00	3.49	0.00 >	3200.00	0.00	2.24	9.51	MTT	+
7935	74	10/16/90	ZJQ	0.849	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7935	75	11/08/90	13R	0.927	80.20	397.00	4.94	157.00	609.00	3.88	0.00	992.00	0.00	2.53	11.71	MTT	+

Table 18 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7940	74	10/16/90	ZJT	1.042	0.00	251.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7940	75	11/08/90	13T	0.777	49.40	427.00	8.64	77.60	618.00	7.96	320.00	962.00	3.01	5.50 >	25.33	MTT	+
7942	74	10/16/90	ZJU	1.001	0.00	159.00	0.00	0.00	218.00	0.00	0.00 >	320.00	0.00	0.00 >	1.10	MTT	-
7942	75	11/08/90	13U	0.898	70.60	257.00	3.64	203.00	482.00	2.37	0.00	968.00	0.00	1.27	10.91	MTT	+
7944	74	10/16/90	ZJV	0.920	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.40	MTT	-
7944	75	11/08/90	13V	0.844	62.70	91.50	1.46	534.00	2000.00	3.75	0.00	3080.00	0.00	0.17	9.48	MTT	+
7945	74	10/16/90	ZJV	0.920	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.52	MTT	-
7945	75	12/04/90	1M4	1.204	387.00	835.00	2.16	854.00	1570.00	1.84	0.00	3070.00	0.00	0.98 >	8.47	MTT	+
7972	75	11/15/90	19H	0.908	542.00	162.00	0.30	919.00	404.00	0.44	0.00	940.00	0.00	0.18	0.00	MTT	+
7972	75	12/04/90	1MH	1.134	0.00 <	10.00	0.00	0.00	29.70	0.00	0.00	235.00	0.00	0.00	0.00	MTT	-
8212	75	11/15/90	19Q	0.910	151.00	459.00	3.04	380.00	958.00	2.52	0.00	1900.00	0.00	1.21 >	8.59	MTT	+
8212	75	12/21/90	277	0.866	130.00	535.00	4.11	0.00	1430.00	0.00	0.00	3020.00	0.00	0.00 >	8.49	MTT	+

• = This value is a virus rating (VR) rather than a TAI. The VR is a measurement of selective antiviral activity that takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound similar to TAI. TAI is more accurate with MTT measurements.

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

$IC_{25,50,95}$ = (Viral) inhibitory concentration 25%, 50% and 95% = The drug concentration (µg/ml) that inhibited viral CPE by 25%, 50% or 95% calculated by using a regression analysis for semilog curve fitting.

$TC_{25,50,95}$ = (Cell) toxicity concentration 25%. 50% and 95% = The drug concentration (µg/ml) that reduced cell viability by 25%, 50% or 95%.

$AI_{25,50,95}$ = Antiviral Index = A single point ratio of the antiviral and anticellular effect of the compound, calculated with 25%, 50% or 95% reduction values (calculated by dividing the $TC_{25,50,95}$ by the $IC_{25,50,95}$).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, µg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

ACT = Activity = A "+" denotes a test that produced ≥25% reduction in CPE. A "-" denotes an inactive test (i.e. ≤25% reduction in CPE).

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4.1.7 Sandfly Fever Virus (SF):

The number of single drug tests carried out against SF during this contract period is summarized in yearly increments in Figure 36. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

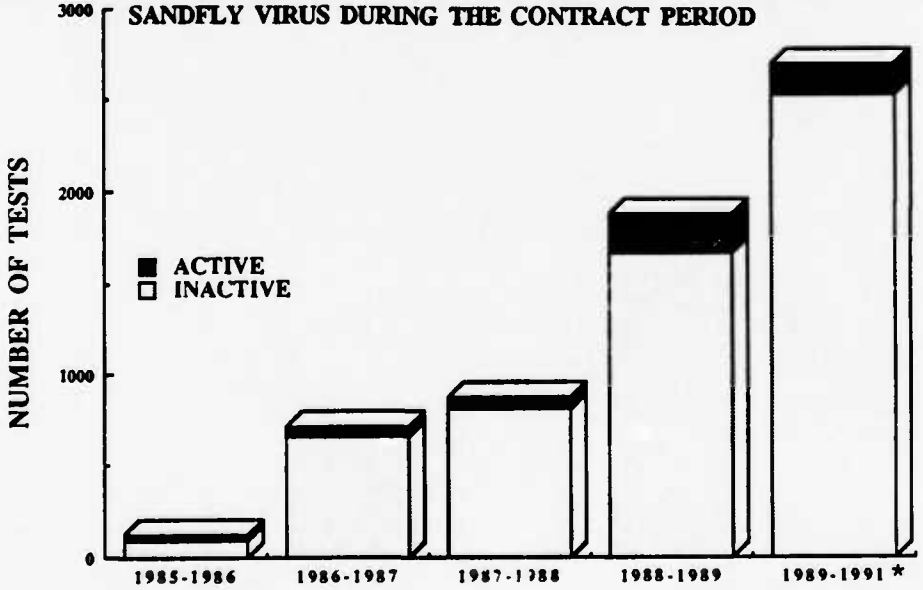
1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since November, 1988, MTT based-antiviral assay format.

A total of 7833 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Ribavirin (AVS-0001) was tested in each standard virus rating (VR) CPE-inhibition assay as a positive control compound. Results of these positive controls (VR tests) were used as a guideline to assess the quality of each assay.

After the testing was converted to the MTT-assay format, we performed a total of 414 control compound assays with Ribavirin during the last 26 months of the contract period. During this time 610 tests were internal (+ + +) virus load, cell load, and other quality control tests. Three hundred twenty-two (322) tests were considered unsatisfactory based on the criteria of the quality controls set during this reporting period. The rest, totaling 4614 were actual single drug MTT-assays. The total number of MTT-assays (5960) tested during the last two years represents a 218% increase (improvement) in the total testing output as compared to the total of 1873 tests performed during the first 3 years of this contract.

Out of the 6487 accepted single drug tests, 566 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 9% of the tested compounds having *in vitro* antiviral activity against SF-virus. The remainder, 5921 compounds (91%), were considered inactive with both assay protocols (Figure 36).

IN VITRO PRIMARY SCREEN: NUMBER OF COMPOUNDS FOUND ACTIVE AGAINST SANDFLY VIRUS DURING THE CONTRACT PERIOD



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	38	58	62	205	165	528
Number Inactive	101	660	815	1668	2576	5820
Yearly Total (Accepted Single Drug Tests)	**139**	**718**	**877**	**1873**	**2741**	**6348**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 36

4.1.7.1 **SF-Quality Controls:** Two positive control compounds (Ribavirin and 2-Thio-6 Azauridine) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to of better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.1.7.1.1 **Antiviral Activity of Ribavirin vs SF Virus:** A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0001 (Ribavirin) is presented in **Figure 37-A** for 226 tests performed during November, 1989 through January, 1991.

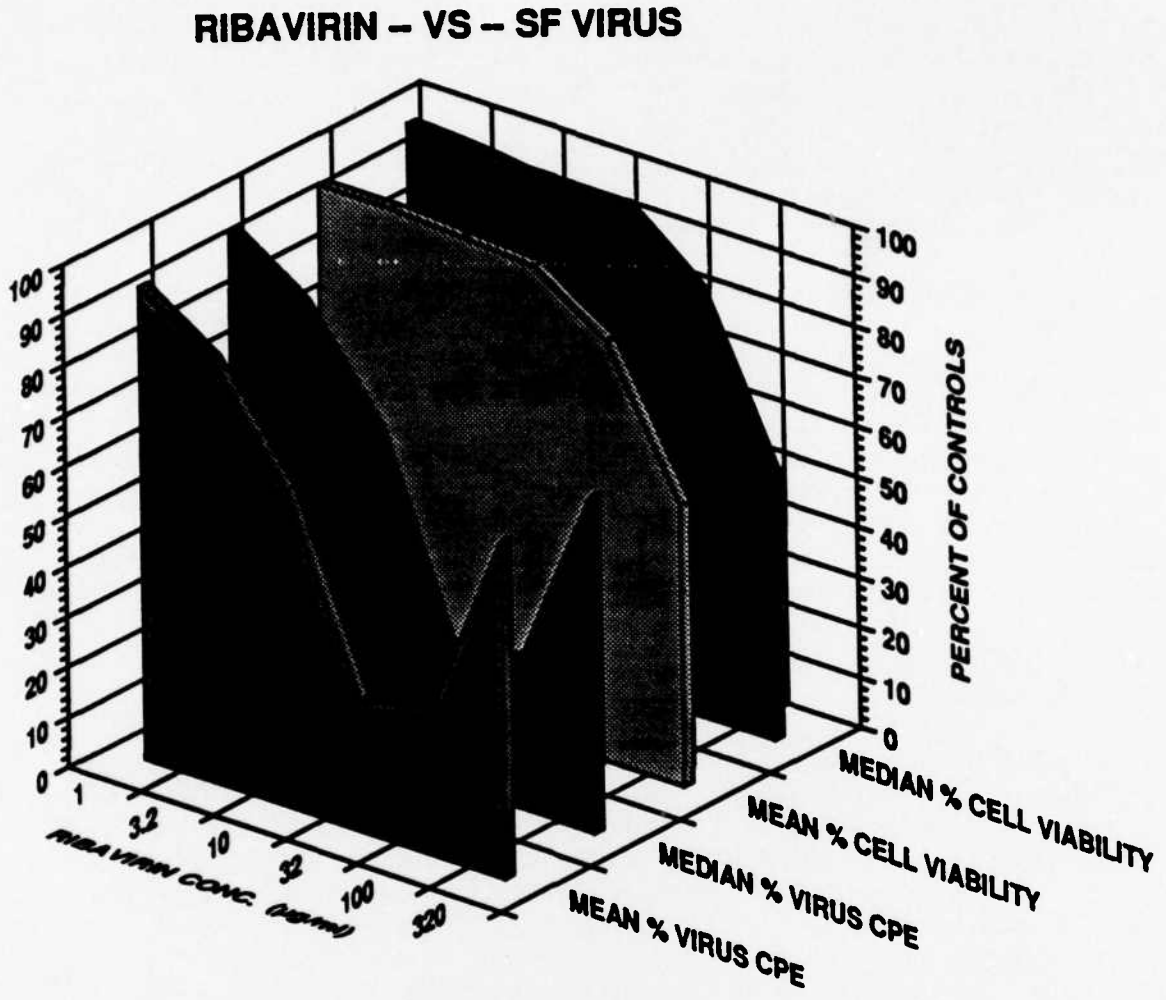
Control Compound-Antiviral Performance: Ribavirin (AVS-0001) has been the sole control compound against SF in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Ribavirin) are illustrated in **Figure 37-A.**

The 226 control tests performed with Ribavirin gave a mean **Total Antiviral Index** (TAI) of 33.5% (SD ± 13.93) and the median value was 31.28%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~0.80 - 73% during this period. The mean **Selectivity Index (SI)** was 15.33 (SD ± 15.89) and the median SI value was 10.79, indicating moderate antiviral selectivity for Ribavirin against SF virus. SI ranged from ~0 - 109 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean **Antiviral Index 25%** (AI_{25}) value was 40.9 (SD ± 47.5). The median AI_{25} value was 25.5 (range 0 - 320). The mean **Antiviral Index 50%** (AI_{50}) was 24.38 (SD ± 17.9) with a median of 19.21 (range 0 - >109). The mean **Antiviral Index 95%** (AI_{95}) was 2.2 (SD ± 5.0), with a median of 0 (range 0 - 36.22). This indicates that the control compound, Ribavirin, does not consistently reach 95% antiviral reduction levels.

The mean **Antiviral Inhibitory Concentration 25%** (IC_{25}) was 7.37 μg/ml (SD ± 4.95). The median IC_{25} value was 5.72 μg/ml (range = 0 - 30.0 μg/ml). The mean **Antiviral Inhibitory Concentration 50%** (IC_{50}) was 17.76 μg/ml (SD ± 11.81). The median IC_{50} value was 15.65 μg/ml (range = 0 - 79.6 μg/ml). The mean **Antiviral Inhibitory Concentration 95%** (IC_{95}) was 9.81 μg/ml (SD ± 21.66). The median IC_{95} value was 0 μg/ml (range from 0 - 94.5 μg/ml). This discrepancy indicates that the control compound Ribavirin does not consistently reach 95% reduction levels. During this reporting period, the highest starting concentration of Ribavirin (100 μg/ml) was increased from previous high dose of 100 to 320 μg/ml to properly evaluate the maximum antiviral effect of Ribavirin.

The average maximum antiviral inhibitory level of 226 Ribavirin tests (**Figure 37-A**) was reached at 32 μg/ml of the compound with 75% antiviral effect. Maximum antiviral effect (~80%) was found with a simultaneous ~5% cytotoxic suppression. Above (100 μg/ml) concentration Ribavirin starts to lose its antiviral potency (~30%) at 320 μg/ml while simultaneously the Ribavirin becomes maximally toxic (~45%).



	% Viral CPE						% Cell Viability					
Conc.(µg/ml)	**1**	**3.2**	**10**	**32**	**100**	**320**	**1**	**3.2**	**10**	**32**	**100**	**320**
Mean	94	84	63	26	29	67	96	96	95	94	84	56
Median	96	86	66	26	30	67	99	98	96	97	85	53
Std. Dev.	0.07	.11	0.20	0.18	0.19	0.18	0.06	0.05	0.05	0.07	0.14	0.16

Figure 37-A
Average Antiviral and Cytotoxicity Values for 226 Positive Control Compound Tests

4.1.7.1.2 Maximum Antiviral Effect of Ribavirin vs SF Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Ribavirin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 38-A) depicts the distribution of the maximum antiviral reduction values of all 226 control compound assays for Ribavirin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 80% (SD ± 14.30) reduction levels. The maximum reduction levels vary from 16 - 100% but remain quite consistently around the median of 81%. The assay control values give a shifted half-bell-shaped distribution curve toward the maximum 100% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the SF-MTT assay.

During this period the positive control compound performance criteria for Ribavirin versus the SF virus was set at 50% reduction level. All assays in which Ribavirin did not meet this accepted quality control level (≥50%) were rejected (i.e., 322 unsatisfactory tests).

Ribavirin is active *in vitro* against SF virus and functions as a reasonable quality control compound. On the other hand, regardless of the performance of the SF-quality control drug Ribavirin, around 165 other compounds have equal or better antiviral activity against SF virus than AVS-0001. (See 95% and 50% reduction summaries).

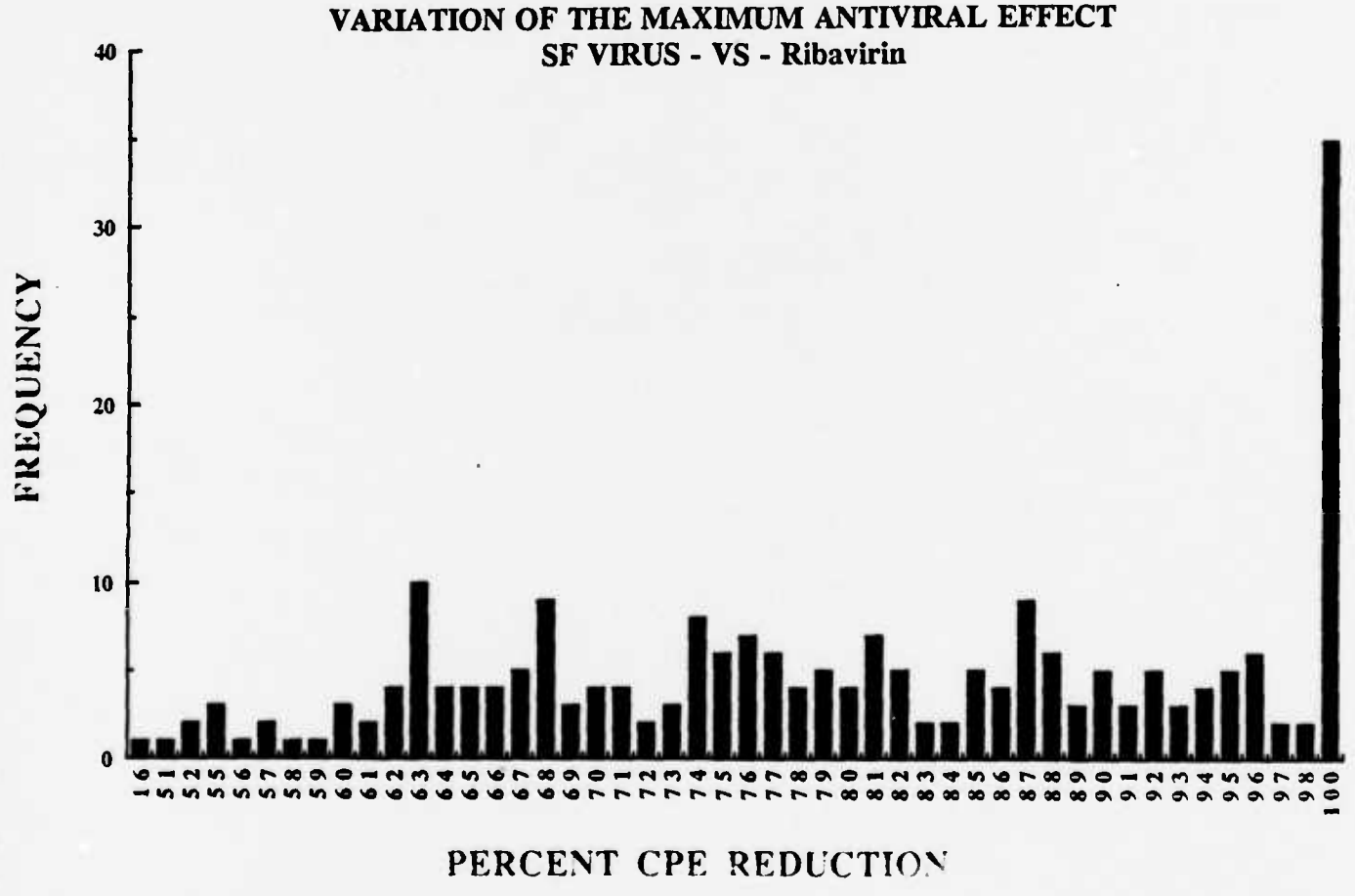


Figure 38-A
Maximum Antiviral CPE Reduction (%).
Summary of 226 Control Tests.

4.1.7.1.3 **Cellular Cytotoxicity of Ribavirin vs SF Virus:**

SF-Control Compound-Cytotoxicity Performance: The 226 cytotoxicity values of the positive control compound Ribavirin are also very consistent. The mean cell **Toxic Concentration 25% (TC_{25})** was 176.52 μg/ml (SD ± 94.76) and the median was 165 μg/ml (range of 0.78 - 320 μg/ml). The mean cell **Toxic Concentration 50% (TC_{50})** value was 290.7 μg/ml (SD ± 48.00) and the median was 320 μg/ml (range of 96-320 μg/ml). The mean cell **Toxic Concentration 95% (TC_{95})** value was 320 (SD ± 0) and the median was 320 (range of 320-320 μg/ml). This discrepancy indicates that the control compound Ribavirin does not consistently reach 95% cytotoxicity levels.

As can be seen from **Figure 37-A**, the toxicity starts to become measurable above the concentration of 100 μg/ml and the maximum toxicity has not been reached at 320 μg/ml. Further increase of the concentration of Ribavirin would be needed to properly evaluate the maximum cytotoxicity of Ribavirin.

Also, **Figure 37-A** indicates that when the cytotoxicity reaches ~10% at 100 μg/ml, the control compound (Ribavirin) has reached simultaneously its maximum antiviral effect (80%). The cytotoxic effect of Ribavirin is insignificant between 1 and 100 μg/ml. The average cytotoxicity reached ~45% at 320 μg/ml, which is the highest Ribavirin concentration tested.

Ribavirin has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} and TC_{50} toxicity could not be consistently achieved with the 100 μg/ml concentration of Ribavirin. Therefore, a readjustment to 320 μg/ml (as being the highest Ribavirin concentration tested) was done during this reporting period. However, at this concentration (320 μg/ml) the TC_{50} and TC_{95} cannot yet be measured consistently.

4.1.7.1.4 SF-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Ribavirin): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation controls for the period of November, 1989 through January, 1991, is presented in **Figures 39-A, 40-A and 41-A.**

SF-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 226 control assays is plotted in **Figure 39-A.** The results indicate that the cell O.D. readings reached a mean of 1.030 (SD ± 0.160) with a median of 1.010 (range of 0.681 - 1.566). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

SF-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 226 control assays is presented in **Figure 40-A.** The results indicate that the average virus load O.D. reading reached a mean of 0.250 (SD ± 0.110 with a median of 0.240 (range of 0.018 -0.646). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

SF-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 226 control assays is provided in **Figure 41-A.** The results indicate that the average differential O.D. reading is 0.780 (SD ± 0.162) with a median of 0.763 (range 0.480 - 1.456). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 78% measurement accuracy.

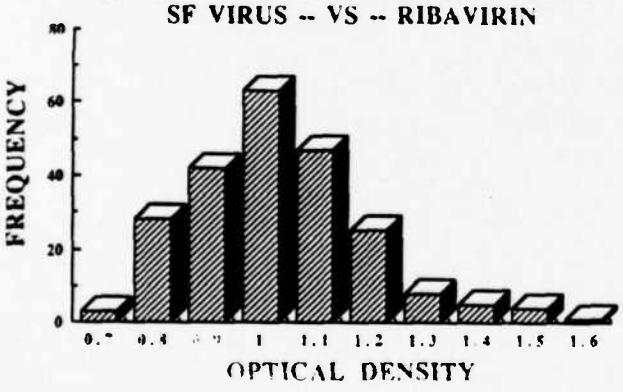


Figure 39-A

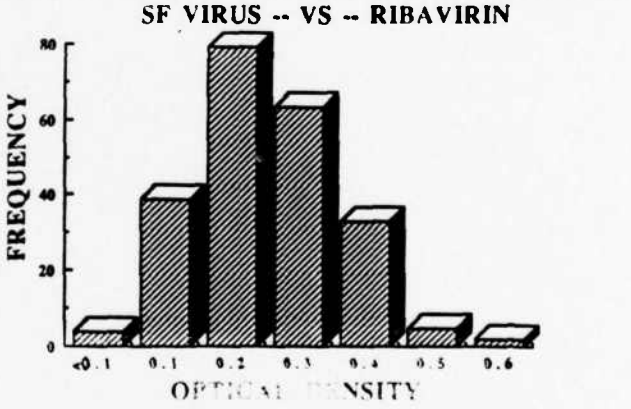


Figure **40-A**

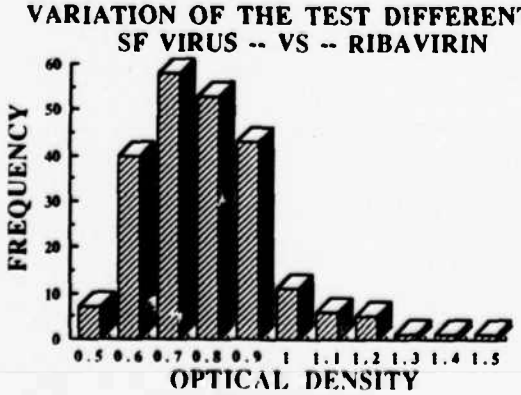


Figure 41-A

4.1.7.1.1 Antiviral Activity of AVS-6724 (2-Thio-6-Azauridine) vs SF Virus: A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in Figure 37-B for 42 tests performed during November, 1989 through January, 1991.

Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible control compound against SF in these MTT-assay screens. The mean and median antiviral inhibition and cytotoxicity patterns of this second positive control drug are illustrated in Figure 37-B.

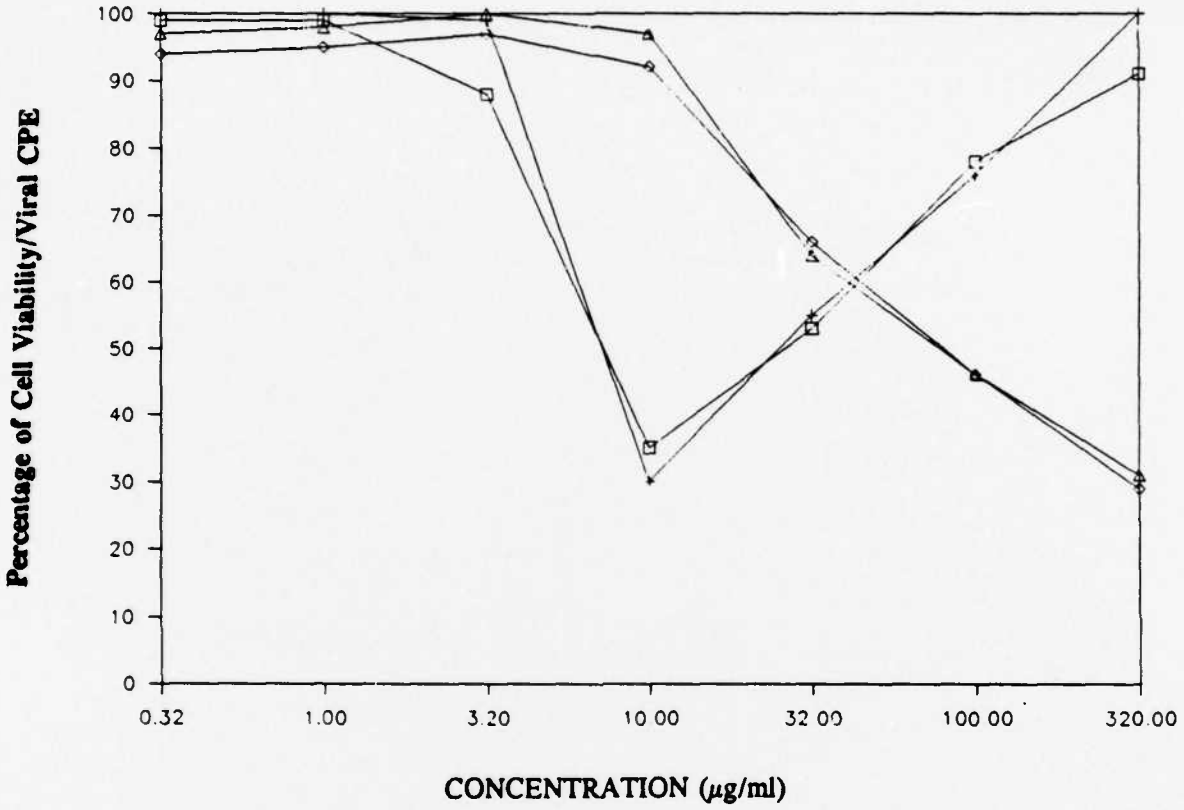
The 42 control tests performed with 2-Thio-6-Azauridine gave a mean Total Antiviral Index (TAI) of 17.10% (SD ± 12.40) and the median value was 14.30%. The TAI measures the overall antiviral effectiveness of the compound and it ranged from ~0 - 50.23% during this period. The mean Selectivity Index (SI) was 5.34 (SD ± 7.70) and the median SI value was 3.40, indicating moderate antiviral selectivity for 2-Thio-6-Azauridine against SF virus. The SI ranged from ~0 - 45.73 during this period. However, the closeness of the mean and median values indicate that the present execution of the SOP is consistent and repeatable.

The mean Antiviral Index 25% (AI_{25}) value was 8.80 (SD ± 11.70). The median AI_{25} value was 5.20 (range 0.150 - 71.53). The mean Antiviral Index 50% (AI_{50}) was 11.00 (SD ± 10.5) with a median of 9.20 (range 0 - 51.58). The mean Antiviral Index 95% (AI_{95}) was 1.10 (SD ± 3.20), with a median of 0 (range 0 - 11.53). This indicates that the, 2-Thio-6-Azauridine, does not consistently reach 95% antiviral reduction levels.

The mean Antiviral Inhibitory Concentration 25% (IC_{25}) was 4.90 μg/ml (SD ± 2.30). The median IC_{25} value was 4.60 μg/ml (range = 1.24 - 12.80 μg/ml). The mean Antiviral Inhibitory Concentration 50% (IC_{50}) was 6.00 μg/ml (SD ± 5.40). The median IC_{50} value was 5.90 μg/ml (range = 0 - 26.80 μg/ml). The mean Antiviral Inhibitory Concentration 95% (IC_{95}) was 1.50 μg/ml (SD ± 4.80). The median IC_{95} value was 0 μg/ml (range from 0 - 26.2 μg/ml). This discrepancy indicates that the 2-Thio-6-Azauridine does not consistently reach 95% reduction levels. During this reporting period, the highest starting concentration of 2-Thio-6-Azauridine (320 μg/ml) was varied to properly evaluate the maximum antiviral effect of 2-Thio-6-Azauridine. The best window appears to be from a high concentration of 100 μg/ml to a low concentration of 0.320 μg/ml in six 1/2 $\log_{10}$ increments. (See Figure 37-B). At this scale (0.32 - 100 μg/ml) all important antiviral (IC_{25}, IC_{50}, IC_{95} and TAI) parameters are measured as well as all important cytotoxicity parameters (TC_{25}, TC_{50}, except TC_{95}) as also indicated.

The average maximum antiviral inhibitory level of 42, 2-Thio-6-Azauridine, tests (Figure 37-B) was reached at 10 μg/ml of the compound with 70% antiviral effect. Maximum antiviral effect (~70%) was found with a simultaneous ~5% cytotoxic suppression. Above 10 μg/ml concentration, 2-Thio-6-Azauridine starts to lose its antiviral potency (~10%) at 320 μg/ml, while simultaneously the 2-Thio-6-Azauridine becomes maximally toxic (~70%) with increasing cytotoxicity.

2-THIO-6-AZAURIDINE - VS- SF VIRUS



% Viral CPE

% Cell Viability

Conc.(μg/ml)	0.32	1	3.2	10	32	100	320	0.32	1	3.2	10	32	100	320
Mean	99	99	88	35	53	78	91	94	95	97	92	66	46	29
Median	100	100	99	30	55	76	100	97	98	100	97	64	46	31
Std. Dev.	0.02	0.03	0.2	0.22	0.23	0.14	0.11	0.07	0.06	0.05	0.11	0.16	0.14	0.08

Figure 37-B
Average Antiviral and Cytotoxicity Values for 42 Positive Control Compound Tests

4.1.7.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs SF Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 38-B) depicts the distribution of the maximum antiviral reduction values of all 42 control compound assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 70% (SD ± 18.70) reduction levels. The maximum reduction levels vary from 40 - 100% but remain quite consistently around the median of 72%. The assay control values give a shifted half-bell-shaped distribution curve toward the maximum 100% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the SF-MTT assay.

Recommendations:

Based upon the data obtained in parallel studies with Ribavirin, we recommend that 2-Thio-6-Azauridine (AVS #6724) will be used as a second control compound against SF virus. It's overall performance is slightly poorer than the present control, Ribavirin. However, it is readily available from Sigma Chemical Company, it is inexpensive and works at ~5 - 10-fold lower concentrations than Ribavirin.

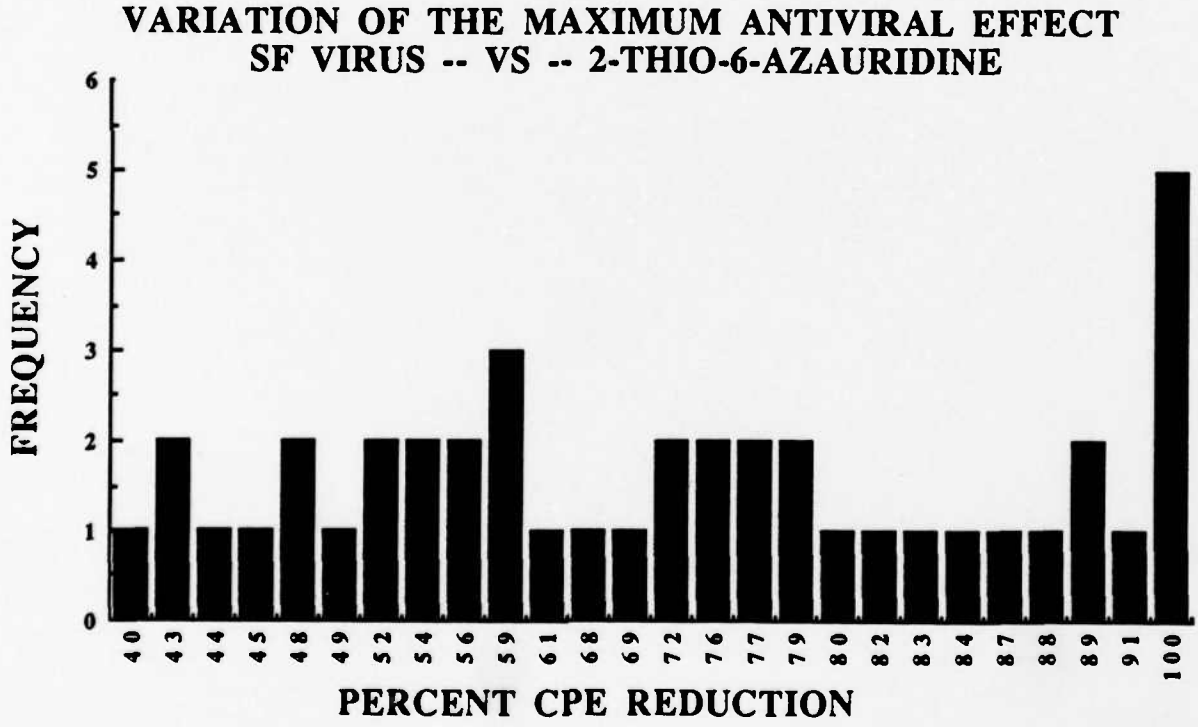


Figure 38-B
Maximum Antiviral CPE Reduction (%).
Summary of 42 Control Tests.

4.1.7.1.3 Cellular Cytotoxicity of 2-Thio-6-Azauridine vs SF Virus:

SF-Control Compound-Cytotoxicity Performance: The 42 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25% (TC_{25})** was 31.10 μg/ml (SD ± 53.30) and the median was 25.5 μg/ml (range of 0.81 - > 100 μg/ml). The mean cell **Toxic Concentration 50% (TC_{50})** value was 73.80 μg/ml (SD ± 27.40) and the median was 84.60 μg/ml (range of 21 - > 100 μg/ml). The mean cell **Toxic Concentration 95% (TC_{95})** value was 147.10 (SD ± 91.40) and the median was 100 (range of 100 - 320 μg/ml). This discrepancy indicates that the control compound 2-Thio-6-Azauridine does not consistently reach 95% cytotoxicity levels.

As can be seen from **Figure 37-B**, the toxicity starts to become measurable above the concentration of 10 μg/ml and the maximum toxicity has not been reached at 320 μg/ml. Further increase of the concentration of 2-Thio-6-Azauridine would be needed to properly evaluate the maximum cytotoxicity of 2-Thio-6-Azauridine.

Also, **Figure 37-B** indicates that when the cytotoxicity reaches ~10% at 10 μg/ml, the control compound (2-Thio-6-Azauridine) has reached simultaneously its maximum antiviral effect (70%). The cytotoxic effect of 2-Thio-6-Azauridine is insignificant between 1 and 10 μg/ml. The average cytotoxicity reached ~70% at 320 μg/ml, which is the highest 2-Thio-6-Azauridine concentration tested.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} and TC_{50} toxicity could be consistently achieved with the 100 μg/ml concentration of 2-Thio-6-Azauridine. Therefore, a readjustment to 320 μg/ml as being the highest 2-Thio-6-Azauridine concentration tested is not needed. However, at this concentration (320 μg/ml) the TC_{95} cannot yet be measured consistently.

4.1.7.1.4 SF-Assay Plate Quality Controls: Cell Load and Virus Load Parameters 2-Thio-6-Azauridine: The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991 is presented in Figures 39-B, 40-B, and 41-B.

SF-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 42 control assays is plotted in Figure 39-B. The results indicate that the cell O.D. readings reached a mean of 0.990 (SD ± 0.160) with a median of 1.000 (range of 0.420 - 1.240). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

SF-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 42 control assays is presented in Figure 40-B. The results indicate that the average virus load O.D. reading reached a mean of 0.300 (SD ± 0.120 with a median of 0.300 (range of 0.090 - 0.650). This demonstrates that a good cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with very consistent viral CPE results.

SF-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 42 control assays is provided in Figure 41-B. The results indicate that the average differential O.D. reading is 0.690 (SD ± 0.170) with a median of 0.720 (range 0.103 - 0.965). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 72% measurement accuracy.

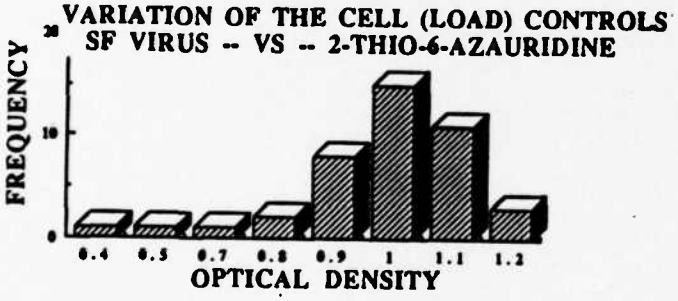


Figure 39-B

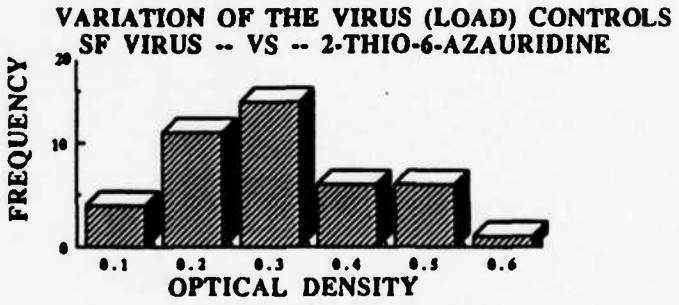


Figure 40-B

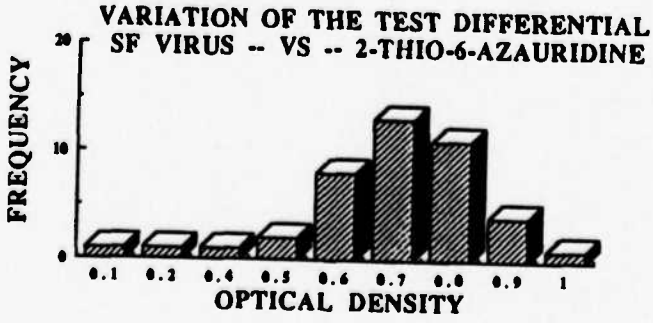


Figure 41-B

4.1.7.2 **SF-Antiviral Activity Results:**

New Drugs with 95% Antiviral Reduction Levels: Out of the 6487 actual single drug tests, 95 new compounds demonstrated excellent antiviral activity, having antiviral reduction values of equal to or better than 95%. This represents around 1.5% of the test compounds being active at this excellent reduction level. These compounds are summarized in **Table 19** according to the highest **Total Antiviral Index (TAI)**. Compound AVS-5580 demonstrated the greatest *in vitro* promise, having a TAI of 97% and **Selectivity Index (SI)** of >313. The next 22 compounds demonstrated excellent antiviral activity with TAI's greater than 50% and SI values that ranged from <1 - >320. Forty other compounds demonstrated good antiviral activity, having TAI's that range from 25 - 48% and SI's from <1 - 18. The rest (32) compounds had only moderate activity with TAI's ranging from 5 - 24 and SI's that ranged from 0.03 to 5.2.

It is worthwhile to note that compounds received in shipment number 62 were mostly colored **(Table 19)**. Therefore those compounds appearing in the 95% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 19

AVS Compounds Active Against Sandfly Virus (SF) at AI_{95} Level

Virus	AVS No.	Shipment#	Test Date	Differntl.	IC 95	TC 95	AI 95	SI	TAI
SF	5580	54	05/02/89	1.130	789.00 >	100000 >	127.00 >	313.00 >	97.22
SF	5278	52	03/21/89	0.753	23.90 >	320.00 >	13.40 >	174.00 >	79.93
SF	5291	52	03/21/89	0.285	8.55 >	320.00 >	37.40 >	217.00 >	69.04
SF	1644	64	05/03/90	0.804	28.00 >	1000.00 >	35.78	68.37 >	68.54
SF	4452	44	08/16/89	0.609	21.10 >	320.00 >	15.15	88.98 >	68.43
SF	4871	61	11/29/89	0.873	29.40 >	1000.00 >	34.04	45.46 >	64.94
SF	6417	66	07/06/90	0.845	29.10 >	1000.00 >	34.38	49.71 >	64.86
SF	5241	52	12/14/89	0.527	28.70	966.00	33.69	45.88	64.58
SF	4796	46	01/12/89	0.639	8.10 >	320.00 >	39.50	94.70 >	62.20
SF	5250	52	03/14/89	0.179	86.70 >	320.00 >	3.69 >	320.00 >	60.23
SF	4855	61	11/29/89	0.831	29.60 >	320.00 >	10.80 >	21.49 >	59.59
SF	5643	57	08/16/89	0.690	31.40 >	320.00 >	10.20 >	24.77 >	54.56
SF	4611	65	07/06/90	0.857	277.00 >	1000.00 >	3.61	62.74 >	54.23
SF	2320	53	04/11/89	0.598	13.90 >	320.00 >	23.00	49.00 >	54.10
SF	6714	67	07/12/90	0.881	409.00 >	1000.00 >	2.44 >	22.43 >	53.52
SF	4763	44	11/02/88	0.937	68.40 >	320.00 >	4.68	0.37 >	52.59
SF	5040	GABSN	02/08/90	0.533	280.00 >	3200.00 >	11.41	28.63 >	52.11
SF	0217	33	04/19/89	0.739	79.60 >	320.00 >	4.02 >	24.40 >	51.36
SF	4822	48	12/14/89	0.583	8.03 >	320.00 >	39.84	25.63 >	51.00
SF	4465	45	12/06/88	0.866	192.00 >	320.00 >	1.66 >	19.80 >	50.81
SF	0206	4	12/05/89	0.626	89.20 >	1000.00 >	11.21	18.43 >	50.77
SF	5067	48	12/14/89	0.559	155.00 >	1000.00 >	6.47	24.62 >	49.90
SF	5075	48	03/01/89	0.743	65.20 >	320.00 >	4.91 >	19.40 >	49.75
SF	5137	57	08/16/89	0.536	44.30	309.00	6.97	13.44 >	48.27
SF	5601	62	12/05/89	0.664	298.00 >	1000.00 >	3.35	17.74 >	47.66
SF	4991	51	03/14/89	0.155	31.60	340.00	10.80	6.36 >	46.17
SF	1217	52	03/15/89	0.663	74.10 >	320.00 >	4.32	9.12	44.43
SF	5058	62	12/05/89	0.570	289.00 >	1000.00 >	3.46 >	8.67 >	44.29
SF	4427	44	03/29/89	0.810	2.91	75.70	26.00	9.24 >	43.67
SF	6986	68	08/07/90	0.596	88.10	963.00	10.93	15.97	41.73
SF	4757	44	11/02/88	1.098	222.00 >	320.00 >	1.44 >	6.39 >	41.63
SF	5138	57	08/16/89	0.536	93.80	1000.00	10.66	9.46 >	40.15
SF	7084	72	08/30/90	0.718	8.32	96.30	11.57	12.21 >	38.97
SF	5271	52	12/14/89	0.608	282.00 >	1000.00 >	3.54	12.65	38.74
SF	4939	51	03/07/89	0.842	10.00	83.80	8.38 >	10.80 >	37.32
SF	3802	35	09/12/89	0.786	0.30 >	10.00 >	33.49	5.51 >	37.07
SF	4934	51	03/07/89	0.836	2.98	80.00	26.90	15.40 >	36.63
SF	4438	44	04/05/89	0.615	8.22	30.70	3.73	4.13 >	36.13
SF	7083	72	08/30/90	0.718	31.10	304.00	9.78	10.22 >	35.95
SF	4753	44	12/14/89	0.547	2.94	30.50	10.37	6.89	35.50
SF	8271	76	12/12/90	0.803	280.00	979.00	3.50	6.33 >	35.25
SF	6315	63	10/04/90	0.718	3.16	30.90	9.78	8.79 >	34.13
SF	4071	62	12/05/89	0.622	302.00 >	1000.00 >	3.31	10.47 >	33.61
SF	6977	68	08/02/90	0.736	89.00	309.00	3.47	5.07 >	32.48
SF	6788	67	07/12/90	0.800	947.00 >	1000.00 >	1.06	0.27 >	32.16
SF	7092	72	10/25/90	0.569	1070.00 >	1000.00 >	0.94	0.03 >	32.11
SF	3688	32	11/10/88	1.011	95.40 >	320.00 >	3.36	8.33 >	31.82
SF	6209	62	01/16/90	0.990	291.00 >	320.00 >	1.10 >	2.55 >	31.54
SF	7085	72	08/30/90	0.674	9.06	100.00	11.03	6.44	30.82
SF	4747	44	11/01/88	0.853	27.50	96.60	3.52	7.16	30.80
SF	5532	56	08/09/89	0.697	293.00	966.00	3.30	3.70 >	30.01
SF	2275	53	04/11/89	0.721	86.70 >	320.00 >	3.69	6.75	29.77
SF	6477	66	07/10/90	0.690	28.30	288.00	10.15	6.08 >	28.71
SF	6482	66	07/10/90	0.690	28.70	97.30	3.39	4.60 >	28.03
SF	1645	33	11/01/90	0.873	29.60 >	100.00 >	3.38	5.43 >	27.60
SF	5498	53	04/18/89	1.058	287.00 >	320.00 >	1.11 >	2.94 >	27.25
SF	5905	61	10/31/89	0.821	3.20	30.30	9.47 >	8.06 >	27.06

Table 19 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 95	TC 95	AI 95	SI	TAI
SF	4990	51	03/14/89	0.155 <	1.00	198.00 >	198.00 >	4.52 >	26.19
SF	4240	39	09/12/89	0.614	9.70	30.90	3.18	5.69	25.90
SF	6194	62	01/31/90	0.650	290.00 >	320.00 >	1.10 >	2.64 >	25.76
SF	6184	62	01/09/90	0.631	283.00 >	320.00 >	1.13 >	3.51 >	25.70
SF	6179	62	01/09/90	0.728	28.70	96.60	3.36	4.50	25.54
SF	6202	62	01/31/90	0.663	294.00 >	320.00 >	1.09 >	2.35 >	24.85
SF	2453	64	03/13/90	0.494	9.18	30.90	3.36	3.63 >	23.92
SF	6837	68	08/02/90	0.711	89.60	306.00	3.41	3.16	23.76
SF	7087	72	10/02/90	0.742	9.30 >	100.00 >	10.75	4.04	23.48
SF	5253	52	03/15/89	0.644	2.62	29.80	11.40 >	4.81 >	23.45
SF	5495	53	04/18/89	1.086	2.83 >	320.00 >	113.00 >	5.16 >	23.12
SF	6225	62	11/01/90	0.791	295.00	966.00	3.27	3.40 >	23.09
SF	6195	62	12/05/90	0.583	287.00	963.00	3.35	4.09	22.90
SF	7086	72	08/30/90	0.674	2.91	29.90	10.26	4.94 >	21.69
SF	6214	62	01/16/90	1.024	302.00 >	320.00 >	1.06 >	1.79 >	20.87
SF	8370	76	12/13/90	0.778	320.00	2260.00	7.05	4.06	20.33
SF	6219	62	11/01/90	0.791	286.00 >	320.00 >	1.12 >	3.06 >	20.26
SF	6217	62	01/16/90	0.777	302.00 >	320.00 >	1.06 >	1.79 >	20.06
SF	6976	68	09/13/90	0.709	90.60	308.00	3.39	2.48	19.75
SF	5531	56	08/09/89	0.697	96.00	320.00	3.33	3.05 >	19.69
SF	6979	68	08/07/90	0.665	315.00	966.00	3.07	3.16	19.32
SF	7032	69	07/31/90	0.617	290.00 >	320.00 >	1.10 >	2.68 >	18.27
SF	7457	73	09/20/90	0.706	3.02	27.90	9.24	3.46 >	17.22
SF	6197	62	01/31/90	0.646	301.00 >	320.00 >	1.06 >	1.86 >	16.97
SF	4754	44	11/02/88	1.195	2.95	9.66	3.27	3.43 >	16.63
SF	7042	69	07/31/90	0.500	94.20	309.00	3.28	2.82	15.92
SF	7049	69	08/02/90	0.756	296.00 >	320.00 >	1.08 >	2.19 >	15.67
SF	7073	72	10/25/90	0.447	312.00	986.00	3.16	2.66 >	15.48
SF	6207	62	10/30/90	0.720	302.00	966.00	3.20	2.74	15.08
SF	7458	73	09/20/90	0.706	2.96	9.61	3.24	2.82 >	14.86
SF	6198	62	01/31/90	0.646	300.00 >	320.00 >	1.07 >	1.91 >	14.47
SF	6201	62	01/31/90	0.663	302.00 >	320.00 >	1.06 >	1.79 >	13.78
SF	7430	70	08/29/90	0.781	300.00 >	320.00 >	1.07 >	1.94 >	11.23
SF	7003	69	07/26/90	0.716	301.00 >	320.00 >	1.06 >	1.86 >	11.10
SF	5242	52	03/08/89	1.035	300.00 >	320.00 >	1.07 >	1.91 >	10.88
SF	7418	70	08/23/90	0.743	302.00 >	320.00 >	1.06 >	1.81 >	9.00
SF	4074	48	12/07/89	0.524 <	1.00	26.50 >	26.50 >	1.89 >	6.22
SF	7023	69	07/31/90	0.749	302.00	88.30	0.29	0.03 >	5.04

New Drugs with 50% Antiviral Reduction Levels: Out of the 6487 actual single drug tests, 283 new compounds demonstrated good antiviral activity, having antiviral reduction values equal to or better than 50%. This represents around 4.4% of the test compounds being active at this good antiviral reduction level. These compounds are summarized in Table 20 according to the highest Total Antiviral Index (TAI). AVS-5277, 2951 and 4098 demonstrated the best TAI of 63, 52 and 47% and SI is of >150. Twenty other compounds demonstrated moderate antiviral activity, having TAI's that ranged from 31 - 43% and SI's from 3 - 173. The rest (260 compounds) showed marginal antiviral activity with TAI's that ranged from <1 to 29% and SI's from <1 - >320.

It is worthwhile to note (Table 20) that compounds received in shipment number 62 were mostly colored. Therefore those compounds appearing in the 50% active category from shipment number 62 should be interpreted with caution, since colored compounds create false positive readings with the MTT assay.

Table 20

AVS Compounds Active Against Sandfly Virus (SF) at AI_{50} Level

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
SF	5277	52	12/14/89	0.527	6.26 >	1000.00 >	159.87 >	159.87 >	63.70
SF	2951	26	09/07/89	0.658	0.21 >	32.00 >	151.74 >	151.74 >	51.85
SF	4098	37	02/24/89	1.041	0.00 >	0.00 >	201.00 >	201.00 >	47.49
SF	1019	28	03/06/90	0.575	2.24 >	100.00 >	44.59	26.67 >	43.49
SF	5794	59	10/10/89	0.542	34.50 >	320.00 >	9.28 >	9.28 >	42.19
SF	3592	ABEBE	01/11/89	0.509	26.10 >	320.00 >	12.20 >	12.20 >	41.57
SF	2948	26	09/07/89	0.658	1.60 >	320.00 >	199.84	173.25 >	40.53
SF	1850	53	04/11/89	0.666	10.40 >	100.00 >	9.61	7.42 >	38.87
SF	0919	52	03/15/89	0.502	2.30	162.00	70.60	35.90	38.47
SF	4989	51	03/14/89	0.182	2.28 >	320.00 >	141.00 >	141.00 >	36.16
SF	5834	59	01/24/90	1.316	201.00 >	320.00 >	1.59 >	1.59 >	36.01
SF	5793	59	10/10/89	0.542	58.50 >	320.00 >	5.47 >	5.47 >	35.69
SF	4472	45	10/11/89	0.952	57.70 >	320.00 >	5.54 >	5.54 >	33.99
SF	3621	32	11/09/88	0.783	42.50 >	320.00 >	7.52	5.91 >	33.34
SF	4875	46	01/18/89	1.142	64.90 >	320.00 >	4.93 >	4.93 >	33.29
SF	2980	25	09/07/89	0.725	0.20	3.09	15.60	8.83 >	32.54
SF	2433	17	08/30/89	0.660	10.50 >	320.00 >	30.55	9.55 >	31.95
SF	4984	51	03/14/89	0.226	7.93	228.00	28.70	14.50 >	31.50
SF	3615	32	11/08/88	0.529	56.60	262.00	4.63	3.20 >	31.48
SF	8353	75	11/29/90	0.765	33.30 >	320.00 >	9.60	8.05 >	31.38
SF	0002	46	01/24/89	1.229	51.60 >	320.00 >	6.21 >	6.21 >	31.30
SF	7382	70	08/21/90	0.770	112.00 >	1000.00 >	8.91 >	8.91 >	31.26
SF	6234	GABSN	02/08/90	0.586	484.00 >	3200.00 >	6.61 >	6.61 >	30.51
SF	4439	44	10/11/89	0.857	7.74	65.30	8.44	6.20 >	29.28
SF	5283	52	03/21/89	0.627	2.97	251.00	84.60	38.20 >	29.05
SF	6205	62	01/31/90	0.593	75.20 >	320.00 >	4.25 >	4.25 >	28.28
SF	4473	45	10/11/89	0.937	99.40 >	320.00 >	3.22 >	3.22 >	27.88
SF	5186	58	10/04/89	0.694	49.90	887.00	17.76	8.30 >	27.60
SF	4764	44	11/08/88	0.827	106.00 >	320.00 >	3.02 >	3.02 >	27.25
SF	5369	54	05/02/89	1.100	9.09 >	320.00 >	35.20	18.50 >	27.11
SF	4432	44	04/05/89	0.580	20.30 >	100.00 >	4.92 >	4.92 >	27.00
SF	5507	53	04/18/89	0.956	42.50	309.00	7.27	3.92 >	26.77
SF	5515	53	04/18/89	0.905	10.80	53.90	4.99	2.38 >	26.74
SF	8499	75	11/29/90	0.728	58.10 >	320.00 >	5.51 >	5.51 >	26.49
SF	3619	32	11/09/88	0.705	93.10 >	320.00 >	3.44 >	3.44 >	26.17
SF	5625	57	06/28/89	0.991	64.80 >	320.00 >	4.94 >	4.94 >	26.01
SF	3584	32	11/03/88	1.270	17.90 >	100.00 >	5.59	4.32 >	25.91
SF	8348	75	11/29/90	0.703	48.40	216.00	4.45	3.00	25.89
SF	6753	67	07/12/90	0.866	86.20 >	1000.00 >	11.60	8.80	25.64
SF	1159	52	08/23/89	0.777	32.90	234.00	7.12	5.08	25.57
SF	1730	45	11/22/88	0.974	75.20 >	320.00 >	4.25 >	4.25 >	25.57
SF	5998	61	02/01/90	0.632	3.69 >	32.00 >	8.67	2.51 >	25.57
SF	6412	66	07/06/90	0.790	32.00	82.70	2.59	1.79 >	25.16
SF	5072	48	03/01/89	0.743	19.50	279.00	14.30	7.21 >	25.11
SF	4035	65	07/06/90	0.794	185.00 >	1000.00 >	5.42 >	5.42 >	25.10
SF	4770	44	11/08/88	0.914	27.10	179.00	6.60	4.00 >	24.98
SF	6236	GABSN	02/08/90	0.548	547.00 >	3200.00 >	5.85 >	5.85 >	24.69
SF	0148	2	08/23/89	0.750	0.32 >	3.20 >	10.00	6.84 >	24.56
SF	2274	12	08/30/89	0.535	18.80 >	100.00 >	5.31 >	5.31 >	24.52
SF	5041	GABSN	02/08/90	0.589	209.00 >	1000.00 >	4.79 >	4.79 >	24.40
SF	5450	53	04/12/89	0.956	2.81	29.30	10.40	6.33 >	24.31
SF	5534	56	06/14/89	1.257	62.80 >	320.00 >	5.10 >	5.10 >	24.30
SF	6218	62	12/05/90	0.831	20.50 >	320.00 >	15.58	7.93	24.28
SF	6373	63	02/27/90	0.449	78.50 >	320.00 >	4.07	2.87 >	24.26
SF	6321	63	03/15/90	0.643	2.81	21.10	7.51	5.53 >	23.75
SF	2363	15	08/30/89	0.630	7.79	63.10	8.09	5.40 >	23.58
SF	2151	52	03/15/89	0.663	48.40 >	320.00 >	6.61	3.54	23.52

Table 20 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
SF	7469	73	10/30/90	0.815	90.20	777.00	8.62	5.53	23.47
SF	7910	75	11/06/90	0.838	544.00 >	3200.00 >	5.89	5.33 >	23.08
SF	4241	46	01/24/89	1.156	2.48	22.90	9.26	6.00 >	23.02
SF	3558	31	03/29/89	0.732	30.00	182.00	6.07	3.39	22.91
SF	5497	53	04/18/89	1.086	88.40 >	320.00 >	3.62 >	3.62 >	22.90
SF	4943	51	03/07/89	0.915	1.71	22.50	13.20	8.70 >	22.87
SF	8251	76	12/11/90	0.768	50.80	618.00	12.16	8.40 >	22.87
SF	1992	56	06/13/89	1.258	94.70 >	320.00 >	3.38 >	3.38 >	22.74
SF	6176	62	01/09/90	0.565	75.20 >	320.00 >	4.25 >	4.25 >	22.63
SF	6191	62	01/31/90	0.689	96.10 >	320.00 >	3.33 >	3.33 >	22.58
SF	4769	44	11/08/88	0.914	14.40	92.40	6.41	3.79 >	22.35
SF	3690	32	11/10/88	1.040	32.00 >	100.00 >	3.12 >	3.12 >	22.15
SF	5372	54	05/02/89	1.044	68.40	180.00	2.63	1.20 >	21.97
SF	2315	13	12/21/88	0.924	100.00 >	100.00 >	1.00	0.56 >	21.92
SF	3803	35	12/13/88	0.623 <	1.00	19.20 >	19.20 >	0.58 >	21.91
SF	5070	48	03/01/89	0.982 <	1.00	142.00 >	142.00 >	62.40 >	21.74
SF	5508	53	04/18/89	0.899	45.70	184.00	4.02	2.27 >	21.73
SF	8347	75	11/29/90	0.640	273.00 >	320.00 >	1.17 >	1.17 >	21.61
SF	2631	19	09/06/89	1.159	25.60 >	320.00 >	12.51	6.64 >	21.49
SF	5818	59	01/31/90	0.662	49.60	237.00	4.78	3.17 >	21.49
SF	7332	70	09/13/90	0.720	42.10	204.00	4.85	3.48 >	21.06
SF	3689	32	11/10/88	1.011	22.20 >	100.00 >	4.51	4.07 >	20.88
SF	5494	53	04/18/89	1.086	19.60 >	100.00 >	5.09	3.63 >	20.88
SF	6943	69	09/06/90	0.827	49.70	541.00	10.88	6.27	20.74
SF	7459	73	09/20/90	0.821	2.35	18.70	7.98	5.16 >	20.72
SF	7484	73	10/30/90	0.612	76.30	849.00	11.12	4.94 >	20.60
SF	5525	56	08/08/89	1.319	52.10	424.00	8.13	4.03	20.56
SF	5791	59	10/10/89	0.566	32.00	204.00	6.38	2.34 >	20.48
SF	7439	73	10/25/90	0.413	70.80	646.00	9.12	6.57 >	20.27
SF	4744	44	11/01/88	0.733	9.07	63.60	7.02	4.84	20.22
SF	4617	GABSN	02/08/90	0.533	566.00 >	3200.00 >	5.66	4.04	20.12
SF	4988	51	03/14/89	0.182 <	1.00	184.00 >	184.00 >	104.00 >	20.11
SF	4785	46	01/12/89	0.684 <	1.00	25.80 >	25.80 >	7.20 >	20.09
SF	3935	35	12/13/88	0.519	19.90	175.00	8.80	4.81	19.88
SF	4993	51	03/14/89	0.215	3.09	202.00	65.30	36.60 >	19.88
SF	5548	56	08/09/89	0.975	16.90	173.00	10.27	5.92 >	19.85
SF	6946	69	09/06/90	0.839	137.00	558.00	4.08	2.46	19.85
SF	4768	44	11/08/88	0.967	16.80	137.00	8.15	3.43 >	19.77
SF	1976	1	08/30/89	0.723	16.90 >	100.00 >	5.92	4.41 >	19.58
SF	5795	59	10/10/89	0.619	9.11	198.00	21.71	5.58 >	19.57
SF	5780	59	10/10/89	0.576	54.90	222.00	4.05	2.94 >	19.44
SF	5790	59	10/10/89	0.570	56.60 >	320.00 >	5.66	1.34 >	19.27
SF	7068	72	08/30/90	0.721	51.90	208.00	4.01	2.92	19.21
SF	4937	51	03/07/89	0.865	16.80	144.00	8.59	3.92 >	19.18
SF	5520	56	06/13/89	1.099	164.00 >	320.00 >	1.95 >	1.95 >	19.11
SF	2318	13	08/30/89	0.652	0.50	10.00	20.01	4.02	19.09
SF	5543	56	08/09/89	0.846	0.23	1.81	7.73	4.52	18.77
SF	4919	46	02/01/89	1.166	33.30	184.00	5.51	3.01	18.70
SF	5678	57	08/16/89	0.699	64.50	404.00	6.25	2.69	18.63
SF	6200	62	12/05/90	0.583	10.00 >	320.00 >	32.00 >	32.00	18.63
SF	5782	59	10/10/89	0.547	65.70	216.00	3.28	2.40 >	18.50
SF	6570	66	05/30/90	0.752	66.40 >	320.00 >	4.82 >	4.82 >	18.41
SF	3624	32	11/09/88	0.814	256.00 >	320.00 >	1.25	1.16 >	18.39
SF	1355	64	05/03/90	0.809	170.00	879.00	5.17	3.38	18.36
SF	5626	57	06/28/89	0.983	61.60	308.00	4.99	3.31 >	18.19
SF	3613	32	11/08/88	0.897	41.00 >	320.00 >	7.81	0.18 >	18.15
SF	2811	48	02/07/89	1.359	0.06	0.26	4.52	2.54 >	18.08
SF	6073	62	12/21/89	0.602	5.18	21.00	4.06	2.99 >	18.01
SF	5285	52	03/21/89	0.684	5.24	20.50	3.92	2.83 >	17.97

Table 20 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
SF	3677	32	11/09/88	0.840	8.46 >	10.00 >	1.18	1.18 >	17.80
SF	6988	68	06/21/90	0.764	71.40 >	320.00 >	4.48	3.89 >	17.80
SF	4459	45	11/23/88	0.689	79.60 >	320.00 >	4.02 >	4.02 >	17.74
SF	5503	53	04/18/89	0.979	22.80	155.00	6.81	3.19	17.57
SF	8293	75	11/28/90	0.818	157.00 >	320.00 >	2.03 >	2.03 >	17.41
SF	4435	44	04/05/89	0.590	95.70 >	100.00 >	1.04 >	1.04 >	17.40
SF	2506	21	09/06/89	1.058	2.16 >	10.00 >	4.64	4.09 >	17.02
SF	4981	51	03/14/89	0.187	1.85 >	320.00 >	173.00 >	173.00 >	16.99
SF	8374	76	01/16/91	0.822	554.00	2050.00	3.71	2.67 >	16.87
SF	4995	51	03/14/89	0.232	7.96	52.90	6.65	2.44 >	16.77
SF	5142	57	08/16/89	0.489	61.10	210.00	3.43	2.54	16.64
SF	5500	53	04/18/89	1.057	1.25	5.45	4.36	2.47 >	16.47
SF	5339	53	04/12/89	0.960	26.50	188.00	7.10	3.48	16.29
SF	8358	76	01/18/91	0.778	54.10	239.00	4.42	3.13	16.26
SF	7434	70	10/02/90	0.717	174.00	580.00	3.34	2.13	16.25
SF	5284	52	03/21/89	0.627	182.00 >	320.00 >	1.76 >	1.76 >	16.23
SF	7935	75	11/08/90	0.569	176.00	762.00	4.34	3.08	16.23
SF	3684	32	11/10/88	1.011	100.00 >	320.00 >	3.20 >	3.20 >	16.16
SF	9121	77	01/31/91	0.636	1860.00 >	3200.00 >	1.72 >	1.72 >	16.13
SF	5367	54	05/02/89	1.149	81.10 >	320.00 >	3.95	2.83 >	16.05
SF	4739	44	07/06/89	1.116	15.10	62.60	4.15	2.88	16.01
SF	5879	61	10/31/89	0.860	27.50	171.00	6.24	3.41	15.99
SF	2503	21	09/06/89	1.121	0.59	6.60	11.13	3.43	15.85
SF	6130	62	12/28/89	0.940	17.60	68.70	3.90	2.82 >	15.68
SF	0360	48	02/07/89	1.334	0.09	0.61	6.63	2.74	15.44
SF	5652	57	07/06/89	1.104	30.90	129.00	4.19	2.18 >	15.36
SF	0346	2	05/10/89	0.961	0.54	2.89	5.33	3.26 >	15.31
SF	2563	48	02/07/89	1.288	5.02 >	3.20 >	0.64	0.50 >	15.19
SF	2979	48	02/07/89	1.110	1.79	4.48	2.50	1.04 >	15.12
SF	6887	69	07/17/90	0.623	19.20	66.00	3.45	2.56	14.97
SF	7461	73	09/20/90	0.691	17.90	83.50	4.67	3.23	14.95
SF	7048	69	08/02/90	0.776	57.40	203.00	3.54	2.52 >	14.79
SF	7378	70	08/21/90	0.711	194.00	660.00	3.40	2.52	14.73
SF	6945	69	09/06/90	0.839	95.00	212.00	2.24	1.64	14.44
SF	8378	76	12/13/90	0.548	170.00	618.00	3.64	2.52	14.33
SF	5350	53	04/12/89	1.099	17.50	61.70	3.52	2.15 >	14.28
SF	8311	76	12/12/90	0.734	224.00	962.00	4.29	2.86 >	14.26
SF	6707	67	07/12/90	0.873	7.30	76.60	10.50	6.68	14.09
SF	5274	52	03/21/89	1.029	4.86	13.30	2.74	0.82 >	13.93
SF	5252	52	03/14/89	0.185	< 1.00	25.20 >	25.20 >	13.10 >	13.86
SF	6226	62	01/16/90	0.908	231.00 >	320.00 >	1.38 >	1.38 >	13.83
SF	5528	56	06/13/89	1.294	6.37	21.70	3.41	2.49	13.69
SF	4592	61	11/29/89	0.859	21.50	67.50	3.15	1.41 >	13.40
SF	5542	56	06/14/89	1.113	1.83	7.06	3.86	2.81 >	13.36
SF	6435	66	07/06/90	0.771	20.30	92.40	4.55	0.03	13.26
SF	1980	27	05/16/89	1.064	24.60 >	100.00 >	4.06	2.29 >	13.03
SF	3038	28	09/07/89	0.677	0.06 >	3.20 >	50.48	4.08	12.88
SF	4765	44	11/08/88	0.845	89.20	181.00	2.03	0.10	12.82
SF	6944	69	09/06/90	0.827	61.60	223.00	3.62	1.56 >	12.81
SF	6212	62	01/16/90	0.999	158.00 >	320.00 >	2.02 >	2.02 >	12.74
SF	2812	48	02/07/89	1.352	0.01 >	0.01 >	1.11 >	1.11 >	12.67
SF	6029	61	02/01/90	0.693	65.70	209.00	3.18	2.33	12.59
SF	7072	72	10/25/90	0.447	239.00	630.00	2.63	1.86 >	12.51
SF	5485	66	05/08/90	0.821	179.00 >	320.00 >	1.79 >	1.79 >	12.47
SF	4436	44	04/05/89	0.530	24.40	54.00	2.21	1.20	12.40
SF	6223	62	01/16/90	0.888	264.00 >	320.00 >	1.21 >	1.21 >	12.34
SF	5280	52	03/21/89	0.766	1.79	5.21	2.91	1.58 >	12.26
SF	7424	70	08/23/90	0.643	162.00 >	320.00 >	1.97 >	1.97 >	12.25
SF	8586	76	01/23/91	0.817	44.30	256.00	5.78	2.52 >	12.19

Table 20 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diffrntl.	IC 50	TC 50	AI 50	SI	TAI
SF	7333	70	09/13/90	0.732	67.60	204.00	3.01	2.05 >	12.03
SF	2449	18	09/06/89	1.121	21.10	93.60	4.43	0.47 >	11.99
SF	8350	75	11/29/90	0.648	9.52	21.00	2.21	1.27 >	11.99
SF	3450	32	04/04/89	0.700	10.00	19.50	1.95	1.02 >	11.92
SF	5403	54	05/04/89	0.678	28.40	91.60	3.23	2.18	11.87
SF	4750	44	11/01/88	0.919	13.40	44.30	3.31	1.75 >	11.66
SF	4996	51	03/14/89	0.182 <	1.00 >	320.00 >	320.00 >	320.00 >	11.56
SF	7373	70	08/21/90	0.705	174.00 >	320.00 >	1.84	1.69 >	11.52
SF	6978	68	06/21/90	0.856	187.00 >	320.00 >	1.71 >	1.71 >	11.45
SF	5997	61	11/07/89	0.918	2.88	28.30	9.84	2.40 >	11.40
SF	5936	60	10/24/89	0.933	21.40	57.40	2.68	1.62 >	11.35
SF	7365	70	08/16/90	0.660	769.00 >	1000.00 >	1.30	1.00 >	11.31
SF	5156	57	08/15/89	0.581	1.00	2.68	2.68	1.23	11.24
SF	4751	44	11/01/88	0.971	22.50	56.40	2.51	1.54 >	11.00
SF	5484	53	12/14/89	0.547	198.00	618.00	3.13	2.16 >	10.98
SF	5653	57	07/06/89	1.104	9.39	26.50	2.82	1.60 >	10.87
SF	5693	57	07/18/89	1.002	141.00 >	320.00 >	2.27	1.94 >	10.84
SF	2586	19	09/06/89	1.103	69.50 >	320.00 >	4.60	0.10 >	10.81
SF	8699	76	01/22/91	0.645	179.00 >	320.00 >	1.79	1.41 >	10.70
SF	4982	51	03/14/89	0.203 <	1.00	278.00 >	278.00 >	151.00 >	10.53
SF	5496	53	04/18/89	1.086	80.00 >	100.00 >	1.25 >	1.25 >	10.35
SF	4051	37	10/04/90	0.779	0.29	0.66	2.24	1.64 >	10.28
SF	5538	56	06/14/89	1.315	213.00 >	320.00 >	1.51 >	1.51 >	10.28
SF	3686	32	11/10/88	0.954	50.50	179.00	3.55	2.15	10.26
SF	4827	48	02/14/89	1.221	241.00 >	320.00 >	1.33 >	1.33 >	10.23
SF	8352	75	11/29/90	0.765 <	1.00	5.61 >	5.61 >	2.67 >	10.22
SF	6422	66	07/06/90	0.771	211.00	585.00	2.78	1.79	10.19
SF	8250	76	12/11/90	0.929	75.70	205.00	2.72	1.96 >	10.17
SF	7059	72	10/25/90	0.681	184.00	602.00	3.28	1.85	10.15
SF	4829	48	02/14/89	1.222	252.00 >	320.00 >	1.27 >	1.27 >	10.11
SF	4756	44	11/02/88	1.131	7.52	19.60	2.61	1.79 >	10.00
SF	4428	44	03/29/89	1.002	27.90	63.10	2.26	1.17	9.97
SF	7487	73	10/30/90	0.862	214.00	720.00	3.36	2.43	9.93
SF	8511	76	12/19/90	0.821	1390.00 >	3200.00 >	2.30	2.30 >	9.84
SF	8698	76	01/22/91	0.645	8.75	27.70	3.17	2.16	9.76
SF	4887	46	01/18/89	1.071	2.85	15.10	5.29	2.43 >	9.61
SF	5714	58	10/04/90	0.762	2.39	6.05	2.53	1.70	9.61
SF	5906	61	10/31/89	0.821 <	1.00	10.40 >	10.45 >	2.72 >	9.54
SF	7356	70	08/16/90	0.565	228.00 >	320.00 >	1.41 >	1.41 >	9.43
SF	4800	46	01/17/89	1.452	188.00 >	320.00 >	1.70 >	1.70 >	9.35
SF	4036	65	04/24/90	0.742	223.00 >	320.00 >	1.43 >	1.43 >	9.14
SF	5307	52	03/22/89	1.044	20.10	60.60	3.02	1.50	8.89
SF	0147	64	03/13/90	0.582	27.40	90.30	3.29	2.18 >	8.50
SF	4527	47	02/01/89	1.259	8.27	17.60	2.12	0.87 >	8.48
SF	6413	66	05/10/90	0.823	23.90	51.00	2.13	0.77 >	8.26
SF	5247	52	03/14/89	0.232 <	1.00	196.00 >	196.00 >	88.50 >	8.04
SF	6970	68	08/02/90	0.683	69.80	186.00	2.66	1.70 >	8.00
SF	8285	75	11/28/90	0.823	147.00 >	320.00 >	2.17	0.47 >	7.83
SF	8677	76	01/22/91	0.716	250.00 >	320.00 >	1.28 >	1.28 >	7.80
SF	4752	44	11/01/88	0.971	5.31	8.68	1.64	1.12	7.74
SF	5197	58	10/04/90	0.764	23.70	56.40	2.38	1.46 >	7.73
SF	5994	61	11/07/89	0.838	256.00 >	320.00 >	1.25	1.00 >	7.66
SF	6896	69	09/05/90	0.914	2.61	6.82	2.61	1.79	7.52
SF	7320	70	08/14/90	0.763	78.90	207.00	2.62	1.88	7.45
SF	3491	65	04/17/90	1.064	289.00 >	320.00 >	1.11 >	1.11 >	7.24
SF	4911	46	01/31/89	1.131	171.00	284.00	1.66	0.85 >	7.10
SF	7055	72	08/29/90	0.823	89.60	207.00	2.31	1.67	7.05
SF	5134	57	08/15/89	0.868	23.30	59.90	2.57	1.69	7.04
SF	7344	70	08/14/90	0.716	20.60	66.70	3.23	1.55	6.87

Table 20 (Cont'd)

Virus	AVS No.	Shipment#	Test Date	Diff-rntl.	IC 50	TC 50	AI 50	SI	TAI
SF	4951	51	03/07/89	0.549	32.00	72.20	2.26	1.45	6.82
SF	5539	56	08/09/89	0.864	2.59	6.96	2.69	1.71	6.79
SF	8313	76	12/12/90	0.862	2860.00 >	3200.00 >	1.12 >	1.12 >	6.73
SF	7323	70	08/14/90	0.735	918.00 >	1000.00 >	1.09 >	1.09 >	6.58
SF	4434	44	04/05/89	0.590	28.20	53.00	1.88	1.00	6.30
SF	5133	56	08/15/89	0.841	7.62	8.91	1.17	0.72	6.30
SF	8376	76	12/13/90	0.606	27.70	89.90	3.25	1.94	6.13
SF	7057	72	10/25/90	0.681	85.00	215.00	2.53	1.51 >	6.09
SF	6900	69	07/19/90	0.761	9.19	19.90	2.17	1.51	5.85
SF	2589	65	04/12/90	0.834	273.00 >	320.00 >	1.17 >	1.17 >	5.74
SF	5363	54	06/28/89	1.102	10.00	100.00	10.00	0.40 >	5.71
SF	6675	64	04/05/90	0.919	23.40	52.10	2.23	1.24	5.69
SF	2590	19	09/06/89	1.190	191.00 >	320.00 >	1.68	0.02 >	5.67
SF	1337	33	08/29/89	0.868	23.50 >	32.00 >	1.36 >	1.36 >	5.53
SF	5174	58	07/25/89	1.341	23.60	64.90	2.74	0.04	5.46
SF	7427	70	08/29/90	0.820	249.00 >	320.00 >	1.28 >	1.28 >	5.46
SF	5251	52	03/14/89	0.179 <	1.00	55.50 >	55.50 >	32.70 >	5.34
SF	7044	69	08/02/90	0.734	95.60	194.00	2.02	1.36	5.22
SF	4762	44	11/02/88	1.114	28.50	210.00	7.37	0.09	5.20
SF	4746	44	11/01/88	0.964	82.70	140.00	1.69	0.23	5.17
SF	5113	56	08/15/89	0.809	7.57	18.30	2.41	1.50	4.83
SF	5449	53	04/12/89	1.022	10.00	20.40	2.04	0.61	4.73
SF	7429	70	08/29/90	0.765	246.00 >	320.00 >	1.30	0.80 >	4.69
SF	4859	48	02/21/89	0.993	81.40	167.00	2.05	1.08 >	4.67
SF	5098	56	08/08/89	1.430	227.00	443.00	1.95	1.02	4.57
SF	2600	65	04/12/90	0.927	850.00 >	1000.00 >	1.18	0.34 >	4.33
SF	7071	72	08/30/90	0.763	100.00 >	100.00 >	1.00 >	1.00 >	4.23
SF	3559	31	03/29/89	0.815	95.70	165.00	1.72	0.91	4.04
SF	5383	54	05/02/89	1.161	79.00	169.00	2.14	1.18	4.01
SF	8541	76	01/03/91	0.912	23.60	2.69	0.11	0.04	3.78
SF	2591	65	04/12/90	0.927	434.00 >	1000.00 >	2.31	0.06 >	3.70
SF	7022	69	07/26/90	0.572	80.20	177.00	2.21	1.32	3.69
SF	7040	69	09/11/90	1.073	259.00	452.00	1.74	0.89	3.59
SF	7369	70	08/16/90	0.730	305.00 >	320.00 >	1.05 >	1.05 >	3.56
SF	7074	72	08/30/90	0.747	292.00 >	320.00 >	1.10 >	1.10 >	3.39
SF	7488	73	10/30/90	0.838	804.00 >	1000.00 >	1.24 >	1.24 >	3.33
SF	6865	68	06/19/90	0.682 <	1.00 >	320.00 >	320.00 >	0.86 >	3.32
SF	6886	69	09/05/90	0.811	2.79	5.28	1.89	0.99	3.29
SF	3801	35	12/13/88	0.725	23.40	2.20	0.09	0.02	3.27
SF	5153	57	07/11/89	1.141	97.80	169.00	1.73	0.97	3.14
SF	7925	75	11/08/90	0.649	2620.00 >	3200.00 >	1.22	0.38 >	3.07
SF	7940	75	11/08/90	0.537	320.00	547.00	1.71	1.00	3.01
SF	5797	59	10/10/89	0.656	312.00 >	320.00 >	1.02	0.07 >	2.85
SF	5384	54	05/02/89	1.129	27.70	50.70	1.83	0.97	2.73
SF	4891	46	01/18/89	1.265 <	1.00	2.21 >	2.21 >	1.29 >	2.72
SF	2572	65	04/12/90	0.945	306.00 >	320.00 >	1.05	1.02 >	2.47
SF	5210	58	08/01/89	1.262	27.00	54.20	2.01	0.72	2.46
SF	6906	69	09/05/90	0.916	9.70	18.10	1.87	0.78	2.44
SF	5774	59	10/10/89	0.548	100.00	30.30	0.30	0.20 >	2.30
SF	8332	76	12/13/90	0.738	286.00	525.00	1.84	0.66	2.17
SF	3800	35	12/13/88	0.725 <	1.00	2.61 >	2.61 >	1.39 >	1.98
SF	8326	76	12/13/90	0.720	313.00	537.00	1.72	0.91	1.96
SF	6942	69	09/06/90	0.886	885.00 >	1000.00 >	1.13	0.83 >	1.89
SF	6220	62	01/16/90	0.943	313.00 >	320.00 >	1.02	0.84 >	1.83
SF	7110	70	09/13/90	0.633	88.50	153.00	1.73	0.75	1.66
SF	7036	69	09/11/90	1.112	312.00	460.00	1.48	0.70 >	1.25
SF	4032	65	07/03/90	0.917	291.00	443.00	1.52	0.34	0.84
SF	2902	26	09/07/89	0.652	85.50	89.30	1.04	0.70 >	0.60
SF	4609	48	03/01/89	0.785	0.32	0.60	1.87 <	1.00 >	0.34

New Drugs with 25% Antiviral Reduction Levels: Of the 6487 actual single drug tests, 492 new compounds demonstrated moderate antiviral activity, having antiviral reduction values equal to or better than 25%. This represents around 8.0% of the test compounds being active at this marginal antiviral reduction level.

In general, when compared to the 95% and 50% antiviral activity categories, the compounds in this (25%) category do not appear to have any significant antiviral promise and probably do not need to be presently confirmed.

4.1.7.3. **Confirmatory Assays:**

Some of the compounds were sent to us in more than one separate drug shipment. These compounds were tested more than once. Data from the confirmatory assays are summarized in **Table 21.** If a compound showed $\geq$50% reduction in CPE during this contract period, then it was considered a candidate for confirmatory testing. The confirmatory tests are from active compounds picked up by both the VR and MTT assay testing. Out of 323 confirmatory tests, 228 compounds were confirmed active during this reporting period and the remaining 95 compounds gave conflicting results. The criteria for activity is that the confirmatory test has to show $\geq$25% reduction in CPE. Failure to confirm the activity in these compounds was probably due to differences during the assay conditions:

1) In confirmatory assays the concentration range is adjusted to a more accurate semilog scale to maximize the TAI window.

2) Differences in the "differential" of the two runs can cause the compound to read positive or negative, falsely. The variability in the differential can cause false positive or negative bias to be introduced into the calculations, thus reflecting the variability in the maximum activity of the compound.

3) The metabolic rate, cell and virus load/well, age, and passage number of the cells may cause the above observed variability in the confirmatory results.

4) Problems associated with stability and storage of the compound (i.e., different lot numbers, solubility, light sensitivity, hygroscopic, etc.).

5) Problems associated with technical execution of large numbers of plates by different technicians.

During this reporting period the overall confirmatory rate against SF was 71%. The conflicting results should be retested at a later date based on the availability of the compound.

4.1.7.4 **Recommendations of SF-Actives Based Upon the *In Vitro* Results with MTT Assay (Vero Cells).**

Based upon the *in vitro* results with the MTT assay (Vero cells) we recommend the following:

1) Compounds with the highest TAI in the 95% activity category that have confirmed results with the exception of "colored" compounds should receive the highest priority for further profile studies and *in vivo* animal testing.

2) Compounds with the highest TAI in the 50% activity category that have confirmed results with the exception of "colored" compounds should receive the next highest priority for further profile studies and *in vivo* animal testing.

Table 21

Confirmatory Assays for Compounds Active Against Sandfly Fever Virus

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
** VIRUS SF																	
0002	46	01/24/89	OEY	1.229	23.70 >	320.00 >	13.50	51.60 >	320.00 >	6.21	0.00 >	320.00	0.00 >	6.21 >	31.30	MTT	+
0002	46	12/20/89	TON	0.581	0.00	320.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
0033	2	10/28/86	---	NA	0.00	32.00	0.00	10.00	32.00	3.20	0.00	100.00	0.00	3.20	3.40[a]	CPE	+
0033	2	12/01/86	---	NA	0.00	6.60	0.00	0.00	10.00	0.00	0.00 >	10.00	0.00	0.00	0.43[a]	CPE	-
0065	2	10/28/86	---	NA	0.10	3.20	32.00	0.98 >	10.00	10.00	0.00 >	10.00	0.00	3.30	2.60[a]	CPE	+
0065	2	05/17/88	---	NA	3.20	3.20	1.00	5.70 >	32.00 >	5.60	32.00 >	32.00 >	1.00	0.60	1.40[a]	CPE	+
0065	53	03/28/89	PCV	0.684	0.00	4.30	0.00	0.00	8.30	0.00	0.00 >	100.00	0.00	0.00 >	2.79	MTT	-
0071	2	10/28/86	---	NA	1.00 >	100.00	100.00	16.40 >	100.00	6.10	0.00 >	100.00	0.00 >	6.10	3.70[a]	CPE	+
0071	2	05/17/88	---	NA	0.32	0.32	1.00	1.43	32.00	22.40	24.00	100.00	4.20	0.22	1.95[a]	CPE	+
0071	2	08/23/89	RBO	0.675	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00 >	3.09	MTT	-
0079	1	10/08/86	---	NA	< 0.10 >	100.00	1000.00	0.65 >	100.00	154.00	32.00 >	100.00 >	3.10 >	154.00	5.50[a]	CPE	+
0079	1	07/27/87	---	NA	~ 32.00 ~	3.20	0.10	72.00	10.00	0.10	0.00 ~	320.00	0.00	0.10	1.00[a]	CPE	+
0084	1	10/08/86	---	NA	< 0.32 ~	100.00 ~	313.00	1.30	320.00	246.00	0.00 ~	320.00	0.00	246.00	4.40[a]	CPE	+
0084	1	07/27/87	---	NA	10.00 ~	0.32 ~	0.03	17.00	1.00	0.06	0.00 ~	320.00	0.00	0.06	1.10[a]	CPE	+
0094	1	10/08/86	---	NA	0.32 >	320.00	1000.00	1.30 >	320.00	246.00	0.00 >	320.00	0.00	246.00 >	4.70[a]	CPE	+
0094	1	08/18/87	---	NA	100.00	10.00	0.10	0.00	32.00	0.00	0.00 >	320.00	0.00	0.00 >	0.40[a]	CPE	+
0139	1	10/08/86	---	NA	~ 0.32	0.66	2.10 <	0.001	1.00	1000.00	0.00	3.20	0.00	1000.00	1.90[a]	CPE	+
0139	1	08/18/87	---	NA	2.10	6.60	3.10	0.00	0.32	0.00	0.00	10.00	0.00	0.00	0.20[a]	CPE	-
0139	1	05/18/88	---	NA	0.66	2.10	3.20	0.87	0.10	0.42	0.00	3.20	0.00	0.12	1.20[a]	CPE	+
0147	64	03/13/90	UJQ	0.582	15.90	59.90	3.78	27.40	90.30	3.29	0.00	294.00	0.00	2.18 >	8.50	MTT	+
0147	64	05/01/90	VTB	0.715	1.79	2.89	1.61	0.00	38.50	0.00	0.00 >	320.00	0.00	0.00 >	2.64	MTT	+
0148	2	10/14/86	---	NA	1.00	21.00	21.00	2.30	32.00	13.90 ~	3.20 >	320.00 >	100.00	4.35	3.60[a]	CPE	+
0148	2	11/18/86	---	NA	< 0.32	2.10	6.60	0.20	3.20	12.90 ~	1.00 >	320.00 >	320.00	12.90	4.10[a]	CPE	+
0148	2	12/15/86	---	NA	0.10	0.66	6.60	0.30	1.00	3.40	1.00 >	100.00 >	100.00	3.40	3.90[a]	CPE	+
0148	2	08/18/87	---	NA	0.66	0.66	1.00	0.70	1.00	1.43	0.00 >	1.00	0.00	1.43	0.50[a]	CPE	+
0148	2	08/23/89	RB3	0.750	0.16	2.19	13.90	0.32 >	3.20 >	10.00	0.00 >	3.20	0.00	6.84 >	24.56	MTT	+
0148	67	05/30/90	WEZ	0.918	0.67	0.47	0.70	0.00	1.00	0.00	0.00 >	3.20	0.00	0.00 >	0.03	MTT	+
0148	2/67	10/04/90	ZA8	0.682	0.39	2.24	5.79	0.60	6.22	10.44	0.00 >	10.00	0.00	3.76 >	20.03	MTT	+
0197	5	10/29/86	---	NA	3.20 >	320.00	100.00	49.70 >	320.00 >	6.40	0.00 >	320.00	0.00 >	6.40	3.40[a]	CPE	+
0197	5	05/18/88	---	NA	46.00	66.00	1.43	64.17	100.00	1.56 ~	320.00	320.00	1.00	1.55	1.35[a]	CPE	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
0206	4	10/29/86	---	NA	3.20	320.00	100.00	8.60 >	320.00 >	37.00	100.00 >	320.00 >	3.20	37.00	3.70[a]	CPE	+
0206	4	08/07/87	---	NA	10.00	100.00	10.00	22.00 >	320.00 >	15.00	100.00 >	320.00 >	3.20	4.60	2.20[a]	CPE	+
0206	5	05/10/89	Q13	0.993	32.00 >	320.00 >	10.00	46.80 >	320.00 >	6.84	92.70 >	320.00 >	3.45 >	6.84 >	31.80	MTT	+
0206	4	12/05/89	SSM	0.590	11.20	449.00	39.97	29.60	742.00	25.06	88.80 >	1000.00 >	11.26	15.16 >	44.66	MTT	+
0206	4	12/05/89	SSD	0.626	12.10	590.00	48.59	32.00	860.00	26.87	89.20 >	1000.00 >	11.21	18.43 >	50.77	MTT	+
0206	67	05/30/90	WEZ	0.918	147.00	180.00	1.22	0.00	305.00	0.00	0.00 >	1000.00	0.00	0.00 >	5.88	MTT	+
0217	33	04/19/89	PNJ	0.739	5.66 >	320.00 >	56.60	13.10 >	320.00 >	24.40	79.60 >	320.00 >	4.02 >	24.40 >	51.36	MTT	+
0217	33	10/11/89	RTO	0.901	3.65	290.00	79.47	8.23 >	320.00 >	38.90	0.00 >	320.00	0.00	35.21 >	36.83	MTT	+
0217	61	11/29/89	SPT	0.906	4.43	293.00	66.01	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	7.69	MTT	+
0230	1	10/10/86	---	NA	19.00	66.00	3.50	53.50	100.00	1.90 ~	100.00 >	320.00	3.20	1.90	2.30[a]	CPE	-
0230	1	11/24/86	---	NA	22.00	32.00	1.45	31.96	32.00	1.00	0.00	32.00	0.00	1.00	0.13[a]	CPE	+
0230	1	08/23/89	RB5	0.758	0.00	52.60	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.26	MTT	-
0272	1	10/10/86	---	NA ~	0.32	3.20 ~	10.00	1.20 ~	100.00 ~	83.00	32.00	100.00	3.10	2.70	2.20[a]	CPE	+
0272	1	06/01/88	---	NA ~	0.32	0.32 ~	1.00	0.60	3.20	5.30	0.00	3.20	0.00	0.50	0.60[a]	CPE	+
0272	41	05/10/89	---	0.993	0.65	0.62	0.96	0.00	0.92	0.00	0.00 >	100.00	0.00	0.00 >	0.65	MTT	+
0346	2	08/03/87	---	NA ~	0.03	0.32 ~	10.00	0.06 ~	5.00 ~	83.00	0.32	10.00	31.00	4.90	2.70[a]	CPE	+
0346	2	08/31/87	---	NA	0.10	1.00	10.00	0.20 >	1.00 >	5.00	1.00 >	1.00	1.00	4.20	1.60[a]	CPE	+
0346	2	05/10/89	214	0.961	0.35	1.80	5.10	0.50	2.90	5.30	0.00	32.00	0.00	3.30 >	15.31	MTT	+
0347	2	10/17/86	---	NA	0.32	10.00	31.00	3.00 ~	20.00	7.00	32.00	10.00	0.30	3.40	1.40[a]	CPE	+
0347	2	11/25/86	---	NA	0.32	0.03	0.10	0.10	0.50	5.00	0.00	1.00	0.00	0.20	0.70[a]	CPE	+
0347	2	05/17/88	---	NA ~	0.10	1.00 ~	10.00	0.20 ~	5.00 ~	25.00	0.00	10.00	0.00	4.20	1.90[a]	CPE	+
0347	41	05/10/89	214	0.961	5.80	6.60	1.10	0.00	10.00	0.00	0.00 <	32.00	0.00	0.00	1.78	MTT	+
0360	2	10/17/86	---	NA <	0.01	0.32	32.00	0.01 ~	2.00 ~	200.00	0.32	3.20	10.00	18.00	2.50[a]	CPE	+
0360	2	11/25/86	---	NA	0.10	0.03	0.30	0.20 ~	2.00 ~	10.00	0.00	3.20	0.00	0.00	1.10[a]	CPE	+
0360	2	08/18/87	---	NA	0.03	0.01	0.30	0.09 >	1.00	11.00	0.32 >	1.00 >	3.10	0.10	1.70[a]	CPE	+
0360	48	02/07/89	OKU	1.334	0.05	0.25	5.40	0.09	0.61	6.63	0.00 >	3.20	0.00	2.74	15.44	MTT	+
0360	2	08/23/89	RB6	0.732	0.00	0.10	0.00	0.00	0.23	0.00	0.00 >	1.00	0.00	0.00 >	0.80	MTT	-
0360	2	11/01/90	2Y7	0.893	0.83	0.56	0.67	0.00	0.89	0.00	0.00 >	1.00	0.00	0.00	0.14	MTT	+
0581	65	04/10/90	V7T	0.683 <	1.00 <	1.00 ~	1.00 <	1.00	1.17 >	1.17 <	1.00	7.57 >	7.57 ~	1.00 >	5.89	MTT	+
0581	65	04/25/90	VOB	0.846	0.00	13.70	0.00	0.00	19.80	0.00	0.00	30.80	0.00	0.00	0.00	MTT	-
0646	2	10/17/86	---	NA <	0.10	2.10	21.00 <	0.10	3.20	0.03	0.32 >	100.00 >	313.00	0.03	4.20[a]	CPE	+
0646	2	11/05/86	---	NA	0.21	6.60	31.40	0.60	10.00	16.70	3.20 >	100.00 >	31.30	16.70	4.30[a]	CPE	+
0646	2	08/18/87	---	NA	0.32	0.21	0.70	0.40	0.32	0.75	1.00 >	1.00 >	1.00	0.75	0.80[a]	CPE	+
0919	52	03/15/89	P3R	0.502	1.51	82.50	54.40	2.30	162.00	70.60	0.00	305.00	0.00	35.90	38.47	MTT	+
0919	52	12/14/89	SY2	0.559	44.30	133.00	2.99	64.20	195.00	3.04	0.00	308.00	0.00	2.07	16.82	MTT	+
1019	28	08/23/89	RB8	0.736	0.46 >	1.00 >	2.19	0.70 >	1.00 >	1.43	0.00 >	1.00	0.00 >	1.43 >	7.04	MTT	+
1019	28	03/06/90	UDU	0.575	1.50	59.80	39.94	2.24 >	100.00 >	44.59	0.00 >	100.00	0.00	26.67 >	43.49	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
1089	5	11/03/86	---	NA	0.66 >	100.00 >	152.00	1.00 >	100.00 >	100.00	10.00 >	100.00	10.00 >	100.00	5.20[a]	CPE	+
1089	5	07/27/87	---	NA	0.66	2.10	3.20	1.10	3.20	3.04	3.20 >	320.00 >	100.00	3.04	3.40[a]	CPE	+
1215	27	09/29/87	---	NA ~	32.00	100.00	3.10	66.00 >	320.00 >	4.80	320.00 >	320.00 >	1.00	1.50	1.50[a]	CPE	+
1215	53	03/28/89	PCW	0.667	24.00	184.00	7.80	0.00	344.00	0.00	0.00 >	320.00	0.00	0.00	14.89	MTT	+
1217	52	03/15/89	P3S	0.663	4.29	97.80	22.80	10.70	240.00	22.40	74.10 >	320.00 >	4.32	9.12	44.43	MTT	+
1217	52	01/10/90	TDN	1.076	167.00 >	320.00 >	1.92	298.00 >	320.00 >	1.07	0.00 >	320.00	0.00 >	1.07 >	3.84	MTT	+
1337	33	08/29/89	RCW	0.868	15.30 >	32.00 >	2.09	23.50 >	32.00 >	1.36	0.00 >	32.00	0.00 >	1.36 >	5.53	MTT	+
1337	62	01/18/90	TFD	1.066	0.00	110.00	0.00	0.00	198.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
1337	64	03/13/90	UJX	0.665	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.32	MTT	-
1337	65	04/12/90	VA4	0.775	294.00	207.00	0.71	0.00	388.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	+
1337	64	05/03/90	VX5	0.809	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
1337	67	05/30/90	WF2	0.807	80.20	146.00	1.82	0.00	222.00	0.00	0.00 >	1000.00	0.00	0.00 >	5.51	MTT	+
1355	64	03/13/90	UJY	0.520	114.00 >	320.00 >	2.81	170.00 >	320.00 >	1.88	0.00 >	320.00	0.00 >	1.88 >	17.26	MTT	+
1355	64	05/03/90	VX5	0.809	102.00	575.00	5.63	170.00	879.00	5.17	0.00 >	1000.00	0.00	3.38	18.36	MTT	+
1644	64	03/13/90	UJZ	0.615	9.19 >	320.00 >	34.82	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	15.67	MTT	+
1644	64	05/03/90	VX6	0.804	4.11	563.00	136.97	8.23	806.00	97.87	28.00 >	1000.00 >	35.78	68.37 >	68.54	MTT	+
1644	64	11/01/90	ZY8	0.885 <	3.20	65.30 >	20.42	3.55	98.70	27.80	9.02	838.00	92.96	18.41 >	43.16	MTT	+
1645	33	08/29/89	RCX	0.906	0.28	14.10	50.57	0.57 >	32.00 >	55.82	0.00 >	32.00	0.00	24.55 >	39.74	MTT	+
1645	33	11/01/90	ZY9	0.873	9.50	79.20	8.34	14.60 >	100.00 >	6.86	29.60 >	100.00 >	3.38	5.43 >	27.60	MTT	+
1850	53	04/11/89	PFY	0.666	0.67	77.20	115.00	10.40 >	100.00 >	9.61	0.00 >	100.00	0.00	7.42 >	38.87	MTT	+
1850	32	08/29/89	RD1	0.943	0.00	77.30	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.07	MTT	-
1850	67	05/31/90	WHU	1.003	95.70	83.00	0.87	305.00	497.00	1.63	0.00 >	1000.00	0.00	0.27	1.36	MTT	+
1976	1	10/27/86	---	NA	6.60 >	100.00	15.15	18.20 >	100.00	5.50	0.00 >	100.00	0.00	18.20	2.40[a]	CPE	+
1976	1	05/18/88	---	NA	6.60	22.00	3.30	0.00	32.00	0.00	0.00	100.00	0.00	0.00	0.85[a]	CPE	-
1976	27	05/16/89	Q1W	1.065	14.30	110.00	7.69	51.20	193.00	3.78	0.00 >	320.00	0.00	2.15	15.49	MTT	+
1976	1	08/30/89	REQ	0.723	7.67	74.50	9.72	16.90 >	100.00 >	5.92	0.00 >	100.00	0.00	4.41 >	19.58	MTT	+
1983	2	10/22/86	---	NA	0.10	21.00	210.00	0.32	32.00	100.00	0.00	100.00	0.00	100.00	3.00[a]	CPE	+
1983	2	08/18/87	---	NA	0.00	100.00	0.00	0.00	100.00	0.00	0.00 >	320.00	0.00	0.00	0.00	CPE	-
1983	2	05/24/88	---	NA	0.00	21.00	0.00	0.00	32.00	0.00	0.00 >	100.00	0.00	0.00	0.00	CPE	-
1984	2	10/22/86	---	NA	0.32	21.00	66.00	1.00	32.00	32.00	0.00	320.00	0.00	32.00	2.90[a]	CPE	+
1984	2	08/18/87	---	NA	0.00	21.00	0.00	0.00	32.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
1984	2	06/06/88	---	NA	0.00	21.00	0.00	0.00	32.00	0.00	0.00 >	100.00	0.00	0.00	0.00[a]	CPE	-
1985	2	10/22/86	---	NA	0.32 >	100.00 >	313.00	6.10 >	100.00	16.40	0.00 >	100.00	0.00	16.40	3.70[a]	CPE	+
1985	2	07/28/87	---	NA	3.20	6.60	2.10	4.60	10.00	2.18	32.00 >	320.00 >	10.00	2.18	2.50[a]	CPE	+
1985	2	05/24/88	---	NA ~	10.00 ~	10.00 ~	1.00	14.80	32.00	2.16	0.00 >	100.00	0.00	2.16	1.20[a]	CPE	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
1987	2	10/22/86	---	NA	< 0.32	100.00	313.00	19.00	100.00	5.30	0.00	320.00	0.00	5.30	3.10[a]	CPE	+
1987	2	05/18/88	---	NA	210.00	66.00	0.31	0.00	100.00	0.00	0.00 >	320.00	0.00	0.00	0.25[a]	CPE	-
1987	2	08/30/89	RER	0.739	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	0.03	MTT	-
1992	56	06/13/89	QCL	1.258	48.10 >	320.00 >	6.66	94.70 >	320.00 >	3.38	0.00 >	320.00	0.00 >	3.38 >	22.74	MTT	+
1992	56	08/08/89	R29	1.252	34.60	262.00	7.57	66.10	485.00	7.34	0.00	948.00	0.00	3.96	15.71	MTT	+
1997	3	10/24/86	---	NA	10.00	210.00	21.00	96.30	320.00	3.30	0.00 >	320.00	0.00	3.30	2.10[a]	CPE	+
1997	3	05/24/88	---	NA	0.00	160.00	0.00	0.00	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
1997	3	04/12/90	VA6	0.865	0.00	608.00	0.00	0.00	935.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
2013	3	11/12/86	---	NA	16.00 >	320.00	20.00	52.30 >	320.00	6.10	0.00 >	320.00	0.00 >	6.10	3.10[a]	CPE	+
2013	3	05/24/88	---	NA	0.00	66.00	0.00	0.00	100.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
2159	9	10/31/86	---	NA	< 0.32 >	320.00	1000.00 <	0.32 >	320.00	1000.00	0.00 >	320.00	0.00	1000.00	3.80[a]	CPE	+
2159	9	05/04/88	---	NA	0.00	160.00	0.00	0.00	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
2159	9	06/01/88	---	NA	0.00	160.00	0.00	0.00	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
2160	9	10/31/86	---	NA	< 0.32	21.00 >	66.00 <	0.32	32.00 >	100.00	3.20	100.00	31.30 >	100.00	3.20[a]	CPE	+
2160	9	07/27/87	---	NA	1.00	0.66	0.66	3.30	1.00	0.30	10.00	100.00	10.00	0.30	1.70[a]	CPE	+
2160	9	05/24/88	---	NA	1.00	0.66	0.66	1.48	1.00	0.68	0.00 >	32.00	0.00	0.68	5.30[a]	CPE	+
2162	9	10/31/86	---	NA	~ 0.32	< 320.00	>1000.00	5.70	~ 320.00	~ 56.00	0.00	320.00	0.00	55.00	1.30[a]	CPE	+
2162	9	05/24/88	---	NA	~ 50.00	32.00	0.60	60.00	~ 320.00	~ 5.00	0.00	320.00	0.00	0.50	0.60[a]	CPE	+
2162	53	04/11/89	---	0.721	0.00	52.00	0.00	0.00	97.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
2219	10	11/12/86	---	NA	0.32	21.00	66.00	2.50	32.00	12.80	32.00	100.00	3.20	12.80	2.50[a]	CPE	+
2219	10	07/28/87	---	NA	3.20	2.10	0.66	8.30	3.20	0.39	32.00	100.00	3.20	0.39	1.00[a]	CPE	+
2219	10	05/25/88	---	NA	10.00	2.10	0.21	19.90	3.20	0.16	0.00	100.00	0.00	0.16	1.70[a]	CPE	+
2220	10	11/12/86	---	NA	< 0.32	21.00	66.00 <	0.32	32.00 >	100.00	32.00	100.00	3.20 >	100.00	3.20[a]	CPE	+
2220	10	07/27/87	---	NA	32.00	6.60	0.21	26.40	10.00	0.38	100.00	320.00	3.20	0.38	1.00[a]	CPE	+
2220	10	05/23/89	Q64	1.127	0.00	22.00	0.00	0.00	39.70	0.00	0.00	320.00	0.00	0.00	0.00	MTT	-
2221	10	11/12/86	---	NA	< 0.32	1.60	5.00	1.80	3.20	1.80	0.00	10.00	0.00	1.80	1.20[a]	CPE	+
2221	10	12/02/86	---	NA	0.00	1.60	0.00	0.00	3.20	0.00	0.00	10.00	0.00	0.00	0.05[a]	CPE	-
2226	10	11/13/86	---	NA	3.20	32.00	10.00	8.80	32.00	3.60	0.00	32.00	0.00	3.60	1.40[a]	CPE	+
2226	10	05/25/88	---	NA	6.60	6.60	1.00	10.00	10.00	1.00	0.00	32.00	0.00	1.00	0.30[a]	CPE	+
2226	10	08/30/89	REU	0.873	6.50	13.60	2.10	0.00	23.00	0.00	0.00 >	32.00	0.00	0.00 >	4.53	MTT	-
2274	12	08/30/89	REV	0.535	10.00 >	100.00 >	10.00	18.80 >	100.00 >	5.31	0.00 >	100.00	0.00 >	5.31 >	24.52	MTT	+
2274	67	05/31/90	WHX	1.050	0.00	121.00	0.00	0.00	194.00	0.00	0.00 >	320.00	0.00	0.00	0.05	MTT	-

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2275	53	04/11/89	PFZ	0.721	15.10	174.00	11.60	25.80	326.00	12.70	86.70 >	320.00 >	3.69	6.75	29.77	MTT	+
2275	12	08/30/89	REV	0.535	7.04	180.00	25.52	17.10	259.00	15.20	0.00 >	320.00	0.00	10.53 >	35.74	MTT	+
2275	67	05/31/90	WHY	0.856	54.20	149.00	2.75	91.90	225.00	2.45	0.00 >	320.00	0.00	1.62	6.06	MTT	+
2317	13	12/15/86	---	NA	32.00	210.00	6.60	18.70	320.00	17.10	0.00 >	320.00	0.00	17.10	1.10[a]	CPE	+
2317	13	08/18/87	---	NA	0.00	66.00	0.00	0.00	100.00	0.00	0.00 >	320.00	0.00	0.00	0.00[a]	CPE	-
2318	13	12/15/86	---	NA <	0.32	3.20 >	10.00 <	0.32 >	320.00	1000.00	1.00 >	320.00 >	320.00	10.00	4.60[a]	CPE	+
2318	13	07/28/87	---	NA ~	0.20	1.00 ~	5.00	0.32 >	10.00 >	31.00	1.00 >	10.00 >	10.00	3.10	2.50[a]	CPE	+
2318	13	05/25/88	---	NA ~	5.00	32.00 ~	6.00	8.30 >	320.00 >	39.00	32.00 >	320.00 <	10.00	3.90	2.60[a]	CPE	+
2318	53	04/11/89	PG0	0.669 <	1.00 <	1.00 ~	1.00	0.00	2.90	0.00	0.00 >	320.00	0.00	0.00 >	0.15	MTT	+
2318	13	08/30/89	REW	0.652	0.24	2.01	8.40	0.50	10.00	20.01	0.00 >	10.00	0.00	4.02	19.09	MTT	+
2318	67	05/31/90	WHY	0.856	0.00	0.64	0.00	0.00	2.71	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	-
2318	67	07/12/90	XHC	0.908	0.28	1.95	6.86	0.57	8.64	15.27	0.00 >	10.00	0.00	3.45	13.75	MTT	+
2320	13	12/15/86	---	NA <	0.32	100.00	313.00	2.10 ~	320.00	152.00	0.00	320.00	0.00	49.00	3.50[a]	CPE	+
2320	13	07/28/87	---	NA	0.32	3.20	10.00	0.80 ~	320.00 ~	400.00	3.20	320.00	100.00	4.30	3.40[a]	CPE	+
2320	53	04/11/89	PG1	0.598 <	1.00	81.50 >	81.50	1.66	162.00	97.80	13.90 >	320.00 >	23.00	49.00 >	54.10	MTT	+
2320	13	08/30/89	REW	0.652 <	1.00	70.10 >	70.08	19.30	156.00	8.07	0.00 >	320.00	0.00	3.63 >	19.21	MTT	+
2320	65	04/12/90	VA7	0.880	3.20	31.00	9.69	0.00	64.60	0.00	0.00	274.00	0.00	0.00 >	10.59	MTT	+
2320	65	07/03/90	XB5	0.915	1.00	30.40	30.43	0.00	90.30	0.00	0.00 >	320.00	0.00	0.00 >	5.25	MTT	+
2320	65	07/17/90	XLR	0.493	0.00	100.00	0.00	0.00	179.00	0.00	0.00	320.00	0.00	0.00 >	7.40	MTT	-
2325	13	12/15/86	---	NA	0.32	66.00	206.00	1.00	100.00	100.00	0.00 >	320.00	0.00	100.00	2.40[a]	CPE	+
2325	13	08/18/87	---	NA	0.00	210.00	0.00	0.00	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	CPE	-
2363	15	08/30/89	REX	0.630	3.20	42.10	13.15	7.79	63.10	8.09	0.00 >	100.00	0.00	5.40 >	23.58	MTT	+
2363	64	03/13/90	UK1	0.494	27.70	55.00	1.99	0.00	77.90	0.00	0.00	278.00	0.00	0.00 >	11.18	MTT	+
2363	64	05/03/90	VX7	0.848	19.30	6.98	0.36	0.00	17.90	0.00	0.00	251.00	0.00	0.00	0.00	MTT	+
2433	17	08/30/89	REZ	0.660	4.25	100.00	23.50	10.50 >	320.00 >	30.55	0.00 >	320.00	0.00	9.55 >	31.95	MTT	+
2433	65	04/12/90	VA7	0.880	26.10	191.00	7.31	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	10.69	MTT	+
2433	65	07/03/90	XB6	0.850	0.00	29.70	0.00	0.00	87.90	0.00	0.00	320.00	0.00	0.00 >	0.10	MTT	-
2453	18	09/06/89	RGI	1.152	1.53	3.20	2.09	3.11	16.10	5.19	0.00	30.70	0.00	1.03	8.70	MTT	+
2453	64	03/13/90	UK1	0.494	1.14	15.50	13.62	4.27	21.00	4.91	9.18	30.90	3.36	3.63 >	23.92	MTT	+
2453	64	05/03/90	VX8	0.885	4.44	12.10	2.73	7.20	19.60	2.73	0.00	62.20	0.00	1.68	8.82	MTT	+
2503	53	04/11/89	PG1	0.598 <	1.00 <	1.00 ~	1.00	0.00	3.02	0.00	0.00 >	320.00	0.00	0.00 >	0.01	MTT	+
2503	21	09/06/89	RGJ	1.121	0.42	2.04	4.80	0.59	6.60	11.13	0.00 >	10.00	0.00	3.43	15.85	MTT	+
2503	67	05/31/90	WHZ	1.000	0.83	0.02	0.03	0.00	3.07	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	+
2503	67	07/12/90	XHD	0.811	0.55	2.65	4.79	0.96 >	10.00 >	10.45	0.00 >	10.00	0.00	2.77	11.48	MTT	+
2503	67	10/04/90	ZA9	0.770	0.53	2.02	3.79	0.89	4.22	4.77	0.00 >	32.00	0.00	2.28 >	9.61	MTT	+
2506	21	09/06/89	RGK	1.058	1.28	8.83	6.88	2.16 >	10.00 >	4.64	0.00 >	10.00	0.00	4.09 >	17.02	MTT	+
2506	64	03/13/90	UK2	0.534	7.59	26.20	3.45	0.00	100.00	0.00	0.00 >	320.00	0.00	0.00	7.43	MTT	+
2506	64	05/03/90	VX8	0.885	6.21	5.54	0.89	0.00	15.90	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
2563	32	02/09/88	---	NA	0.32	10.00	31.00	0.80	32.00	40.00	10.00	32.00	3.20	13.00	2.60[a]	CPE	+
2563	48	02/07/89	OKW	1.288	0.32	2.52	7.97	5.02 >	3.20 >	0.64	0.00 >	3.20	0.00	0.50 >	15.19	MTT	+
2563	15	05/23/89	Q65	1.118	0.00	5.94	0.00	0.00	8.68	0.00	0.00 >	32.00	0.00	0.00	0.00	MTT	-
2563	21	09/06/89	RGL	1.090	0.00	0.58	0.00	0.00	1.05	0.00	0.00	6.11	0.00	0.00	0.00	MTT	-
2563	48	12/05/89	SSJ	0.604	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	3.00	MTT	-
2563	15/21	11/01/90	ZYA	1.030	0.00	0.52	0.00	0.00	0.96	0.00	0.00	9.43	0.00	0.00	0.00	MTT	-
2586	19	09/06/89	RGO	1.103	37.90	6.98	0.18	69.50 >	320.00 >	4.60	0.00 >	320.00	0.00	0.10 >	10.81	MTT	+
2586	19	12/05/90	1QB	0.740	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
2590	19	09/06/89	RGP	1.190	62.20	3.06	0.05	191.00 >	320.00 >	1.68	0.00 >	320.00	0.00	0.02 >	5.67	MTT	+
2590	65	04/12/90	VAB	0.834	215.00	462.00	2.15	0.00	858.00	0.00	0.00 >	1000.00	0.00	0.00	3.03	MTT	+
2591	19	09/06/89	RGP	1.190	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
2591	65	04/12/90	VAC	0.927	195.00	25.70	0.13	434.00 >	1000.00 >	2.31	0.00 >	1000.00	0.00	0.06 >	3.70	MTT	+
2631	19	09/06/89	RGQ	1.159	14.60	170.00	11.62	25.60 >	320.00 >	12.51	0.00 >	320.00	0.00	6.64 >	21.49	MTT	+
2631	65	04/17/90	VEM	1.169	108.00 >	320.00 >	2.96	175.00 >	320.00 >	1.82	0.00 >	320.00	0.00 >	1.82 >	11.37	MTT	+
2631	65	07/03/90	XB7	0.956	0.00 <	3.20	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
2812	48	02/07/89	OL0	1.352	0.00 >	0.01 >	2.56	0.01 >	0.01 >	1.11	0.00 >	0.01	0.00 >	1.11 >	12.67	MTT	+
2812	61	11/29/89	SPV	1.016	0.02	0.02	0.95	0.00	0.03	0.00	0.00	0.10	0.00	0.00 >	3.85	MTT	+
2812	61	12/05/90	1QD	0.808	0.00 <	0.32	0.00	0.00 <	0.32	0.00	0.00 <	0.32	0.00	0.00	0.00	MTT	-
2906	26	09/14/87	---	NA ~	20.00	100.00 ~	5.00	25.00 >	320.00	13.00	100.00 >	320.00	3.20	4.00	2.10[a]	CPE	+
2906	26	05/25/88	---	NA ~	50.00	100.00 ~	2.00	70.00 >	100.00 >	1.40	0.00 >	100.00	0.00	1.40	0.60[a]	CPE	+
2906	53	04/11/89	PG2	0.601	0.00	52	0.00	0.00	93.00	0.00	0.00 >	320.00	0.00	0.00	6.59	MTT	-
2979	48	02/07/89	OM3	1.110 <	0.10	1.86 >	18.60	1.79	4.48	2.50	0.00	30.90	0.00	1.04 >	15.12	MTT	+
2979	27	04/19/89	PN8	0.801 <	1.00	3.20 >	3.20	3.77	5.82	1.54	0.00	66.30	0.00	0.85 >	7.04	MTT	+
2979	25	09/07/89	RIH	0.643	1.13	1.82	1.61	0.00	3.10	0.00	0.00	22.60	0.00	0.00 >	2.91	MTT	+
2980	25	09/01/87	---	NA ~	0.50	3.20 ~	6.00	1.20	32.00	27.00	3.20	32.00	10.00	2.70	1.70[a]	CPE	+
2980	48	02/07/89	OM4	1.141	0.42	2.19	5.20	0.00 >	3.20	0.00	0.00 >	3.20	0.00	0.00 >	14.98	MTT	+
2980	25	09/07/89	RII	0.725	0.03	1.75	54.73	0.20	3.09	15.60	0.00 >	10.00	0.00	8.83 >	32.54	MTT	+
2980	61	11/29/89	SQ4	0.918	0.66	1.83	2.77	0.00	2.87	0.00	0.00 >	3.20	0.00	0.00 >	8.51	MTT	+
3038	28	02/02/88	---	NA <	0.32	0.32 >	1.00 <	0.32	320.00	>1000.00	0.32	320.00	>1000.00 >	1.00	3.50[a]	CPE	+
3038	53	04/11/89	PG3	0.727	0.00 <	1.00	0.00	0.00 <	1.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
3038	28	09/07/89	RIJ	0.677	0.04	0.26	6.84	0.06 >	3.20 >	50.48	0.00 >	3.20	0.00	4.08	12.88	MTT	+
3450	32	04/04/89	PAT	0.700	4.11	10.20	2.49	10.00	19.50	1.95	0.00	78.80	0.00	1.02 >	11.92	MTT	+
3450	32	04/19/89	PNC	0.702	8.50	11.20	1.32	0.00	21.40	0.00	0.00	88.20	0.0	0.00 >	5.73	MTT	+
3491	65	04/17/90	VEY	1.064	151.00 >	320.00 >	2.12	289.00 >	320.00 >	1.11	0.00 >	320.00	0.00 >	1.11 >	7.24	MTT	+
3491	65	07/03/90	XB9	0.747	0.00	66.70	0.00	0.00	105.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
3558	31	03/29/89	PF6	0.732	17.30	102.00	5.88	30.00	182.00	6.07	0.00	326.00	0.00	3.39	22.91	MTT	+
3558	31	09/07/89	RIL	0.742	0.00	39.30	0.00	0.00	100.00	0.00	0.00	298.00	0.00	0.00	0.00		-
3584	32	11/03/88	02A	1.270	10.80	77.30	7.14	17.90 >	100.00 >	5.59	0.00 >	100.00	0.00	4.32 >	25.91	MTT	+
3584	32	04/19/89	PNF	0.764	15.60	75.70	4.85	53.10 >	320.00 >	6.03	0.00 >	320.00	0.00	1.43 >	15.48	MTT	+
3584	32	09/12/89	RK3	0.803	18.50	32.00	1.73	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.71	MTT	+
3592	ABEBE	01/11/89	OAE	0.509	7.52 >	320.00 >	42.50	26.10 >	320.00 >	12.20	0.00 >	320.00	0.00 >	12.20 >	41.57	MTT	+
3592	51	03/07/89	OXA	0.680	320.00	266.00	0.83	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	7.98	MTT	+
3592	51	09/12/89	RK4	0.741	90.90 >	320.00 >	3.52	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	13.61	MTT	+
3592	61	11/29/89	SPV	1.016	8.50 >	1000.0 >	117.68	205.00 >	1000.00 >	4.89	0.00 >	1000.00	0.00 >	4.89 >	31.92	MTT	+
3592	65	04/24/90	VL7	0.792	128.00	252.00	1.98	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.14	MTT	+
3615	32	11/08/88	OC5	0.529	1.94	181.00	93.10	56.60	262.00	4.63	0.00 >	320.00	0.00	3.20 >	31.48	MTT	+
3615	32	12/20/89	TOO	0.521	0.00	143.00	0.00	0.00	263.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
3621	32	11/09/88	OC9	0.783	2.48	251.00	101.00	42.50 >	320.00 >	7.52	0.00 >	320.00	0.00	5.91 >	33.34	MTT	+
3621	32	12/20/89	TOP	0.531	0.00	210.00	0.00	0.00	424.00	0.00	0.00	942.00	0.00	0.00	0.00	MTT	-
3688	32	11/10/88	OCP	1.011	13.40	273.00	20.40	32.80 >	320.00 >	9.77	95.40 >	320.00 >	3.36	8.33 >	31.82	MTT	+
3688	32	12/14/89	SXW	0.751	42.10	225.00	5.34	68.80	393.00	5.71	0.00	939.00	0.00	3.27	16.73	MTT	+
3802	35	12/13/88	061	0.623 <	1.00	1.75 >	1.75 <	1.00	3.20 >	3.20	0.00	228.00	0.00 >	1.75 >	2.93	MTT	+
3802	35	09/12/89	RK5	0.786	0.11	0.88	7.79	0.16 >	10.00 >	62.45	0.30 >	10.00 >	33.49	5.51 >	37.07	MTT	+
3802	67	05/31/90	WI1	0.903	0.18	0.15	0.84	4.87	0.69	0.14	0.00 >	10.00	0.00	0.03 >	0.41	MTT	+
3802	67	07/12/90	XHD	0.811	0.13 >	10.00 >	76.87	0.18 >	10.00 >	54.37	0.00 >	10.00	0.00 >	54.37 >	44.49	MTT	+
3803	35	12/13/88	061	0.623 <	1.00	0.58 >	0.58 <	1.00	19.20 >	19.20	0.00	262.00	0.00 >	0.58 >	21.91	MTT	+
3803	35	10/11/89	RT2	1.041	1.86	2.25	1.21	14.10	9.03	0.64	0.00 >	32.00	0.00	0.16 >	3.04	MTT	+
3935	35	12/13/88	062	0.519	12.80	95.70	7.48	19.90	175.00	8.80	0.00	318.00	0.00	4.81	19.88	MTT	+
3935	35	09/12/89	RK7	0.704	20.40	103.00	5.05	49.30	175.00	3.55	0.00	306.00	0.00	2.09	10.22	MTT	+
3935	65	04/24/90	VLA	0.866	0.00	51.60	0.00	0.00	72.80	0.00	0.00	259.00	0.00	0.00	0.00	MTT	-
3935	65	07/03/90	XB9	0.747	47.40	85.20	1.80	79.60	163.00	2.05	0.00	304.00	0.00	1.07 >	8.11	MTT	+
4032	65	04/24/90	VLA	0.866	183.00	271.00	1.48	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	2.22	MTT	+
4032	65	07/03/90	XBA	0.917	161.00	100.00	0.62	291.00	443.00	1.52	0.00	944.00	0.00	0.34	0.84	MTT	+
4035	65	04/24/90	VLB	0.742	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.81	MTT	-
4035	65	07/06/90	XD8	0.794	135.00 >	1000.0 >	7.41	185.00 >	1000.00 >	5.42	0.00 >	1000.00	0.00 >	5.42 >	25.10	MTT	+
4036	65	04/24/90	VLB	0.742	132.00 >	320.00 >	2.43	223.00 >	320.00 >	1.43	0.00 >	320.00	0.00 >	1.43 >	9.14	MTT	+
4036	65	07/06/90	XD9	0.834	207.00	442.00	2.14	0.00	782.00	0.00	0.00 >	1000.00	0.00	0.00 >	3.40	MTT	+
4051	37	09/12/89	RK9	0.679	1.00	1.58	1.58	0.00	2.16	0.00	0.00	3.20	0.00	0.00 >	4.54	MTT	+
4051	67	05/31/90	WI1	0.903	0.00	3.78	0.00	0.00	5.85	0.00	0.00	9.59	0.00	0.00	0.00	MTT	-
4051	67	10/02/90	Z8L	0.747	0.00	4.81	0.00	0.00	6.56	0.00	0.00	9.72	0.00	0.00	0.00	MTT	-
4051	37	10/04/90	ZAD	0.779	0.14	0.48	3.47	0.29	0.66	2.24	0.00	0.97	0.00	1.64 >	10.28	MTT	+
4051	37	10/04/90	ZAC	0.720	1.81	4.63	2.56	0.00	6.42	0.00	0.00	9.64	0.00	0.00	5.36	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4071	62	12/05/89	SSE	0.622	22.70	779.00	34.29	74.40 >	1000.00 >	13.44	302.00 >	1000.00 >	3.31	10.47 >	33.61	MTT	+
4071	62	01/18/90	TFF	0.862	239.00	378.00	1.58	0.00	585.00	0.00	0.00	959.00	0.00	0.00	1.50	MTT	+
4071	62	02/08/90	TW3	0.646	56.60	492.00	8.70	122.00	679.00	5.55	0.00 >	1000.00	0.00	4.02 >	22.05	MTT	+
4074	48	02/07/89	OM7	1.222	0.00 >	0.03	0.00	0.00 >	0.03	0.00	0.00 >	0.03	0.00	0.00 >	6.49	MTT	-
4074	48	12/07/89	SUR	0.524 <	1.00	1.89 >	1.89 <	1.00	2.77 >	2.77 <	1.00	26.50 >	26.50 >	1.89 >	6.22	MTT	+
4074	48	02/13/90	UOQ	0.655	0.69	0.85	1.23	0.00	1.94	0.00	0.00 >	10.00	0.00	0.00	0.53	MTT	+
4240	53	04/11/89	PG3	0.727	1.76	13.90	7.86	3.48	28.50	8.18	9.00	92.30	10.30	3.98 >	25.72	MTT	+
4240	39	09/12/89	RKC	0.614	1.65	15.50	9.39	2.73	21.00	7.70	9.70	30.90	3.18	5.69	25.90	MTT	+
4241	39	05/11/88	---	NA ~	3.20	10.00	3.10	6.30 ~	100.00 ~	16.00	32.00	100.00	3.10	1.60	1.30[a]	CPE	+
4241	46	01/24/89	OF2	1.156	1.40	15.00	11.00	2.50	23.00	9.30	0.00	85.00	0.00	6.00 >	23.02	MTT	+
4420	44	10/05/88	---	NA ~	20.00	32.00 ~	1.60	26.00 ~	320.00 ~	12.00	100.00	320.00	3.20	1.20	1.10[a]	CPE	+
4420	44	03/29/89	PFB	0.721	85.00	66.00	0.80	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	1.89	MTT	+
4427	44	03/29/89	PFE	0.810	0.63	11.60	18.40	1.25	19.90	15.90	2.91	75.70	26.00	9.24 >	43.67	MTT	+
4427	44	10/11/89	RT3	0.734	0.84	17.20	20.41	1.41	24.50	17.35	2.95 >	32.00 >	10.85	12.22	41.75	MTT	+
4428	44	10/12/88	---	NA ~	3.20	10.00 ~	3.00	5.90 ~	320.00 ~	54.00	0.00	320.00	0.00	1.50	1.70[a]	CPE	+
4428	44	03/29/89	PFF	1.002	12.00	33.00	2.70	28.00	63.00	2.30	0.00 >	100.00	0.00	1.20	9.97	MTT	+
4432	44	04/05/89	PCT	0.580	12.40 >	100.00 >	8.05	20.30 >	100.00 >	4.92	0.00 >	100.00	0.00 >	4.92 >	27.00	MTT	+
4432	44	10/11/89	RT3	0.734	13.50 >	100.00 >	7.38	48.40 >	100.00 >	2.06	0.00 >	100.00	0.00 >	2.06 >	20.88	MTT	+
4432	44	12/20/89	TOP	0.531	0.00	183.00	0.00	0.00	267.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
4438	44	04/05/89	PCW	0.615	0.78	7.58	9.76	1.84	15.80	8.62	8.22	30.70	3.73	4.13 >	36.13	MTT	+
4438	44	10/11/89	RT4	0.857	1.09	4.90	4.48	0.00	6.60	0.00	0.00	9.66	0.00	0.00 >	15.52	MTT	+
4439	44	04/05/89	PCW	0.615	4.89	19.80	4.05	11.30	48.40	4.29	0.00	100.00	0.00	1.76 >	27.07	MTT	+
4439	44	10/11/89	RT4	0.857	3.80	48.00	12.63	7.74	65.30	8.44	0.00	96.50	0.00	6.20 >	29.28	MTT	+
4452	44	07/06/89	QOP	1.225	3.73	85.90	23.10	7.02	219.00	31.30	27.20 >	320.00 >	11.80	12.20	39.64	MTT	+
4452	44	08/16/89	R70	0.609 <	1.00	193.00 >	193.22	2.17	286.00	131.91	21.10 >	320.00 >	15.10	88.98 >	68.43	MTT	+
4465	45	12/06/88	02Z	0.866	4.09 >	320.00 >	78.30	16.20 >	320.00 >	19.80	192.00 >	320.00 >	1.66 >	19.80 >	50.81	MTT	+
4465	45	10/11/89	RT5	0.952	10.00 >	320.00 >	31.86	100.00 >	320.00 >	3.20	0.00 >	320.00	0.00 >	3.20 >	27.80	MTT	+
4472	45	12/07/88	03S	0.689	8.00 >	320.00 >	40.00	16.00 >	320.00 >	20.00	0.00 >	320.00	0.00 >	20.00 >	43.60	MTT	+
4472	45	10/11/89	RT5	0.952	5.70 >	320.00 >	56.00	58.00 >	320.00 >	5.50	0.00 >	320.00	0.00 >	5.50 >	33.99	MTT	+
4473	45	12/07/88	03S	0.689	10.00	320.00	31.00	17.00 >	320.00	19.00	0.00 >	320.00	0.00	19.00 >	40.66	MTT	+
4473	45	10/11/89	RT6	0.937	9.80 >	320.00 >	33.00	99.00 >	320.00	3.20	0.00 >	320.00	0.00 >	3.20 >	27.88	MTT	+
4475	45	12/07/88	03T	0.751	5.00	17.00	3.40	17.00	54.00	3.20	0.00	261.00	0.00	0.99	10.37	MTT	+
4475	45	10/11/89	RT6	0.937	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	1.39	MTT	-

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4524	45	12/07/88	03V	0.784	10.00	198.00	19.00	18.00 >	320.00 >	18.00	0.00 >	320.00	0.00	11.00 >	30.17	MTT	+
4524	45	10/11/89	RT7	0.966	97.00	26.00	0.26	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.42	MTT	+
4527	47	02/01/89	OJB	1.259	2.08	7.20	3.46	8.27	17.60	2.12	0.00	97.30	0.00	0.87 >	8.48	MTT	+
4527	47	02/06/90	TSO	0.729	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
4527	47	02/13/90	UOR	0.690	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00 >	100.00	0.00	0.00	0.03	MTT	-
4527	63	02/13/90	UOL	0.534	0.00	21.50	0.00	0.00	35.00	0.00	0.00 >	100.00	0.00	0.00 >	2.33	MTT	-
4592	48	03/01/89	OV1	0.749	15.30	40.30	2.63	27.80	78.70	2.83	0.00 >	100.00	0.00	1.45	7.46	MTT	+
4592	61	11/29/89	SPX	0.859	9.16	30.40	3.32	21.50	67.50	3.15	0.00 >	100.00	0.00	1.41 >	13.40	MTT	+
4592	48	02/06/90	TS1	0.696	28.80	36.90	1.28	0.00	77.30	0.00	0.00 >	100.00	0.00	0.00	2.22	MTT	+
4592	63	02/13/90	UOM	0.655	0.00	6.28	0.00	0.00	9.49	0.00	0.00	62.20	0.00	0.00 >	0.10	MTT	-
4609	48	03/01/89	OV2	0.785 <	0.32 <	0.32 -	1.00	0.32	0.60	1.87	0.00	8.87	0.00 <	1.00 >	0.34	MTT	+
4609	48	12/05/89	SSL	0.643	0.00	0.18	0.00	0.00	0.26	0.00	0.00	0.98	0.00	0.00 >	8.98	MTT	-
4609	63	02/13/90	UON	0.713	0.06	0.14	2.24	0.00	0.25	0.00	0.00	0.92	0.00	0.00	4.75	MTT	+
4611	65	04/24/90	VLJ	0.734	42.00 >	320.00 >	7.62	66.00 >	320.00 >	4.85	0.00 >	320.00	0.00 >	4.85 >	25.44	MTT	+
4611	65	07/06/90	XDB	0.857	6.77	970.00	143.30	15.50 >	1000.00 >	64.65	277.00 >	1000.00 >	3.61	62.74 >	54.23	MTT	+
4617	62	12/05/89	SSF	0.595	208.00	477.00	2.29	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.95	MTT	+
4617	GABSN	02/08/90	TW4	0.533	273.00	2290.0	8.38	566.00 >	3200.00 >	5.66	0.00 >	3200.00	0.00	4.04	20.12	MTT	+
4739	44	07/06/89	QOQ	1.116	7.67	43.50	5.67	15.10	62.60	4.15	0.00	96.90	0.00	2.88	16.01	MTT	+
4739	44	08/16/89	R7O	0.609	2.01	18.40	9.15	0.00	45.20	0.00	0.00	94.50	0.00	0.00 >	10.58	MTT	+
4739	64	03/08/90	UFO	0.623	0.00	149.00	0.00	0.00	207.00	0.00	0.00	311.00	0.00	0.00	2.67	MTT	-
4739	64	05/03/90	VX9	0.850	13.00	25.50	1.96	0.00	51.40	0.00	0.00	95.10	0.00	0.00	4.21	MTT	+
4744	44	11/01/88	OOJ	0.733	4.02	43.90	10.90	9.07	63.60	7.02	0.00	99.20	0.00	4.84	20.22	MTT	+
4744	44	12/05/89	SSK	0.658	0.00	17.20	0.00	0.00	24.80	0.00	0.00	94.10	0.00	0.00 >	5.30	MTT	-
4747	44	11/01/88	OOL	0.853	3.06	49.00	16.00	6.84	66.00	9.65	27.50	96.60	3.52	7.16	30.80	MTT	+
4747	44	12/14/89	SXX	0.523	4.73	16.10	3.40	0.00	25.60	0.00	0.00	89.70	0.00	0.00 >	6.43	MTT	+
4752	44	11/01/88	OON	0.971	1.98	5.94	3.01	5.31	8.68	1.64	0.00	32.00	0.00	1.12	7.74	MTT	+
4752	44	03/06/90	UDV	0.646	0.00	18.20	0.00	0.00	31.00	0.00	0.00	92.90	0.00	0.00 >	1.70	MTT	-
4753	44	11/01/88	OOO	0.857 <	1.00	8.06 >	8.06 <	1.00	15.10 >	15.10 <	1.00	30.30 >	30.30 >	8.06 >	35.19	MTT	+
4753	44	12/14/89	SXV	0.547	0.73	9.50	12.96	1.38	16.90	12.29	2.94	30.50	10.37	6.89	35.50	MTT	+
4754	44	11/02/88	O1D	1.195 <	1.00	4.90 >	4.90	1.43	6.60	4.63	2.95	9.66	3.27	3.43 >	16.63	MTT	+
4754	44	12/20/89	TOQ	0.532	1.68	6.29	3.74	2.83	9.38	3.32	0.00	29.60	0.00	2.23	8.94	MTT	+
4757	44	11/02/88	O1F	1.098	19.40 >	320.00 >	16.50	50.10 >	320.00 >	6.39	222.00 >	320.00 >	1.44 >	6.39 >	41.63	MTT	+
4757	44	12/14/89	SXT	0.594	35.20	490.00	13.93	140.00	660.00	4.70	0.00	966.00	0.00	3.49	25.09	MTT	+
4762	44	11/02/88	O1H	1.114	2.94	2.47	0.84	28.50	210.00	7.37	0.00 >	320.00	0.00	0.09	5.20	MTT	+
4762	44	12/07/89	SUS	0.616	0.00	6.60	0.00	0.00	25.70	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4763	44	11/02/88	011	0.937	2.24	2.39	1.06	6.40 >	320.00 >	50.00	68.40 >	320.00 >	4.68	0.37 >	52.59	MTT	+
4763	44	01/10/90	TDO	1.054	49.80	26.70	0.54	418.00 >	1000.00 >	2.39	0.00 >	1000.00	0.00	0.06 >	13.63	MTT	+
4764	44	11/08/88	0C0	0.827	4.43 >	320.00 >	72.20	106.00 >	320.00 >	3.02	0.00 >	320.00	0.00 >	3.02 >	27.25	MTT	+
4764	44	12/20/89	TOQ	0.532	0.00	121.00	0.00	0.00	208.00	0.00	0.00	811.00	0.00	0.00	0.00	MTT	-
4765	44	11/08/88	0C1	0.845	2.01	9.24	4.60	89.20	181.00	2.03	0.00	306.00	0.00	0.10	12.82	MTT	+
4765	44	02/13/90	U0S	0.706	0.00	11.90	0.00	0.00	28.10	0.00	0.00	274.00	0.00	0.00 >	0.14	MTT	-
4768	44	11/08/88	0C2	0.967	5.10	57.50	11.30	16.80	137.00	8.15	0.00	302.00	0.00	3.43 >	19.77	MTT	+
4768	44	02/13/90	U0T	0.692	0.00	140.00	0.00	0.00	216.00	0.00	0.00 >	320.00	0.00	0.00	1.40	MTT	-
4769	44	11/08/88	0C3	0.914	3.04	54.70	18.00	14.40	92.40	6.41	0.00	296.00	0.00	3.79 >	22.35	MTT	+
4769	44	02/13/90	U0T	0.692	0.00	114.00	0.00	0.00	183.00	0.00	0.00	306.00	0.00	0.00 >	1.88	MTT	-
4770	44	11/08/88	0C3	0.914	4.18	108.00	25.90	27.10	179.00	6.60	0.00	306.00	0.00	4.00 >	24.98	MTT	+
4770	44	03/06/90	UDW	0.598	0.00	400.00	0.00	0.00	600.00	0.00	0.00	960.00	0.00	0.00	1.35	MTT	-
4785	46	01/12/89	09Y	0.684 <	1.00	7.20 >	7.20 <	1.00	25.80 >	25.80	0.00 >	320.00	0.00 >	7.20 >	20.09	MTT	+
4785	46	11/01/90	ZYD	0.934	1.33	2.74	2.06	2.91	7.66	2.63	0.00 >	32.00	0.00	0.94	4.38	MTT	+
4796	46	01/12/89	0A3	0.639	1.49	210.00	141.00	2.22 >	320.00 >	144.00	8.10 >	320.00 >	39.50	94.70 >	62.20	MTT	+
4796	61	11/29/89	SPY	1.021	3.04	168.00	55.25	5.59	273.00	48.91	25.40 >	320.00 >	12.62	29.99 >	53.61	MTT	+
4822	48	02/01/89	0JG	1.057	1.26	106.00	83.70	4.44	222.00	50.00	0.00 >	320.00	0.00	23.80 >	42.28	MTT	+
4822	48	12/14/89	SY1	0.583	1.37	54.10	39.56	2.11	76.20	36.10	8.03 >	320.00 >	39.84	25.63 >	51.00	MTT	+
4827	48	02/14/89	0MX	1.221	126.00 >	320.00 >	2.54	241.00 >	320.00 >	1.33	0.00 >	320.00	0.00 >	1.33 >	10.23	MTT	+
4827	61	11/29/89	SPZ	1.012	54.70	544.00	9.94	0.00	767.00	0.00	0.00 >	1000.00	0.00	0.00 >	19.70	MTT	+
4855	48	02/22/89	0Q5	0.808	7.22	122.00	16.80	19.50	221.00	11.30	0.00 >	320.00	0.00	6.23	37.03	MTT	+
4855	61	11/29/89	SQ1	0.831	10.20 >	320.00 >	31.51	14.90 >	320.00 >	21.49	29.60 >	320.00 >	10.8 >	21.49 >	59.59	MTT	+
4855	48	12/05/90	1QE	1.070	1.18 >	100.00 >	84.69	12.50 >	100.00 >	7.98	0.00 >	100.00	0.00 >	7.98 >	42.18	MTT	+
4871	46	01/17/89	0BR	0.418	14.50	230.00	15.90	21.10 >	320.00 >	15.20	0.00 >	320.00	0.00	10.90	25.65	MTT	+
4871	46	01/24/89	0QE	1.167	13.60	151.00	11.10	22.10 >	320.00 >	14.50	0.00 >	320.00	0.00	6.82	21.39	MTT	+
4871	61	11/29/89	SQ2	0.873	6.26	619.00	98.88	13.60 >	1000.00 >	73.50	29.40 >	1000.00 >	34.04	45.46 >	64.94	MTT	+
4875	46	01/18/89	0DI	1.142 <	1.00 >	320.00 >	320.00	64.90 >	320.00 >	4.93	0.00 >	320.00	0.00 >	4.93 >	33.29	MTT	+
4875	46	12/20/89	TOR	0.489	0.00	159.00	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.13	MTT	-
4891	46	01/18/89	0DQ	1.265 <	1.00	1.29 >	1.29 <	1.00	2.21 >	2.21	0.00	8.52	0.00 >	1.29 >	2.72	MTT	+
4891	46	12/20/89	TOR	0.489	0.00	0.49	0.00	0.00	0.66	0.00	0.00	0.97	0.00	0.00	0.00	MTT	-
4911	46	01/31/89	0HO	1.131	69.80	147.00	2.10	171.00	284.00	1.66	0.00 >	320.00	0.00	0.85 >	7.10	MTT	+
4911	65	04/26/90	VMZ	0.831	0.00	3.20	0.00	0.00	9.27	0.00	0.00	235.00	0.00	0.00	0.00	MTT	-
4919	46	02/01/89	0J5	1.166	18.10	100.00	5.55	33.30	184.00	5.51	0.00	333.00	0.00	3.01	18.70	MTT	+
4919	61	11/29/89	SQ3	0.903	32.00	85.40	2.67	0.00	161.00	0.00	0.00	304.00	0.00	0.00 >	6.46	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
4934	51	03/07/89	QXC	0.836	< 1.00	15.40 >	15.40	1.00	22.60	22.60	2.98	80.00	26.90	15.40 >	36.63	MTT	+
4934	51	12/14/89	SXU	0.506	1.55	8.69	5.62	7.22	16.30	2.26	0.00	30.40	0.00	1.20 >	12.59	MTT	+
4939	51	03/07/89	QXE	0.842	< 1.00	10.80 >	10.80 <	1.00	20.60 >	20.60	10.00	83.80	8.38 >	10.80 >	37.32	MTT	+
4939	51	12/14/89	SXU	0.506	1.06	15.50	14.62	4.31	21.00	4.88	0.00	30.90	0.00	3.60 >	24.80	MTT	+
4981	51	03/14/89	P2D	0.187	1.02 >	320.00 >	312.00	1.85 >	320.00 >	173.00	0.00 >	320.00	0.00 >	173.00 >	16.99	MTT	+
4981	51	04/20/89	PUM	1.225	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.60	MTT	-
4982	51	03/14/89	P2E	0.203	< 1.00	151.00 >	151.00 <	1.00	278.00 >	278.00	0.00 >	320.00	0.00 >	151.00 >	10.53	MTT	+
4982	51	04/20/89	PUN	1.225	0.00	150.00	0.00	0.00	241.00	0.00	0.00 >	320.00	0.00	0.00 >	0.30	MTT	-
4984	51	03/14/89	P2F	0.226	4.43	115.00	26.00	7.93	228.00	28.70	0.00 >	320.00	0.00	14.50 >	31.50	MTT	+
4984	51	04/20/89	PUO	1.194	75.20	63.50	0.84	0.00	95.00	0.00	0.00 >	320.00	0.00	0.00	1.46	MTT	+
4984	51	12/14/89	SY4	0.480	0.00	55.00	0.00	0.00	77.90	0.00	0.00 >	100.00	0.00	0.00	3.74	MTT	-
4988	51	03/14/89	P2H	0.182	< 1.00	104.00 >	104.00 <	1.00	184.00 >	184.00	0.00	328.00	0.00 >	104.00 >	20.11	MTT	+
4988	51	04/20/89	PUQ	1.359	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00 >	3.70	MTT	-
4989	51	03/14/89	P2H	0.182	1.12 >	320.00 >	286.00	2.28 >	320.00 >	141.00	0.00 >	320.00	0.00 >	141.00 >	36.16	MTT	+
4990	51	03/14/89	P2I	0.155	< 1.00	4.52 >	4.52 <	1.00	8.03 >	8.03 <	1.00	198.00 >	198.00 >	4.52 >	26.19	MTT	+
4990	51	04/20/89	PUR	1.282	0.00	5.35	0.00	0.00	8.33	0.00	0.00	92.40	0.00	0.00 >	2.52	MTT	-
4990	51	12/14/89	SXY	0.594	0.00	0.09	0.00	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	-
4991	51	03/14/89	P2I	0.155	1.47	108.00	73.00	16.90	191.00	11.30	31.60	340.00	10.80	6.36 >	46.17	MTT	+
4991	51	04/20/89	PUR	1.282	66.10	156.00	2.35	0.00	211.00	0.00	0.00	311.00	0.00	0.00 >	12.52	MTT	+
4991	51	01/10/90	TDP	1.053	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.60	MTT	-
4993	51	03/14/89	P2J	0.215	1.31	113.00	86.10	3.09	202.00	65.30	0.00 >	320.00	0.00	36.60 >	19.88	MTT	+
4993	51	04/20/89	PUS	1.229	0.00	163.00	0.00	0.00	225.00	0.00	0.00 >	320.00	0.00	0.00 >	4.91	MTT	-
4995	51	03/14/89	P2K	0.232	< 1.00	19.50 >	19.50	7.96	52.90	6.65	0.00	305.00	0.00	2.44 >	16.77	MTT	+
4995	51	04/20/89	PUT	1.305	17.90	20.40	1.14	0.00	30.80	0.00	0.00 >	320.00	0.00	0.00 >	5.02	MTT	+
4996	51	03/14/89	P2L	0.182	< 1.00 >	320.00 >	320.00 <	1.00 >	320.00 >	320.00	0.00 >	320.00	0.00 >	320.00 >	11.56	MTT	+
4996	51	04/20/89	PUU	1.289	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5040	45	12/07/88	04U	0.853	25.70 >	320.00 >	12.40	56.60 >	320.00 >	5.66	0.00 >	320.00	0.00 >	5.66 >	22.70	MTT	+
5040	62	12/05/89	SSF	0.595	26.40	559.00	21.20	81.60 >	1000.00 >	12.26	0.00 >	1000.00	0.00	6.85	23.52	MTT	+
5040	45	12/20/89	T0S	0.572	48.60	463.00	9.51	74.00	737.00	9.96	0.00 >	1000.00	0.00	6.25	19.08	MTT	+
5040	GABSN	02/08/90	TW4	0.533	23.50	2220.0	94.70	77.60 >	3200.00 >	41.22	280.00 >	3200.00 >	11.41	28.63 >	52.11	MTT	+
5041	45	12/07/88	04U	0.853	158.00 >	320.00 >	2.02	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.42	MTT	+
5041	62	12/05/89	SSG	0.570	136.00 >	1000.0 >	7.33	468.00 >	1000.00 >	2.14	0.00 >	1000.00	0.00 >	2.14 >	13.45	MTT	+
5041	GABSN	02/08/90	TW5	0.589	115.00 >	1000.0 >	8.67	209.00 >	1000.00 >	4.79	0.00 >	1000.00	0.00 >	4.79 >	24.40	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5058	48	02/28/89	OTI	0.907	26.40	> 320.00	> 12.10	50.30	> 320.00	> 6.37	0.00	> 320.00	0.00	> 6.37	> 31.02	MTT	+
5058	62	12/05/89	SSG	0.570	46.80	> 1000.0	> 21.37	115.00	> 1000.00	> 8.67	289.00	> 1000.00	> 3.46	> 8.67	> 44.29	MTT	+
5058	48	12/20/89	TOS	0.572	170.00	835.00	4.92	288.00	> 1000.00	> 3.47	0.00	> 1000.00	0.00	2.90	> 12.95	MTT	+
5058	62	02/08/90	TWS	0.589	100.00	> 1000.0	> 10.00	147.00	> 1000.00	> 6.79	296.00	> 1000.00	> 3.38	> 6.79	> 33.40	MTT	+
5067	48	03/01/89	OUW	0.864	9.47	> 320.00	> 33.80	15.80	> 320.00	> 20.20	0.00	> 320.00	0.00	> 20.20	> 42.00	MTT	+
5067	48	12/14/89	SY2	0.559	13.80	927.00	66.94	37.70	> 1000.00	> 26.56	155.00	> 1000.00	> 6.47	24.62	> 49.90	MTT	+
5067	48	12/20/89	TOT	0.570	163.00	527.00	3.23	0.00	> 1000.00	0.00	0.00	> 1000.00	0.00	0.00	4.18	MTT	+
5070	48	03/01/89	OUY	0.982	< 1.00	62.40	> 62.40	< 1.00	142.00	> 142.00	0.00	284.00	0.00	> 62.40	> 21.74	MTT	+
5070	48	10/03/89	RVC	0.907	0.00	61.80	0.00	0.00	91.60	0.00	0.00	294.00	0.00	0.00	0.00	MTT	-
5070	65	04/26/90	VN4	0.818	0.00	25.00	0.00	0.00	57.10	0.00	0.00	268.00	0.00	0.00	0.00	MTT	-
5072	48	03/01/89	OUZ	0.743	12.10	141.00	11.60	19.50	279.00	14.30	0.00	> 320.00	0.00	7.21	> 25.11	MTT	+
5072	48	10/03/89	RVC	0.907	256.00	265.00	1.03	0.00	759.00	0.00	0.00	> 1000.00	0.0	0.00	1.65	MTT	+
5072	48	10/11/89	RSW	0.955	15.80	234.00	14.75	31.10	> 320.00	> 10.27	0.00	> 320.00	0.00	7.50	> 22.15	MTT	+
5075	48	03/01/89	OUZ	0.743	10.90	> 320.00	> 29.40	16.50	> 320.00	> 19.40	65.20	> 320.00	> 4.91	> 19.40	> 49.75	MTT	+
5075	48	10/03/89	RVD	0.905	0.00	100.00	0.00	0.00	592.00	0.00	0.00	> 1000.00	0.00	0.00	> 0.35	MTT	-
5075	48	10/11/89	RSX	0.895	11.70	302.00	25.70	32.00	> 320.00	> 10.00	0.00	> 320.00	0.00	9.43	> 35.00	MTT	+
5075	65	04/26/90	VN5	0.826	0.00	391.00	0.00	0.00	745.00	0.00	0.00	> 1000.00	0.00	0.00	2.03	MTT	-
5098	56	06/20/89	QGG	1.278	162.00	204.00	1.26	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 0.52	MTT	+
5098	56	08/08/89	R2C	1.430	129.00	232.00	1.81	227.00	443.00	1.95	0.00	944.00	0.00	1.02	4.57	MTT	+
5113	56	06/21/89	QI1	1.104	8.27	4.66	0.56	0.00	11.30	0.00	0.00	320.00	0.00	0.00	0.01	MTT	+
5113	56	08/15/89	R5V	0.809	3.78	11.40	3.01	7.57	18.30	2.41	0.00	30.60	0.00	1.50	4.83	MTT	+
5133	56	06/27/89	QJN	1.072	0.00	5.09	0.00	0.00	6.98	0.00	0.00	21.00	0.00	0.00	1.23	MTT	-
5133	56	08/15/89	R5X	0.841	1.34	5.51	4.12	7.62	8.91	1.17	0.00	29.90	0.00	0.72	6.30	MTT	+
5134	57	07/11/89	QQ8	1.394	26.60	11.80	0.45	0.00	35.90	0.00	0.00	94.80	0.00	0.00	0.00	MTT	+
5134	57	08/15/89	R62	0.868	12.00	39.40	3.27	23.30	59.90	2.57	0.00	96.70	0.00	1.69	7.04	MTT	+
5137	57	07/11/89	QQA	1.318	17.00	143.00	8.40	28.80	202.00	7.01	0.00	308.00	0.00	4.95	20.48	MTT	+
5137	57	08/16/89	R7P	0.536	4.21	155.00	36.85	11.50	210.00	18.21	44.30	309.00	6.97	13.44	> 48.27	MTT	+
5138	57	07/11/89	QQA	1.318	50.70	294.00	5.80	93.00	> 320.00	> 3.44	0.00	> 320.00	0.00	3.16	> 13.39	MTT	+
5138	57	08/16/89	R7P	0.536	38.30	499.00	13.03	52.70	678.00	12.86	93.80	1000.00	10.66	9.46	> 40.15	MTT	+
5138	65	04/26/90	VN6	0.860	652.00	613.00	0.94	0.00	906.00	0.00	0.00	> 1000.00	0.00	0.00	0.00	MTT	+
5142	57	07/11/89	QQC	1.331	61.40	47.10	0.77	0.00	78.60	0.00	0.00	287.00	0.00	0.00	0.24	MTT	+
5142	57	08/16/89	R7Q	0.489	44.20	155.00	3.50	61.10	210.00	3.43	0.00	309.00	0.00	2.54	16.64	MTT	+
5153	57	07/11/89	QQ1	1.141	55.90	95.00	1.70	97.80	169.00	1.73	0.00	305.00	0.00	0.97	3.14	MTT	+
5153	57	08/16/89	R7T	0.834	0.00	52.70	0.00	0.00	89.70	0.00	0.00	294.00	0.00	0.00	1.46	MTT	-
5156	57	07/12/89	QRW	1.058	< 1.00	< 1.00	~ 1.00	0.00	2.96	0.00	0.00	9.29	0.00	0.00	0.00	MTT	+
5156	57	08/15/89	R65	0.581	0.25	1.23	5.01	1.00	2.68	2.68	0.00	9.48	0.00	1.23	11.24	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5174	58	07/25/89	QW1	1.341	13.20	0.96	0.07	23.60	64.90	2.74	0.00	268.00	0.00	0.04	5.46	MTT	+
5174	58	10/04/89	RWV	0.852	0.00	16.00	0.00	0.00	49.00	0.00	0.00	301.00	0.00	0.00	0.00	MTT	-
5186	58	07/25/89	QW7	1.180	88.50	196.00	2.21	0.00	296.00	0.00	0.00 >	320.00	0.00	0.00	5.18	MTT	+
5186	58	10/04/89	RWZ	0.694	22.30	414.00	18.58	49.90	887.00	17.76	0.00 >	1000.00	0.00	8.30 >	27.60	MTT	+
5186	65	04/26/90	VN8	0.892	80.20	90.30	1.13	0.00	247.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.30	MTT	+
5197		10/04/89	RX0	0.699	14.70	130.00	8.85	0.00	194.00	0.00	0.00	307.00	0.00	0.00	14.49	MTT	+
5197	58	10/04/90	ZAE	0.764	14.30	34.60	2.41	23.70	56.40	2.38	0.00	95.60	0.00	1.46 >	7.73	MTT	+
5197	58	07/26/89	QXE	0.844	0.00	55.10	0.00	0.00	87.20	0.00	0.00	293.00	0.00	0.00	0.00	MTT	-
5210	58	08/01/89	QZL	1.262	13.30	19.40	1.46	27.00	54.20	2.01	0.00	257.00	0.00	0.72	2.46	MTT	+
5210	58	10/17/89	S32	1.023	4.89	16.80	3.43	0.00	45.60	0.00	0.00	270.00	0.00	0.00	4.54	MTT	+
5241	52	03/08/89	QZP	1.[illegible]	34.40 >	320.00 >	9.31	121.00 >	320.00 >	2.64	290.00 >	320.00 >	1.10 >	2.64 >	22.86	MTT	+
5241	52	12/14/89	SY0	0.527	5.43	490.00	90.31	10.70	660.00	61.79	28.70	966.00	33.69	45.88	64.58	MTT	+
5242	52	03/08/89	QZQ	1.035	121.00 >	320.00 >	2.64	168.00 >	320.00 >	1.91	300.00 >	320.00 >	1.07 >	1.91 >	10.88	MTT	+
5242	52	12/20/89	T0T	0.570	100.00 >	1000.0 >	10.00	379.00 >	1000.00 >	2.64	0.00 >	1000.00	0.00 >	2.64 >	23.33	MTT	+
5247	52	03/14/89	P2M	0.232 <	1.00	88.50 >	88.50 <	1.00	196.00 >	196.00	0.00 >	320.00	0.00 >	88.50 >	8.04	MTT	+
5247	52	04/20/89	PUV	1.235	0.00	2.59	0.00	0.00	7.48	0.00	0.00 >	320.00	0.00	0.00 >	0.17	MTT	-
5250	52	03/14/89	P2N	0.179 <	1.00 >	320.00 >	320.00 <	1.00 >	320.00 >	320.00	86.70 >	320.00 >	3.69 >	320.00 >	60.23	MTT	+
5250	52	04/20/89	PUW	1.262	0.00	90.60	0.00	0.00	165.00	0.00	0.00	305.00	0.00	0.00 >	5.80	MTT	-
5250	52	01/10/90	TDP	1.053	49.40 >	320.00 >	6.48	143.00 >	320.00 >	2.24	0.00 >	320.00	0.00 >	2.24 >	13.82	MTT	+
5251	52	03/14/89	P2N	0.179 <	1.00	32.70 >	32.70 <	1.00	55.50 >	55.50	0.00	96.40	0.00 >	32.70 >	5.34	MTT	+
5251	52	04/20/89	PUW	1.262	0.00	5.97	0.00	0.00	9.12	0.00	0.00	29.40	0.00	0.00 >	0.42	MTT	-
5252	52	03/14/89	P20	0.185 <	1.00	13.10 >	13.10 <	1.00	25.20 >	25.20	0.00	90.60	0.00 >	13.10 >	13.86	MTT	+
5252	52	04/20/89	PUX	1.091	0.00	16.50	0.00	0.00	22.90	0.00	0.00	77.30	0.00	0.00 >	1.71	MTT	-
5253	52	03/15/89	P3U	0.644 <	1.00	4.81 >	4.81 <	1.00	8.63 >	8.63	2.62	29.80	11.40 >	4.81 >	23.45	MTT	+
5253	52	12/14/89	SXZ	0.625	0.48	7.43	15.40	1.35	14.00	10.36	0.00	30.20	0.00	5.51 >	26.46	MTT	+
5271	52	03/21/89	P7I	0.979	10.00 >	320.00 >	32.00	46.00 >	320.00 >	6.95	0.00 >	320.00	0.00 >	6.95 >	31.32	MTT	+
5271	52	12/14/89	SY3	0.608	19.60	715.00	36.41	56.60 >	1000.00 >	17.68	282.00 >	1000.00 >	3.54	12.65	38.74	MTT	+
5277	52	03/21/89	P7L	0.753	1.38 >	320.00 >	232.00	4.25 >	320.00 >	75.20	0.00 >	320.00	0.00 >	75.20 >	49.55	MTT	+
5277	52	12/14/89	SY0	0.527	3.58 >	1000.0 >	279.47	6.26 >	1000.00 >	159.87	0.00 >	1000.00	0.00 >	159.87 >	63.70	MTT	+
5283	52	03/21/89	P70	0.627	1.60	114.00	71.00	2.97	251.00	84.60	0.00 >	320.00	0.00	38.20 >	29.05	MTT	+
5283	52	01/09/90	T7K	0.600	8.92	38.80	4.35	0.00	159.00	0.00	0.00 >	320.00	0.00	0.00	4.46	MTT	+
5291	52	03/21/89	P7R	0.285 <	1.00 >	320.00 >	320.00	1.47 >	320.00 >	217.00	8.55 >	320.00 >	37.40 >	217.00 >	69.04	MTT	+
5291	52	01/10/90	TDQ	1.111	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5350	53	04/12/89	PI8	1.099	5.93	37.70	6.36	17.50	61.70	3.52	0.00	210.00	0.00	2.15 >	14.28	MTT	+
5350	53	01/18/90	TFI	0.774	0.00	34.00	0.00	0.00	84.00	0.00	0.00	294.00	0.00	0.00	0.15	MTT	-
5363	54	05/02/89	PWN	1.013	7.26	10.00	1.38	0.00	25.30	0.00	0.00 >	320.00	0.00	0.00	0.74	MTT	+
5363	54	06/28/89	QA5	1.102	1.39	3.96	2.84	10.00	100.00	10.00	0.00 >	320.00	0.00	0.40 >	5.71	MTT	+
5367	54	05/02/89	PWP	1.149	38.30	230.00	6.00	81.10 >	320.00 >	3.95	0.00 >	320.00	0.00	2.83 >	16.05	MTT	+
5367	54	06/28/89	QA7	1.022	17.90	141.00	7.90	0.00	313.00	0.00	0.00 >	320.00	0.00	0.00 >	15.46	MTT	+
5369	54	05/02/89	PWQ	1.100 <	1.00	168.00 >	168.00	9.09 >	320.00 >	35.20	0.00 >	320.00	0.00	18.50 >	27.11	MTT	+
5369	54	06/28/89	QA8	0.983 <	0.32	42.20 >	132.00	7.69	70.50	9.17	0.00 >	100.00	0.00	5.49 >	23.37	MTT	+
5372	54	05/02/89	PWS	1.044	2.11	82.00	38.80	68.40	180.00	2.63	0.00 >	320.00	0.00	1.20 >	21.97	MTT	+
5372	54	06/28/89	QA8	0.983 <	1.00	2.93 >	2.93	0.00	67.30	0.00	0.00 >	320.00	0.00	0.00 >	8.88	MTT	+
5383	54	05/02/89	PWX	1.161	50.30	93.50	1.86	79.00	169.00	2.14	0.00	305.00	0.00	1.18	4.01	MTT	+
5383	54	06/28/89	QA9	0.926	0.00	32.00	0.00	0.00	69.00	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
5384	54	05/02/89	PWY	1.129	16.70	26.90	1.62	27.70	50.70	1.83	0.00	95.10	0.00	0.97	2.73	MTT	+
5384	54	06/28/89	QAA	1.024	18.30	26.20	1.43	0.00	51.40	0.00	0.00	95.10	0.00	0.00	1.40	MTT	+
5384	65	04/26/90	VN9	0.792	0.00	8.06	0.00	0.00	47.70	0.00	0.00	94.80	0.00	0.00	0.00	MTT	-
5403	54	05/04/89	PYP	0.678	13.50	61.80	4.59	28.40	91.60	3.23	0.00	299.00	0.00	2.18	11.87	MTT	+
5403	54	06/28/89	QAC	0.939	64.90	154.00	2.37	0.00	210.00	0.00	0.00	311.00	0.00	0.00 >	7.98	MTT	+
5450	53	04/12/89	PI7	0.956	1.25	17.80	14.20	2.81	29.30	10.40	0.00 >	320.00	0.00	6.33 >	24.31	MTT	+
5450	65	04/26/90	VNA	0.758	0.00	3.06	0.00	0.00	25.90	0.00	0.00 >	100.00	0.00	0.00	0.00	MTT	-
5450	65	07/06/90	XDC	0.955	2.43	6.08	2.50	0.00	18.30	0.00	0.00 >	100.00	0.00	0.00	3.51	MTT	+
5484	53	12/14/89	SXV	0.547	139.00	427.00	3.08	198.00	618.00	3.13	0.00	962.00	0.00	2.16 >	10.98	MTT	+
5484	53	01/10/90	TDR	1.060	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
5484	66	05/08/90	WOE	0.851	156.00 >	320.00 >	2.05	245.00 >	320.00 >	1.31	0.00 >	320.00	0.00 >	1.31 >	5.04	MTT	+
5485	53	12/14/89	SXW	0.751	5.14	0.06	0.01	8.79	17.30	1.97	0.00 >	32.00	0.00	0.01	2.54	MTT	+
5485	66	05/08/90	WOF	0.821	106.00 >	320.00 >	3.01	179.00 >	320.00 >	1.79	0.00 >	320.00	0.00 >	1.79 >	12.47	MTT	+
5485	66	07/17/90	XLS	0.654	2.83	0.24	0.09	0.00	6.72	0.00	0.00 >	100.00	0.00	0.00	1.65	MTT	+
5495	53	04/18/89	PL6	1.086 <	1.00	5.16 >	5.16 <	1.00	7.28 >	7.28	2.83 >	320.00 >	113.00 >	5.16 >	23.12	MTT	+
5495	53	12/14/89	SXZ	0.625	5.31 >	32.00 >	6.03	13.50 >	32.00 >	2.37	0.00 >	32.00	0.00 >	2.37 >	22.95	MTT	+
5495	66	05/08/90	WOI	0.828	17.00	55.30	3.26	0.00	78.60	0.00	0.00 >	100.00	0.00	0.00	7.26	MTT	+
5495	66	07/17/90	XLT	0.626	0.00 <	0.32	0.00	0.00	0.31	0.00	0.00	94.50	0.00	0.00	0.00	MTT	-
5497	53	04/18/89	PL7	1.086	40.90 >	320.00 >	7.82	88.40 >	320.00 >	3.62	0.00 >	320.00	0.00 >	3.62 >	22.90	MTT	+
5497	53	12/20/89	TOW	0.556	64.70	485.00	7.50	147.00	657.00	4.46	0.00	966.00	0.00	3.29	20.25	MTT	+
5497	65	05/01/90	VT1	0.700	26.40	329.00	12.48	128.00	553.00	4.31	0.00	955.00	0.00	2.56 >	22.17	MTT	+
5497	66	05/08/90	WOJ	0.798	106.00 >	320.00 >	3.03	211.00 >	320.00 >	1.51	0.00 >	320.00	0.0 >	1.51 >	8.06	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5498	53	04/18/89	PL8	1.058	48.40 >	320.00 >	6.61	109.00 >	320.00 >	2.94	287.00 >	320.00 >	1.11 >	2.94 >	27.25	MTT	+
5498	53	12/14/89	SXX	0.523	125.00	446.00	3.58	198.00	689.00	3.48	0.00 >	1000.00	0.00	2.25	11.31	MTT	+
5498	66	05/08/90	W0K	0.759	140.00 >	320.00 >	2.29	195.00 >	320.00 >	1.64	0.00 >	320.00	0.00 >	1.64 >	8.03	MTT	+
5500	53	04/18/89	PL9	1.057 <	1.00	3.08 >	3.08	1.25	5.45	4.36	0.00	9.72	0.00	2.47 >	16.47	MTT	+
5500	66	05/08/90	W0K	0.759	0.00 <	1.00	0.00	0.00 <	1.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
5500	66	07/03/90	XBB	0.829	0.00	8.95	0.00	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00	1.78	MTT	-
5503	53	04/18/89	PLA	0.979	8.62	72.70	8.44	22.80	155.00	6.81	0.00	304.00	0.00	3.19	17.57	MTT	+
5503	53	02/13/90	U0V	0.677	0.00	69.00	0.00	0.00	116.00	0.00	0.00	300.00	0.00	0.00	0.72	MTT	-
5503	66	05/08/90	W0L	0.738	0.00	24.10	0.00	0.00	49.80	0.00	0.00	262.00	0.00	0.00 >	0.10	MTT	-
5507	53	04/18/89	PLC	0.956	17.90	167.00	9.33	42.50	309.00	7.27	0.00 >	320.00	0.00	3.92 >	26.77	MTT	+
5507	53	12/20/89	T0W	0.556	0.00	155.00	0.00	0.00	210.00	0.00	0.00	309.00	0.00	0.00	2.40	MTT	-
5507	66	05/08/90	W0M	0.755	34.70	128.00	3.69	96.00	192.00	2.00	0.00	307.00	0.00	1.33 >	15.74	MTT	+
5508	53	04/18/89	PLD	0.899	15.90	104.00	6.52	45.70	184.00	4.02	0.00	328.00	0.00	2.27 >	21.73	MTT	+
5508	66	05/10/90	W2R	0.805	10.00	37.20	3.72	0.00	58.70	0.00	0.00	97.40	0.00	0.00 >	7.22	MTT	+
5515	53	04/18/89	PLG	0.905	3.67	25.80	7.02	10.80	53.90	4.99	0.00	198.00	0.00	2.38 >	26.74	MTT	+
5515	53	01/18/90	TFJ	0.877	0.00	52.10	0.00	0.00	73.10	0.00	0.00	259.00	0.00	0.00	1.53	MTT	-
5515	66	05/10/90	W2S	0.884	0.00	5.72	0.00	0.00	13.60	0.00	0.00	86.40	0.00	0.00	0.00	MTT	-
5515	53	11/01/90	ZYF	0.988	13.90	52.40	3.76	0.00	80.70	0.00	0.00	312.00	0.00	0.00 >	8.75	MTT	+
5520	56	06/13/89	QCP	1.099	43.40 >	320.00 >	7.38	164.00 >	320.00 >	1.95	0.00 >	320.00	0.00 >	1.95 >	19.11	MTT	+
5520	56	08/08/89	R2H	1.319	16.50	122.00	7.41	93.90	260.00	2.76	0.00	913.00	0.00	1.30	7.73	MTT	+
5525	56	06/13/89	QCS	1.227	33.60	192.00	5.71	0.00	283.00	0.00	0.00 >	320.00	0.00	0.00	13.71	MTT	+
5525	56	08/08/89	R2I	1.319	17.20	210.00	12.20	52.10	424.00	8.13	0.00	942.00	0.00	4.03	20.56	MTT	+
5528	56	06/13/89	QCT	1.294	3.72	15.90	4.26	6.37	21.70	3.41	0.00 >	320.00	0.00	2.49	13.69	MTT	+
5528	56	08/09/89	R41	0.804	0.00	17.30	0.00	0.00	26.50	0.00	0.00 >	32.00	0.00	0.00	1.46	MTT	-
5531	56	06/13/89	QCV	1.220	48.20	175.00	3.64	100.00	251.00	2.51	0.00 >	320.00	0.00	1.75 >	13.96	MTT	+
5531	56	08/09/89	R42	0.697	36.70	158.00	4.30	51.70	216.00	4.17	96.00	320.00	3.33	3.05 >	19.69	MTT	+
5532	56	06/14/89	QDW	1.447	176.00 >	320.00 >	1.82	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	4.35	MTT	+
5532	56	08/09/89	R42	0.697	35.90	490.00	13.66	133.00	660.00	4.98	293.00	966.00	3.30	3.70 >	30.01	MTT	+
5534	56	06/14/89	QDX	1.257	42.00 >	320.00 >	7.61	62.80 >	320.00 >	5.10	0.00 >	320.00	0.00 >	5.10 >	24.30	MTT	+
5534	56	08/09/89	R43	0.930	37.50	312.00	8.30	72.80	541.00	7.43	0.00	954.00	0.00	4.28	18.00	MTT	+
5538	56	06/14/89	QDZ	1.315	124.00 >	320.00 >	2.58	213.00 >	320.00 >	1.51	0.00 >	320.00	0.00 >	1.51 >	10.28	MTT	+
5538	56	08/09/89	R44	0.864	137.00	354.00	2.58	233.00	570.00	2.44	0.00	957.00	0.00	1.52	7.90	MTT	+
5539	56	06/14/89	QE0	1.339	0.00	4.81	0.00	0.00	7.90	0.00	0.00	265.00	0.00	0.00	0.78	MTT	-
5539	56	08/09/89	R44	0.864	1.34	4.42	3.30	2.59	6.96	2.69	0.00	75.30	0.00	1.71	6.79	MTT	+
5539	56	11/01/90	ZYF	0.988	2.15	2.00	0.93	0.00	3.00	0.00	0.00 >	32.00	0.00	0.00 >	0.77	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5542	56	06/14/89	QE1	1.113	1.07	5.13	4.81	1.83	7.06	3.86	0.00 >	320.00	0.00	2.81 >	13.36	MTT	+
5542	56	08/09/89	R45	0.832	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00 >	10.00	0.00	0.00	0.00	MTT	-
5543	56	06/14/89	QE2	1.231	1.87	9.50	5.08	4.53	17.80	3.93	0.00 >	320.00	0.00	2.10 >	14.01	MTT	+
5543	56	08/09/89	R46	0.846	0.14	1.06	7.34	0.23	1.81	7.73	0.00	10.00	0.00	4.52	18.77	MTT	+
5543	65	05/01/90	VT2	0.743	0.00	25.90	0.00	0.00 >	32.00	0.00	0.00 >	32.00	0.00	0.00	0.23	MTT	-
5543	56	10/04/90	ZAF	0.762	4.40	18.10	4.11	7.01	26.20	3.73	0.00 >	100.00	0.00	2.58 >	11.82	MTT	+
5548	56	06/14/89	QE4	1.089	0.00	185.00	0.00	0.00	269.00	0.00	0.00 >	320.00	0.00	0.00 >	9.02	MTT	-
5548	56	08/09/89	R47	0.975	4.02	100.00	24.88	16.90	173.00	10.27	0.00	305.00	0.00	5.92 >	19.85	MTT	+
5580	54	05/02/89	PYG	1.130	< 320.00 >	100000 >	313.00 <	320.00 >	100000 >	313.00	789.00 >	100000 >	127.00 >	313.00 >	97.22	MTT	+
5580	54	05/02/89	PYG	1.130	32.90 >	100.00 >	3.04	68.40 >	100.00 >	1.46	0.00 >	100.00	0.00 >	1.46 >	9.86	MTT	+
5601	62	12/05/89	SSH	0.664	5.66	887.00	156.74	50.00 >	1000.00 >	20.01	298.00 >	1000.00 >	3.35	17.74 >	47.66	MTT	+
5601	GABSN	02/08/90	TW6	0.633	50.90	2450.0	48.05	128.00 >	3200.00 >	25.09	700.00 >	3200.00 >	4.57	19.17 >	44.72	MTT	+
5601	67	05/31/90	WI3	1.049	119.00	2.86	0.02	246.00	686.00	2.79	0.00 >	1000.00	0.00	0.01	3.91	MTT	+
5601	62/67	11/01/90	ZYG	0.894	38.90	1230.0	31.56	104.00	2380.00	22.93	0.00 >	3200.00	0.00	11.87 >	34.63	MTT	+
5625	57	06/28/89	QLE	0.991	32.90 >	320.00 >	9.73	64.80 >	320.00 >	4.94	0.00 >	320.00	0.00 >	4.94 >	26.01	MTT	+
5625	57	08/09/89	R48	0.703	21.70	629.00	28.97	100.00 >	1000.00 >	10.00	0.00 >	1000.00	0.00	6.29	23.34	MTT	+
5643	57	07/06/89	QN0	1.215	7.22	192.00	26.50	28.60	283.00	9.89	0.00 >	320.00	0.00	6.69 >	33.78	MTT	+
5643	57	08/16/89	R7V	0.690	6.69 >	320.00 >	47.84	12.90 >	320.00 >	24.77	31.40 >	320.00 >	10.20 >	24.77 >	54.56	MTT	+
5643	65	05/01/90	VT3	0.728	44.30	7.45	0.17	0.00	69.80	0.00	0.00	307.00	0.00	0.00	0.00	MTT	+
5652	57	07/06/89	QN4	1.104	12.80	67.40	5.27	30.90	129.00	4.19	0.00 >	320.00	0.00	2.18 >	15.36	MTT	+
5652	57	08/22/89	R9E	0.889	0.00	25.10	0.00	0.00	74.50	0.00	0.00 >	100.00	0.00	0.00 >	1.02	MTT	-
5653	57	07/06/89	QN4	1.104	4.25	15.00	3.54	9.39	26.50	2.82	0.00	92.60	0.00	1.60 >	10.87	MTT	+
5653	57	08/22/89	R9F	0.738	0.00	7.38	0.00	0.00	61.40	0.00	0.00	96.10	0.00	0.00 >	2.91	MTT	-
5678	57	07/18/89	QTW	1.173	32.00	218.00	6.83	288.00 >	320.00 >	1.11	0.00 >	320.00	0.0	0.76 >	9.02	MTT	+
5678	57	08/16/89	R7W	0.699	13.00	173.00	13.31	64.50	404.00	6.25	0.00	940.00	0.00	2.69	18.63	MTT	+
5693	57	07/18/89	QU3	1.002	53.10	274.00	5.15	141.00 >	320.00 >	2.27	0.00 >	320.00	0.00	1.94 >	10.84	MTT	+
5693	57	08/16/89	R7Y	0.611	0.00	72.00	0.00	0.00	393.00	0.00	0.00	939.00	0.00	0.00	0.00	MTT	-
5714	58	08/01/89	QZQ	1.223	1.08 <	1.00 <	0.93	2.06	5.41	2.62	0.00	9.54	0.00 <	0.48	4.78	MTT	+
5714	58	10/03/89	RVM	0.943	0.73	1.57	2.16	0.00	2.17	0.00	0.00	5.14	0.00	0.00	5.98	MTT	+
5714	58	10/17/89	S33	0.971	0.00	1.46	0.00	0.00	2.19	0.00	0.00	7.73	0.00	0.00	0.33	MTT	-
5714	58	10/04/90	ZAG	0.762	1.31	4.07	3.12	2.39	6.05	2.53	0.00	9.60	0.00	1.70	9.61	MTT	+
5774	59	10/10/89	RPK	0.548	49.10	19.70	0.40	100.00	30.30	0.30	0.00 >	320.00	0.00	0.20 >	2.30	MTT	+
5774	59	01/23/90	TI4	1.036	0.00	5.13	0.00	0.00	7.23	0.00	0.00	25.50	0.00	0.00 >	0.83	MTT	-
5780	59	10/10/89	RPL	0.576	37.30	161.00	4.32	54.90	222.00	4.05	0.00 >	320.00	0.00	2.94 >	19.44	MTT	+
5780	59	01/23/90	TI5	0.920	0.00	158.00	0.00	0.00	216.00	0.00	0.00	320.00	0.00	0.00 >	3.12	MTT	-

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
5782	59	10/10/89	RPM	0.547	29.30	158.00	5.40	65.70	216.00	3.28	0.00	320.00	0.00	2.40 >	18.50	MTT	+
5782	59	01/30/90	TML	0.795	0.00	44.00	0.00	0.00	62.60	0.00	0.00	96.30	0.00	0.00	0.59	MTT	-
5818	59	01/30/90	TMN	0.805	43.50	119.00	2.74	94.00	216.00	2.29	0.00 >	320.00	0.00	1.27	4.97	MTT	+
5818	59	01/31/90	TQW	0.662	32.00	157.00	4.92	49.60	237.00	4.78	0.00 >	320.00	0.00	3.17 >	21.49	MTT	+
5879	61	10/31/89	SB1	0.860	12.80	93.50	7.32	27.50	171.00	6.24	0.00	311.00	0.00	3.41	15.99	MTT	+
5879	61	01/30/90	TMN	0.795	27.70	59.20	2.14	0.00	161.00	0.00	0.00	304.00	0.00	0.00	2.23	MTT	+
5905	61	10/31/89	SB8	0.821 <	1.00	8.06 >	8.06 <	1.00	15.10 >	15.08	3.20	30.30	9.47 >	8.06 >	27.06	MTT	+
5905	61	01/30/90	TMO	0.885	0.48	2.10	4.42	0.00	3.20	0.00	0.00	9.32	0.00	0.00 >	10.89	MTT	+
5906	61	10/31/89	SB8	0.821 <	1.00	2.72 >	2.72 <	1.00	10.40 >	10.45	0.00	100.00	0.00 >	2.72 >	9.54	MTT	+
5906	61	01/30/90	TMP	0.763	0.34	0.87	2.52	0.00	5.07	0.00	0.00	9.51	0.00	0.00 >	5.95	MTT	+
5936	60	10/24/89	S6R	0.933	12.60	34.70	2.75	21.40	57.40	2.68	0.00	98.20	0.00	1.62 >	11.35	MTT	+
5936	60	01/25/90	TJO	0.768	0.00	38.60	0.00	0.00	59.00	0.00	0.00	95.90	0.00	0.00	4.93	MTT	-
5994	61	11/07/89	SF3	0.838	72.20	257.00	3.56	256.00 >	320.00 >	1.25	0.00 >	320.00	0.00	1.00 >	7.66	MTT	+
5994	61	04/18/90	VCL	0.928	0.00 >	1000.0	0.00	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	2.43	MTT	-
5997	61	11/07/89	SF5	0.918	1.49	6.91	4.65	2.88	28.30	9.84	0.00 >	320.00	0.00	2.40 >	11.40	MTT	+
5997	61	11/01/90	ZYH	0.792	1.55	4.75	3.06	2.41	9.61	3.98	0.00 >	100.00	0.00	1.97	7.74	MTT	+
5998	61	11/07/89	SF5	0.918 <	1.00	2.29 >	2.29 <	1.00	8.40 >	8.40	0.00 >	320.00	0.00 >	2.29 >	7.02	MTT	+
5998	61	02/01/90	TOE	0.632	0.90	9.27	10.28	3.69 >	32.00 >	8.67	0.00 >	32.00	0.00	2.51 >	25.57	MTT	+
5998	61	02/08/90	TVX	0.553	2.64	14.80	5.60	0.00	29.60	0.00	0.00 >	32.00	0.00	0.00	7.55	MTT	+
6029	61	11/09/89	SH7	0.710	59.30	114.00	1.92	0.00	183.00	0.00	0.00	306.00	0.00	0.00	1.55	MTT	+
6029	61	02/01/90	TOF	0.693	29.40	153.00	5.21	65.70	209.00	3.18	0.00	309.00	0.00	2.33	12.59	MTT	+
6195	62	01/31/90	TQP	0.638	116.00 >	320.00 >	2.76	163.00 >	320.00 >	1.97	299.00 >	320.00 >	1.07 >	1.97 >	13.08	MTT	+
6195	62	10/30/90	ZW6	0.778	109.00	490.00	4.50	156.00	660.00	4.23	298.00	966.00	3.24	3.14	18.89	MTT	+
6195	62	12/05/90	1QF	0.583	59.40	446.00	7.50	109.00	630.00	5.78	287.00	963.00	3.35	4.09	22.90	MTT	+
6200	62	01/31/90	TQR	0.623	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	11.00	MTT	-
6200	62	12/05/90	1QF	0.583	4.43 >	320.00 >	72.21	10.00 >	320.00 >	32.00	0.00 >	320.00	0.00 >	32.00	18.63	MTT	+
6201	62	01/31/90	TQS	0.663	134.00 >	320.00 >	2.39	179.00 >	320.00 >	1.79	302.00 >	320.00 >	1.06 >	1.79 >	13.78	MTT	+
6201	62	12/05/90	1QG	0.918 <	1.00 >	320.00 >	320.00	8.81 >	320.00 >	36.32	0.00 >	320.00	0.00 >	36.32 >	27.67	MTT	+
6202	62	01/31/90	TQS	0.663	51.40 >	320.00 >	6.22	136.00 >	320.00 >	2.35	294.00 >	320.00 >	1.09 >	2.35 >	24.85	MTT	+
6202	62	10/30/90	ZW7	0.766	106.00	490.00	4.62	153.00	660.00	4.31	297.00	966.00	3.25	3.20	19.54	MTT	+
6207	62	01/31/90	TQV	0.594	155.00	0.73	0.00	241.00 >	320.00 >	1.33	0.00 >	320.00	0.00	0.00 >	6.35	MTT	+
6207	62	10/30/90	ZW9	0.720	134.00	490.00	3.66	179.00	660.00	3.69	302.00	966.00	3.20	2.74	15.08	MTT	+
6214	62	01/16/90	TD7	1.024	17.90 >	320.00 >	17.89	179.00 >	320.00 >	1.79	302.00 >	320.00 >	1.06 >	1.79 >	20.87	MTT	+
6214	62	11/01/90	ZYH	0.792	81.80	2.76	0.03	167.00	667.00	4.00	0.00	979.00	0.00	0.02	19.47	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6218	62	01/16/90	TD9	0.777	19.70	166.00	8.44	100.00 >	320.00 >	3.20	0.00 >	320.00	0.00	1.66	13.74	MTT	+
6218	62	12/05/90	1QH	0.831	12.90	163.00	12.58	20.50 >	320.00 >	15.58	0.00 >	320.00	0.00	7.93	24.28	MTT	+
6219	62	01/16/90	TDA	0.943	116.00 >	320.00 >	2.76	163.00 >	320.00 >	1.97	299.00 >	320.00 >	1.07 >	1.97 >	14.47	MTT	+
6219	62	11/01/90	ZYI	0.791	55.90 >	320.00 >	5.73	105.00 >	320.00 >	3.06	286.00 >	320.00 >	1.12 >	3.06 >	20.26	MTT	+
6220	62	01/16/90	TDA	0.943	177.00	262.00	1.48	313.00 >	320.00 >	1.02	0.00 >	320.00	0.00	0.84 >	1.83	MTT	+
6220	62	12/05/90	1QI	0.786	0.00	222.00	0.00	0.00	430.00	0.00	0.00 >	1000.00	0.00	0.00	1.58	MTT	-
6225	62	01/16/90	TDD	0.908	94.20 >	320.00 >	3.40	146.00 >	320.00 >	2.19	296.00 >	320.00 >	1.08 >	2.19 >	16.79	MTT	+
6225	62	11/01/90	ZYI	0.791	86.70	490.00	5.65	144.00	660.00	4.57	295.00	966.00	3.27	3.40 >	23.09	MTT	+
6234	62	12/05/89	SSI	0.619 <	3.20 >	1000.0 >	312.50	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	17.58	MTT	+
6234	GABSN	02/08/90	TW7	0.586	300.00 >	3200.0 >	10.67	484.00 >	3200.00 >	6.61	0.00 >	3200.00	0.00 >	6.61 >	30.51	MTT	+
6234	67	05/31/90	WI4	0.902	513.00	1610.0	3.13	0.00	2780.00	0.00	0.00 >	3200.00	0.00	0.00	6.74	MTT	+
6234	67	11/01/90	ZYJ	0.759	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	1.30	MTT	-
6236	62	12/05/89	SSJ	0.604	919.00	773.00	0.84	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	1.34	MTT	+
6236	GABSN	02/08/90	TW8	0.548	306.00 >	3200.0 >	10.46	547.00 >	3200.00 >	5.85	0.00 >	3200.00	0.0 >	5.85 >	24.69	MTT	+
6236	67	05/31/90	WI5	0.888	674.00	2100.0	3.12	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	6.28	MTT	+
6315	63	02/15/90	U2K	0.539	0.00	6.13	0.00	0.00	9.06	0.00	0.00	29.40	0.00	0.00 >	0.30	MTT	-
6315	63	03/20/90	UPQ	0.830	0.00	13.50	0.00	0.00	19.60	0.00	0.00	30.80	0.00	0.00	0.00	MTT	-
6315	63	10/04/90	ZAH	0.718	1.21	15.00	12.38	1.71	20.70	12.12	3.16	30.90	9.78	8.79 >	34.13	MTT	+
6321	63	02/15/90	U2N	0.605	6.84	44.40	6.49	0.00	63.70	0.00	0.00	98.50	0.00	0.00 >	7.87	MTT	+
6321	63	03/15/90	UNR	0.643	0.94	15.60	16.57	2.81	21.10	7.51	0.00	31.10	0.00	5.53 >	23.75	MTT	+
6373	63	02/27/90	U8G	0.449	7.96	225.00	28.26	78.50 >	320.00 >	4.07	0.00 >	320.00	0.00	2.87 >	24.26	MTT	+
6373	63	03/20/90	UPV	0.813	0.00	116.00	0.00	0.00	320.00	0.00	0.00	932.00	0.00	0.00	0.00	MTT	-
6412	66	05/10/90	W2Z	0.940	23.60	2.67	0.11	0.00	48.50	0.00	0.00	94.80	0.00	0.00	0.00	MTT	+
6412	66	07/06/90	XDG	0.790	2.24	57.40	25.64	32.00	82.70	2.59	0.00	287.00	0.00	1.79 >	25.16	MTT	+
6413	66	05/10/90	W30	0.823	4.82	18.50	3.83	23.90	51.00	2.13	0.00	137.00	0.00	0.77 >	8.26	MTT	+
6413	66	07/06/90	XDH	0.845	4.25	39.80	9.36	0.00	67.70	0.00	0.00	268.00	0.00	0.00	13.32	MTT	+
6417	66	05/10/90	W32	0.724	13.60 >	320.00 >	23.56	39.30 >	320.00 >	8.14	91.10 >	320.00 >	3.51 >	8.14 >	39.78	MTT	+
6417	66	07/06/90	XDH	0.845	3.91	613.00	156.70	12.30	906.00	73.47	29.10 >	1000.00 >	34.38	49.71 >	64.86	MTT	+
6422	66	05/15/90	W4U	0.773	166.00	249.00	1.50	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	4.89	MTT	+
6422	66	07/06/90	XDJ	0.771	122.00	378.00	3.10	211.00	585.00	2.78	0.00	959.00	0.00	1.79	10.19	MTT	+
6435	66	05/15/90	W51	0.750	9.16	8.23	0.90	0.00	43.50	0.00	0.00	137.00	0.00	0.00	0.40	MTT	+
6435	66	07/06/90	XDJ	0.771	6.99	0.58	0.08	20.30	92.40	4.55	0.00	300.00	0.00	0.03	13.26	MTT	+
6477	66	05/15/90	W57	0.782	11.60	10.00	0.86	23.90	55.50	2.32	0.00	251.00	0.00	0.42	3.09	MTT	+
6477	66	07/10/90	XFD	0.690	4.97	57.80	11.62	9.50	83.50	8.80	28.30	288.00	10.15	6.08 >	28.71	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6482	66	05/17/90	W88	0.825	33.70	121.00	3.59	65.40	187.00	2.86	0.00	307.00	0.00	1.85 >	13.95	MTT	+
6482	66	07/10/90	XFO	0.690	4.78	49.20	10.28	10.70	66.30	6.21	28.70	97.30	3.39	4.60 >	28.03	MTT	+
6570	66	05/30/90	WEU	0.752	46.10 >	320.00 >	6.94	66.40 >	320.00 >	4.82	0.00 >	320.00	0.00 >	4.82 >	18.41	MTT	+
6570	66	07/10/90	XFM	0.916	0.00	384.00	0.00	0.00	649.00	0.00	0.00 >	1000.00	0.00	0.00 >	0.32	MTT	-
6675	64	04/05/90	V40	0.919	14.70	29.00	1.97	23.40	52.10	2.23	0.00	95.20	0.00	1.24	5.69	MTT	+
6675	64	06/29/90	X7Q	0.674	0.00	49.00	0.00	0.00	66.00	0.00	0.00	96.60	0.00	0.00	0.00	MTT	-
6707	67	05/31/90	WI5	0.888	7.61	59.90	7.87	0.00	87.70	0.00	0.00 >	320.00	0.00	0.00	11.40	MTT	+
6707	67	07/12/90	XHE	0.873	3.98	48.70	12.24	7.30	76.60	10.50	0.00 >	320.00	0.00	6.68	14.09	MTT	+
6714	67	06/05/90	WK2	0.742	103.00 >	320.00 >	3.11	213.00 >	320.00 >	1.50	0.00 >	320.00	0.00 >	1.50 >	9.84	MTT	+
6714	67	07/12/90	XHF	0.881	13.00 >	1000.0 >	76.89	44.60 >	1000.00 >	22.43	409.00 >	1000.00 >	2.44 >	22.43 >	53.52	MTT	+
6724	67	06/05/90	WK7	0.811	3.90	6.71	1.72	0.00	24.70	0.00	0.00 >	320.00	0.00	0.00	2.29	MTT	+
6724	67	07/12/90	XHG	0.828	1.71	18.60	10.88	2.94	73.80	25.15	0.00 >	320.00	0.00	6.35	21.03	MTT	+
6724	67	11/15/90	19E	0.756	4.78	16.70	3.49	7.14	40.50	5.67	0.00 >	100.00	0.00	2.33	10.06	MTT	+
6753	67	06/05/90	WKC	0.781	36.50 >	320.00 >	8.78	82.30 >	320.00 >	3.89	0.00 >	320.00	0.00 >	3.89 >	12.75	MTT	+
6753	67	07/12/90	XHH	0.866	23.90	759.00	31.71	86.20 >	1000.00 >	11.60	0.00 >	1000.00	0.00	8.80	25.64	MTT	+
6788	67	06/07/90	WMF	0.770	50.50	100.00	1.98	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.97	MTT	+
6788	67	07/12/90	XHM	0.800	17.60	19.90	1.13	73.10 >	1000.00 >	13.68	947.00 >	1000.00 >	1.06	0.27 >	32.16	MTT	+
6837	68	06/12/90	WQW	0.749	23.30	85.10	3.65	65.80	160.00	2.43	0.00	310.00	0.00	1.29	11.10	MTT	+
6837	68	08/02/90	XXV	0.711	14.20	106.00	7.43	33.40	177.00	5.30	89.60	306.00	3.41	3.16	23.76	MTT	+
6886	69	07/17/90	XLN	0.623	1.81	4.14	2.28	0.00	6.09	0.00	0.00	9.61	0.00	0.00	3.06	MTT	+
6886	69	09/05/90	YKV	0.811	1.39	2.76	1.98	2.79	5.28	1.89	0.00	9.53	0.00	0.99	3.29	MTT	+
6887	69	07/17/90	XLN	0.623	12.50	49.00	3.92	19.20	66.00	3.45	0.00	96.60	0.00	2.56	14.97	MTT	+
6887	69	09/05/90	YKV	0.811	0.00	15.40	0.00	0.00	21.50	0.00	0.00	51.40	0.00	0.00	0.87	MTT	-
6896	69	07/19/90	XNS	0.729	4.25	11.40	2.67	0.00	18.30	0.00	0.00	30.60	0.00	0.00 >	4.81	MTT	+
6896	69	09/05/90	YKX	0.914	1.26	4.66	3.70	2.61	6.82	2.61	0.00	23.50	0.00	1.79	7.52	MTT	+
6900	69	07/19/90	XNU	0.761	5.42	13.90	2.56	9.19	19.90	2.17	0.00	30.80	0.00	1.51	5.85	MTT	+
6900	69	09/05/90	YKY	0.934	0.00	1.44	0.00	0.00	3.01	0.00	0.00	9.28	0.00	0.00	0.00	MTT	-
6906	69	07/19/90	XNX	0.747	14.70	14.40	0.98	0.00	43.50	0.00	0.00	137.00	0.00	0.00	0.00	MTT	+
6906	69	09/05/90	YLO	0.916	4.49	7.57	1.69	9.70	18.10	1.87	0.00	78.80	0.00	0.78	2.44	MTT	+
6942	69	07/24/90	XRT	0.732	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
6942	69	09/06/90	YNR	0.886	532.00	735.00	1.38	885.00 >	1000.00 >	1.13	0.00 >	1000.00	0.00	0.83 >	1.89	MTT	+
6943	69	07/24/90	XRT	0.732	57.90	189.00	3.26	0.00	295.00	0.00	0.00 >	320.00	0.00	0.00	6.49	MTT	+
6943	69	09/06/90	YNS	0.827	23.50	312.00	13.28	49.70	541.00	10.88	0.00	954.00	0.00	6.27	20.74	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
6944	69	07/24/90	XRU	0.796	23.00	100.00	4.36	54.00	206.00	3.81	0.00 >	320.00	0.00	1.85	10.26	MTT	+
6944	69	09/06/90	YNS	0.827	27.40	96.00	3.50	61.60	223.00	3.62	0.00 >	1000.00	0.00	1.56 >	12.81	MTT	+
6945	69	07/26/90	XUI	0.546	24.90	208.00	8.33	0.00	316.00	0.00	0.00 >	320.00	0.00	0.00	6.79	MTT	+
6945	69	09/06/90	YNT	0.839	25.40	156.00	6.16	95.00	212.00	2.24	0.00	313.00	0.00	1.64	14.44	MTT	+
6946	69	07/26/90	XUJ	0.789	0.00	290.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	0.40	MTT	-
6946	69	09/06/90	YNT	0.839	46.80	338.00	7.22	137.00	558.00	4.08	0.00	956.00	0.00	2.46	19.85	MTT	+
6970	68	06/21/90	X12	0.816	57.20	90.60	1.58	0.00	165.00	0.00	0.00	305.00	0.00	0.00 >	2.47	MTT	+
6970	68	08/02/90	XXX	0.683	47.30	119.00	2.51	69.80	186.00	2.66	0.00	307.00	0.00	1.70 >	8.00	MTT	+
6970	68	09/13/90	YTN	0.709	0.00	49.90	0.00	0.00	67.80	0.00	0.00	100.00	0.0	0.00	1.66	MTT	-
6976	68	06/21/90	X22	0.909	34.10	108.00	3.18	75.20	179.00	2.38	0.00	306.00	0.00	1.44	8.88	MTT	+
6976	68	08/02/90	XXY	0.736	28.50	153.00	5.38	53.50	209.00	3.90	0.00	309.00	0.00	2.87	13.98	MTT	+
6976	68	09/13/90	YTN	0.709	18.50	92.70	5.02	37.40	168.00	4.49	90.60	308.00	3.39	2.48	19.75	MTT	+
6977	68	06/21/90	X22	0.909	22.80	155.00	6.80	43.90	210.00	4.79	96.60	309.00	3.20	3.53 >	21.98	MTT	+
6977	68	08/02/90	XXY	0.736	9.22	155.00	16.81	30.50	210.00	6.88	89.00	309.00	3.47	5.07 >	32.48	MTT	+
6977	68	09/13/90	YTO	0.632	18.70	103.00	5.50	59.30	175.00	2.95	0.00	306.00	0.00	1.73 >	14.74	MTT	+
6978	68	06/21/90	X23	0.856	107.00 >	320.00 >	2.99	187.00 >	320.00 >	1.71	0.00 >	320.00	0.00 >	1.71 >	11.45	MTT	+
6978	68	08/07/90	YOL	0.693	447.00 >	1000.0 >	2.24	0.00 >	1000.00	0.00	0.00 >	1000.00	0.00	0.00 >	4.88	MTT	+
6979	68	06/21/90	X23	0.856	77.30 >	320.00 >	4.14	167.00 >	320.00 >	1.92	0.00 >	320.00	0.00 >	1.92 >	13.46	MTT	+
6979	68	08/07/90	YOM	0.665	105.00	490.00	4.67	155.00	660.00	4.25	315.00	966.00	3.07	3.16	19.32	MTT	+
6986	68	06/21/90	X27	0.849	14.60	157.00	10.74	30.20	216.00	7.15	88.80 >	320.00 >	3.60	5.19	25.88	MTT	+
6986	68	08/07/90	YON	0.596	15.20	452.00	29.65	28.30	634.00	22.44	88.10	963.00	10.93	15.97	41.73	MTT	+
6988	68	06/21/90	X28	0.764	47.80	277.00	5.80	71.40 >	320.00 >	4.48	0.00 >	320.00	0.00	3.89 >	17.80	MTT	+
6988	68	08/07/90	YON	0.596	140.00	497.00	3.54	220.00	674.00	3.07	0.00	993.00	0.00	2.26	12.59	MTT	+
7003	69	07/26/90	XUL	0.716	127.00 >	320.00 >	2.53	172.00 >	320.00 >	1.86	301.00 >	320.00 >	1.06 >	1.86 >	11.10	MTT	+
7003	69	09/06/90	YNU	0.770	0.00	43.60	0.00	0.00	79.70	0.00	0.00	313.00	0.00	0.00	0.00	MTT	-
7022	69	07/26/90	XUV	0.572	50.70	106.00	2.09	80.20	177.00	2.21	0.00	306.00	0.00	1.32	3.69	MTT	+
7022	69	09/06/90	YNZ	0.747	69.40	53.20	0.77	0.00	90.90	0.00	0.00	295.00	0.00	0.00 >	3.47	MTT	+
7023	69	07/31/90	XWO	0.749	134.00	5.94	0.04	179.00	8.68	0.05	302.00	88.30	0.29	0.03 >	5.04	MTT	+
7023	69	09/06/90	YOO	0.682	25.80 >	1000.0 >	38.73	121.00 >	1000.00 >	8.24	0.00 >	1000.00	0.00 >	8.24 >	36.89	MTT	+
7032	69	07/31/90	XWS	0.617	64.10 >	320.00 >	4.99	119.00 >	320.00 >	2.68	290.00 >	320.00 >	1.10 >	2.68 >	18.27	MTT	+
7032	69	09/06/90	YO1	0.663	0.00	59.20	0.00	0.00	90.10	0.00	0.00	294.00	0.00	0.00 >	0.30	MTT	-
7036	69	07/31/90	XWU	0.867	0.00	228.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	0.83	MTT	-
7036	69	09/11/90	YRJ	1.112	166.00	218.00	1.32	312.00	460.00	1.48	0.00	946.00	0.00	0.70 >	1.25	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7040	69	07/31/90	XWW	0.655	100.00 >	320.00 >	3.20	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00	5.81	MTT	+
7040	69	09/11/90	YRK	1.073	134.00	231.00	1.72	259.00	452.00	1.74	0.00	945.00	0.00	0.89	3.59	MTT	+
7042	69	07/31/90	XWX	0.500	40.70	155.00	3.81	54.90	210.00	3.83	94.20	309.00	3.28	2.82	15.92	MTT	+
7042	69	09/11/90	YRK	1.073	0.00	109.00	0.00	.00	181.00	0.00	0.00	311.00	0.00	0.00	0.00	MTT	-
7044	69	08/02/90	XXQ	0.734	54.70	130.00	2.38	95.60	194.00	2.02	0.00	307.00	0.00	1.36	5.22	MTT	+
7044	69	09/11/90	YRL	1.022	0.00	147.00	0.00	0.00	206.00	0.00	0.00	313.00	0.00	0.00	0.00	MTT	-
7048	69	08/02/90	XXS	0.776	40.20	144.00	3.59	57.40	203.00	3.54	0.00	308.00	0.00	2.52 >	14.79	MTT	+
7048	69	09/11/90	YRM	1.011	70.60	34.40	0.49	0.00	95.10	0.00	0.00	297.00	0.00	0.00	0.00	MTT	+
7049	69	08/02/90	XXT	0.756	95.70 >	320.00 >	3.34	146.00 >	320.00 >	2.19	296.00 >	320.00 >	1.08 >	2.19 >	15.67	MTT	+
7049	69	09/11/90	YRN	1.031	145.00	420.00	2.90	225.00	699.00	3.11	0.00 >	1000.00	0.00	1.87	8.06	MTT	+
7055	72	08/29/90	YE2	0.823	51.80	150.00	2.89	89.60	207.00	2.31	0.00	309.00	0.00	1.67	7.05	MTT	+
7055	72	10/02/90	Z8B	0.799	0.00	28.20	0.00	0.00	86.90	0.00	0.00	296.00	0.00	0.00	0.00	MTT	-
7055	72	10/25/90	ZQU	0.656	46.80	124.00	2.64	68.40	189.00	2.76	0.00	307.00	0.00	1.81	6.79	MTT	+
7057	72	08/29/90	YE3	0.655	52.80 >	100.00 >	1.89	93.40 >	100.00 >	1.07	0.00 >	100.00	0.00 >	1.07 >	6.08	MTT	+
7057	72	10/02/90	Z8C	0.785	0.00	43.30	0.00	0.00	145.00	0.00	0.00	691.00	0.00	0.00	0.00	MTT	-
7057	72	10/25/90	ZQV	0.681	47.50	128.00	2.69	85.00	215.00	2.53	0.00 >	320.00	0.00	1.51 >	6.09	MTT	+
7059	72	08/29/90	YE4	0.785	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	1.82	MTT	-
7059	72	10/02/90	Z8D	0.750	193.00	320.00	1.66	0.00	547.00	0.00	0.00	955.00	0.00	0.00	3.11	MTT	+
7059	72	10/25/90	ZQV	0.681	55.40	341.00	6.16	184.00	602.00	3.28	0.00 >	1000.00	0.00	1.85	10.15	MTT	+
7068	72	08/30/90	YFY	0.721	32.00	152.00	4.74	51.90	208.00	4.01	0.00	309.00	0.00	2.92	19.21	MTT	+
7068	72	10/02/90	Z8E	0.808	0.00	25.60	0.00	0.00	48.70	0.00	0.00	95.80	0.00	0.00	0.00	MTT	-
7068	72	10/25/90	ZQY	0.739	0.00	38.50	0.00	0.00	124.00	0.00	0.00	300.00	0.00	0.00	0.00	MTT	-
7071	72	08/30/90	YG0	0.763	55.20 >	100.00 >	1.81	100.00 >	100.00 >	1.00	0.00 >	100.00	0.00 >	1.00 >	4.23	MTT	+
7071	72	10/02/90	Z8F	0.706	0.00	135.00	0.00	0.00	222.00	0.00	0.00	845.00	0.00	0.00	0.00	MTT	-
7071	72	10/25/90	ZQY	0.739	320.00	143.00	0.45	0.00	320.00	0.00	0.00	932.00	0.00	0.00	0.00	MTT	+
7072	72	08/30/90	YG0	0.763	79.60	290.00	3.64	234.00 >	320.00 >	1.37	0.00 >	320.00	0.00	1.24 >	8.91	MTT	+
7072	72	10/02/90	Z8F	0.706	204.00	230.00	1.13	0.00	424.00	0.00	0.00	942.00	0.00	0.00	1.88	MTT	+
7072	72	10/25/90	ZQZ	0.447	137.00	446.00	3.26	239.00	630.00	2.63	0.00	963.00	0.00	1.86 >	12.51	MTT	+
7073	72	08/30/90	YG1	0.747	158.00	283.00	1.79	0.00 >	320.00	0.00	0.00 >	320.00	0.00	0.00 >	6.11	MTT	+
7073	72	10/02/90	Z8G	0.861	0.00	162.00	0.00	0.00	346.00	0.00	0.00	935.00	0.00	0.00	0.00	MTT	-
7073	72	10/25/90	ZQZ	0.447	135.00	485.00	3.59	182.00	664.00	3.64	312.00	986.00	3.16	2.66 >	15.48	MTT	+
7074	72	08/30/90	YG1	0.747	165.00 >	320.00 >	1.94	292.00 >	320.00 >	1.10	0.00 >	320.00	0.00 >	1.10 >	3.39	MTT	+
7074	72	10/02/90	Z8G	0.861	0.00	90.30	0.00	0.00	233.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
7074	72	10/25/90	ZR0	0.601	0.00	191.00	0.00	0.00	427.00	0.00	0.00 >	1000.00	0.00	0.00	0.00	MTT	-
7083	72	08/30/90	YG6	0.718	4.31	86.80	20.14	8.50	161.00	18.90	31.10	304.00	9.7	10.22 >	35.95	MTT	+
7083	72	10/02/90	Z8H	0.863	12.90	62.50	4.84	19.80	97.20	4.90	0.00	297.00	0.00	3.15 >	16.41	MTT	+
7083	72	10/25/90	ZR0	0.601	8.27	50.10	6.06	16.80	112.00	6.71	0.00	299.00	0.00	2.99	12.33	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7084	72	08/30/90	YG6	0.718	0.77	22.80	29.65	1.87	40.70	21.78	8.32	96.30	11.57	12.21 >	38.97	MTT	+
7084	72	10/02/90	Z8H	0.863	1.84	15.50	8.43	6.73	28.00	4.16	0.00	91.90	0.00	2.30 >	16.60	MTT	+
7084	72	10/25/90	ZR1	0.709	0.59	2.47	4.20	1.49	33.30	22.35	0.00	93.30	0.00	1.65	17.48	MTT	+
7085	72	08/30/90	YG7	0.674	1.79	24.10	13.47	3.74	45.40	12.11	9.06	100.00	11.03	6.44	30.82	MTT	+
7085	72	10/02/90	Z8I	0.799	4.28	22.20	5.19	7.85	40.70	5.19	0.00	273.00	0.00	2.83 >	14.51	MTT	+
7085	72	10/25/90	ZR1	0.709	1.89	0.83	0.44	3.69	42.10	11.42	0.00 >	100.00	0.00	0.22	14.87	MTT	+
7086	72	08/30/90	YG7	0.674 <	1.00	6.18 >	6.18	1.25	9.16	7.32	2.91	29.90	10.26	4.94 >	21.69	MTT	+
7086	72	10/02/90	Z8I	0.799	4.68	15.20	3.24	7.71	23.30	3.02	0.00	85.20	0.00	1.97	8.81	MTT	+
7086	72	10/25/90	ZR2	0.716	1.06	13.70	12.88	1.74	23.90	13.73	0.00	88.70	0.00	7.87 >	26.98	MTT	+
7087	72	08/30/90	YG8	0.688	0.48	9.50	19.92	0.97	31.10	31.98	0.00 >	100.00	0.00	9.77 >	35.17	MTT	+
7087	72	10/02/90	Z8J	0.742	3.39	19.60	5.80	4.86	29.30	6.03	9.30 >	100.00 >	10.75	4.04	23.48	MTT	+
7087	72	10/25/90	ZR2	0.716	0.70	5.75	8.19	1.41	23.30	16.53	0.00 >	100.00	0.00	4.07	22.80	MTT	+
7092	72	09/05/90	YKP	1.050	86.70 >	320.00 >	3.69	164.00 >	320.00 >	1.96	0.00 >	320.00	0.00 >	1.96 >	15.65	MTT	+
7092	72	10/02/90	Z8K	0.708	147.00 >	1000.0 >	6.79	420.00 >	1000.00 >	2.38	947.00 >	1000.00 >	1.06 >	2.38 >	22.55	MTT	+
7092	72	10/25/90	ZR3	0.569	26.30	2.67	0.10	98.60 >	1000.00 >	10.14	1070.0 >	1000.00 >	0.94	0.03 >	32.11	MTT	+
7110	70	08/07/90	Y0X	0.771	0.00	10.00	0.00	0.00	54.70	0.00	0.00 >	320.00	0.00	0.00	0.00	MTT	-
7110	70	09/13/90	YTP	0.633	53.20	66.00	1.24	88.50	153.00	1.73	0.00	303.00	0.00	0.75	1.66	MTT	+
7320	70	08/14/90	Y4Y	0.763	46.10	149.00	3.22	78.90	207.00	2.62	0.00	311.00	0.00	1.88	7.45	MTT	+
7320	70	09/13/90	YTV	0.777	192.00	220.00	1.14	0.00	370.00	0.00	0.00	937.00	0.00	0.00 >	4.35	MTT	+
7323	70	08/14/90	Y50	0.735	450.00 >	1000.0 >	2.22	918.00 >	1000.00 >	1.09	0.00 >	1000.00	0.00 >	1.09 >	6.58	MTT	+
7323	70	09/13/90	YTW	0.698	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00 >	5.60	MTT	-
7332	70	08/14/90	Y54	0.710	45.00	86.40	1.92	79.60	166.00	2.08	0.00	313.00	0.00	1.09	4.37	MTT	+
7332	70	09/13/90	YTX	0.720	20.40	146.00	7.17	42.10	204.00	4.85	0.00	308.00	0.00	3.48 >	21.06	MTT	+
7333	70	08/14/90	Y55	0.725	51.90	92.40	1.78	84.00	169.00	2.01	0.00	305.00	0.00	1.10	3.25	MTT	+
7333	70	09/13/90	YTY	0.732	43.30	139.00	3.21	67.60	204.00	3.01	0.00	320.00	0.00	2.05 >	12.03	MTT	+
7344	70	08/14/90	Y58	0.716	14.20	32.00	2.26	20.60	66.70	3.23	0.00 >	100.00	0.00	1.55	6.87	MTT	+
7344	70	09/18/90	YW4	0.888	0.00	13.00	0.00	0.00	19.40	0.00	0.00	30.70	0.00	0.00	0.00	MTT	-
7356	70	08/16/90	Y74	0.565	112.00 >	320.00 >	2.86	228.00 >	320.00 >	1.41	0.00 >	320.00	0.00 >	1.41 >	9.43	MTT	+
7356	70	09/18/90	YW8	0.629	0.00	287.00	0.00	0.00	540.00	0.00	0.00	990.00	0.00	0.00	0.00	MTT	-
7365	70	08/16/90	Y79	0.660	179.00	766.00	4.28	769.00 >	1000.00 >	1.30	0.00 >	1000.00	0.00	1.00 >	11.31	MTT	+
7365	70	09/18/90	YWA	0.815	0.00 >	3200.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	-
7369	70	08/16/90	Y7B	0.730	166.00 >	320.00 >	1.92	305.00 >	320.00 >	1.05	0.00 >	320.00	0.00 >	1.05 >	3.56	MTT	+
7369	70	09/18/90	YW8	1.001	0.00	2320.0	0.00	0.00 >	3200.00	0.00	0.00 >	3200.00	0.00	0.00	0.00	MTT	-
7373	70	08/21/90	Y93	0.705	54.30	294.00	5.41	174.00 >	320.00 >	1.84	0.00 >	320.00	0.00	1.69 >	11.52	MTT	+
7373	70	09/18/90	YWC	0.871	162.00	188.00	1.16	0.00	404.00	0.00	0.00	940.00	0.00	0.00	2.04	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7378	70	08/21/90	Y9S	0.711	95.40	490.00	5.14	194.00	660.00	3.40	0.00	966.00	0.00	2.52	14.73	MTT	+
7378	70	09/18/90	YWE	0.819	0.00	2470.0	0.00	0.00	> 3200.00	0.00	0.00	> 3200.00	0.00	0.00	0.00	MTT	-
7382	70	08/21/90	Y97	0.770	22.00	> 1000.0	> 45.52	112.00	> 1000.00	> 8.91	0.00	> 1000.00	0.00	> 8.91	> 31.26	MTT	+
7382	70	09/27/90	Z3K	0.858	33.60	9.55	0.28	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 5.26	MTT	+
7418	70	08/23/90	YBO	0.743	131.00	> 320.00	> 2.44	177.00	> 320.00	> 1.81	302.00	> 320.00	> 1.06	> 1.81	> 9.00	MTT	+
7418	70	09/27/90	Z3U	0.770	145.00	329.00	2.27	294.00	553.00	1.88	0.00	955.00	0.00	1.12	> 6.59	MTT	+
7424	70	08/23/90	YBR	0.643	88.10	> 320.00	> 3.63	162.00	> 320.00	> 1.97	0.00	> 320.00	0.00	> 1.97	> 12.25	MTT	+
7424	70	09/27/90	Z3V	0.811	0.00	156.00	0.00	0.00	264.00	0.00	0.00	908.00	0.00	0.00	> 0.13	MTT	-
7427	70	08/29/90	YDU	0.820	148.00	> 320.00	> 2.16	249.00	> 320.00	> 1.28	0.00	> 320.00	0.00	> 1.28	> 5.46	MTT	+
7427	70	09/27/90	Z3V	0.811	172.00	241.00	1.40	0.00	443.00	0.00	0.00	944.00	0.00	0.00	> 3.50	MTT	+
7429	70	08/29/90	YDV	0.765	95.20	197.00	2.07	246.00	> 320.00	> 1.30	0.00	> 320.00	0.00	0.80	> 4.69	MTT	+
7429	70	09/27/90	Z3W	0.757	0.00	69.30	0.00	0.00	146.00	0.00	0.00	575.00	0.00	0.00	> 0.34	MTT	-
7430	70	08/29/90	YDW	0.781	119.00	> 320.00	> 2.69	165.00	> 320.00	> 1.94	300.00	> 320.00	> 1.07	> 1.94	> 11.23	MTT	+
7430	70	09/27/90	Z3X	0.704	228.00	220.00	0.96	0.00	370.00	0.00	0.00	937.00	0.00	0.00	> 4.39	MTT	+
7434	70	08/29/90	YDY	0.722	116.00	> 320.00	> 2.76	215.00	> 320.00	> 1.49	0.00	> 320.00	0.00	> 1.49	> 11.56	MTT	+
7434	70	10/02/90	Z8A	0.717	69.80	370.00	5.31	174.00	580.00	3.34	0.00	958.00	0.00	2.13	16.25	MTT	+
7439	73	09/20/90	YY7	0.829	54.50	9.38	0.17	0.00	607.00	0.00	0.00	> 1000.00	0.00	0.00	5.95	MTT	+
7439	73	10/25/90	ZR4	0.413	42.50	465.00	10.92	70.80	646.00	9.12	0.00	971.00	0.00	6.57	> 20.27	MTT	+
7457	73	09/20/90	YYE	0.706	1.12	5.53	4.94	1.60	7.86	4.92	3.02	27.90	9.24	3.46	> 17.22	MTT	+
7457	73	10/30/90	ZVZ	0.881	0.44	1.66	3.79	0.83	2.62	3.14	0.00	9.03	0.00	1.99	7.95	MTT	+
7458	73	09/20/90	YYE	0.706	1.02	4.20	4.14	1.49	6.14	4.12	2.96	9.61	3.24	2.82	> 14.86	MTT	+
7458	73	10/30/90	ZVZ	0.881	1.00	4.40	4.40	0.00	6.26	0.00	0.00	9.63	0.0	0.00	8.76	MTT	+
7459	73	09/20/90	YYF	0.821	1.30	12.10	9.34	2.35	18.70	7.98	0.00	30.70	0.00	5.16	> 20.72	MTT	+
7459	73	10/30/90	ZW0	0.818	0.57	3.12	5.51	2.64	5.41	2.05	0.00	9.54	0.00	1.18	11.52	MTT	+
7461	73	09/20/90	YYG	0.691	12.30	57.80	4.69	17.90	83.50	4.67	0.00	313.00	0.00	3.23	14.95	MTT	+
7461	73	10/30/90	ZW1	0.815	5.45	20.70	3.80	10.00	50.10	5.01	0.00	292.00	0.00	2.07	> 8.42	MTT	+
7469	73	09/25/90	ZOE	1.095	71.00	320.00	4.50	190.00	> 320.00	> 1.68	0.00	> 320.00	0.00	1.68	> 10.52	MTT	+
7469	73	10/30/90	ZW1	0.815	47.20	498.00	10.56	90.20	777.00	8.62	0.00	> 1000.00	0.00	5.53	23.47	MTT	+
7484	73	09/25/90	ZOL	0.989	57.50	> 320.00	> 5.57	143.00	> 320.00	> 2.24	0.00	> 320.00	0.00	> 2.24	> 20.53	MTT	+
7484	73	10/30/90	ZW3	0.612	47.10	377.00	8.00	76.30	849.00	11.12	0.00	> 1000.00	0.00	4.94	> 20.60	MTT	+
7487	73	09/25/90	ZON	1.286	0.00	79.90	0.00	0.00	156.00	0.00	0.00	304.00	0.00	0.00	> 3.01	MTT	-
7487	73	10/30/90	ZW4	0.862	130.00	520.00	4.01	214.00	720.00	3.36	0.00	> 1000.00	0.00	2.43	9.93	MTT	+

Table 21 (Cont'd)

AVS No.	Shipment	Test Date	Plt #	Diff.	IC 25	TC 25	AI 25	IC 50	TC 50	AI 50	IC 95	TC 95	AI 95	SI	TAI	Assay Type	ACT
7488	73	09/25/90	20N	1.286	0.00	26.30	0.00	0.00	210.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7488	73	10/30/90	2W5	0.838	439.00	> 1000.0	> 2.28	804.00	> 1000.00	> 1.24	0.00	> 1000.00	0.00	> 1.24	> 3.33	MTT	+
7910	74	10/11/90	2G8	0.883	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7910	75	11/06/90	123	0.838	239.00	2900.0	12.11	544.00	> 3200.00	> 5.89	0.00	> 3200.00	0.00	5.33	> 23.08	MTT	+
7925	74	10/16/90	2K1	0.833	0.00	218.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.17	MTT	-
7925	75	11/08/90	141	0.649	1140.0	1000.0	0.88	2620.00	> 3200.00	> 1.22	0.00	> 3200.00	0.00	0.38	> 3.07	MTT	+
7935	74	10/16/90	2K6	0.723	0.00	245.00	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7935	75	11/08/90	146	0.569	112.00	541.00	4.85	176.00	762.00	4.34	0.00	> 3200.00	0.00	3.08	16.23	MTT	+
7940	74	10/16/90	2K9	0.804	0.00	97.40	0.00	0.00	> 320.00	0.00	0.00	> 320.00	0.00	0.00	0.00	MTT	-
7940	75	11/08/90	148	0.537	179.00	320.00	1.79	320.00	547.00	1.71	0.00	955.00	0.00	1.00	3.01	MTT	+
7949	75	12/11/90	1SX	0.719	224.00	36.70	0.16	0.00	95.30	0.00	0.00	955.00	0.00	0.00	0.35	MTT	+
7949	75	01/31/91	2ZL	0.653	439.00	9.26	0.02	603.00	2100.00	3.48	0.00	3090.00	0.00	0.02	11.14	MTT	+
8374	76	12/13/90	1YN	0.395	264.00	1550.00	5.88	443.00	2100.00	4.74	922.00	3090.00	3.35	3.50	20.91	MTT	+
8374	76	01/16/91	20H	0.822	327.00	1480.00	4.53	554.00	2050.00	3.71	0.00	3090.00	0.00	2.67	> 16.87	MTT	+

* = This value is a virus rating (VR) rather than a TAI. The VR is a measurement of selective antiviral activity that takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound similar to TAI. TAI is more accurate with MTT measurements.

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

$IC_{25,50,95}$ = (Viral) inhibitory concentration 25%, 50% and 95% = The drug concentration (μg/ml) that inhibited viral CPE by 25%, 50% or 95% calculated by using a regression analysis for semilog curve fitting.

$TC_{25,50,95}$ = (Cell) toxicity concentration 25%, 50% and 95% = The drug concentration (μg/ml) that reduced cell viability by 25%, 50% or 95%.

$AI_{25,50,95}$ = Antiviral Index = A single point ration of the antiviral and anticellular effect of the compound, calculated with 25%, 50% or 95% reduction values (calculated by dividing the $TC_{25,50,95}$ by the $IC_{25,50,95}$).

SI = Selectivity Index = A ratio calculated by dividing the TC_{25} by the IC_{50} (based upon 6 one-half-log_{10} dilutions, μg/ml, the maximum scale is 0-320).

TAI = Total Antiviral Index = The area between the cytotoxicity and the antiviral curves (based upon a scale of 0-100%).

ACT = Activity = A "+" denotes a test that produced $\geq$25% reduction in CPE. A "-" denotes an inactive test (i.e. $\leq$25% reduction in CPE.

4.1.8 Hantaan Virus (HTN)

Initially, we had problems adapting a method for evaluating compounds against the Hantaan Virus (See section 4.1.10 of Second Annual report dated December 15, 1987). A plaque-reduction method was developed but it was unsuitable for our large-scale screening program. We continued to test compounds versus HTN by plaque-reduction assay through April, 1988. At this time, testing of the antiviral compounds against the HTN virus was suspended in our laboratory to complete the development of the ELISA system (a less labor-intensive and suitable for large-scale screening assay) under the direction of Dr. John Huggins at USAMRIID, Ft. Detrick, Maryland. However, testing of antiviral agents against HTN has continued to be carried out at USAMRIID under the direction of Dr. Huggins and Dr. Z. Zhang.

With the plaque-reduction assay, one compound, AVS-3593 showed moderate antiviral activity against the virus with an ID_{50} of 0.93 μg/ml, a MTC of 1.0 μg/ml and a TI of 1.1. Ribavirin was our positive control compound and yielded ID_{50}'s ranging from 1 - 17 μg/ml and TI values that ranged from 6.3 - 57 (based on results of 12 assays). Table 22 shows a comparison of AVS-3593 and Ribavirin tested on February 17, 1988.

Table 22

Compounds Active Against Hantaan Virus[a]

AVS No.	IC_{50} (μg/ml)	MTC μg/ml	TI
0001	15.9	100	6.3
3593	0.9	1.0	1.1

[a] = Plaque-reduction assays were done in C1008 cells.

IC_{50} = The minimum drug concentration (μg/ml) that inhibited the CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

MTC = Minimum cytotoxic drug concentration is the lowest drug concentration at which drug toxicity was observed.

TI = The Therapeutic Index of a compound was determined by dividing the MTC by the IC_{50}.

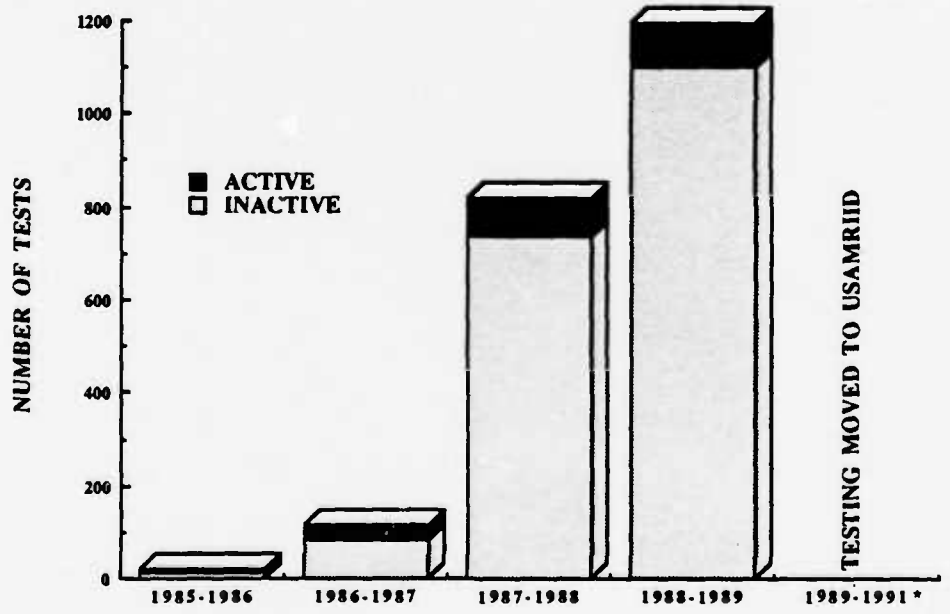
4.1.9 Pichinde Virus (PIC):

The number of single drug tests carried out against PIC during this contract period is summarized in yearly increments in **Figure 42**. During 1989, testing was moved to USAMRIID in order for SRI to develop an ELISA assay system suitable for primary screening of large numbers of compounds versus the Pichinde virus.

A total of 2276 tests were performed during this contract period using a plaque reduction assay procedure. Ribavirin (AVS-0001) was tested in each plaque reduction assay as the positive control compound. Data from 135 positive control assays tested during 1988 - 1989 yielded a mean IC_{50} of 10.65 (± 5.4) and a range of 4.1 μg/ml to 18 μg/ml. The mean MTC was 76.8 μg/ml (± 35.1). The mean TI value was 7.95 (± 4.33). Results of Ribavirin tested in parallel in each assay were used as a guideline to assess the quality of each assay in the day-to-day screening.

Out of the 2141 accepted single drug tests, 210 compounds demonstrated antiviral activity at greater than or equal to 50% reduction levels. This represents around 10% of the tested compounds having *in vitro* antiviral activity against the PIC virus. The remainder, 1931 compounds (90%), were considered inactive with the CPE-inhibition assay protocol (**Figure 42**).

IN VITRO PRIMARY SCREEN: NUMBER OF COMPOUNDS FOUND ACTIVE AGAINST PICHINDE VIRUS DURING THE CONTRACT PERIOD



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991*	Five-Year Totals
Number Active	9	22	83	96	0	210
Number Inactive	4	92	736	1099	0	1931
Yearly Total (Accepted Single Drug Tests)	**13**	**114**	**819**	**1195**	**0**	**2141**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 42

4.1.9.1 **PIC - Antiviral Activity Results:**

Of the 2141 compounds tested against PIC using the plaque reduction assay, 197 (7%) demonstrated antiviral good activity with **antiviral reduction values** (IC_{50}) equal to or better than 50% and a **Therapeutic Index** of > 1.0 **(Table 23)**. Five compounds (AVS-0646, 0148, 0140, 2350 and 3189) produced **Therapeutic Indices** (TI's) of > 100. Fifteen compounds produced good antiviral activity with TI's that ranged from > 10 - 62. These compounds should be tested further in *in vitro* profile studies and *in vivo* testing.

Table 23

Compounds Active Against Pichinde Virus[a]

AVS No.	Shipment	IC_{50}	MTC	TI
0646	2	0.1	100	>681
0148	2	0.2	100	589
0140	4	0.5	>100	>208.2
2350	14	158	>20000	>126
3189	29	0.9	100	106
3800	35	0.16	10	62.4
0215	1	2.2	>100	>45.4
0001	4	2.5	>100	>40.1
2527	20	0.9	32	34
0230	1	9.8	320	32.7
0139	1	15.4	>320	>20.8
3799	35	0.56	10	17.6
3802	35	0.56	10	17.6
2581	19	5.9	100	17
0253	1	2.0	32	16
0272	1	2.0	32	16
2568	21	26	320	12
2585	19	8.3	100	12
0095	2	9.1	>100	>10.9
3801	35	0.31	3.2	10.1
4452	44	11	100	9.5
2506	21	1.4	10	7.4
1985	2	4.7	32	6.9
2503	21	0.14	1	6.9
2618	19	47	>320	>6.8
3803	35	0.49	3.2	6.5
2594	19	16	100	6.2
2979	25	17	100	6.0
2582	19	17	100	5.8
0332	4	17.5	>100	>5.7
2591	19	17	100	5.7
0360	2	0.2	1	5.5
5480	53	60	320	5.3
4035	36	6.9	32	4.7
3038	28	0.06	0.32	4.7
4871	46	22	100	4.6

Table 23 (Cont'd)

AVS No.	Shipment	IC_{50}	MTC	TI
2868	20	2.2	<10	<4.5
3422	32	2.4	10	4.2
4240	39	2.5	10	4.0
0206	4	87.2	>320	>3.7
2577	19	28	100	3.6
3490	33	9.2	32	3.5
1992	3	94.9	320	3.4
0094	1	30	>100	>3.3
2592	19	100	320	3.2
4768	44	31	100	3.2
4611	43	104	>320	3.1
4234	42	35	100	2.9
3206	29	1.2	3.2	2.8
0068	1	112.3	>320	>2.8
1975	1	120.6	>320	>2.7
4073	37	119	320	2.7
1378	45	39	100	2.6
2576	19	38	100	2.6
2575	19	40	100	2.5
2125	7	13	32	2.5
0111	22	40	100	2.5
2584	19	42	>100	>2.4
2980	25	1.4	3.2	2.4
2811	24	0.13	0.32	2.4
4434	44	13	32	2.4
4113	39	1.4	3.2	2.4
2089	6	4.3	10	2.3
2277	11	43	100	2.3
3190	29	14	32	2.3
4887	46	1.5	3.2	2.2
0113	1	45.1	100	2.2
0347	2	0.4	1	2.2
2132	7	45	100	2.2
2589	19	48	100	2.1
4610	43	155	320	2.1
4190	39	16	32	2.1
4464	45	0.16	0.32	2.0
2363	15	16	32	2.0
2172	8	16	32	2.0
3503	33	16	32	2.0
0708	30	50	100	2.0
3565	32	5.0	10	2.0
0349	2	1.6	3.2	2.0
2108	6	52	>100	>1.9
0084	1	172	320	1.9
4071	35	53	100	1.9
4273	39	17	32	1.9

Table 23 (Cont'd)

AVS No.	Shipment	IC_{50}	MTC	TI
4272	39	56	100	1.8
2630	19	57	100	1.8
2863	20	1.8	3.2	1.8
2907	26	57	100	1.7
3141	29	5.7	10	1.7
2228	10	19	32	1.7
3073	28	1.9	3.2	1.7
1970	27	19	32	1.7
4390	43	18	32	1.7
4769	44	19	32	1.7
5558	53	19	32	1.7
2408	16	192	320	1.7
0136	4	198.5	>320	>1.6
2862	20	19	32	1.6
2717	22	195	320	1.6
2167	8	64	100	1.6
2193	9	6.4	10	1.6
3691	32	64	>100	>1.6
3355	31	6	10	1.6
3765	35	61	100	1.6
3542	31	20	32	1.6
4802	46	20	32	1.6
4339	42	20	32	1.6
1976	1	67	>100	>1.5
1996	3	66	100	1.5
2985	27	209	320	1.5
2583	19	22	32	1.5
3861	40	21	32	1.5
4373	31	21	32	1.5
1729	45	66	100	1.5
5555	53	208	320	1.5
3788	35	21	32	1.5
3509	33	2.1	3.2	1.5
5557	53	2.2	3.2	1.5
2487	19	223	320	1.4
3204	29	2.3	3.2	1.4
2178	8	73	>100	>1.4
3581	32	6.9	10	1.4
5562	53	70	100	1.4
3805	35	6.9	10	1.4
2563	32	23	32	1.4
3867	41	22	32	1.4
4739	44	70	100	1.4
4454	45	7.1	10	1.4
3860	40	23	32	1.4
4120	40	230	320	1.4
4177	39	3.6	5	1.4

Table 23 (Cont'd)

AVS No.	Shipment	IC_{50}	MTC	TI
3851	40	7.3	10	1.4
4316	42	24	32	1.4
1972	1	79.3	100	1.3
1973	1	25	32	1.3
2615	19	74	100	1.3
2093	6	76	100	1.3
2212	10	7.6	10	1.3
2984	27	25	32	1.3
3695	32	248	320	1.3
2716	22	2.5	3.2	1.3
4233	42	238	320	1.3
4049	37	7.8	10	1.3
4241	39	7.8	10	1.3
4427	44	25	32	1.3
4384	43	7.9	10	1.3
4047	37	7.9	10	1.3
4890	46	25	32	1.3
4085	37	254	320	1.3
5491	53	24	32	1.3
3797	35	7.6	10	1.3
3593	30	0.25	0.32	1.3
3496	33	25	32	1.3
1999	3	2.7	3.2	1.2
3689	32	82	100	1.2
2188	9	84	100	1.2
2232	10	84	100	1.2
2517	20	2.7	3.2	1.2
2138	5	270	320	1.2
2285	11	269	320	1.2
2812	24	0.02	0.032	1.2
3106	28	27	32	1.2
2739	22	28	32	1.2
3205	29	2.8	3.2	1.2
1850	32	261	320	1.2
3680	32	82	100	1.2
1901	33	82	100	1.2
3677	32	2.7	3.2	1.2
3589	32	27	32	1.2
4261	39	8.1	10	1.2
4192	39	8.2	10	1.2
3789	35	8.2	10	1.2
4216	41	85	100	1.2
3858	40	0.85	1	1.2
4437	44	8.7	10	1.2
1738	45	87	100	1.2
0202	4	298	> 320	> 1.1
0228	1	28.4	32	1.1

Table 23 (Cont'd)

AVS No.	Shipment	IC_{50}	MTC	TI
0302	1	0.3	0.32	1.1
1089	5	0.9	1.0	1.1
2718	22	279	320	1.1
2652	21	287	320	1.1
0065	2	29	32	1.1
2429	17	9.1	10	1.1
3131	28	9.2	10	1.1
2971	27	30	32	1.1
2189	9	303	320	1.1
4281	42	2.8	3.2	1.1
4127	40	89	100	1.1
4859	48	9.1	10	1.1
4197	39	94	100	1.1
3902	41	9.5	10	1.1
1730	45	306	320	1.1
3488	33	2.8	3.2	1.1
3499	33	9.1	10	1.1
3351	31	30	32	1.1
3919	34	9.3	10	1.1
2403	16	30	32	1.1

[a] Compounds identified by their AVS numbers are listed in descending order from the most active to the least active. Assays were done in Vero cells. An active compound is defined here as having a therapeutic index (TI) of greater than 1.0. The drug concentration which reduced the mean plaque number of 50% (50% inhibitory dose, IC_{50}) was calculated using a regression analysis program for semilog curve fitting and is expressed in μg/ml. The minimum cytotoxic drug concentration (MTC) is the lowest drug concentration at which toxicity was observed. This is also expressed in μg/ml. The therapeutic index (TI) of a compound was determined by dividing the MTC by the IC_{50}.

4.1.9.2 **Confirmatory Assays:**

Some of the compounds were sent to us in more than one separate drug shipment. These compounds were tested more than once. Data from the confirmatory assays are summarized in **Table 24.** If a compound showed a **Therapeutic Index** of ≥ 1, then it was considered a candidate for confirmatory testing. Out of 10 confirmatory assays, 9 compounds were confirmed active during this contract period. If sufficient amounts of compound is available, the other compounds in **Table 23** should be retested for confirmation.

Table 24

Confirmatory Assays for Compounds Found Active Against Pichinde Virus[a]

AVS No.	Shipment	IC_{50} (μg/ml)	MTC μg/ml	TI
0646	2	0.1	100	>681
	2	0.4	>10	>27
0148	2	0.2	100	589
	2	0.7	>100	>151
0140	4	0.5	>100	>208
	4	0.2	0.32	1.5
0001	4	2.5	>100	>40
	4	3.7	32	8.7
0230	1	9.8	320	33
	1	71	320	4.5
2506	21	1.4	10	7.4
	21	4.8	10	2.1
0094	1	30	>100	>3.3
	1	56	100	1.8
	1	44	100	2.3
2980	25	1.4	3.2	2.4
	25	0.86	1.0	1.1
3788	35	21	32	1.5
	35	--	3.2	--
4241	39	7.8	10	1.3
	46	18	10	0.7

[a] = Compounds identified by their AVS number are listed in ascending order by AVS number.

IC_{50} = The minimum drug concentration (μg/ml) that inhibited the CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

MTC = Minimum cytotoxic drug concentration is the lowest drug concentration at which drug toxicity was observed.

TI = The **Therapeutic Index** of a compound was determined by dividing the MTC by the IC_{50}.

4.1.10 Vesicular Stomatitis Virus (VSV)

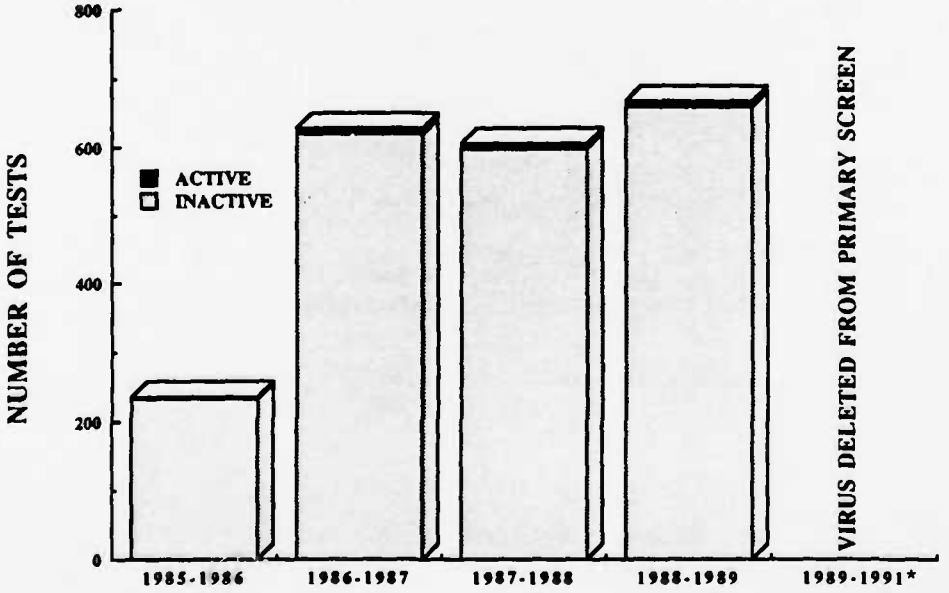
The number of single drug tests carried out against VSV during this contract period is summarized in yearly increments in **Figure 43**. During this five-year period two main *in vitro* antiviral assay protocols were implemented:

1. A standard CPE inhibition assay by virus rating (VR) (Annual Report, December 15, 1988, Section 3.2.4).
2. Since January, 1989, MTT based-antiviral assay format.

A total of 2438 tests were performed during this contract period using both assay types. Routine testing was changed to the MTT-assay format to improve the efficiency and quality of the primary screening program in addition to being more cost-effective. Two positive control drugs (AVS-303 and 1160) were included in each assay. For the CPE-inhibition assay, the VR of AVS-303 ranged from 1.3 to 4.8, the IC_{50} from 0.6 to 18.5 μg/ml, and the TI from 1.1 to 17.9. The VR of AVS-1160 ranged from 1.6 to 4.9, the IC_{50} from 0.2 to 2.3 μg/ml, and the TI from 1.1 to 33.6. A wider range of values was obtained with the MTT assay. The TC_{25} of AVS-303 ranged from 4.33 to 320, the IC_{50} from 1.27 to 5.39 μg/ml, and the SI from 1.94 to 73.07. The TC_{25} of AVS-1160 ranged from 1.31 to 37.6, the IC_{50} from 0.32 to 55.9 μg/ml, and the SI from 1.07 to 36.03. Results of these positive controls (VR tests) were used as a guideline to assess the quality of each assay.

Out of the 2130 accepted single drug tests, 26 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents around 1.2% of the tested compounds having *in vitro* antiviral activity against VSV. The remainder, 2104 compounds (98.8%), were considered inactive with both assay protocols (**Figure 43**).

IN VITRO PRIMARY SCREEN: NUMBER OF COMPOUNDS FOUND ACTIVE AGAINST VESICULAR STOMATITIS VIRUS DURING THE CONTRACT PERIOD



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991*	Five-Year Totals
Number Active	3	8	8	7	0	26
Number Inactive	230	619	597	658	0	2104
Yearly Total (Accepted Single Drug Tests)	**233**	**627**	**605**	**665**	**0**	**2130**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 43

As shown in **Table 25** fourteen compounds demonstrated confirmed *in vitro* antiviral activity versus VSV during this contract period. The activity of the remaining compounds was either not confirmed on retest or there was not sufficient drug available for retest.

The three most active compounds identified during this contract period were AVS-5580 with a TAI of >73.5 and >59.5 and a SI of >1000 and >5060, AVS-5219 with a TAI of >71.99 and 28.27 and a SI of 127 and 10.6 and AVS-2350 with VR of 2.0 and a SI of 32 and 317. AVS-2503 also showed good antiviral activity with a VR of 4.1 and 4.8 and a SI of 46 and 75.

Table 25

Confirmatory Assays for Compounds Active Against Vesicular Stomatitis Virus

AVS No.	Shipment	Date	DIFRNTL	IC_{50}	TC_{25}	TAI	SI	Assay Type
346[a]	25	07/10/87	NA	0.41	1.00	0.95[b]	2.42	CPE
	25	07/28/87	NA	0.09	0.32	1.40[b]	3.60	CPE
1159	27	07/28/87	NA	15.95	100.00	1.90[b]	6.27	CPE
	27	10/13/87	NA	8.86	100.00	2.60[b]	11.29	CPE
1214	52	03/03/89	1.451	3.05	20.20	>30.25	6.61	MTT
	52	05/12/89	1.477	2.33	5.78	10.52	2.48	MTT
1217	52	03/03/89	1.451	41.60	218.00	>29.06	5.24	MTT
	52	05/12/89	1.429	55.90	144.00	13.33	2.58	MTT
2350	14	11/06/87	NA	0.00	>20000.00	1.10[b]	>0.00	CPE
	14	11/12/87	NA	632.00	200000.00	1.95[b]	316.60	CPE
	14	02/04/88	NA	0.00	200000.00	0.00[b]	0.00	CPE
	14	05/13/88	NA	6317.00	>200000.00	2.00[b]	>31.70	CPE
2503	21	05/05/87	NA	2.17	100.00	4.10[b]	46.10	CPE
	21	06/12/87	NA	1.33	100.00	4.75[b]	75.36	CPE
2906	26	07/17/87	NA	7.80	<100.00	2.10[b]	<12.81	CPE
	26	07/28/87	NA	8.86	100.00	2.60[b]	11.29	CPE
3586	32	01/29/88	NA	1.80	32.00	3.70[b]	17.70	CPE
	32	02/23/88	NA	1.60	32.00	4.30[b]	20.10	CPE
3968	36	03/18/88	NA	89.50	320.00	1.25[b]	3.58	CPE
	36	08/04/89	1.570	54.20	180.00	>17.98	3.32	MTT
4240	39	04/05/88	NA	8.00	32.00	2.60[b]	4.00	CPE
	39	05/10/88	NA	11.80	<100.00	1.70[b]	<8.50	CPE
4275	39	04/08/88	NA	0.22	1.00	3.60[b]	4.49	CPE
	39	04/19/88	NA	0.16	0.32	4.10[b]	1.95	CPE
	39	08/11/89	1.504	0.06	0.22	>18.82	3.66	MTT
5219	51	03/03/89	1.315	1.96	249.00	>71.99	127.00	MTT
	51	05/12/89	1.477	1.85	19.60	28.27	10.60	MTT
5556	53	05/12/89	1.300	48.10	141.00	>19.17	2.93	MTT
	53	06/02/89	1.391	41.80	155.00	24.99	3.70	MTT

Table 25 (Cont'd)

AVS No.	Shipment	Date	DIFRNTL	IC_{50}	TC_{25}	TAI	SI	Assay Type
5580	54	05/05/89	1.153	<1.00	>100000.00	>73.50	>1000.00	MTT
	54	05/19/89	1.657	19.80	>100000.00	>59.50	>5060.00	MTT

[a] Compounds identified by their AVS numbers are listed in ascending numerical order. AVS-2350 and AVS-5580 were tested in Vero cells and activity is expressed as I.U./ml. All other assays were done in L929 cells.

[b] This value is a virus rating (VR) rather than TAI. The VR is a measurement of selective antiviral activity that takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound similar to TAI.

DIFRNTL = The differential is the difference in the cell control and the virus control optical densities.

IC_{50} = The minimum drug concentration (μg/ml) that inhibited CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

TC_{25} = The minimum drug concentration (μg/ml) that reduced cell viability by 25%.

TAI = Total Antiviral Index = the area between the cytotoxicity and the antiviral curves.

SI = Selective Index, calculated by dividing the TC_{25} by the IC_{50}.

NA = Not Applicable.

4.1.11 Antiviral Screening *In Vitro*: Retroviruses:

The contract was modified in the second year (DAMD17-86-C-6013, modification No. P60001) to also include testing of the compounds supplied by USAMRIID against Human Immunodeficiency Virus (HIV) and other retroviruses. In April, 1987, the contract was amended to test 5,000 - 10,000 compounds per year against HIV for NCI. We used the XTT assay and automated plate readers. A computer was connected to the plate reader for data processing and then the data was down loaded to the NCI database by modem. This testing was later supported by two separate contracts (cooperative agreement No. DAMD17-88-H-8003 dated January 4, 1988 and NCI Contract N01-CM-87237 dated July 15, 1988). Results are presented below for antiviral testing done under this contract.

4.1.11.1 Primary Screening-HIV:

4.1.11.1.1 USAMRIID Compounds:

Approximately 500 AVS compounds supplied to us from USAMRIID were screened in the primary ATH8 cell assay for antiviral activity against HIV. Although the ATH8 human T-cell line proved to be very sensitive in detection of HIV antiviral activity, it was a troublesome cell line to maintain in quantity on a regular basis for use in assays.

Table 26 lists the most active AVS compounds, based on the therapeutic index and virus rating, identified in our primary screening. All of these compounds appeared to be very potent, with six of them, AVS-999, AVS-2353, AVS-2623, AVS-1764, AVS-206 and AVS-1603, having an ID_{50} of 0.1 μg/ml or lower. Several of these compounds appeared very active, having VR values greater than 4, with AVS-2576 having a VR of 5.2. Dideoxycytidine (ddC) was included with each set of assays as a positive control drug. It typically had a VR of 4 or greater and an ID_{50} of <0.1 μg/ml. A complete listing of all the USAMRIID compounds found to have some degree of activity in the primary HIV screen is presented in **Appendix A, Table 9** of our second annual report dated December, 15, 1987.

Table 26
Compounds Active Against Human Immunodeficiency Virus[a]

AVS#	Shipment	VR	VR*	ID_{50}	MTC	TI
0999	9	3.5	1.2	<0.1	100	>1000
2353	11	4.2	1.4	<0.1	>100	>1000
2276	11	4.3	1.4	0.2	100	499
2623	19	3.1	1.0	<0.1	32	>320
1764	22	3.1	1.0	<0.1	32	>320
2285	11	4.4	1.5	0.4	>100	>254
1790	21	2.6	0.9	0.5	100	184
2572	19	4.7	1.6	1.0	100	100
0206	9	2.0	0.7	0.1	10	100
1603	N/A[b]	4.2	1.4	<0.1	10	>100
2576	19	5.2	1.7	1.0	100	100
2575	19	4.5	1.5	1.5	>100	>69
2574	19	3.6	1.2	1.6	100	64
2567	21	3.4	1.1	1.8	>100	>54

a. Compounds identified by their AVS number are listed in descending order by activity. Assays were done in ATH8 cells.

b. AZT (not applicable).

VR = A measurement of selective antiviral activity which takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound, determined by a modification of the method of Ehrlich *et al.* (Ann. N.Y. Acad. Sci. *130*:5, 1965).

VR* = The designation for the virus rating calculated by the method of Sidwell and Huffman (Appl. Microbiol. *22*:797, 1971).

ID_{50} = The minimum drug concentration (μg/ml) that inhibited the CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

MTC = Minimum cytotoxic drug concentration is the lowest drug concentration at which drug toxicity was observed.

TI = The **Therapeutic Index** of a compound was determined by dividing the MTC by the ID_{50}.

Compounds exhibiting HIV antiviral activity in the initial ATH8 cell assay were retested in ATH8 cells to confirm the activity. The results of these confirmatory assays are presented in **Table 27**. Antiviral activity was confirmed for many of the compounds. Some of the best compounds, based on the VR and TI values, appeared to be AVS-999, AVS-2353, AVS-2358, AVS-2393, and AVS-2576. Compounds having confirmed activity were further evaluated in additional assays (see below).

Table 27

Confirmatory Assays for Compounds Active Against Human Immunodeficiency Virus[a]

AVS#	Date Shipment	Tested	VR	VR*	ID_{50}	MTC	TI
1	9	01/26/87	1.5	0.5	0.8	3.2	4.0
		07/08/87	2.0	0.7	-	10.0	-
206	9	01/29/87	2.0	0.7	0.1	10.0	100.0
		10/19/87	1.9	0.6	-	10.0	-
999	9	01/29/87	3.6	1.2	<0.1	100.0	>1000.0
		03/16/87	1.9	0.6	2.2	32.0	15.0
		10/19/87	3.3	1.1	0.3	100.0	313.0
1790	21	07/16/87	2.6	0.9	0.5	100.0	184.0
		11/06/87	0.0	0.0	-	32.0	-
2274	12	03/11/87	1.2	0.4	0.3	3.2	10.0
		06/30/87	0.0	0.0	-	<100.0	-
2275	12	03/16/87	1.0	0.3	-	10.0	-
		06/30/87	0.0	0.0	-	32.0	-
2276	11	01/26/87	4.3	1.4	0.2	100.0	499.0
		06/16/87	0.0	0.0	-	≤0.1	-
		06/25/87	0.5	0.2	-	10.0	-
		06/30/87	0.0	0.0	-	32.0	-
2278	11	02/13/87	1.4	0.5	1.8	100.0	56.0
		06/17/87	0.0	0.0	-	≤0.1	-
2285	11	02/03/87	4.4	1.5	0.4	>100.0	>253.0
		07/01/87	1.7	0.6	-	100.0	-
2332	12	03/11/87	1.7	0.6	-	>100.0	-
		06/25/87	1.8	0.6	-	>100.0	-
		07/01/87	1.1	0.4	-	>100.0	-
		07/08/87	2.0	0.7	5.7	100.0	18.0
2340	12	03/19/87	1.5	0.5	9.5	>100.0	>11.0
		07/01/87	1.3	0.4	-	>100.0	-

Table 27 (Cont'd)

AVS#	Date Shipment	Tested	VR	VR*	ID_{50}	MTC	TI
2353	11	01/26/87	4.2	1.4	<0.1	>100.0	>1000.0
		06/16/87	0.0	0.0	-	<0.1	-
		07/01/87	2.2	0.7	12.1	>100.0	>8.2
2358	15	03/18/87	1.1	0.4	<0.1	1.0	10.0
		07/01/87	1.2	0.4	43.0	>100.0	>2.4
2365	15	03/22/87	1.8	0.6	-	>100.0	-
		06/30/87	1.5	0.5	23.0	100.0	4.4
		07/01/87	0.5	0.2	-	>100.0	-
		07/08/87	1.3	0.4	-	100.0	-
2393	16	07/22/87	1.9	0.6	0.6	32.0	57.0
		10/19/87	3.3	1.1	59.0	100.0	1.7
2397	16	07/22/87	1.1	0.4	17.0	32.0	1.9
		10/19/87	2.4	0.8	-	32.0	-
2404	16	05/15/87	1.0	0.3	-	10.0	-
		07/24/87	0.0	0.0	-	10.0	-
2407	16	05/15/87	1.7	0.6	0.9	10.0	11.0
		07/06/87	0.0	0.0	-	32.0	-
2408	16	05/15/87	1.1	0.4	-	<100.0	-
		07/06/87	0.0	0.0	-	100.0	-
2488	19	06/01/87	2.4	0.8	3.2	32.0	10.0
		07/09/87	0.3	0.1	-	32.0	-
2572	19	06/05/87	4.8	1.6	1.0	100.0	100.0
		07/09/87	0.0	0.0	-	10.0	-
		10/29/87	0.0	0.0	-	100.0	-
2574	19	06/05/87	3.6	1.2	1.6	<100.0	64.0
		07/09/87	0.6	0.2	-	10.0	-
2576	19	06/05/87	5.2	1.7	1.0	100.0	100.0
		06/17/87	3.1	1.0	2.4	100.0	41.0
2581	19	06/05/87	3.4	1.1	3.2	100.0	31.0
		07/10/87	0.4	0.1	-	10.0	-
2621	19	07/08/87	1.7	0.6	-	32.0	-
		07/23/87	2.4	0.8	11.2	100.0	8.9

Table 27 (Cont'd)

AVS#	Date Shipment	Tested	VR	VR*	ID_{50}	MTC	TI
2708	22	10/14/87	1.3	0.4	0.1	1.0	10.0
		10/19/87	2.5	0.8	-	32.0	-
2748	22	05/20/87	1.1	0.4	0.1	1.0	8.2
		07/10/87	0.0	0.0	-	$\leq$0.1	-
2749	22	05/20/87	1.9	0.6	1.8	32.0	18.0
		06/17/87	0.0	0.0	-	10.0	-
		07/22/87	0.0	0.0	-	100.0	-

a. Compounds are listed in ascending numerical order by AVS number. The results from the primary and the subsequent confirmatory CPE-inhibition assays are listed chronologically for each compound.

VR = A measurement of selective antiviral activity which takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound, determined by a modification of the method of Ehrlich *et al.* (Ann. N.Y. Acad. Sci. *130*:5, 1965).

VR* = The designation for the virus rating calculated by the method of Sidwell and Huffman (Appl. Microbiol. *22*:797, 1971).

ID_{50} = The minimum drug concentration (μg/ml) that inhibited the CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

MTC = Minimum cytotoxic drug concentration is the lowest drug concentration at which drug toxicity was observed.

TI = The **Therapeutic Index** of a compound was determined by dividing the MTC by the ID_{50}.

Further assays of AVS-999 were conducted on the following samples of the drug: (1) purified samples of 4-acetyl-4-phenyl-piperidine (PAP-base and PAP-HC1), purified from inactive drug received from the NCI (NSC 613291); (2) original and new samples obtained from Technassociates, and (3) a drug sample obtained from Dr. Raymond Schinazi (VA Medical Center, Decatur, GA). The samples were assayed in parallel on ATH8 cells and scored by visual assessment of CPE. The results, summarized in **Table 28**, showed that all of these samples were active, which was reflected in their VR scores of 2.5 - 3.3, although the original sample and the PAP-HC1 appeared to be less toxic, resulting in higher TI values for those two samples. It should be noted from the data that the maximum reduction in CPE observed at any concentration level in this set of assays was 58%, in contrast to parallel data for ddC in which 100% reduction was observed supporting the lack of concentration-dependency and the marginal nature of the results for AVS-999. The new samples obtained from Technassociates was identical by HPLC profile to the material received from the NCI (NSC 613291) and it contained the same impurities. This material was significantly less active than the purified compound and the original sample submitted as AVS-999.

Table 28

Retesting of AVS-999 Samples[a]

AVS No.	Sample	VR	ID_{50} (μg/ml)	MTC (μg/ml)	Therapeutic Index
999	PAP-Base	3.2	3.2	100	31.25
999	PAP-HC1	2.7	0.32	>100	>312.50
999	Schinazi Sample	3.1	3.2	100	31.25
999	Original Sample (Technassociates)	3.3	0.32	100	312.50
999	New Sample (Technassociates)	2.5	>32.0	100	<3.13
2639	ddC (Positive Control drug)	3.8	0.1	10	100

[a] = Assays were done in ATH8 cells.

VR = A measurement of selective antiviral activity which takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound, determined by a modification of the method of Ehrlich *et al.* (Ann. N.Y. Acad. Sci. *130*:5, 1965).

VR* = The designation for the virus rating calculated by the method of Sidwell and Huffman (Appl. Microbiol. 22:797, 1971).

ID_{50} = The minimum drug concentration (μg/ml) that inhibited the CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

MTC = Minimum cytotoxic drug concentration is the lowest drug concentration at which drug toxicity was observed.

TI = The **Therapeutic Index** of a compound was determined by dividing the MTC by the ID_{50}.

4.1.11.1.2 **NCI Compounds:**

During this period all elements of the XTT (tetrazolium dye) assay system were brought into operation. During the short period that this Task was included in this contract, we tested approximately 1700 NSC compounds supplied by NCI against HIV in MT-2 cells of this number, 20 compounds were considered active or possibly active and the remainder were either inactive or represented unsatisfactory tests. The most frequent cause of unsatisfactory tests was poor infectivity of virus. One drug, NSC-614846, demonstrated significant activity comparable to dideoxycytidine (ddC, NSC-606170, AVS-2639). The results for ddC are shown in **Figure 44** and results for NSC-614846 assayed in MT-2 cells, are shown in **Figure 45**. Inoculation was by cocultivation with H9/IIIB cells (20 cells/well). This compound (NSC 614846) had an ID_{50} of 0.009 μg/ml, a 50% cytotoxicity concentration (TC_{50}) of 3.8 μg/ml, and a TI (calculated as the TC_{50}/ID_{50}) of 404. **Figure 46** is an example of the data sheet resulting from this assay.

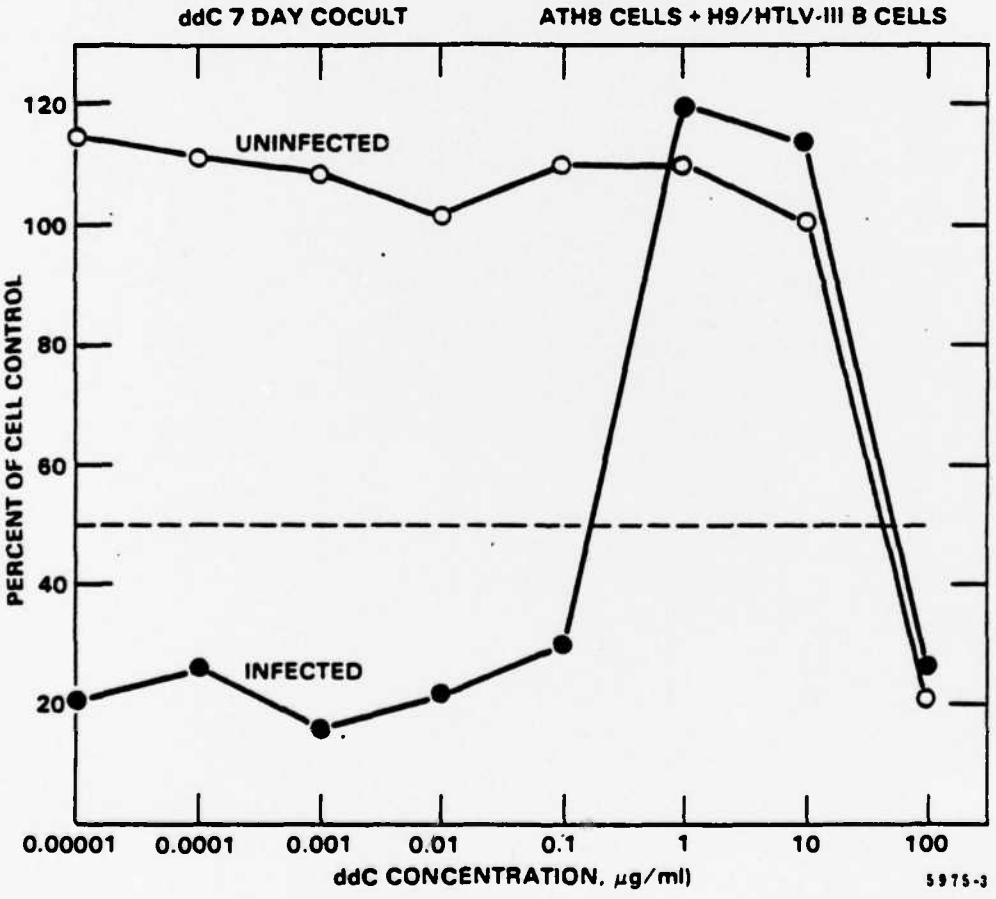


Figure 44

Results from an XTT assay of the antiviral activity of 2′,3′-dideoxycytidine against HIV in ATH8 cells.

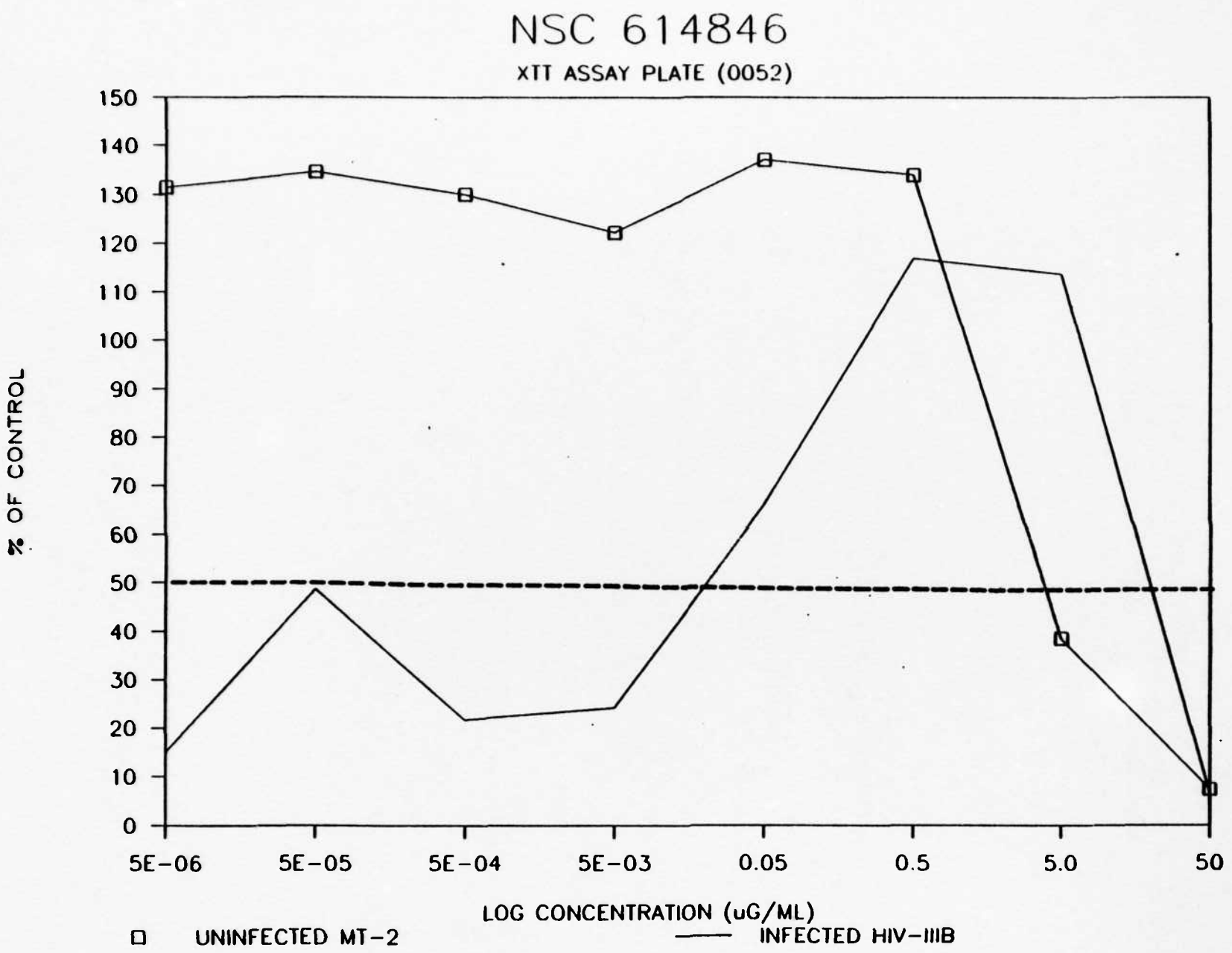


Figure 45
Results from an XTT assay of the antiviral activity of NSC-614846 against HIV in MT-2 cells.

EXPERIMENT ID : 9N 0052
PLATE BARCODE : 0052 CONFIG: 017
INOC DATE : 03-DEC-87
STAIN DATE : 03-DEC-87

REPORT DATE : 09-FEB-88
ASSAY : XTT
DRUG ADD DATE : 03-DEC-87
MR600 READ DATE : 03-DEC-87

OPTICAL DENSITIES

	01	02	03	04	05	06	07	08	09	10	11	12
A	0.017	0.018	0.017	0.221	0.216	0.000	0.220	0.219	0.222	0.291	0.236	0.020
B	0.018	0.232	0.692	0.396	0.588	0.455	0.595	0.986	1.429	1.525	0.297	0.018
C	0.018	0.231	0.667	0.393	0.949	0.482	0.398	0.944	1.639	1.471	0.304	0.019
D	0.020	0.217	0.419	0.793	0.284	0.309	0.627	1.298	1.299	1.484	0.532	0.019
E	0.020	0.223	1.328	0.756	0.407	0.719	0.410	1.510	1.564	1.558	1.000	0.018
F	0.019	0.223	1.353	1.696	1.732	1.680	1.593	1.759	1.726	0.656	0.308	0.018
G	0.019	0.225	1.351	1.350	1.224	1.276	1.403	1.377	1.503	1.623	1.281	0.017
H	0.020	0.020	0.020	0.220	0.210	0.000	0.219	0.219	0.211	0.214	0.210	0.017

CALCULATED RESULTS (INFECTED)

WELL GRP	NSC	TTYPE	CONC	QC	MEAN	SD	CV	T/C%	IND	EC50/90/100
CELL LINE : MT-2			SAMPLE : 0100							
E03-G03		VEH 54		1	1.119	0.014	0.010			
B02-G02		BACKGD			0.225	0.006	0.025			
B04-C04	614846	1I	5.00E-06 u	1	0.169	0.002	0.005	15.1	N	9.38E-03
B05-C05	614846	1I	5.00E-05 u	66	0.543	0.255	0.332	48.6	N	1.47E-01
B06-C06	614846	1I	5.00E-04 u	1	0.243	0.019	0.041	21.7	*	2.31E-01
B07-C07	614846	1I	5.00E-03 u	66	0.271	0.139	0.281	24.3		
B08-C08	614846	1I	5.00E-02 u	1	0.740	0.030	0.031	66.1*		
B09-C09	614846	1I	5.00E-01 u	1	1.309	0.148	0.097	117.0		
B10-C10	614846	1I	5.00E+00 u	1	1.273	0.038	0.025	113.8		
B11-C11	614846	1I	5.00E+01 u	1	0.075	0.005	0.016	6.7		
B03-D03		HIVCNTL		66	0.368	0.151	0.151	32.8		

CALCULATED RESULTS (UNINFECTED)

WELL GRP	NSC	TTYPE	CONC	QC	MEAN	SD	CV	T/C%	IND	IC50/90/100
CELL LINE : MT-2			SAMPLE : 0100							
E03-G03		VEH 54		1	1.119	0.014	0.010			
F04-F04	614846	1U	5.00E-06 u	1	1.471	0.000	0.000	131.5		3.79E+00
F05-F05	614846	1U	5.00E-05 u	1	1.507	0.000	0.000	134.7		4.12E+01
F06-F06	614846	1U	5.00E-04 u	1	1.455	0.000	0.000	130.0		>5.00E+01
F07-F07	614846	1U	5.00E-03 u	1	1.368	0.000	0.000	122.3		
F08-F08	614846	1U	5.00E-02 u	1	1.534	0.000	0.000	137.1		
F09-F09	614846	1U	5.00E-01 u	1	1.501	0.000	0.000	134.1*		
F10-F10	614846	1U	5.00E+00 u	1	0.431	0.000	0.000	38.5*		
F11-F11	614846	1U	5.00E+01 u	1	0.083	0.000	0.000	7.4		

In Vitro Therapeutic Indices

	IC50/EC50	IC90/EC90	IC100/EC100
NSC : 614846	* 4.04E+02	> 2.79E+02	> 2.16E+02

Figure 46
Example data sheet form an XTT assay.

4.1.11.3 Secondary Evaluations (FAIDS, MAIDS, and SAIDS):

4.1.11.3.1 Feline Leukemia Virus - FAIDS Variant:

Initially, several compounds were screened in parallel using both the FeLV (FAIDS) assay and the HIV ATH8 assay, and occasionally, such as when the ATH8 assay was not working properly, the FeLV (FAIDS) assay was used as the primary screen for retrovirus antiviral activity. Four additional compounds were identified having antiviral activity in this focus-inhibition assay (Table 29). The most active compound assayed in this model was AVS-2708. It had a VR of 4.6, and ID_{50} of 1.2 μg/ml, and a TI of 82.5. This compound also showed antiviral activity against HIV (VR values of 1.3 and 2.5, Table 27). Compounds AVS-2280, AVS-2291, and AVS-222 did not show activity against HIV.

Table 29

Compounds Active Against Feline Leukemia Virus FAIDS Variant[a]

AVS#	Shipment	VR	VR*	ID_{50}	MTC	TI
2708	22	4.6	1.5	1.2	100	82.5
2280	11	3.2	1.1	4.5	100	22.1
2291	11	1.7	0.6	4.6	32	7.0
0222	9	1.4	0.5	31.4	32	1.0

a. Compounds identified by their AVS number are listed in descending order by activity. CPE-inhibition assays were done in F81C cells.

VR = A measurement of selective antiviral activity which takes into account the degree of inhibition of virus-induced CPE and the degree of cytotoxicity produced by the test compound, determined by a modification of the method of Ehrlich *et al.* (Ann. N.Y. Acad. Sci. *130*:5, 1965).

VR* = The designation for the virus rating calculated by the method of Sidwell and Huffman (Appl. Microbiol. *22*:797, 1971).

ID_{50} = The minimum drug concentration (μg/ml) that inhibited the CPE by 50%, calculated by using a regression analysis program for semilog curve fitting.

MTC = Minimum cytotoxic drug concentration is the lowest drug concentration at which drug toxicity was observed.

TI = The Therapeutic Index of a compound was determined by dividing the MTC by the ID_{50}.

Five compounds have been assayed in the FeLV (FAIDS) focus-inhibition assay for confirmation of antiviral activity. These results are summarized in Table 30. Four of the compounds, AVS-0001, AVS-999, AVS-2285, and AVS-2353, showed antiviral activity in this *in vitro* feline retrovirus model; AVS-2358 did not display activity in this assay. AVS-2639 (dideoxycytidine) was the positive control compound for this assay and yielded VR's in the range 1.0 - 3.4, ID_{50}'s in the range 0.3 - 3.6 μg/ml, and TI values of 2.8 - 32.4.

4.1.11.3.2 Simian retrovirus - SAIDS:

Three compounds were assayed in the SAIDS syncytia-inhibition assay during the reporting period. Because of the nature of this assay, a virus rating was not calculated for test compounds. Thus, antiviral activity of a compound was determined by a therapeutic index of 1.0 or greater. Two compounds, AVS-1 and AVS-2285, showed antiviral activity according to this scheme. AVS-999 was inactive in this assay. The results are summarized in Table 30.

4.1.11.3.3 Murine AIDS (MAIDS:

Two drugs which demonstrated significant antiviral activity in the HIV primary screen AVS-2639 (ddC) and AVS-01 (Ribavirin), have been tested in the CAS-BR-M murine leukemia virus plaque-reduction assay. AVS-2639 (ddC) was the more active of the two drugs tested. Only slight toxicity was observed at 100 μg/ml (Figure 47-B) and 100% plaque-reduction was observed at drug concentrations as low as 10 μg/ml (Figure 47-A). The MIC_{50} was 1.8 μg/ml and the TI was 54.5. This drug will be used as the positive control drug in future drug assays.

AVS-01 (Ribavirin) also demonstrated antiviral activity in this assay (Figure 48-A). The drug was toxic to the SC-1 cells at 32 μg/ml and partially toxic at 10 and 3.2 μg/ml (Figure 48-B). The MIC_{50} was 0.5 μg/ml and the TI was 5.9. AVS-2639 was included in the assay as a positive control drug. It had an MIC_{50} of 1.2 μg/ml and a TI > 8.2.

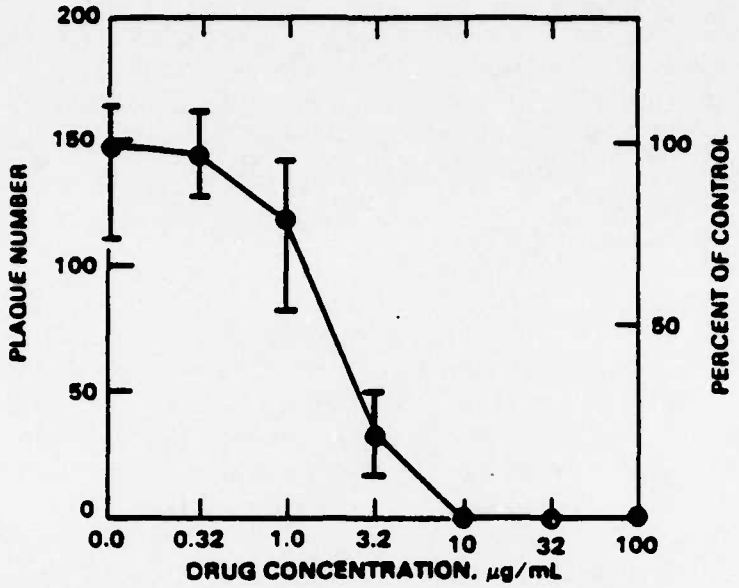


Figure A. Effect of AVS 2639 (ddC) on CAS-Br-M replication in SC-1 cells.

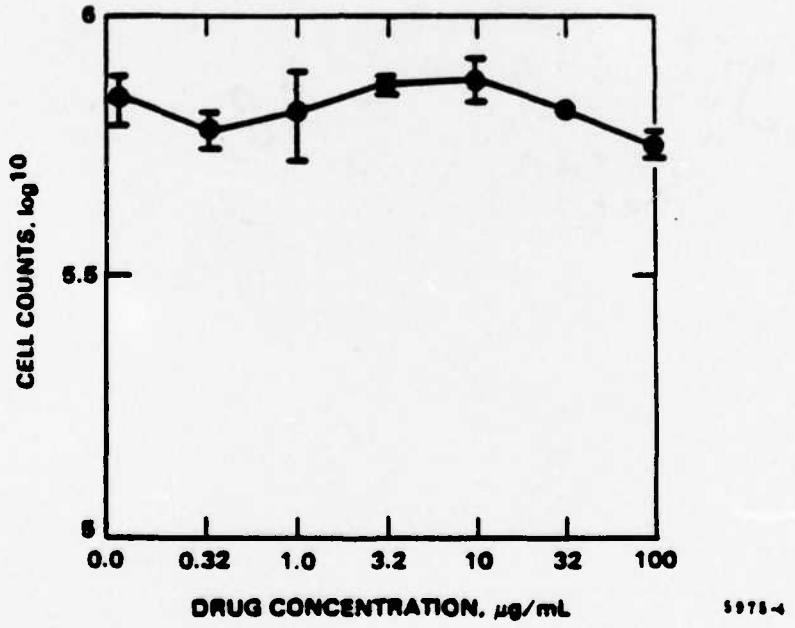


Figure B. Effect of AVS 2639 (ddC) on host cell multiplication.

Figure 47

Antiviral activity of 2',3'-dideoxycytidine in the *in vitro* murine retrovirus assay.

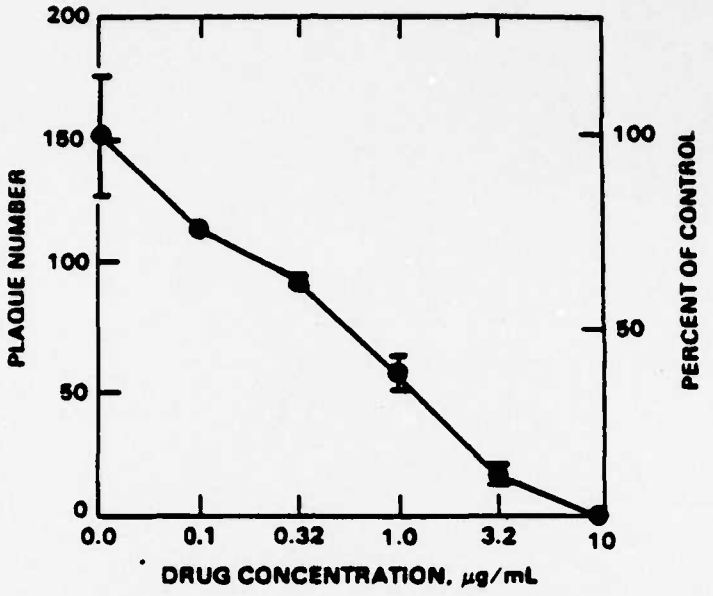


Figure A. Effect of AVS 1 (ribavirin) on CAS-Br-M replication in SC-1 cells.

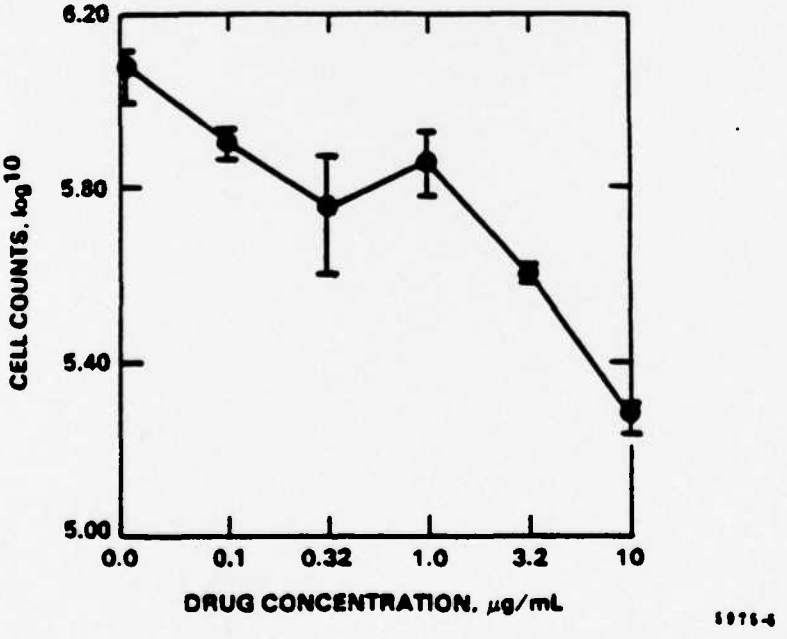


Figure B. Effect of AVS 1 (ribavirin) on host cell multiplication.

Figure 48

Antiviral activity of Ribavirin in the *in vitro* murine retrovirus assay.

Table 30

Secondary Testing of AVS Compounds Showing Confirmed Activity Against HIV in ATH8 Cell Assays[a]

AVS No.	FAIDS VR	FAIDS ID50/MTC	FAIDS TI	SAIDS ID50/MTC	SAIDS TI	MAIDS ID50/MTC	MAIDS TI	HeLa-T4+ Syncytia Assay ID50/MTC	HeLa-T4+ Syncytia Assay TI	Immuno-Fluorescence ID50/MTC	Immuno-Fluorescence TI
001	2.3	3.2/3.2	1.0	26/320 0.18/>10	12 >57	0.55/3.2	5.9	0.2/32	139	X	
999	2.7 1.3 1.2 1.6	14.8/100 -/ 32 11.5/>32 3.9/>10	6.8 - >2.8 >2.6	-/>320	--	X		<0.1/>32 22 / 32	> 320 1.5	15/100	6.7
2285	1.2	29.8/ 32	1.1	28/>320	>11	X		-/ 32	--	X	
2332		X		X		X		-/>100	--	X	
2340		X		X		X		2.7/ 32	12	X	
2353	2.3	9.7/100	10	X		X		0.5/ 32	59	17.5/100	5.7
2358	0	-/10	--	X		X		X		X	
2365		X		X		X		X		X	
2578		X		X		X		X		X	
2621		X		X		X		X		X	
Positive Control Drug (Typical Results)											
2639 (ddC)	3.0	0.68/10	15	4.1/>10	>2.4	1.2/>10	>8.2	<0.1/32	>320	0.48/>3.2	>8.7

a. Results are shown for compounds evaluated in five different secondary assays. The abbreviations are defined in the footnote to **Table 25.** Dideoxycytidine (ddC, AVS-2639) was assayed in parallel as a positive control drug. The "X" indicates assays scheduled for testing.

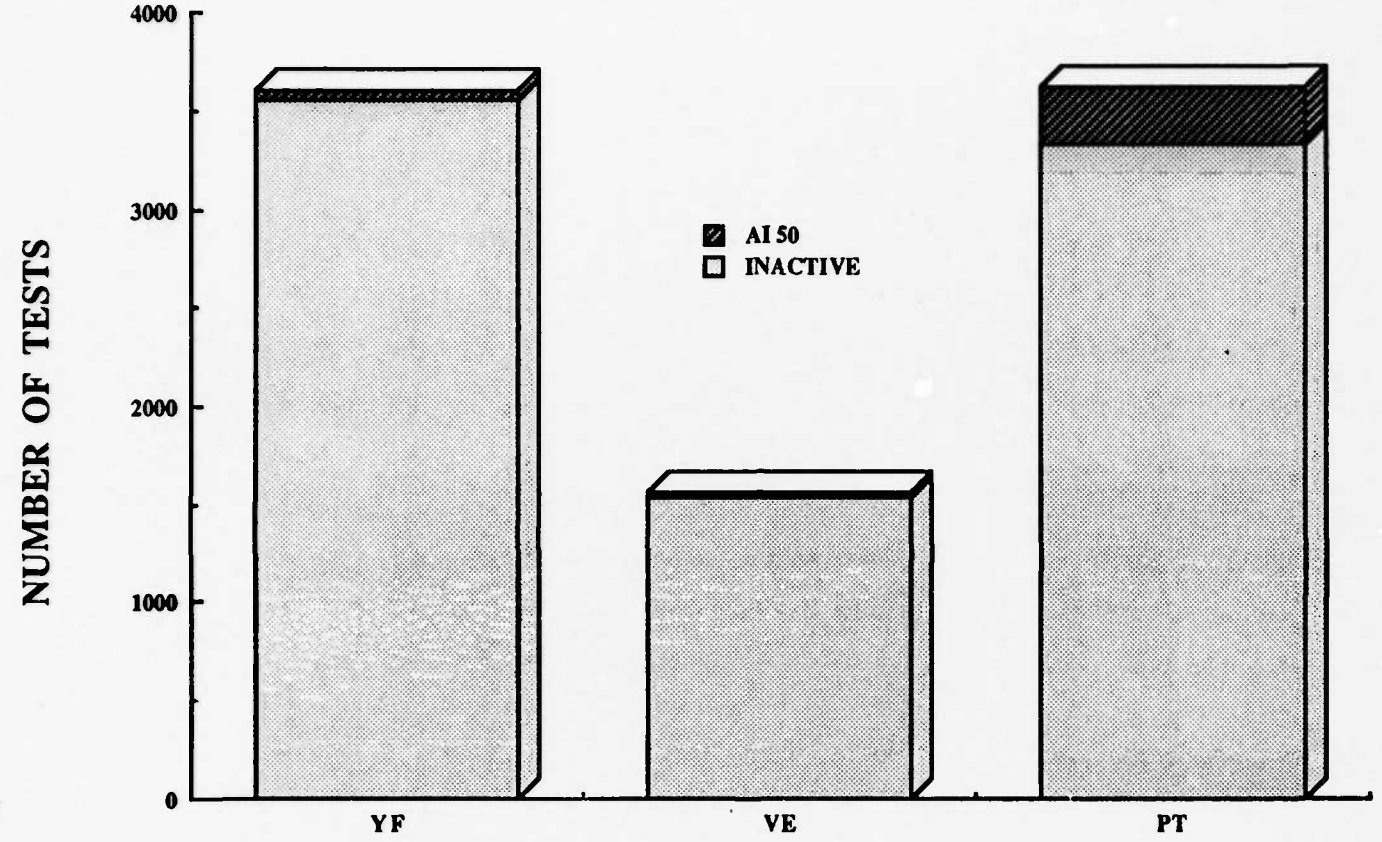
4.2 In Vitro Prescreen Antiviral Evaluation

Large numbers of plant extracts were available for screening for *in vitro* antiviral activity. We were requested to develop an assay that would: 1) allow more compounds to be evaluated per microtiter plate than in the regular antiviral screen and 2) pre-evaluate plant extracts as well as other extracts of natural origin for activity against three indicator virus families. The three viruses selected by USAMRIID for this purpose were the attenuated, vaccine strain (17D) of Yellow Fever virus (YF), Punta Toro virus (PT), and Venezuelan Equine Encephalomyelitis virus (VE). The prescreen should select candidate compounds for screening against the Asibi strain of YF and the other more virulent target viruses in the full screen.

A prescreen procedure was developed which utilized MTT and evaluated five compounds per virus per 96-well plate. Vero cells were seeded as monolayer cultures in COSTAR 96-well plates at 18,000/0.2 ml/well in MEM + 10% heat-inactivated fetal bovine serum (Δfbs). The plates were incubated approximately 24 hours prior to use. From the time that prescreen assays were started on this contract (June 1989 through January 31, 1991), a total of 3809 test compounds were received for evaluation in the prescreen antiviral assay. Approximately 14,000 *in vitro* antiviral prescreen assays (tests) were performed during this contract period (5667 tests with YF, 2235 tests with VE and 6026 tests with PT). It is worthwhile to note that we added the VE virus to the prescreen in June, 1990 therefore fewer assays were tested with this virus.

Out of 8789 accepted single drug tests from all three viruses, 401 demonstrated antiviral activity at $\geq$50% reduction levels. This represents ~5% of the tested natural products having *in vitro* antiviral activity against these viruses (YF, VE, and PT). The remainder 8388 (95%) are to be considered inactive with the prescreen assay protocol. The antiviral activity results of the prescreen assays are summarized in **Figure 49**. In reality we have confirmed some compounds with $\leq$20% original antiviral activity, i.e., if the cytotoxicity was zero or very minimal at 1000 μg/ml. Based upon the present prescreen confirmatory criteria, the correlation between prescreen actives and confirmed actives from the primary screen was 67% **(Table 34)**. The detailed results are summarized in the following sections for each virus.

ACTIVE COMPOUNDS FROM THE PRESCREEN ASSAY



Activity Status	YF	VE	PT	Activity Totals
AI_{50}	61	30	310	401
Inactive	3545	1535	3308	8388
Total	3606	1565	3618	8789 *

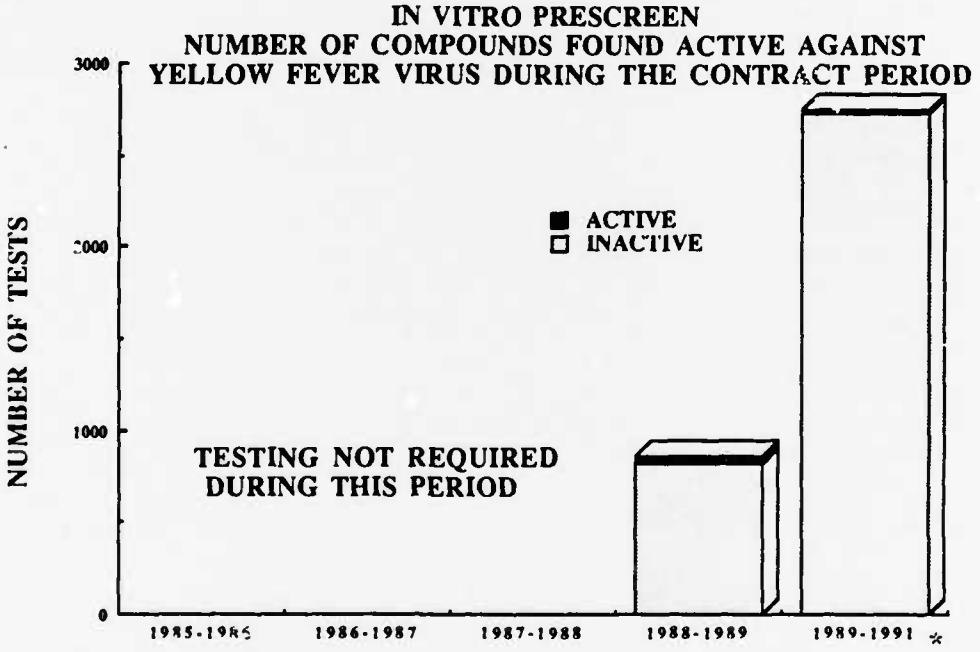
* Grand Total of Accepted Single Drug Tests (Excluding Positive Control Tests)

Figure 49

4.2.1 Prescreen Assay (Yellow Fever Virus [YF]):

The number of single drug tests carried against YF during this contract period is summarized in yearly increments in **Figure 50**. During this nineteen-month period (June, 1989 - January, 1991) 5667 tests were performed against YF-virus with MTT-assay format. Out of these, 266 were control compound assays-selenazofurin (AVS-0253) being the primary positive control compound. Nine hundred thirty-eight (938) tests were internal (+ + +) virus load, cell load, and other quality control tests. Eight hundred fifty-seven (857) tests were considered unsatisfactory based on the preliminary criteria of the quality controls set during this reporting period. The rest, totaling 3606 were actual single drug tests. The 857 unsatisfactory tests represent a 15% rejection rate based on present preliminary quality control parameters used for the YF-virus.

Out of the 3606 accepted single drug tests, 61 compounds demonstrated antiviral activity at greater than 50% reduction levels. This represents a 1.7% of the tested compounds having *in vitro* antiviral activity against YF-virus. The remainder, 3545 compounds (98.3%), are to be considered inactive with both assay protocols (**Figure 50**).



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	0	0	0	41	20	61
Number Inactive	0	0	0	817	2728	3545
Yearly Total (Accepted Single Drug Tests)	**0**	**0**	**0**	**858**	**2748**	**3606**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 50

4.2.1.1 Prescreen YF-Quality Controls: Two positive control compounds (Selenazofurin and 2-Thio-6 Azauridine) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to or better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.2.1.1.1 Antiviral Activity of Selenazofurin vs YF Virus: A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0253 (Selenazofurin) is presented in **Figure 51-A** for 120 tests performed during June, 1989 through January, 1991.

Control Compound-Antiviral Performance: Selenazofurin (AVS-0253) has been the sole control compound against YF in these MTT-assay prescreens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Selenazofurin) are illustrated in **Figure 51-A.**

The 120 control tests performed with Selenazofurin gave a mean **Selectivity Index (SI)** of 1.60 (SD ± 3.10) and the median value was 0, indicating poor antiviral selectivity for Selenazofurin. The reason for this discrepancy is that Selenazofurin does not consistently reach the 50% antiviral reduction level, thus SI calculations cannot be executed properly. (SI is calculated by dividing the TC_{25} by the IC_{50}).

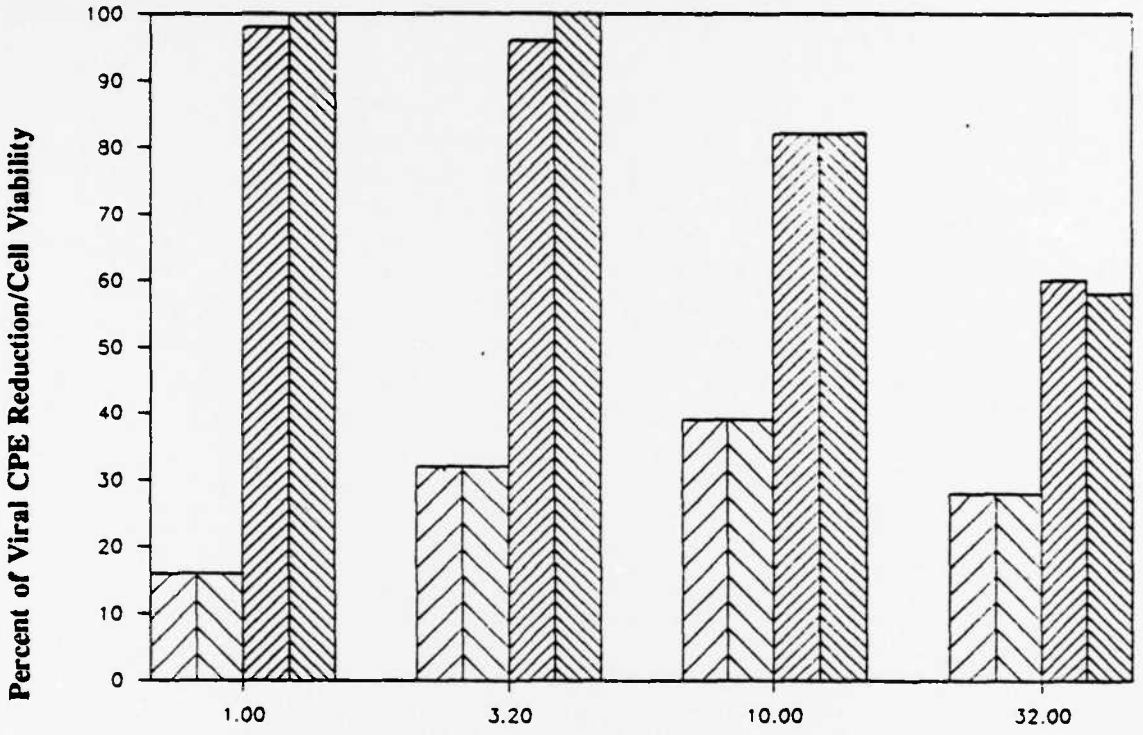
The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 1.53 μg/ml (SD ± 2.70). The median IC_{50} value was 0 μg/ml. This indicates that Selenazofurin does not consistently reach 50% antiviral reduction levels, at any tested drug concentration level. During this reporting period, the highest concentration of Selenazofurin was varied from 1 to 320 μg/ml to properly evaluate the maximum antiviral effect and cytotoxicity pattern of Selenazofurin.

The maximum antiviral inhibitory level of 120 Selenazofurin tests **(Figure 51-A)** varies depending upon which drug concentration scale is used. Maximum antiviral effect (~39%) was found with a simultaneous ~20% cytotoxic suppression. Above 10 μg/ml concentration Selenazofurin starts to lose its antiviral potency with increasing cytotoxicity. An increase of the concentration of Selenazofurin to 320 μg/ml does not improve the antiviral activity **(Figure 51-A)**. Actually antiviral activity decreases from 32% (at 3.2 μg/ml) to ~28% (at 32 μg/ml).

As previously reported in the seventh semiannual report, a different maximum antiviral value is obtained depending upon which Selenazofurin concentration scale is used. This scale measures more accurately the maximum antiviral effect of the control compound selenazofurin (10 μg/ml). In those tests, the $\log_{10}$ scale of 0.1 - 100 μg/ml measured more accurately the antiviral effect of Selenazofurin, whereas the $\log_{10}$ scale of 0.32 - 320 μg/ml more accurately measured the cytotoxicity effects.

In the present, 120 control assays we tested Selenazofurin at 0.5 $\log_{10}$ scale concentrations (1 - 32 μg/ml) to maximize the correct measurements of its antiviral and cytotoxicity effects. This enabled us to monitor our quality control parameters more accurately.

SELENAZOFURIN -VS- YF VIRUS
(PRESCREEN PROTOCOL)



	% Viral CPE Reduction				% Cell Viability			
Conc. (μg/ml)	**1**	**3.2**	**10**	**32**	**1**	**3.2**	**10**	**32**
Mean	16	32	39	28	98	96	82	60
Median	16	32	39	28	100	100	82	58
Std. Dev.	0.10	0.15	0.18	0.17	0.03	0.07	0.14	0.17

Figure 51-A
Average Antiviral and Cytotoxicity Values for 120 Positive Control Compound Assays

4.2.1.1.2 <u>Maximum Antiviral Effect of Selenazofurin vs YF Virus:</u> Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Selenazofurin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (**Figure 52-A**) depicts the distribution of the maximum antiviral reduction values 120 control compound prescreen assays for Selenazofurin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 45% (SD ± 14.60) reduction levels. The maximum reduction levels vary from 25 - 93% but remain quite consistently around the median of 43%. The assay control values give a shifted bell-shaped distribution curve toward the median 32% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the YF prescreen-MTT assay.

During this period the positive control compound performance criteria for Selenazofurin versus the YF virus in the pre-screen format has not been set to a definite endpoint. We have collected data in order to find out what would constitute a reasonable quality control endpoint and the data indicates that it could be set at the 25% reduction level. In order to measure the maximum antiviral endpoints of Selenazofurin correctly, the concentration scale and the highest concentration to be used, must be evaluated at the proper (semi-log) scale as seen in **Figure 51-A**.

Selenazofurin is active *in vitro* against YF virus and functions as a reasonable quality control compound. On the other hand, regardless of the performance of the YF-quality control drug Selenazofurin, around 20 other compounds have equal to or better antiviral activity against YF virus than AVS-0253.

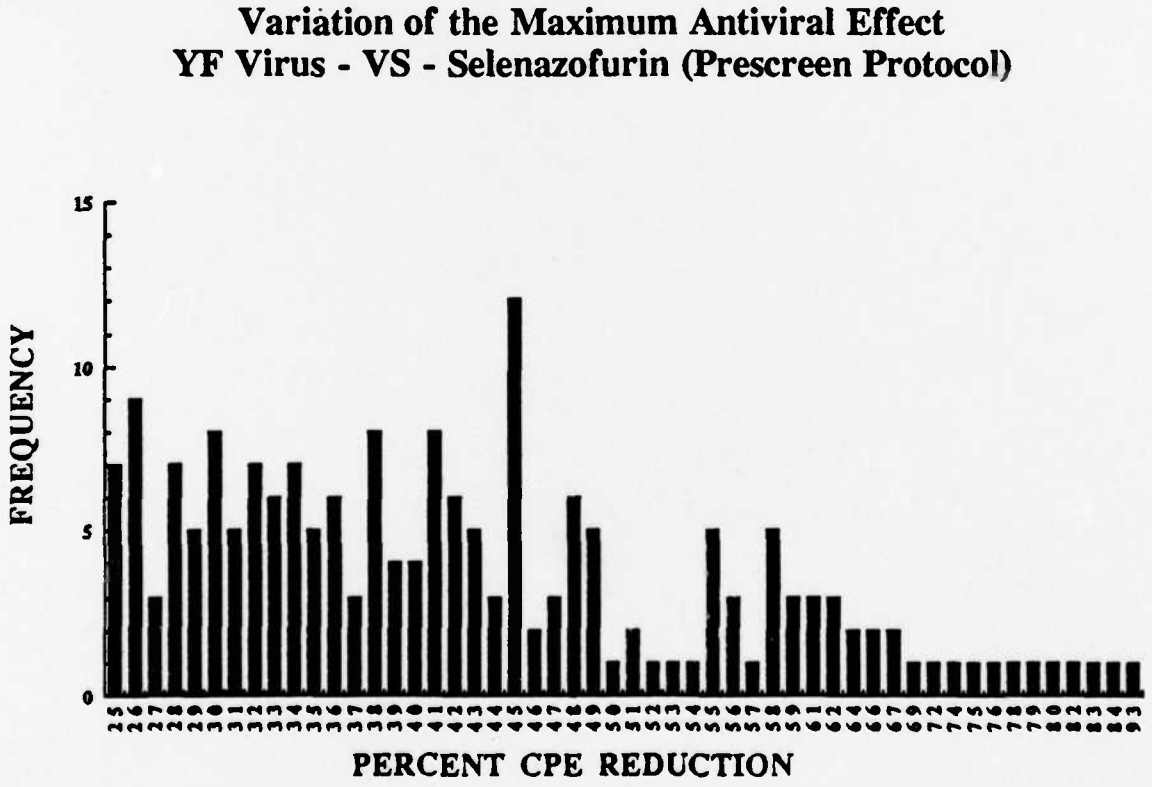


Figure 52-A
Maximum Antiviral CPE Reduction (%).
Summary of 120 Control Tests.

4.2.1.1.3 Cellular Cytotoxicity of Selenazofurin vs YF Virus:

YF-Control Compound-Cytotoxicity Performance: The 120 cytotoxicity values of the positive control compound Selenazofurin are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 17.90 μg/ml (SD $\pm$ 9.00) and the median was 16.05 μg/ml (range of 2.81 - 32 μg/ml).

As can be seen in **Figure 51-A**, a definite TC_{25} toxicity value can be measured with 32 μg/ml 0.5 $\log_{10}$ scale. Further increase in the concentration of Selenazofurin would be needed to consistently evaluate the maximum cytotoxicity of Selenazofurin.

Also, **Figure 51-A** indicates that when the cytotoxicity reaches ~20% at 10 μg/ml, the control compound (Selenazofurin) has reached simultaneously its maximum antiviral effect. The cytotoxic effect of Selenazofurin is insignificant below 3.2 μg/ml. The average cytotoxicity reached ~40% at 32 μg/ml, which was the highest Selenazofurin concentration in most tests.

Selenazofurin has a definite cytotoxic suppression on cellular metabolism and growth. The TC_{25} toxicity can be achieved with the 32 μg/ml concentration of Selenazofurin. Therefore, a readjustment to 100 μg/ml (as being the highest Selenazofurin concentration tested) is not needed. However, at this concentration (32 μg/ml) the TC_{50} cannot yet be measured consistently.

4.2.1.1.4 YF-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Selenazofurin): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in Figures 53-A, 54-A and 55-A.

YF-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 120 control assays is plotted in Figure 53-A. The results indicate that the cell O.D. readings reached a mean 1.228 (SD ± 1.55) with a median of 1.233 (range of 0.853 - 1.570). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

YF-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 120 control assays is presented in Figure 54-A. The results indicate that the average virus load O.D. reading is 0.397 (SD ± 0.122) with a median of 0.379 (0.155 - 0.697). This demonstrates that a reasonable cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with consistent viral CPE results.

YF-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 120 control assays is provided in Figure 55-A. The results indicate that the average differential O.D. reading is 0.831 (SD ± 0.152) with a median of 0.821 (range 0.516 - 1.256). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 83% measurement accuracy.

VARIATION OF THE CELL (LOAD) CONTROLS
YF VIRUS -- VS -- SELENAZOFURIN
(PRESCREEN ASSAY)

Figure 53-A

VARIATION OF THE VIRUS (LOAD) CONTROLS
YF VIRUS -- VS -- SELENAZOFURIN
(PRESCREEN ASSAY)

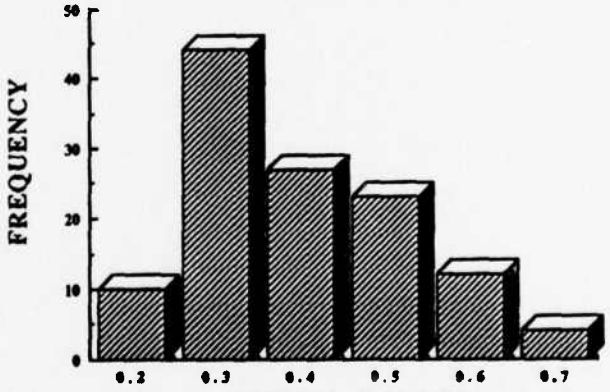


Figure 54-A

VARIATION OF THE TEST DIFFERENTIAL
YF VIRUS -- VS -- SELENAZOFURIN
(PRESCREEN ASSAY)

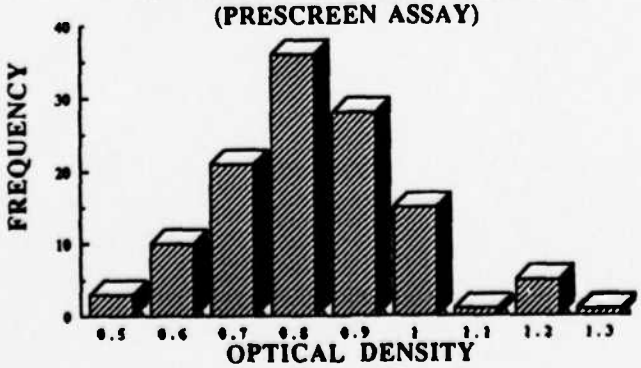


Figure 55-A

4.2.1.1 **Prescreen YF-Quality Controls:**

4.2.1.1.1 **Antiviral Activity of 2-Thio-6-Azauridine vs YF Virus:** A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in **Figure 51-B** for 52 tests performed during June 1989 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible second control compound against YF in these MTT-assay prescreens. The mean and median antiviral inhibition and cytotoxicity patterns of the second positive control drug are illustrated in **Figure 51-B**.

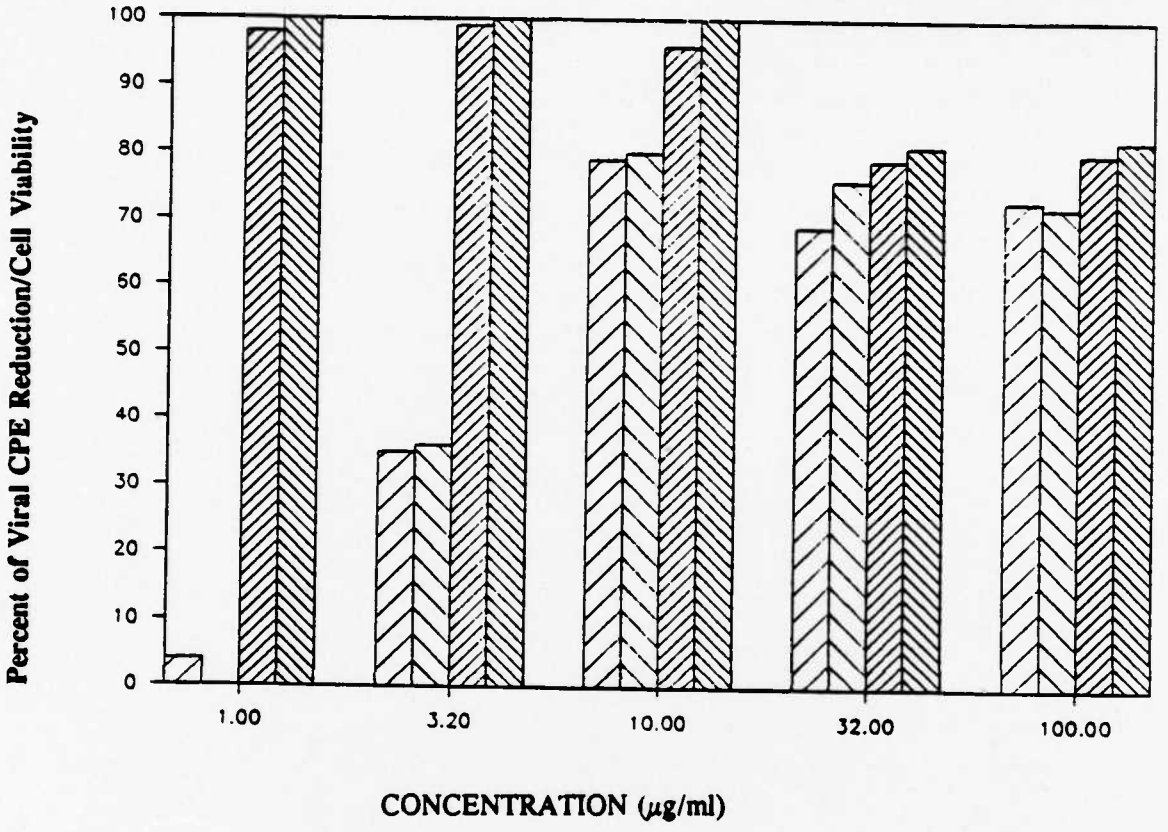
The 52 control tests performed with 2-Thio-6-Azauridine gave a mean **Selectivity Index (SI)** of 8.14 (SD $\pm$ 4.60) and the median value was 7.70, indicating moderate antiviral selectivity for 2-Thio-6-Azauridine. The reason for this discrepancy is that even at 100 μg/ml the maximum cytotoxic effect does not consistently reach 25% reduction level, thus SI calculations cannot be executed properly. (SI is calculated by dividing the TC_{25} by the IC_{50}).

The mean **Antiviral Inhibitory Concentration 50%** (IC_{50}) was 5.66 μg/ml (SD $\pm$ 4.75). The median IC_{50} value was 4.74 μg/ml. This indicates that 2-Thio-6-Azauridine does reach 50% antiviral reduction levels, consistently at 10 μg/ml concentration. During this reporting period, the highest concentration of 2-Thio-6-Azauridine was varied from 1 to 320 μg/ml to properly evaluate the maximum antiviral effect and cytotoxicity pattern of 2-Thio-6-Azauridine.

The maximum antiviral inhibitory level of 52 2-Thio-6-Azauridine tests **(Figure 51-B)** varies depending upon which drug concentration scale is used. Maximum antiviral effect ($\sim$80%) was found with a simultaneous $\sim$5% cytotoxic suppression. Above 10 μg/ml concentration 2-Thio-6-Azauridine starts to lose its antiviral potency with increasing cytotoxicity. An increase of the concentration of 2-Thio-6-Azauridine to 100 μg/ml does not improve the antiviral activity **(Figure 51-B)**.

In the present 52 assays we tested 2-Thio-6-Azauridine at 0.5 $\log_{10}$ scale concentrations (1 - 32 μg/ml) to maximize the correct measurements of its antiviral and cytotoxicity effects. This enabled us to monitor our quality control parameters more accurately.

2-THIO-6-AZAURIDINE -VS- YF (PRE-SCREEN) VIRUS



Conc.(µg/ml)	1	3.2	10	32	100	1	3.2	10	32	100
Mean	4	35	79	69	73	98	99	96	79	80
Median	0	36	80	76	72	100	100	100	81	82
Std. Dev.	0.09	0.24	0.19	0.23	0.08	0.04	0.03	0.06	0.14	0.08

Figure 51-B
Average Antiviral and Cytotoxicity Values for 52 Positive Control Compound Tests

4.2.1.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs YF Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 52-B) depicts the distribution of the maximum antiviral reduction values of all 52 control compound prescreen assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 86% (SD ± 13.50) reduction levels. The maximum reduction levels vary from 56 - 100% but remain quite consistently around the median of 87.5%. The assay control values give a shifted bell-shaped distribution curve toward the median 87.5% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the YF prescreen-MTT assay.

During this period the positive control compound performance criteria for 2-Thio-6-Azauridine versus the YF virus in the pre-screen format has not been set to a definite endpoint. We have collected data in order to find out what would constitute a reasonable quality control endpoint and the data indicates that it could be set at the 50% reduction level. In order to measure the maximum antiviral endpoints of 2-Thio-6-Azauridine correctly, the concentration scale and the highest concentration to be used, must be evaluated at the proper (semi-log) scale (1 - 32 μg/ml) as seen in Figure 51-B.

2-Thio-6-Azauridine is active *in vitro* against YF virus and functions as a better quality control compound than our present control, Selenazofurin.

Variation of the Maximum Antiviral Effect
YF Virus - VS - 2-Thio-6-Azauridine (Prescreen Protocol)

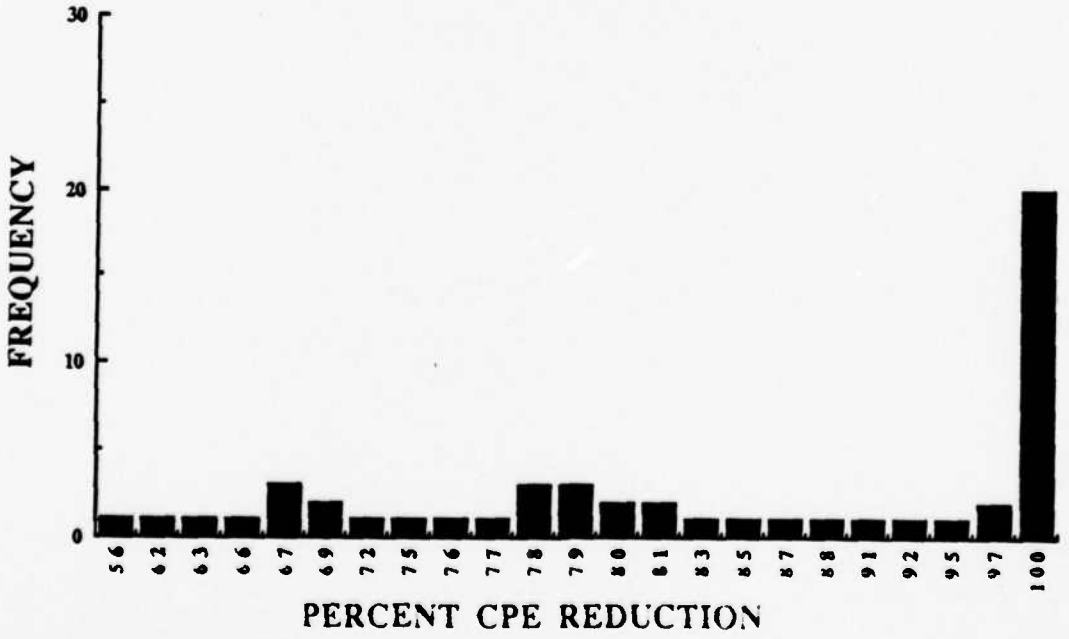


Figure 52-B
Maximum Antiviral CPE Reduction (%).
Summary of 52 Control Tests.

4.2.1.1.3 Cellular Cytotoxicity of 2-Thio-6-Azauridine vs YF Virus:

YF-Control Compound-Cytotoxicity Performance: The 52 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 35.5 μg/ml (SD ± 22.00) and the median was 32.00 μg/ml (range of 9.75 - 108 μg/ml).

As can be seen from **Figure 51-B**, no definite TC_{25} toxicity value can be consistently measured with a 100 μg/ml $\log_{10}$ scale. Further increase in the concentration of 2-Thio-6-Azauridine would be needed to properly evaluate the maximum cytotoxicity of 2-Thio-6-Azauridine.

Figure 51-B, indicates that when the cytotoxicity reaches ~0 - 5% at 10 μg/ml, the control compound (2-Thio-6-Azauridine) has reached simultaneously its maximum antiviral effect. The cytotoxic effect of 2-Thio-6-Azauridine is insignificant between 1 and 10 μg/ml. The average cytotoxicity reached ~20% at 100 μg/ml, which was the highest 2-Thio-6-Azauridine concentration in most tests.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} and TC_{50} toxicity could not be consistently achieved with the 100 μg/ml concentration of 2-Thio-6-Azauridine. Therefore, a readjustment to 320 μg/ml (as being the highest 2-Thio-6-Azauridine concentration tested) would be needed to properly evaluate the TC_{25} endpoint. However, at this concentration (100 μg/ml) the IC_{50} cannot be measured consistently.

4.2.1.1.4 YF-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of June, 1989 through January, 1991 is presented in **Figures 53-B, 54-B, and 55-B.**

YF-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 52 control assays is plotted in **Figure 53-B.** The results indicate that the cell O.D. readings reached a mean 1.210 (SD ± 0.160) with a median of 1.210 (range of 0.890 - 1.570). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

YF-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 52 control assays is presented in **Figure 54-B.** The results indicate that the average virus load O.D. reading is 0.350 (SD ± 0.140) with a median of 0.340 (range of 0.140 - 0.680). This demonstrates that a reasonable cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with consistent viral CPE results.

YF-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 52 control assays is provided in **Figure 55-B.** The results indicate that the average differential O.D. reading is 0.850 (SD ± 0.130) with a median of 0.860 (range 0.538 - 1.195). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 86% measurement accuracy.

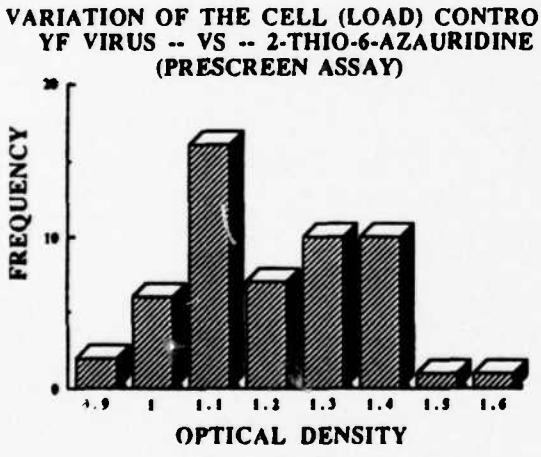


Figure 53-B

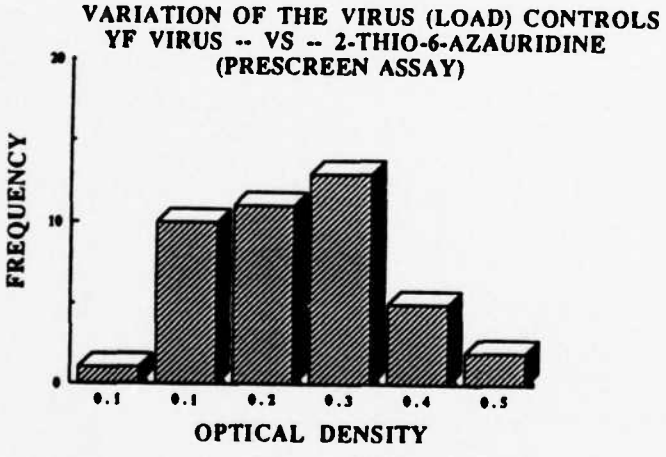


Figure 54-B

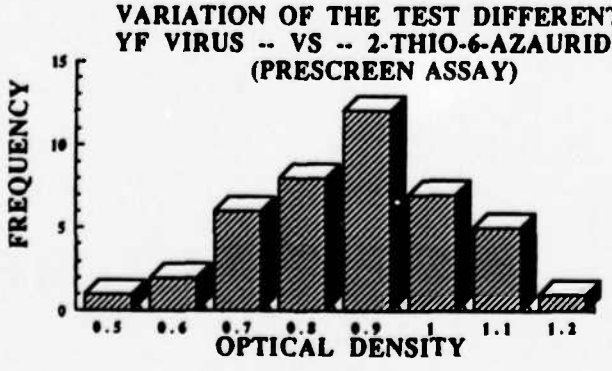


Figure 55-B

4.2.1.2 Prescreen YF-Antiviral Activity Results:

New Drugs with 50% Antiviral Reduction Levels: Out of the 3606 accepted single drug tests, 61 new compounds demonstrated antiviral activity, having antiviral reduction values better than 50%. This represents around 1.7% of the test compounds being active at this antiviral reduction level. These compounds are summarized in **Table 31** according to the highest **Selectivity Index (SI)**. One compound, B723123, demonstrated the best antiviral promise having an SI of 325. Six compounds demonstrated moderate antiviral activity, having SI's from 22 - 56. The rest (54) demonstrated minimal antiviral selectivity with SI's that ranged from < 1 - 11.

Table 31

New Prescreen Drugs that Produced 50% Antiviral Reduction Against YF Virus

DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B723123	YF	X2V	5P	06/20/90	325.00 <	1.00 >	325.00
B721173	YF	V0O	4P	04/05/90	325.00	5.80	56.05
B722182	YF	0K8		11/22/89	163.00	3.70	44.17
B722116	YF	ZDQ	9P	10/09/90	182.00	4.43	41.10
B722241	YF	0KD		11/22/89	> 1000.0	31.60 >	31.62
B723412	YF	XI0	6P	07/12/90	227.00	7.99	28.40
B721568	YF	0AE		08/09/89	360.00	16.20	22.24
4279	YF	09W		08/03/89	32.50	2.97	10.95
4280	YF	09W		08/03/89	32.50	3.00	10.83
B721511	YF	09X		08/03/89	330.00	30.50	10.81
B721899	YF	0J2		11/08/89	325.00	30.90	10.52
B724898	YF	0FN		09/27/89	322.00	37.30	8.65
B722183	YF	0K8		11/22/89	270.00	36.10	7.48
GRP19380	YF	WO4	4P	06/07/90	10.40	1.40	7.46
B724618	YF	0AN		08/09/89	248.00	37.10	6.69
B721823	YF	0GC		10/04/89	> 1000.0	154.00 >	6.51
4276	YF	09V		08/03/89	32.50	5.06	6.42
B724610	YF	0AL		08/09/89	262.00	45.10	5.82
B722239	YF	0KD		11/22/89	244.00	43.60	5.60
B724701	YF	0CQ		08/24/89	227.00	42.20	5.39
B724592	YF	0AI		08/09/89	204.00	41.40	4.94
B724466	YF	07Y		07/12/89	218.00	45.70	4.77
2630	YF	05N		06/21/89	100.00	22.30	4.49
B722111	YF	0JQ		11/15/89	175.00	45.30	3.85
B721754	YF	065		06/29/89	360.00	97.10	3.71
GRP19396	YF	WOK	4P	06/08/90	230.00	62.20	3.70
B724468	YF	07Y		07/12/89	329.00	98.80	3.33
B723141	YF	X2Y	5P	06/20/90	> 1000.0	316.00 >	3.16
B721953	YF	0J2		11/08/89	> 1000.0	320.00 >	3.13
B722165	YF	0JV		11/15/89	> 1000.0	345.00 >	2.90
B721728	YF	05Q		06/21/89	1000.0	447.00	2.24
B724844	YF	0EZ		09/14/89	110.00	50.50	2.18
B724852	YF	0F1		09/14/89	142.00	67.90	2.09
B722246	YF	0KE		11/22/89	118.00	62.70	1.89
B724530	YF	09G		07/26/89	126.00	68.70	1.84
B724863	YF	0FG		09/27/89	125.00	69.30	1.81
B721823	YF	0I3		10/25/89	> 1000.0	574.00 >	1.74
B722109	YF	0JQ		11/15/89	155.00	90.70	1.71
B724812	YF	0ET		09/14/89	135.00	80.10	1.69
B722824	YF	UBS	3P	03/07/90	53.10	31.50	1.68
B722248	YF	151	9P	11/08/90	> 1000.0	602.00 >	1.66
B722518	YF	UKZ	3P	03/16/90	942.00	586.00	1.61
B721702	YF	05M		06/21/89	1000.0	748.00	1.34
B722181	YF	0JW		11/15/89	123.00	93.90	1.31
B721166	YF	09V		08/03/89	589.00	451.00	1.30
B724772	YF	0G4		10/04/89	92.80	73.90	1.26
B723441	YF	ZRY	10	10/30/90	> 1000.0	805.00 >	1.24
B723427	YF	ZRU	10	10/26/90	> 1000.0	890.00 >	1.12
B721714	YF	05O		06/21/89	1000.0	919.00	1.09
B722247	YF	0KE		11/22/89	69.70	65.50	1.06

Table 31 (Cont'd)

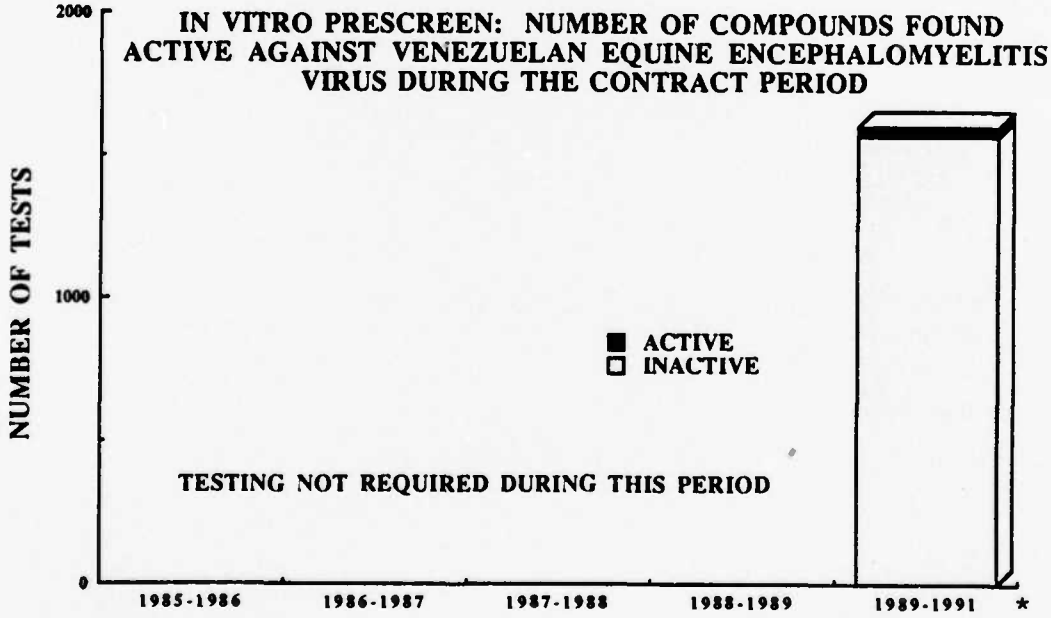
DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B722087	YF	0JA		11/08/89	736.00	703.00	1.05
B724442	YF	07T		07/12/89	730.00	715.00	1.02
B723436	YF	ZRX	10	10/30/90	> 1000.0	1000.0 >	1.00
B848752	YF	2M6	11P	01/17/91	> 3200.0	3200.0 >	1.00
B724654	YF	0BH		08/16/89	8.08	8.54	0.95
B724510	YF	09C		07/26/89	698.00	808.00	0.86
B724731	YF	0D6		08/30/89	598.00	692.00	0.86
B724663	YF	0BJ		08/16/89	56.80	68.10	0.83
B724657	YF	0BI		08/16/89	493.00	786.00	0.63
B721559	YF	09V		08/03/89	457.00	798.00	0.57
B721770	YF	067		06/29/89	79.10	316.00	0.25

The *in vitro* antiviral activity of the compounds in **Table 31** should be further confirmed. Verification of the antiviral activity of these prescreen actives was done using the primary screening (confirmatory) protocol. **(See Table 34)**

4.2.2 Prescreen Assay (Venezuelan Equine Encephalomyelitis Virus [VE]):

The number of single drug tests carried against VE during this contract period is summarized in yearly increments in **Figure 56**. During this seven-month period (June, 1990 - January, 1991) 2235 tests were performed against the VE-virus with the MTT-assay format. Out of these, 126 were control compound assays-selenazofurin (AVS-0253) being the primary positive control compound. Three hundred ninety-nine (399) tests were internal (+ + +) virus load, cell load, and other quality control tests. One hundred forty-five (145) tests were considered unsatisfactory based on the preliminary criteria of the quality controls set during this reporting period. The rest, totaling 1565 were actual single drug tests. The total number of tests (2235) represents testing for an seven-month period since we only added the VE virus to the prescreen assay protocol in June 1990. The 145 unsatisfactory tests represent a 6.5% rejection rate based on present preliminary quality control parameters used for the VE-virus.

Out of the 1565 test compounds, 30 demonstrated antiviral activity at greater than 50% reduction levels. This represents 2% of the tested compounds having *in vitro* antiviral activity against VE-virus. The remainder, 1535 compounds (98%), are to be considered inactive with present quality control and assay protocols.



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	0	0	0	0	30	30
Number Inactive	0	0	0	0	1535	1535
Yearly Total (Accepted Single Drug Tests)	**0**	**0**	**0**	**0**	**1565**	**1565**

* Represents 7-month period (June 1, 1990 - January 31, 1991)

Figure 56

4.2.2.1 **Prescreen VE-Quality Controls:** Two positive control compounds (Selenazofurin and 2-Thio-6 Azauridine) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to or better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.2.2.1.1 **Antiviral Activity of Selenazofurin vs VE Virus:** A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0253 (Selenazofurin) is presented in **Figure 57-A** for 119 tests performed during June, 1990 through January, 1991.

Control Compound-Antiviral Performance: Selenazofurin (AVS-0253) has been the sole control compound against VE in these MTT-assay prescreens. The mean and median antiviral inhibition a cytotoxicity patterns of the positive control drug (Selenazofurin) are illustrated in **Figure 57-A.**

The 119 control tests performed with Selenazofurin gave a mean **Selectivity Index (SI)** of 4.60 (SD $\pm$ 6.60) and the median value was 2.40, indicating poor antiviral selectivity for Selenazofurin. SI is calculated by dividing the TC_{25} by the IC_{50}.

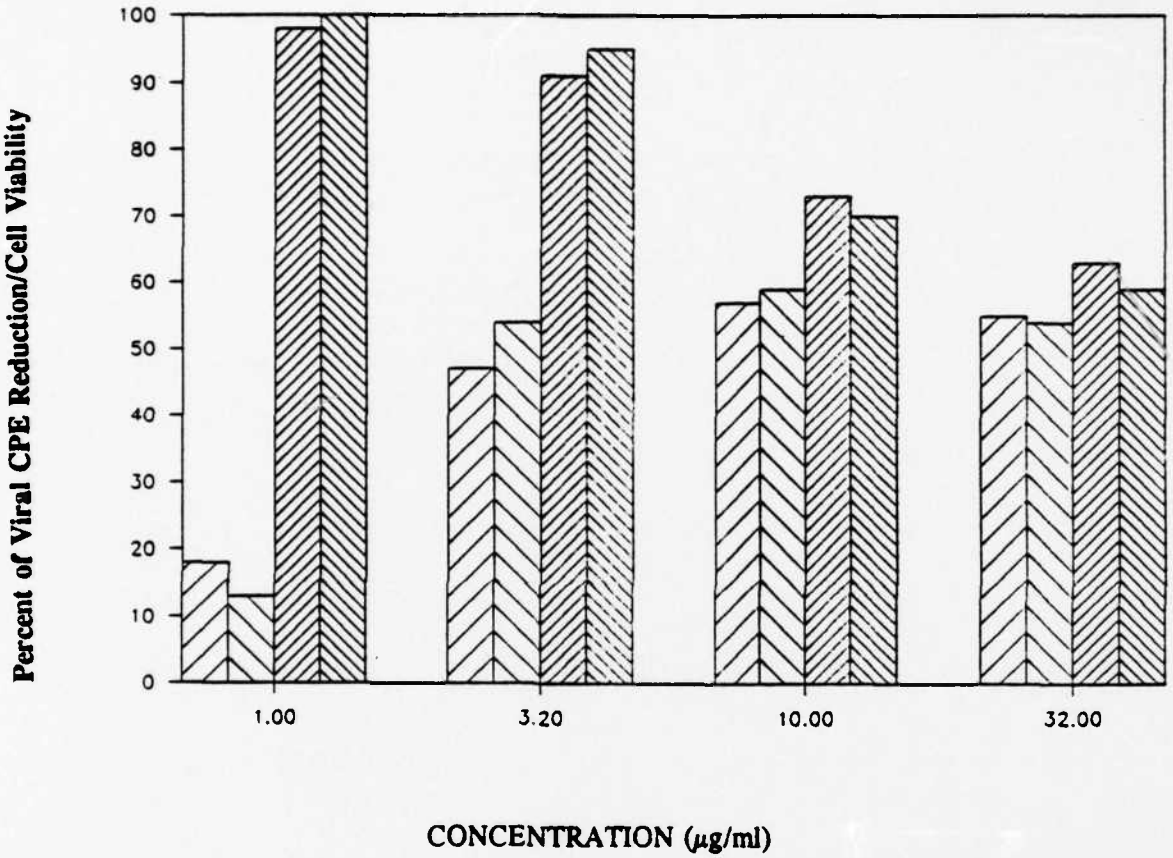
The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 5.30 μg/ml (SD $\pm$ 7.40). The median IC_{50} value was 2.60 μg/ml. This indicates that Selenazofurin does reach 50% antiviral reduction levels reasonably well at 3.2 - 32 μg/ml concentrations **(Figure 57-A).** During this reporting period, the highest and lowest concentrations of Selenazofurin was varied from 0.32 to 320 μg/ml to properly evaluate the maximum antiviral effect and cytotoxicity pattern of Selenazofurin. These statistics are based on 119 values tested using the 1 - 32 μg/ml 0.5 $\log_{10}$ scale.

The average maximum antiviral inhibitory level of 119 Selenazofurin tests **(Figures 57-A)** was reached at 10 μg/ml of compound with 59% antiviral effect. Maximum antiviral effect ($\sim$59%) was found with a simultaneous $\sim$30% cytotoxic suppression. Above this concentration (10 μg/ml) Selenazofurin starts to lose its antiviral potency with increasing cytotoxicity **(Figure 57-A).** An increase of the concentration of Selenazofurin to 100 - 320 μg/ml does not improve the antiviral activity **(Figure 57-A).** Actually antiviral activity decreases from 59% (at 10 μg/ml) to $\sim$10% (at 320 μg/ml).

As reported previously in the 9th semiannual report, depending upon which concentration scale is used (log or semilog scale) a different maximum antiviral value is obtained.

In the present, we tested 119 control assays with Selenazofurin at 0.5 $\log_{10}$ scale from 1 - 32 μg/ml to maximize the correct measurements of its antiviral and cytotoxicity effects. This enabled us to monitor our quality control parameters more accurately.

SELENAZOFURIN -VS- VE VIRUS
(PRESCREEN PROTOCOL)



	% Viral CPE Reduction				% Cell Viability			
Conc. (μg/ml)	**1**	**3.2**	**10**	**32**	**1**	**3.2**	**10**	**32**
Mean	18	47	57	55	98	91	73	63
Median	13	54	59	54	100	95	70	59
Std. Dev.	0.16	0.26	0.21	0.14	.04	0.11	0.18	0.18

Figure 57-A
Average Antiviral and Cytotoxicity Values for 119 Positive Control Compound Assays

4.2.2.1.2 Maximum Antiviral Effect of Selenazofurin vs VE Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Selenazofurin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 58-A) depicts the distribution of the maximum antiviral reduction values of all 119 control compound prescreen assays for Selenazofurin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 64% (SD ± 15.20) reduction levels. The maximum reduction levels vary from 25 - 100% but remain quite consistently around the median of 62%. The assay control values give a reasonable bell-shaped distribution curve toward the median 62% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the VE prescreen-MTT assay.

During this period the positive control compound performance criteria for Selenazofurin versus the VE virus in the pre-screen format has not been set to a definite endpoint. We have collected data in order to find out what would constitute a reasonable quality control endpoint and the data indicates that it could be set at the 50% reduction level. In order to measure the maximum antiviral endpoints of Selenazofurin correctly, the concentration scale and the highest concentration to be used, must be evaluated at the proper (semi-log) scale as seen in Figure 57-A.

Selenazofurin is active *in vitro* against VE virus and functions as a reasonable quality control compound. On the other hand, regardless of the performance of the VE-quality control drug Selenazofurin, around 30 other compounds have equal or better antiviral activity against VE virus than AVS-0253.

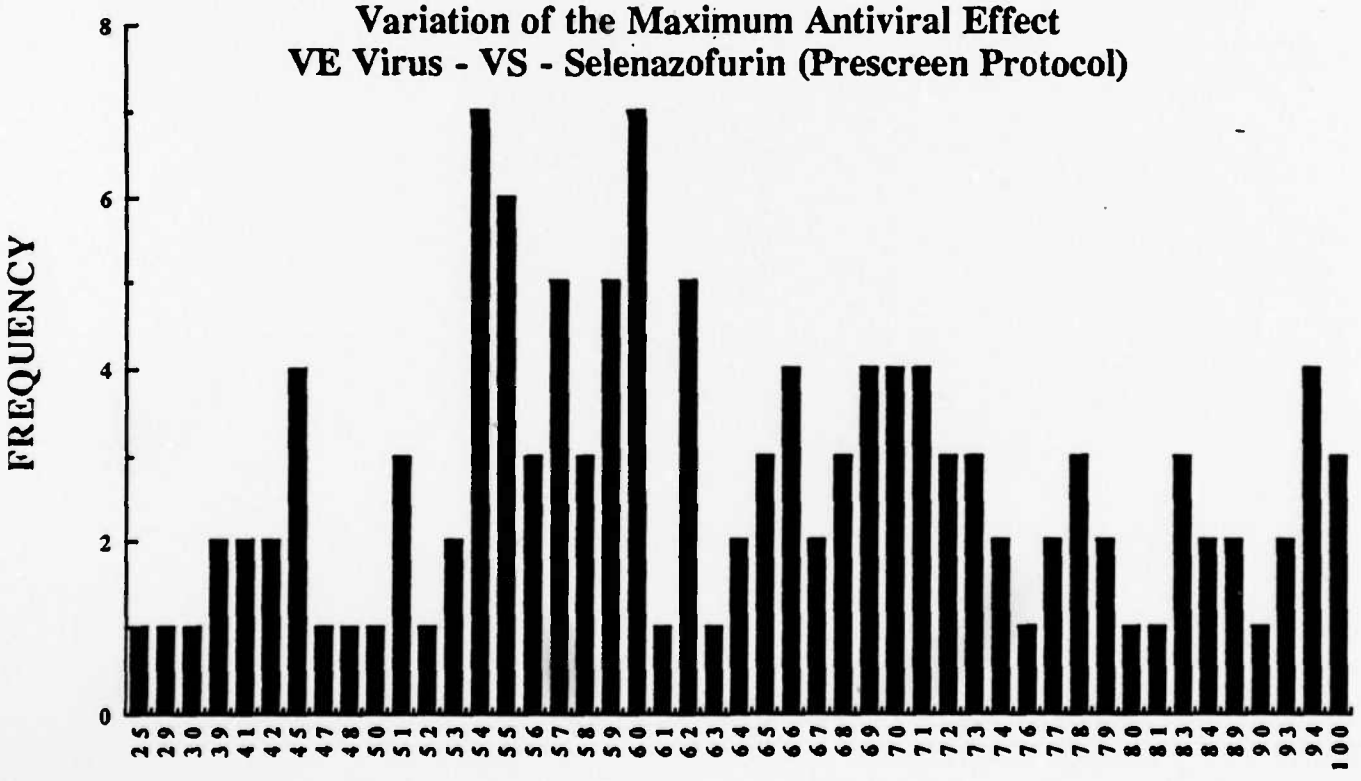


Figure 58-A
Maximum Antiviral CPE Reduction (%).
Summary of 119 Control Tests.

4.2.2.1.3 Cellular Cytotoxicity of Selenazofurin vs VE Virus:

VE-Control Compound-Cytotoxicity Performance: The 119 cytotoxicity values of the positive control compound Selenazofurin are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 14.40 μg/ml (SD ± 11.10) and the median was 8.40 μg/ml (range of 1.0 - 32 μg/ml). The reason for this discrepancy is that at 32 μg/ml scale, neither the TC_{25} cytotoxicity or the IC_{50} cannot always be measured accurately.

As can be seen from **Figure 57-A**, a definite TC_{25} toxicity value can be measured with a 32 μg/ml $\log_{10}$ scale. Further increase in the concentration of Selenazofurin would be needed to consistently evaluate the maximum cytotoxicity of Selenazofurin. Also, **Figure 57-A** indicates that when the cytotoxicity reaches ~25 - 30% at 10 μg/ml, the control compound (Selenazofurin) has reached simultaneously its maximum antiviral effect. The cytotoxic effect of Selenazofurin is insignificant below 3.2 μg/ml. The average cytotoxicity reached ~30% at 32 μg/ml, which was the highest Selenazofurin concentration in most tests.

Selenazofurin has a definite cytotoxic suppression on cellular metabolism and growth, however, the TC_{25} and TC_{50} toxicity can be achieved with reasonable consistency at 32 μg/ml concentration. Therefore, a readjustment to 100 μg/ml (as being the highest Selenazofurin concentration tested) is not needed. However, at this concentration (100 μg/ml) the IC_{50} cannot yet be measured accurately.

4.2.2.1.4 VE-Assay Plate Quality Controls: Cell Load and Virus Load Parameters: The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of June, 1990 through January, 1991, is presented in **Figures 59-A, 60-A and 61-A.**

VE-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 119 control assays is plotted in **Figure 59-A.** The results indicate that the cell O.D. readings reached a mean 1.200 (SD $\pm$ 0.150) with a median of 1.230 (range of 0.530 - 1.600). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

VE-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 119 control assays is presented in **Figure 60-A.** The results indicate that the average virus load O.D. reading is 0.020 (SD $\pm$ 0.030) with a median of 0.020 (range of 0 - 0.160). This demonstrates that a reasonable cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with consistent viral CPE results.

VE-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 119 control assays is provided in **Figure 61-A.** The results indicate that the average differential O.D. reading is 1.140 (SD $\pm$ 0.180) with a median of 1.160 (range 0.572 - 1.568). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 85% measurement accuracy.

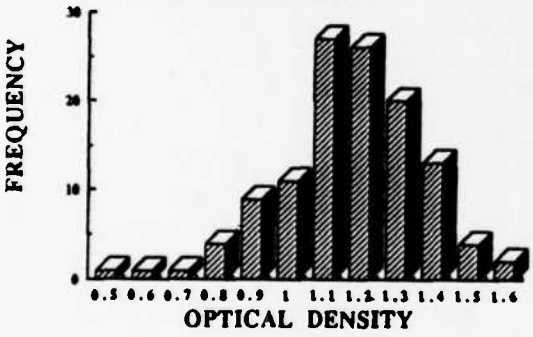


Figure 59-A

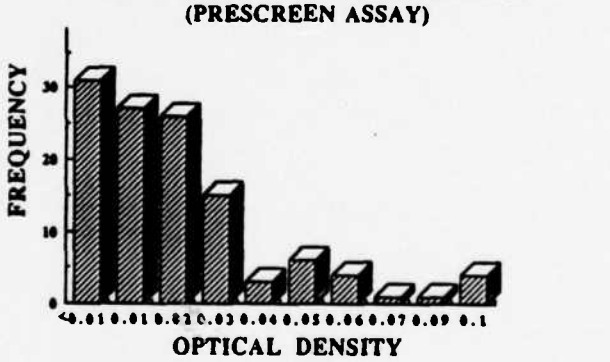


Figure 60-A

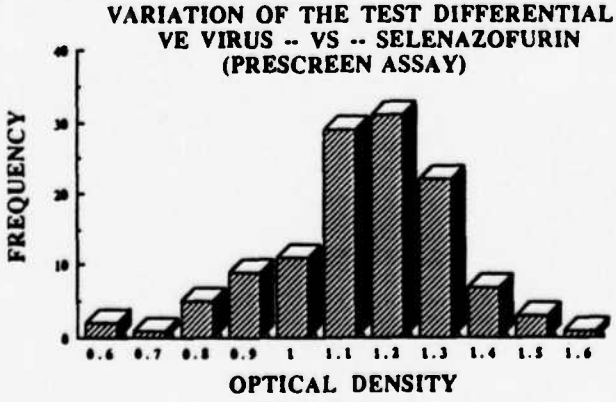


Figure 61-A

4.2.2.1 **Prescreen VE-Quality Controls:**

4.2.2.1.1 **Antiviral Activity of 2-Thio-6-Azauridine vs VE Virus:** A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in **Figure 57-B** for 50 tests performed during June, 1990 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible second control compound against VE in these MTT-assay prescreens. The mean and median antiviral inhibition and cytotoxicity patterns of the second positive control drug are illustrated in **Figure 57-B**.

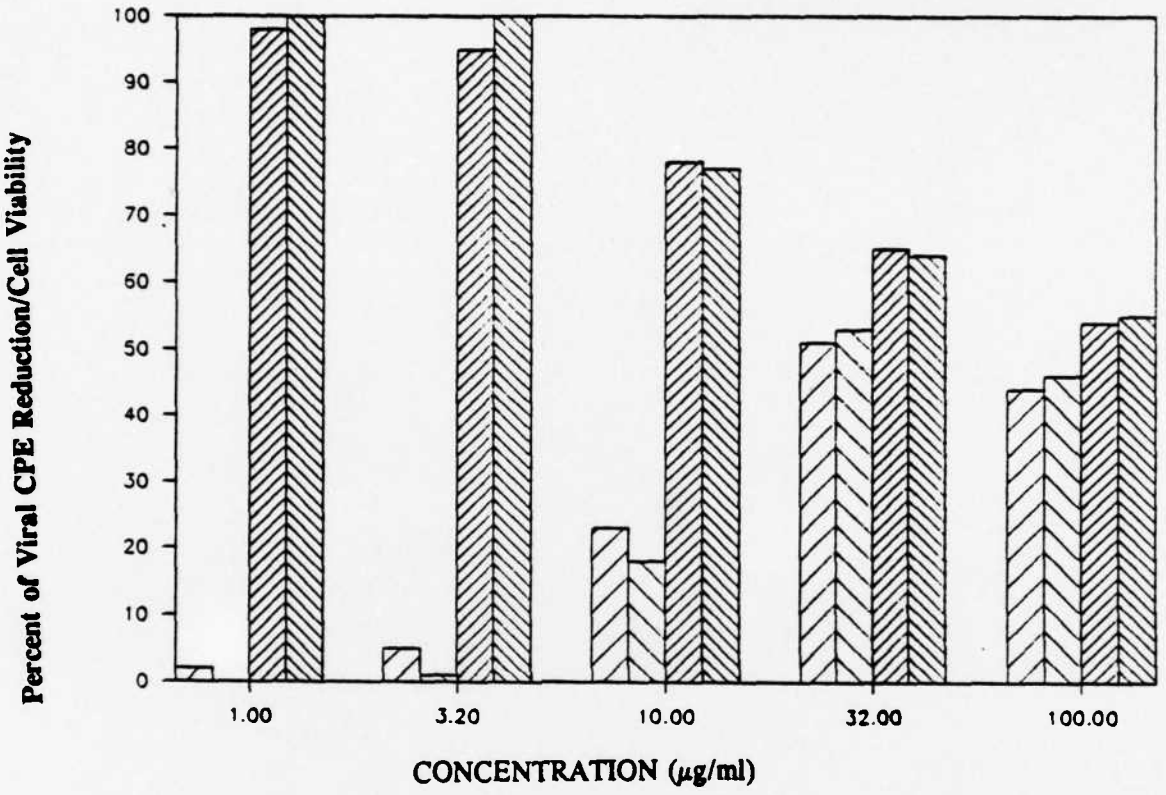
The 50 control tests performed with 2-Thio-6-Azauridine gave a mean Selectivity Index (SI) of 0.69 (SD $\pm$ 0.78) and the median value was 0.42, indicating poor antiviral selectivity for 2-Thio-6-Azauridine. The reason for this discrepancy is that even at 100 μg/ml the maximum antiviral effect does not consistently reach 50% reduction level, thus SI calculations cannot be executed properly. SI is calculated by dividing the TC_{25} by the IC_{50}.

The mean Antiviral Inhibitory Concentration 50% (IC_{50}) was 13.00 μg/ml (SD $\pm$ 12.00). The median IC_{50} value was 13.70 μg/ml. This indicates that 2-Thio-6-Azauridine does reach 50% antiviral reduction levels, with reasonable consistently at 32 μg/ml maximum concentration. During this reporting period, the highest and lowest concentration of 2-Thio-6-Azauridine was varied from 1 to 320 μg/ml to properly evaluate the maximum antiviral effect and cytotoxicity pattern of 2-Thio-6-Azauridine. The statistics are based on 50 assays tested using the 1 - 100 μg/ml 0.5 $\log_{10}$ scale.

The average maximum antiviral inhibitory level of 50 2-Thio-6-Azauridine tests (Figure 57-B) was reached at 32 μg/ml of the compound with 53% antiviral effect. Maximum antiviral effect ($\sim$53%) was found with a simultaneous $\sim$35% cytotoxic suppression. Above 32.0 μg/ml concentration 2-Thio-6-Azauridine starts to lose its antiviral potency with increasing cytotoxicity. An increase of the concentration of 2-Thio-6-Azauridine to 100 - 320 μg/ml does not improve the antiviral activity (Figure 57-B). Actually antiviral activity decreases from 53% (at 32 μg/ml) to $\sim$10% (at 320 μg/ml).

In the present 50 assays, we tested 2-Thio-6-Azauridine at 0.5 $\log_{10}$ scale concentrations to maximize the correct measurements of its antiviral and cytotoxicity effects. This enabled us to monitor our quality control parameters more accurately.

2-THIO-6-AZAURIDINE -VS- VE (PRE-SCREEN) VIRUS



% Viral CPE Reduction

% Cell Viability

Conc.(μg/ml)	1	3.2	10	32	100	1	3.2	10	32	100
Mean	2	5	23	51	44	98	95	78	65	54
Median	0	1	18	53	46	100	100	77	64	55
Std. Dev.	0.07	0.09	0.21	0.13	0.11	0.05	0.09	0.15	0.10	0.11

Figure 57-B
Average Antiviral and Cytotoxicity Values for 50 Positive Control Compound Tests

4.2.2.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs VE Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 58-B) depicts the distribution of the maximum antiviral reduction values of all 50 control compound prescreen assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 52% (SD ± 13.50) reduction levels. The maximum reduction levels vary from 23 - 80% but remain quite consistently around the median of 54%. The assay control values give a reasonable bell-shaped distribution curve toward the median 54% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the VE prescreen-MTT assay.

During this period the positive control compound performance criteria for 2-Thio-6-Azauridine versus the VE virus in the pre-screen format has not been set to a definite endpoint. We have collected data in order to find out what would constitute a reasonable quality control endpoint and the data indicates that it could be set at the 25% reduction level. In order to measure the maximum antiviral endpoints of 2-Thio-6-Azauridine correctly, the concentration scale and the highest concentration to be used, must be evaluated at the proper (semi-log) scale of 1 - 32 μg/ml as seen in Figure 57-B.

2-Thio-6-Azauridine is active *in vitro* against VE virus and functions as a reasonable quality control compound similar to the present control compound Selenazofurin.

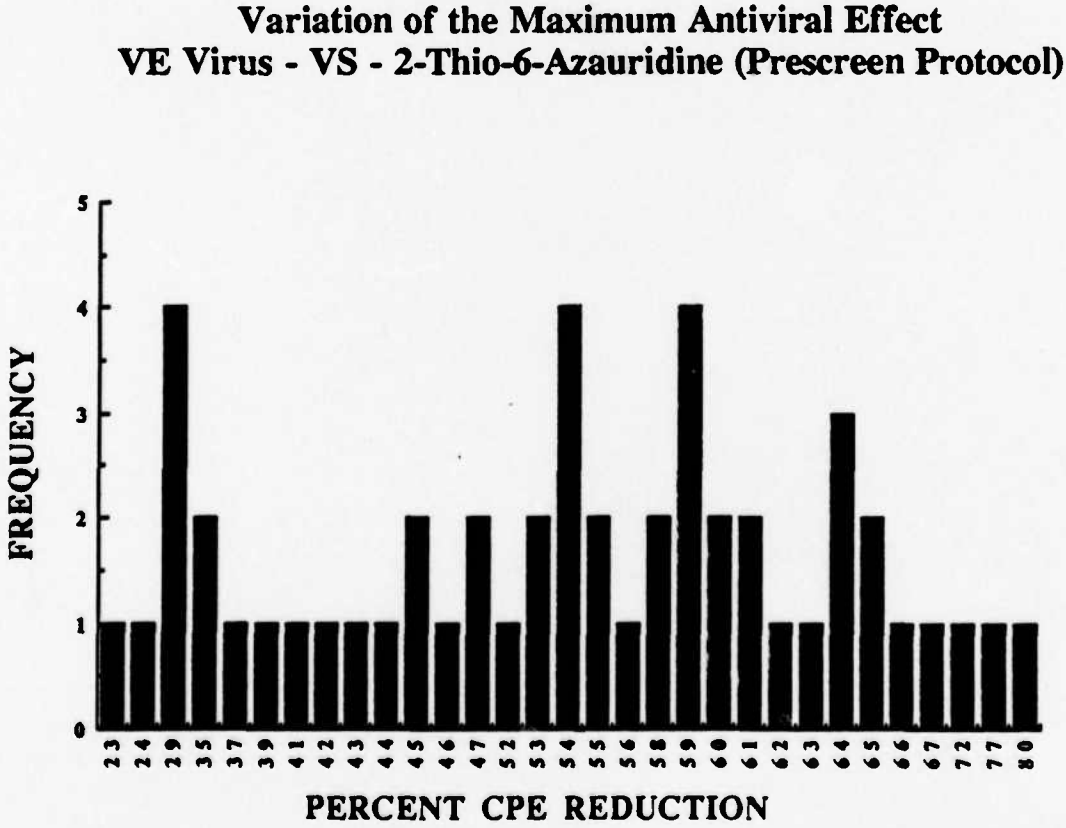


Figure 58-B
Maximum Antiviral CPE Reduction (%).
Summary of 50 Control Tests.

4.2.2.1.3 **Cellular Cytotoxicity of 2-Thio-6-Azauridine vs VE Virus:**

VE-Control Compound-Cytotoxicity Performance: The 50 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 18.70 μg/ml (SD $\pm$ 14.70) and the median was 13.00 μg/ml (range of 1.02 - 83.1 μg/ml).

As can be seen from **Figure 57-B**, a definite TC_{25} toxicity value can be consistently measured with 32 μg/ml at 0.5 $\log_{10}$ scale. Further increase in the concentration of 2-Thio-6-Azauridine would be needed to properly evaluate the maximum cytotoxicity.

Figure 57-B indicates that when the cytotoxicity reaches ~25 - 30% at 32 μg/ml, the control compound (2-Thio-6-Azauridine) as reached simultaneously its maximum antiviral effect. The cytotoxic effect of 2-Thio-6-Azauridine is insignificant below 3.2 μg/ml. The average cytotoxicity reached ~45% at 100 - 320 μg/ml, which was the highest 2-Thio-6-Azauridine concentration in most tests.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth, however, the TC_{25} and TC_{50} toxicity cannot be consistently measured at 100 μg/ml concentration of 2-Thio-6-Azauridine. Therefore, a readjustment to 100 - 320 μg/ml (as being the highest 2-Thio-6-Azauridine concentration tested) would be needed to properly evaluate the TC_{25} and TC_{50} endpoints. However, at this concentration (100 μg/ml) the IC_{50} cannot yet be measured accurately.

4.2.2.1.4 VE-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of June, 1990 through January, 1991 is presented in Figures 59-B, 60-B, and 61-B.

VE-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 50 control assays is plotted in Figure 59-B. The results indicate that the cell O.D. readings reached a mean 1.120 (SD ± 0.190) with a median of 1.120 (range of 0.810 - 1.550). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

VE-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 50 control assays is presented in Figure 60-B. The results indicate that the average virus load O.D. reading is 0.030 (SD ± 0.060) with a median of 0.020 (range of 0 - 0.330). This demonstrates that a reasonable cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with consistent viral CPE results.

VE-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 50 control assays is provided in Figure 61-B. The results indicate that the average differential O.D. reading is 1.090 (SD ± 0.190) with a median of 1.080 (range 0.786 - 1.519). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 92% measurement accuracy.

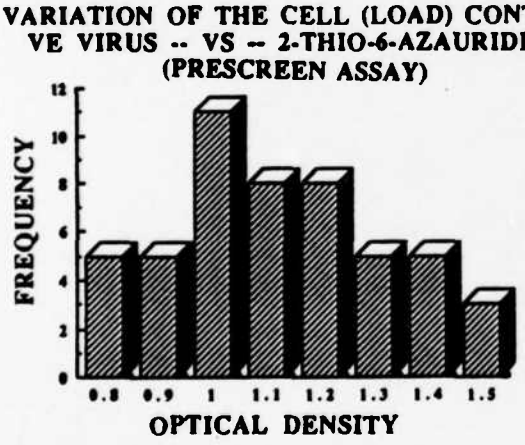


Figure 59-B

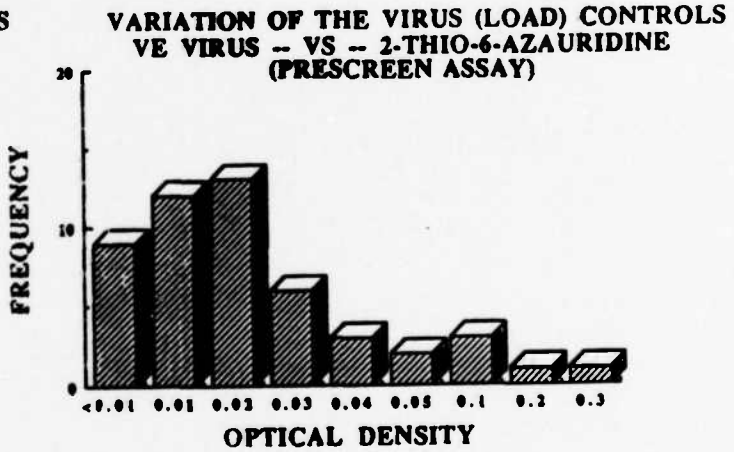


Figure 60-B

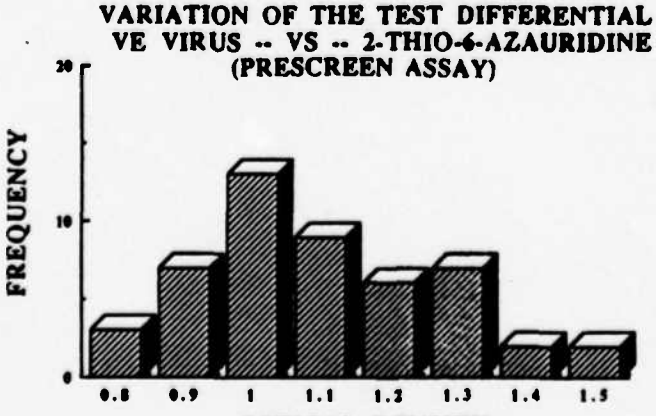


Figure 61-B

4.2.2.2 Prescreen VE-Antiviral Activity Results:

New Drugs with 50% Antiviral Reduction Levels: Out of the 1565 accepted single drug tests, 30 new compounds demonstrated antiviral activity, having antiviral reduction values better than 50%. This represents around 2.0% of the test compounds being active at this antiviral reduction level. These compounds are summarized in **Table 32** according to the highest **Selectivity Index (SI)**. B723096 demonstrated the best antiviral promise having a SI of around 5.0. Three other compounds demonstrated moderate antiviral activity, having SI's that ranged from 3 - 4. The other 26 compounds showed some degree of activity having SI's that ranged from 0.4 - 2.4.

Table 32

New Prescreen Drugs that Produced 50% Antiviral Reduction Against VE Virus

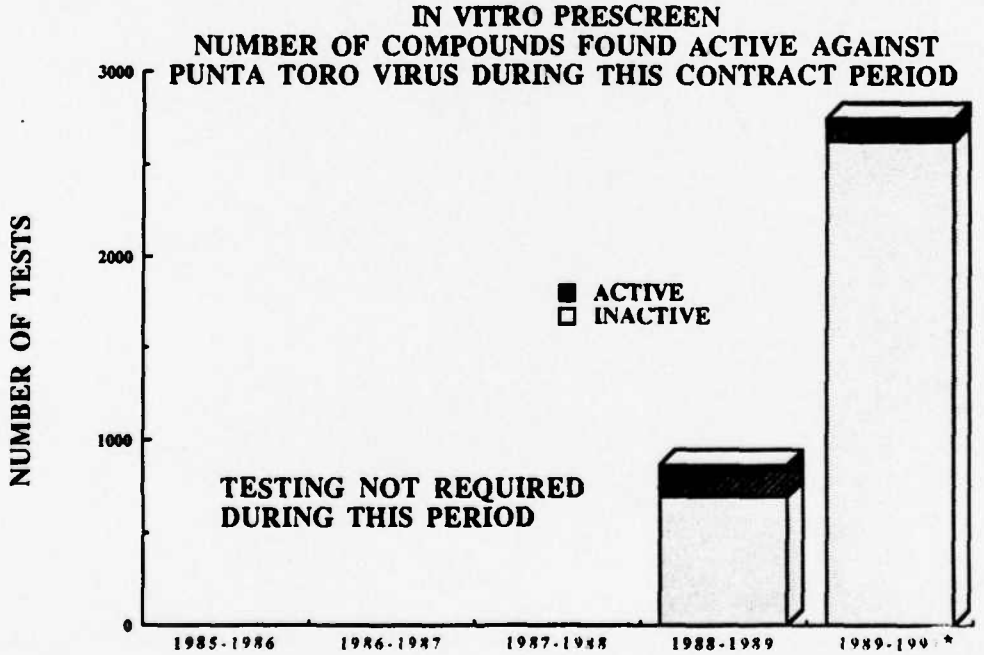
DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B723096	VE	WWY	5P	06/19/90	> 1000.0	208.00 >	4.80
B720933	VE	Z15	8P	09/28/90	> 1000.0	277.00 >	3.62
B723322	VE	XIC	6P	07/13/90	> 1000.0	343.00 >	2.91
B723148	VE	WWT	5P	06/19/90	> 1000.0	382.00 >	2.62
B723414	VE	XHU	6P	07/13/90	> 1000.0	419.00 >	2.39
B723802	VE	ZTP	10	11/02/90	> 1000.0	425.00 >	2.35
B723315	VE	XSE	6P	07/27/90	> 1000.0	466.00 >	2.15
B848727	VE	2J6	11P	01/17/91	> 3200.0	1490.0 >	2.15
B723247	VE	XHR	5P	07/13/90	> 1000.0	488.00 >	2.05
B723103	VE	WWZ	5P	06/19/90	> 1000.0	492.00 >	2.03
B848653	VE	2J4	11P	01/17/91	2670.0	1350.0	1.97
B723061	VE	WWW	5P	06/19/90	> 1000.0	525.00 >	1.91
B723250	VE	XO9	6P	07/20/90	> 1000.0	580.00 >	1.73
B723465	VE	ZSA	10	10/30/90	981.00	569.00	1.72
B719218	VE	22O	12P	12/18/90	> 1000.0	589.00 >	1.70
B723141	VE	WWS	5P	06/19/90	765.00	453.00	1.69
B723431	VE	14H	10P	11/09/90	880.00	537.00	1.64
B723409	VE	XHU	6P	07/13/90	> 1000.0	688.00 >	1.45
B723203	VE	X7W	5P	06/26/90	902.00	656.00	1.37
B723807	VE	ZTQ	10	11/02/90	720.00	596.00	1.21
B723136	VE	WWR	5P	06/19/90	> 1000.0	890.00 >	1.12
B723318	VE	XSF	6P	07/27/90	> 1000.0	1000.0 >	1.00
B723240	VE	X8N	5P	06/29/90	628.00	680.00	0.92
B723364	VE	XJA	6P	07/17/90	704.00	761.00	0.92
B723140	VE	WWR	5P	06/19/90	823.00	907.00	0.91
B848911	VE	1OS	12P	12/11/90	685.00	825.00	0.83
B723232	VE	X8L	5P	06/29/90	557.00	710.00	0.78
B723391	VE	XO7	6P	07/20/90	474.00	861.00	0.55
B723064	VE	WWW	5P	06/19/90	508.00	1000.0	0.51
B849177	VE	XIB	6P	07/13/90	278.00	746.00	0.37

The *in vitro* antiviral activity of the compounds in **Table 32** was further confirmed in most of the compounds. Verification of the antiviral activity of these prescreen actives was tested using the primary screening (confirmatory) protocol.

4.2.3 Prescreen Assay (Punta Toro Virus [PT])

The number of single drug tests carried against PT during this contract period is summarized in yearly increments in **Figure 62**. During this nineteen-month period (June, 1989 - January, 1991) 6026 tests were performed against the PT-virus with MTT-assay format. Out of these, 298 were control compound assays-ribavirin (AVS-0001) being the primary positive control compound. Nine hundred seventy-six (976) tests were internal (+++) virus load, cell load, and other quality control tests. One thousand one hundred thirty-four (1134) tests were considered unsatisfactory based on the preliminary criteria of the quality controls set during this reporting period. The rest, totaling 3618 were actual single drug tests. The 1134 unsatisfactory tests represent a 19% rejection rate based on present preliminary quality control parameters used for the PT-virus.

Out of the 3618 test compounds, 310 demonstrated antiviral activity at greater than 50% reduction levels. This represents around 9% of the tested compounds having *in vitro* antiviral activity against PT-virus. The remainder, 3308 compounds (91%), are to be considered inactive with present quality control and assay protocols.



Status	1985-1986	1986-1987	1987-1988	1988-1989	1989-1991 *	Five-Year Totals
Number Active	0	0	0	187	123	310
Number Inactive	0	0	0	682	2626	3308
Yearly Total (Accepted Single Drug Tests)	**0**	**0**	**0**	**869**	**2749**	**3618**

* Represents 14-month period (November 15, 1989 - January 31, 1991)

Figure 62

4.2.3.1 **Prescreen PT-Quality Controls:** Two positive control compounds (Ribavirin and 2-Thio-6 Azauridine) were used in the daily assay sets as antiviral activity quality controls. The antiviral performance of the unknown compounds is compared to that of the positive control compounds. Compounds with equal to or better antiviral potency are considered active and are worthy of further *in vitro* profile studies and *in vivo* testing.

4.2.3.1.1 **Antiviral Activity of Ribavirin vs PT Virus** A summary of the antiviral and cytotoxicity performance of the primary control compound, AVS-0001 (Ribavirin) is presented in **Figure 63-A** for 142 tests performed during November, 1989 through January, 1991.

Control Compound-Antiviral Performance: Ribavirin (AVS-0001) has been the sole control compound against PT in these MTT-assay prescreens. The mean and median antiviral inhibition and cytotoxicity patterns of the positive control drug (Ribavirin) are illustrated in **Figure 63-A.**

The 142 control tests performed with Ribavirin gave a mean **Selectivity Index** of 13.62 (SD ± 8.00) and the median value was 12.30 (range = 0.39 - 32.00), indicating moderate antiviral selectivity for Ribavirin. SI is calculated by dividing the TC_{25} by the IC_{50}.

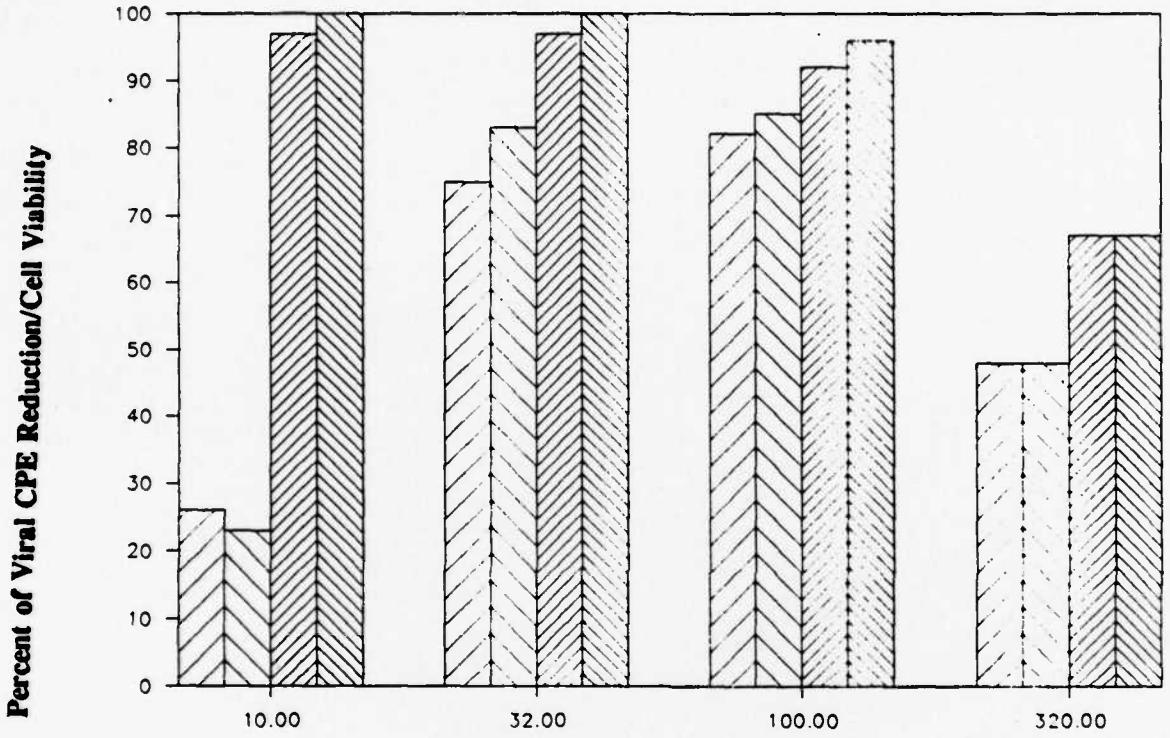
The mean **Antiviral Inhibitory Concentration 50% (IC_{50})** was 27.60 μg/ml (SD ± 40.90). The median IC_{50} value was 17.0 μg/ml (range = 0 - 320). This indicates that Ribavirin does reach 50% antiviral reduction levels, relatively consistent at 10 - 320 μg/ml (half $\log_{10}$) concentrations. During this reporting period, the highest and lowest concentration of Ribavirin was varied from 1 to 320 μg/ml to properly evaluate the maximum antiviral effect and cytotoxicity pattern of Ribavirin. The statistics are based on 142 values tested using the 10 - 320 half $\log_{10}$ scale.

The average maximum antiviral inhibitory level of 142 Ribavirin tests **(Figure 63-A)** was reached at 100 μg/ml of the compound with 85% antiviral effect. Maximum antiviral effect (~85%) was found with a simultaneous ~5% cytotoxic suppression. Above this concentration (100 μg/ml) Ribavirin starts to lose its antiviral potency with increasing cytotoxicity. An increase of the concentration of Ribavirin to 320 μg/ml, does not improve the antiviral activity **(Figure 63-A)**. The antiviral activity decreases from 85% (at 32 μg/ml) to 48% (at 320 μg/ml). The highest concentration (320) of Ribavirin is needed to properly evaluate the Cellular Toxicity 25% (TC_{25}) value.

As reported previously in the 9th semiannual report, a different maximum antiviral value is obtained depending upon which concentration scale is used. In those tests, the $\log_{10}$ scale of 100 - 0.1 measured more accurately the **antiviral effect** of the control compound, Ribavirin, whereas the $\log_{10}$ scale of 320-0.32 measured more accurately the **cytotoxicity effect.**

In the present 142 control assays, we tested Ribavirin at 0.5 $\log_{10}$ scale from 10 - 320 μg/ml concentrations to maximize the correct measurements of both the antiviral and cytotoxicity effects. This enables us to monitor our quality control parameters more accurately.

RIBAVIRIN -VS- PT VIRUS
(PRESCREEN PROTOCOL)



	% Viral CPE Reduction				% Cell Viability			
Conc.(µg/ml)	**10**	**32**	**100**	**320**	**10**	**32**	**100**	**320**
Mean	26	75	82	48	97	97	92	67
Median	23	83	85	48	100	100	96	67
Std. Dev.	0.19	0.24	0.15	0.21	0.05	0.06	0.10	0.18

Figure 63-A
Average Antiviral and Cytotoxicity Values for 142 Positive Control Compounds Assays

4.2.3.1.2 Maximum Antiviral Effect of Ribavirin vs PT Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound Ribavirin. This demonstrated the amount of infectious virus that was produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (**Figure 64-A**) depicts the distribution of the maximum antiviral reduction values of all 142 control compound prescreen assays for Ribavirin. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 88% (SD ± 12.00) reduction levels. The maximum reduction levels vary from 56 - 100% but remain quite consistently around the median of 90%. The assay control values give a shifted half-bell-shaped distribution curve toward the maximum 100% reduction level. This indicates quite a consistent day-to-day performance of the control compound in the PT prescreen-MTT assay.

During this period the positive control compound performance criteria for Ribavirin versus the PT virus in the pre-screen format has not been set to a definite endpoint. We have collected data in order to find out what would constitute a reasonable quality control endpoint and the data indicates that it could be set at the 50% reduction level. In order to measure the maximum antiviral endpoints of Ribavirin correctly, the concentration scale and the highest concentration to be used, must be evaluated at the proper (semi-log) scale as seen in **Figure 63-A.**

Ribavirin is active *in vitro* against PT virus and functions as a reasonable quality control compound. On the other hand, regardless of the performance of the PT-quality control drug Ribavirin, around 32 other compounds have equal or better antiviral activity against PT virus than AVS-0001.

Variation of the Maximum Antiviral Effect
PT Virus - VS - Ribavirin (Prescreen Protocol)

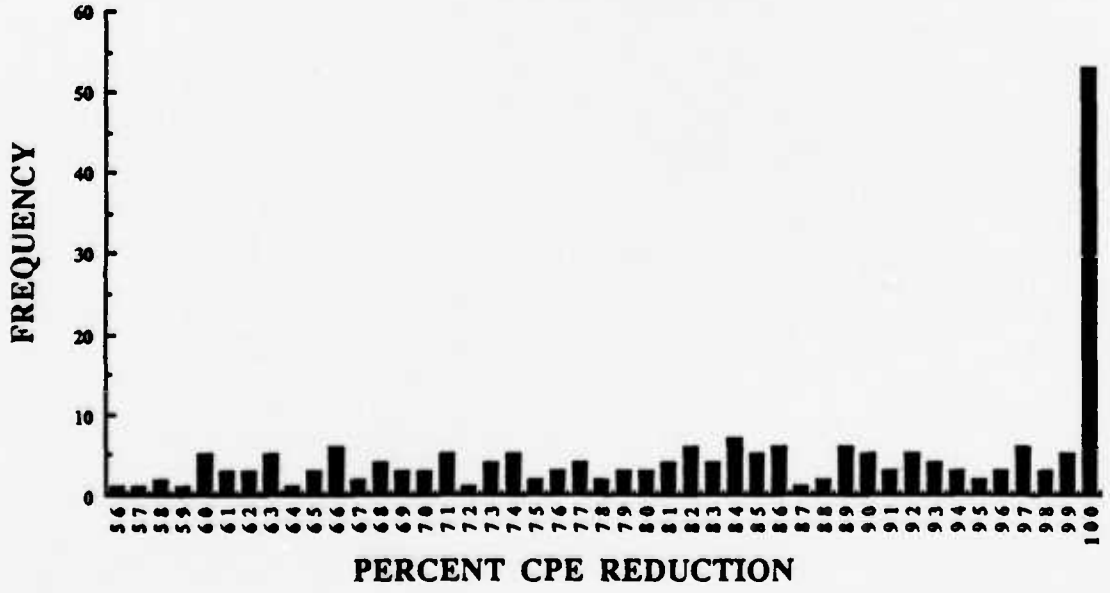


Figure 64-A
Maximum Antiviral CPE Reduction (%).
Summary of 142 Control Tests.

4.2.3.1.3 Cellular Cytotoxicity of Ribavirin vs PT Virus

PT-Control Compound-Cytotoxicity Performance: The 142 cytotoxicity values of the positive control compound Ribavirin are also very consistent. The mean cell **Toxic Concentration 25%** (TC_{25}) was 240 μg/ml (SD $\pm$ 81.60) and the median was 262 μg/ml (range of 8.62 to 320 μg/ml). The reason for this discrepancy is that at 320 μg/ml scale, the TC_{25} cytotoxicity cannot always be measured accurately.

As can be seen from **Figure 63-A**, a definite TC_{25} toxicity value can be measured with a 320 μg/ml $\log_{10}$ scale. Further increase in the concentration of Ribavirin would be needed to consistently evaluate the maximum cytotoxicity of Ribavirin.

Also **Figure 63-A**, indicates that when the cytotoxicity reaches ~5% at 100 μg/ml, the control compound (Ribavirin) has reached simultaneously its maximum antiviral effect. The cytotoxic effect of Ribavirin is insignificant between 1 and 100 μg/ml. The average cytotoxicity reached 37% at 320 μg/ml, which was the highest Ribavirin concentration tested.

Ribavirin has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} and TC_{50} toxicity could not be consistently achieved with the 100 μg/ml concentration of Ribavirin. Therefore, a readjustment to 320 μg/ml (as being the highest Ribavirin concentration tested) was done during this reporting period. However, at this concentration (320 μg/ml) the TC_{50} and TC_{95} cannot yet be measured consistently.

4.2.3.1.4 **PT-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (Ribavirin)** The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal numbers of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991, is presented in **Figures 65-A, 66-A and 67-A.**

PT-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 142 control assays is plotted in **Figure 65-A.** The results indicate that the cell O.D. readings reached a mean 1.150 (SD ± 0.200) with a median of 1.130 (range of 0.610 - 1.630). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

PT-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 142 control assays is presented in **Figure 66-A.** The results indicate that the average virus load O.D. reading is 0.240 (SD ± 0.150) with a median of 0.200 (range of 0.020 - 0.730). This demonstrates that a reasonable cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with consistent viral CPE results.

PT-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 142 control assays is provided in **Figure 67-A.** The results indicate that the average differential O.D. reading is 0.897 (SD ± 0.211) with a median of 0.214 (range 0.460 - 1.423). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 89% measurement accuracy.

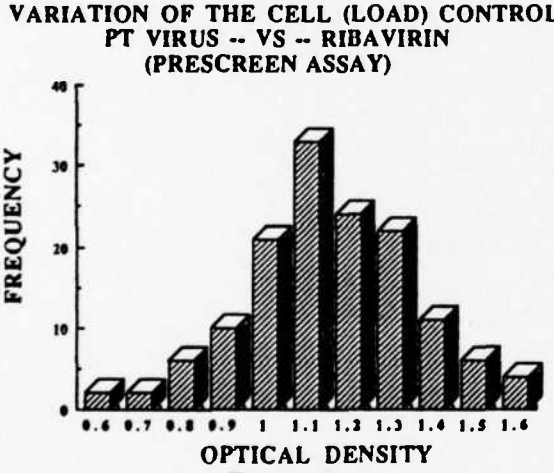


Figure 65-A

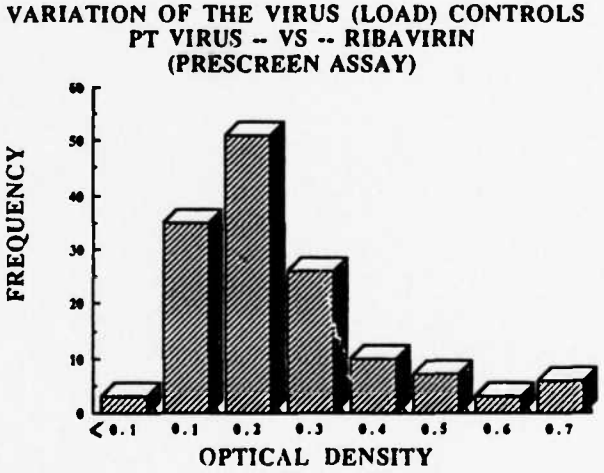


Figure 66-A

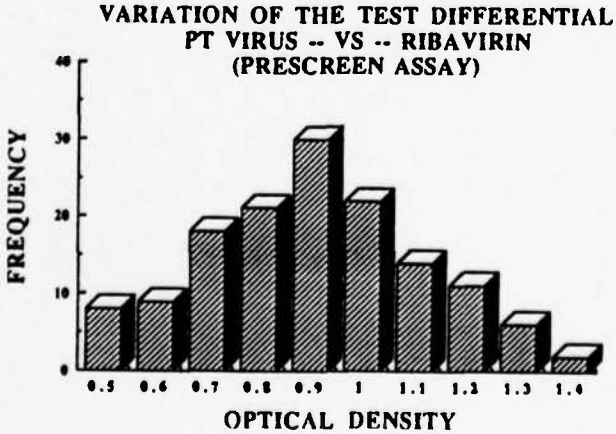


Figure 67-A

4.2.3.1 Prescreen PT-Quality Controls:

4.2.3.1.1 Antiviral Activity of 2-Thio-6-Azauridine vs PT Virus: A summary of the antiviral and cytotoxicity performance of the second control compound, AVS-6724 (2-Thio-6-Azauridine) is presented in **Figure 63-B** for 60 tests performed during November, 1989 through January, 1991.

Second Control Compound-Antiviral Performance: 2-Thio-6-Azauridine (AVS-6724) has been tested as a possible second control compound against PT in these MTT-assay prescreens. The mean and median antiviral inhibition and cytotoxicity patterns of this second positive control drug are illustrated in **Figure 63-B**.

The 60 control tests performed with 2-Thio-6-Azauridine gave a mean Selectivity Index (SI) of 17.40 (SD ± 8.20) and the median value was 18.00 (range = 0.30 - 32.00), indicating moderate antiviral selectivity for 2-Thio-6-Azauridine. The reason for this discrepancy is that at 100 μg/ml the 25% cytotoxicity cannot be measured properly to execute SI calculations. SI is calculated by dividing the TC_{25} by the IC_{50}.

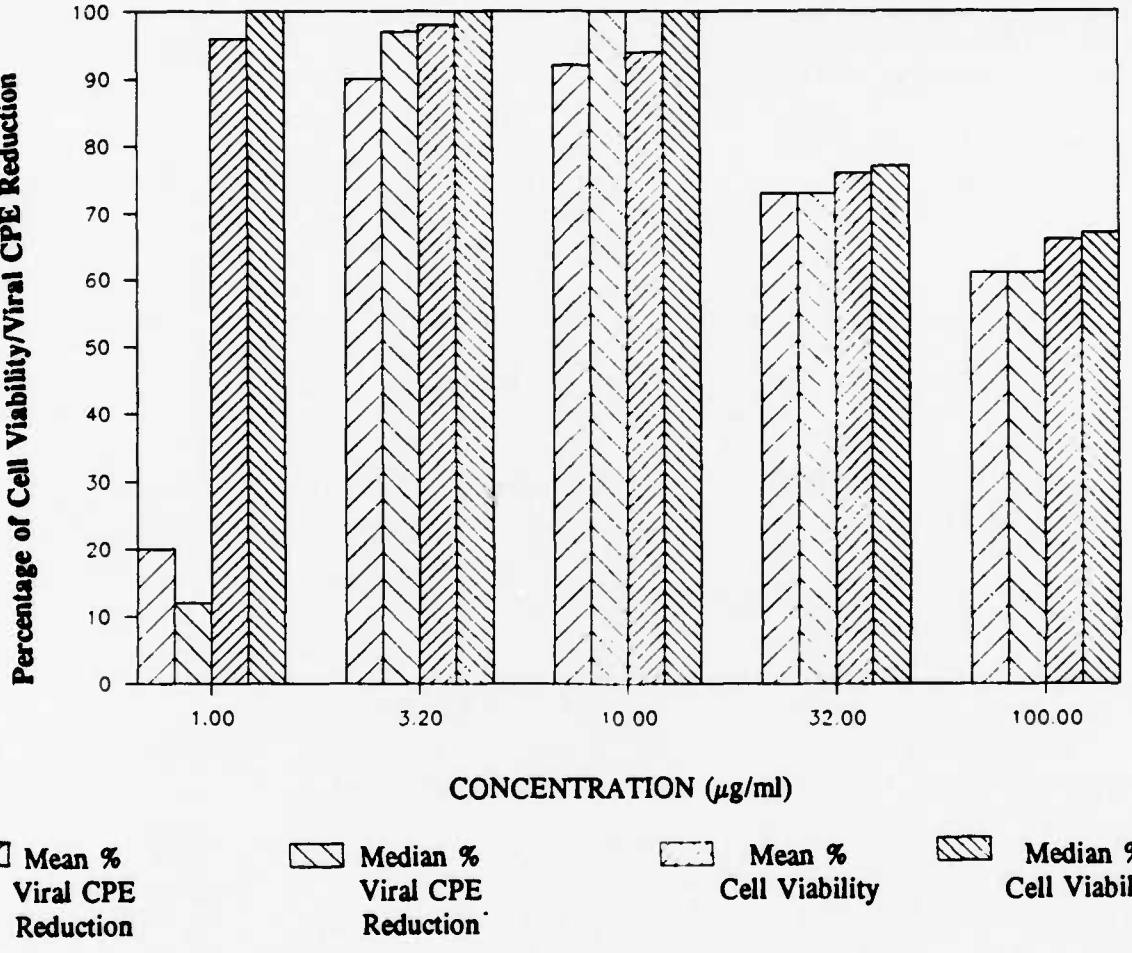
The mean Antiviral Inhibitory Concentration 50% (IC_{50}) was 2.00 μg/ml (SD ± 0.92). The median IC_{50} value was 1.7 μg/ml (range = 1 - 5.35). This indicates that 2-Thio-6-Azauridine does reach 50% antiviral reduction levels consistently at 32 μg/ml maximum concentration. During this reporting period, the highest concentration of 2-Thio-6-Azauridine was varied from 32 to 320 μg/ml to properly evaluate the maximum antiviral effect and cytotoxicity pattern of 2-Thio-6-Azauridine.

The average maximum antiviral inhibitory level of 60 2-Thio-6-Azauridine tests (**Figure 63-B**) was reached at 3.2 μg/ml of the compound with 95% antiviral effect. Maximum antiviral effect (~95%)was found with a simultaneous ~2% cytotoxic suppression. Above this concentration (10 μg/ml) 2-Thio-6-Azauridine starts to lose its antiviral potency with increasing cytotoxicity (**Figure 63-B**). An increase of the concentration of 2-Thio-6-Azauridine to 100 μg/ml, does not improve the antiviral activity (**Figure 63-B**). The antiviral activity decreases from 92% (at 10 μg/ml) to 60% (at 100 μg/ml).

A different maximum antiviral value is obtained depending upon which concentration scale is used. In these tests (**Figure 63-B**), the $\log_{10}$ scale of 1 - 100 measures more accurately the antiviral effect of the control compound, 2-Thio-6-Azauridine, whereas the $\log_{10}$ scale of 0.32 - 320 μg/ml measures more accurately the cytotoxicity effect.

In the present 60 positive control assays, we tested 2-Thio-6-Azauridine at 0.5 $\log_{10}$ scale concentrations (1 - 32 μg/ml) to maximize the correct measurements of both the antiviral and cytotoxicity effects. This enables us to monitor our quality control parameters more accurately.

2-THIO-6-AZAURIDINE -VS- PT (PRE-SCREEN) VIRUS



% Viral CPE Reduction

% Cell Viability

Conc.(μg/ml)	1	3.2	10	32	100	1	3.2	10	32	100
Mean	4	35	79	69	73	98	99	96	79	80
Median	0	36	80	76	72	100	100	100	81	82
Std. Dev.	0.09	0.24	0.19	0.23	0.08	0.04	0.03	0.06	0.14	0.08

Figure 63-B
Average Antiviral and Cytotoxicity Values for 60 Positive Control Compound Tests

4.2.3.1.2 Maximum Antiviral Effect of 2-Thio-6-Azauridine vs PT Virus: Since the metabolic activity of the cells was an unknown function during the testing period, it was monitored indirectly by measuring the maximum antiviral effect of the control compound 2-Thio-6-Azauridine. This demonstrated the amount of infectious virus produced by the cells (Maximum Percent CPE).

A bar graph scatter plot (Figure 64-B) depicts the distribution of the maximum antiviral reduction values of all 60 control compound prescreen assays for 2-Thio-6-Azauridine. The results indicate that the average maximum antiviral reduction obtained with the present SOP is around 97.60% (SD ± 5.30) reduction levels. The maximum reduction levels vary from 77 - 100% but remain quite consistently around the median of 100%. The assay control values give a shifted half-bell-shaped distribution curve toward the maximum 100% reduction level. This indicates quite a consistent day-to-day performance of the second control compound in the PT prescreen-MTT assay.

During this period the positive control compound performance criteria for 2-Thio-6-Azauridine versus the PT virus in the pre-screen format has not been set to a definite endpoint. We have collected data in order to find out what would constitute a reasonable quality control endpoint and the data indicates that it could be set at the 50% reduction level. In order to measure the maximum antiviral endpoints of 2-Thio-6-Azauridine correctly, the concentration scale and the highest concentration to be used, must be evaluated at the proper semi-log scale as seen in Figure 63-B.

2-Thio-6-Azauridine is active *in vitro* against PT virus and functions as a reasonable candidate for a second quality control compound.

Variation of the Maximum Antiviral Effect
PT Virus - VS - 2-Thio-6-Azauridine (Prescreen Protocol)

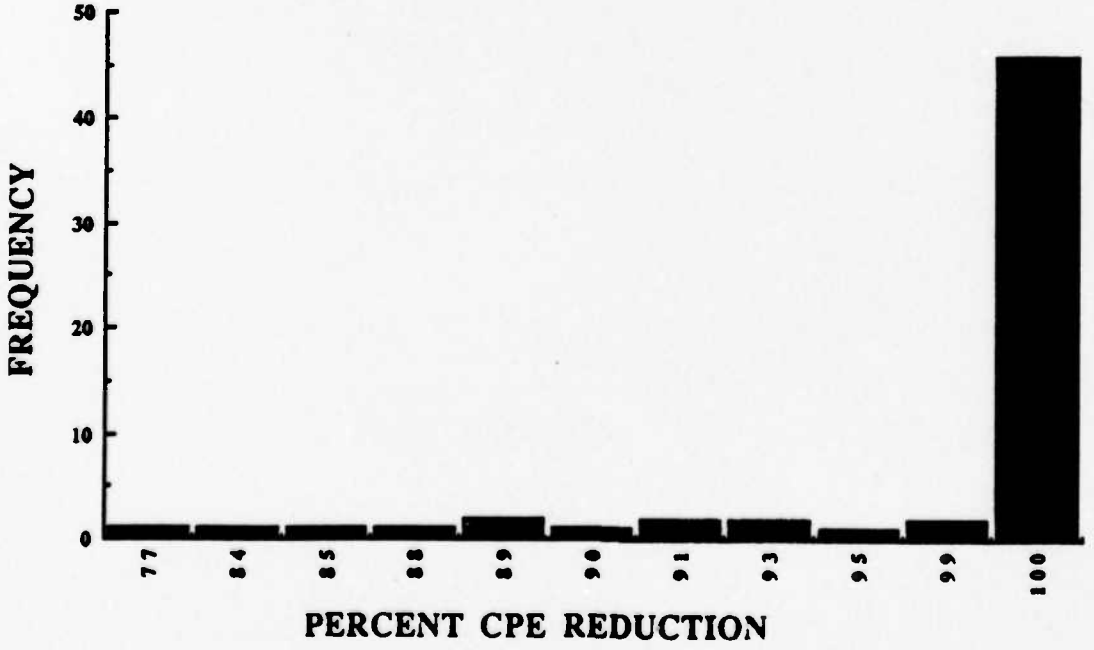


Figure 64-B
Maximum Antiviral CPE Reduction (%).
Summary of 60 Control Tests.

4.2.3.1.3 Cellular Cytotoxicity of 2-Thio-6-Azauridine vs PT Virus

PT-Control Compound-Cytotoxicity Performance: The 60 cytotoxicity values of the positive control compound 2-Thio-6-Azauridine are also very consistent. The mean cell **Toxic Concentration 25% (TC_{25})** was 32.9 μg/ml (SD $\pm$ 20.70) and the median was 32.00 μg/ml (range of 0.88 to 100 μg/ml). The reason for this discrepancy is that at 100 μg/ml scale the TC_{25} cytotoxicity cannot be measured accurately.

As can be seen from **Figure 63-B**, a definite TC_{25} toxicity value can be measured with a 100 μg/ml 0.5 $\log_{10}$ scale. Further increase in the concentration of 2-Thio-6-Azauridine would be needed to properly evaluate the maximum cytotoxicity of 2-Thio-6-Azauridine.

Also **Figure 63-B**, indicates that when the cytotoxicity reaches ~0 - 5% at 10 μg/ml, the control compound (2-Thio-6-Azauridine) has reached simultaneously its maximum antiviral effect. The cytotoxic effect of 2-Thio-6-Azauridine is insignificant between 0 and 10 μg/ml. The average cytotoxicity reached 35% at 100 μg/ml, which was the highest 2-Thio-6-Azauridine concentration in most tests.

2-Thio-6-Azauridine has a definite cytotoxic suppression on cellular metabolism and growth. However, the TC_{25} toxicity could not be consistently achieved with the 32 μg/ml concentration of 2-Thio-6-Azauridine. Therefore, a readjustment to 100 μg/ml (as being the highest 2-Thio-6-Azauridine concentration tested) would be needed to properly evaluate the TC_{25} endpoint. However, at this concentration (100 μg/ml) the IC_{50} cannot be measured.

4.2.3.1.4 PT-Assay Plate Quality Controls: Cell Load and Virus Load Parameters (2-Thio-6-Azauridine): The MTT assay is fundamentally dependent upon the quality of the assay plates. Our large-scale antiviral testing is dependent upon the uniformity of the test plates produced for the daily assays. Equal loads of cell load and virus load as well as the consistent performance of the reagents used daily was monitored. A sample of the plate variation control for the period of November, 1989 through January, 1991 is presented in Figures 65-B, 66-B, and 67-B.

PT-Control Compound-Cell Load Performance: A bar graph scatter plot of the mean cell control (O.D. reading) of 60 control assays is plotted in Figure 65-B. The results indicate that the cell O.D. readings reached a mean 1.140 (SD ± 0.170) with a median of 1.100 (range of 0.840 - 1.640). This indicates that a uniform and equal number (18,000 cells/well) of cells are being loaded into every well in the 96-well plate during the day-to-day operation. The cells reduced MTT to formazan giving maximum blue color uniformly and consistently.

PT-Control Compound-Virus Load Performance: A bar graph scatter plot of the mean virus load O.D. readings of the 60 control assays is presented in Figure 66-B. The results indicate that the average virus load O.D. reading is 0.190 (SD ± 0.070) with a median of 0.160 (range of 0.100 - 0.450). This demonstrates that a reasonable cell destruction is taking place and a uniform load of virus (32 $TCID_{50}$) is administered on the cell monolayer with consistent viral CPE results.

PT-Control Compound-Assay Differential Performance: A bar graph scatter plot of the mean O.D. differential values of the 60 control assays is provided in Figure 67-B. The results indicate that the average differential O.D. reading is 0.950 (SD ± 0.170) with a median of 0.940 (range 0.687 - 1.423). The single bell-shaped curve is reasonably sharp and uniform. This reflects that the assays are executed consistently and are repeatable during day-to-day operation with close to 94% measurement accuracy.

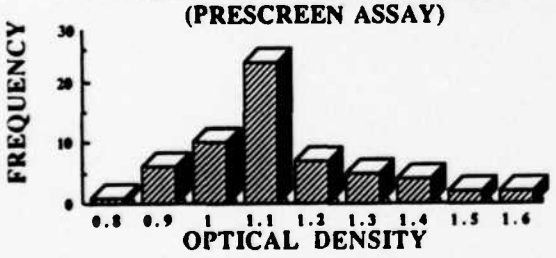


Figure 65-B

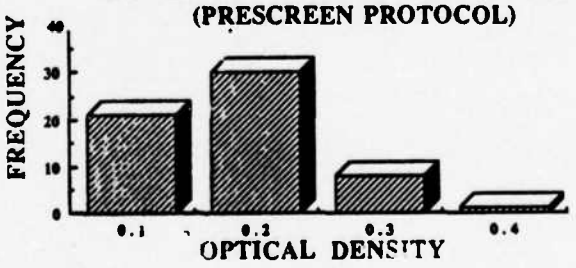


Figure 66-B

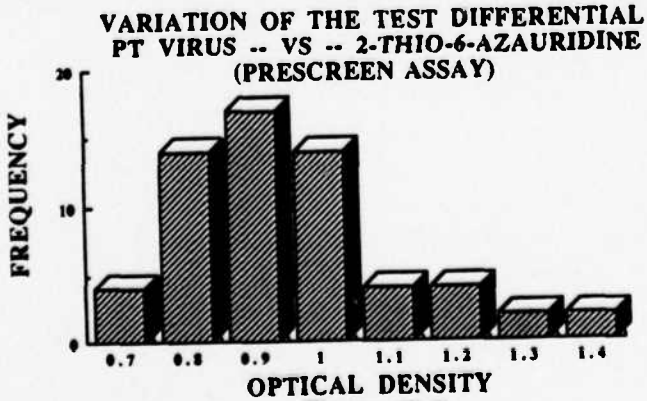


Figure 67-B

4.2.3.2 Prescreen PT-Antiviral Activity Results:

New Drugs with 50% Antiviral Reduction Levels: Out of the 3618 accepted single drug tests, 310 new compounds demonstrated antiviral activity, having antiviral reduction values equal to or better than 50%. This represents around 8.6% of the test compounds being active at this antiviral reduction level. These compounds are summarized in **Table 33** according to the highest **Selectivity Index (SI)**. Four compounds, B721392, B721377, B721595 and B723280 demonstrated the best antiviral promise having SI's of > 1000. Seventeen other compounds demonstrated good antiviral activity, having SI's that ranged from 102-883. The rest (289 compounds) showed marginal to moderate antiviral activity with SI's that ranged from 0.2 to 88.

Table 33

New Prescreen Drugs that Produced 50% Antiviral Reduction Against PT Virus

DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B721392	PT	V5C	4P	04/12/90	> 1000.0	< 1.00	> 1000.0
B721377	PT	V59	4P	04/12/90	> 1000.0	< 1.00	> 1000.0
B721595	PT	V63	4P	04/13/90	> 1000.0	< 1.00	> 1000.0
B723280	PT	XP4	6P	07/24/90	> 1000.0	< 1.00	> 1000.0
B723278	PT	XP3	6P	07/24/90	883.00	< 1.00	> 883.18
B721374	PT	V59	4P	04/12/90	560.00	< 1.00	> 559.71
B722904	PT	VQM	3P	04/26/90	516.00	< 1.00	> 516.00
B721611	PT	V64	4P	04/13/90	408.00	1.00	407.65
B721596	PT	V63	4P	04/13/90	389.00	< 1.00	> 389.19
B721011	PT	VU9	4P	05/01/90	328.00	< 1.00	> 327.84
B720952	PT	UZ5	4P	04/03/90	326.00	< 1.00	> 325.82
B720951	PT	UZ5	4P	04/03/90	326.00	< 1.00	> 325.56
B722805	PT	UBK	3P	03/07/90	325.00	< 1.00	> 325.00
B721378	PT	V59	4P	04/12/90	318.00	< 1.00	> 318.26
B721021	PT	VUB	4P	05/01/90	265.00	< 1.00	> 264.97
B720958	PT	UZ6	4P	04/03/90	231.00	< 1.00	> 231.38
B722874	PT	VH6	3P	04/17/90	701.00	3.20	219.04
B720916	PT	UZ4	4P	04/03/90	170.00	< 1.00	> 169.54
B720937	PT	UZ4	4P	04/03/90	169.00	< 1.00	> 168.79
B720963	PT	UZ6	4P	04/03/90	168.00	< 1.00	> 168.28
B720941	PT	UZ5	4P	04/03/90	102.00	< 1.00	> 102.16
B722871	PT	VH6	3P	04/17/90	334.00	3.78	88.45
B721568	PT	09N		08/03/89	330.00	5.77	57.24
B722808	PT	UBK	3P	03/07/90	35.10	< 1.00	> 35.14
B721568	PT	089		07/19/89	290.00	8.50	34.08
B724825	PT	0EM		09/14/89	156.00	4.75	32.91
B724374	PT	06H		06/29/89	1000.0	31.60	31.60
B849179	PT	X10	6P	07/13/90	701.00	23.60	29.68
B724526	PT	095		07/26/89	161.00	5.60	28.78
B724447	PT	07K		07/12/89	208.00	7.28	28.58
B722054	PT	01W		11/08/89	786.00	28.10	27.94
B720940	PT	UZ5	4P	04/03/90	27.80	< 1.00	> 27.76
B720979	PT	UZ6	4P	04/03/90	27.60	< 1.00	> 27.59
B722077	PT	01X		11/08/89	211.00	7.88	26.75
B721064	PT	VRA	4P	04/27/90	742.00	34.80	21.33
B724740	PT	0CY		08/30/89	76.60	3.78	20.27
B723037	PT	UHH	3P	03/14/90	> 1000.0	51.10	> 19.56
B721062	PT	VR9	4P	04/27/90	595.00	32.90	18.10
B721749	PT	06C		06/29/89	1000.0	59.40	16.80
B721702	PT	05V		06/21/89	1000.0	61.00	16.40
B721061	PT	VR9	4P	04/27/90	409.00	29.10	14.09
B722228	PT	0K1		11/22/89	487.00	34.60	14.07
B722081	PT	01Y		11/08/89	134.00	9.54	14.03
B721880	PT	0GV		10/11/89	> 1000.0	71.50	> 13.99
B721568	PT	0A4		08/09/89	241.00	17.80	13.49
B722222	PT	0K0		11/22/89	446.00	34.30	13.02
B721092	PT	09K		08/03/89	325.00	26.30	12.35
B721511	PT	09N		08/03/89	330.00	28.40	11.61
B724521	PT	094		07/26/89	32.80	2.88	11.38
B724698	PT	0CF		08/24/89	51.50	4.60	11.19
B722091	PT	01Z		11/08/89	310.00	27.70	11.17
B721592	PT	V63	4P	04/13/90	330.00	30.00	11.00
B721690	PT	05T		06/21/89	1000.0	94.70	10.60
B722525	PT	TE7	3P	01/18/90	323.00	30.60	10.53

Table 33 (Cont'd)

DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B724456	PT	07M		07/12/89	34.90	3.33	10.48
4279	PT	09M		08/03/89	32.50	3.16	10.28
4280	PT	09M		08/03/89	32.50	3.16	10.28
B724566	PT	09R		08/03/89	32.00	3.30	9.70
B721060	PT	VR9	4P	04/27/90	369.00	41.70	8.84
B721762	PT	06F		06/29/89	339.00	38.60	8.77
B721756	PT	06E		06/29/89	325.00	37.30	8.70
B722280	PT	YGH	7P	08/24/90	538.00	61.80	8.70
B722634	PT	YGQ	7P	08/24/90	34.60	4.07	8.50
B721754	PT	06E		06/29/89	337.00	41.50	8.13
B722048	PT	01V		11/08/89	326.00	40.10	8.13
B724458	PT	07M		07/12/89	28.90	3.69	7.84
B724886	PT	0FB		09/27/89	505.00	64.40	7.84
B724527	PT	096		07/26/89	32.50	4.19	7.75
B722849	PT	UBO	3P	03/07/90	543.00	71.20	7.63
B722883	PT	VQL	3P	04/26/90	508.00	67.50	7.52
B722920	PT	ZST	10	10/26/90	366.00	49.20	7.43
B721917	PT	0HA		10/18/89	330.00	44.50	7.41
GRP19386	PT	VPX	4P	04/26/90	326.00	44.30	7.36
B721823	PT	0HS		10/25/89	> 1000.0	137.00 >	7.29
B724416	PT	06R		07/06/89	29.40	4.09	7.17
B722183	PT	0JX		11/22/89	271.00	38.00	7.13
B849035	PT	XIN	6P	07/13/90	115.00	16.20	7.10
B722886	PT	VQL	3P	04/26/90	435.00	63.70	6.83
B724433	PT	07H		07/12/89	28.60	4.21	6.79
B724519	PT	094		07/26/89	22.70	3.45	6.58
B724820	PT	0EL		09/14/89	23.40	3.61	6.48
B722632	PT	YGP	7P	08/24/90	494.00	76.40	6.47
B721728	PT	05Z		06/21/89	1000.0	156.00	6.41
B724764	PT	0OD		09/06/89	24.00	3.74	6.41
B848752	PT	21S	11P	01/17/91	> 3200.0	501.00 >	6.38
B724453	PT	07L		07/12/89	35.10	5.56	6.31
B721758	PT	06F		06/29/89	1000.0	160.00	6.27
B724722	PT	0CU		08/30/89	22.30	3.64	6.12
B724466	PT	07O		07/12/89	266.00	43.60	6.11
B721899	PT	01R		11/08/89	325.00	55.60	5.84
B724417	PT	06R		07/06/89	22.10	3.80	5.81
B724378	PT	061		06/29/89	295.00	51.20	5.77
B724512	PT	092		07/26/89	323.00	55.90	5.77
B724783	PT	0DH		09/06/89	217.00	38.10	5.69
B721767	PT	06G		06/29/89	1000.0	176.00	5.68
B721905	PT	0J0		11/08/89	325.00	58.50	5.56
B724781	PT	0DG		09/06/89	21.50	3.87	5.55
B848990	PT	YIW	7P	08/31/90	492.00	88.90	5.53
B721769	PT	06G		06/29/89	295.00	53.60	5.50
B722279	PT	YGH	7P	08/24/90	369.00	67.10	5.50
B721761	PT	06F		06/29/89	1000.0	185.00	5.39
B724697	PT	0CF		08/24/89	5.38	< 1.00 >	5.38
B722094	PT	0JC		11/15/89	325.00	61.60	5.28
B721823	PT	0G1		10/04/89	> 1000.0	194.00 >	5.16
B722607	PT	YGO	7P	08/24/90	295.00	57.80	5.10
B722224	PT	0K0		11/22/89	212.00	42.70	4.98
B722076	PT	01X		11/08/89	242.00	48.80	4.96
B724762	PT	0DC		09/06/89	20.40	4.13	4.95
B724712	PT	0CH		08/24/89	19.80	4.14	4.77
B848750	PT	1EE	11P	11/29/90	> 1000.0	212.00 >	4.72
B724434	PT	07H		07/12/89	30.30	6.61	4.58
B724586	PT	0A6		08/09/89	208.00	45.60	4.57
B724457	PT	07M		07/12/89	16.20	3.57	4.55
B724387	PT	090		07/26/89	263.00	57.80	4.55
B724384	PT	06K		07/06/89	23.40	5.21	4.49
B724418	PT	06R		07/06/89	18.80	4.24	4.44
B724670	PT	0C9		08/24/89	66.40	14.90	4.44
B722230	PT	0K1		11/22/89	192.00	47.30	4.07
B722080	PT	01Y		11/08/89	108.00	26.70	4.05
B721719	PT	05X		06/21/89	1000.0	266.00	3.76
B724607	PT	0AB		08/09/89	18.80	5.01	3.76
B724558	PT	09Q		08/03/89	26.10	6.97	3.74
B721838	PT	0GS		10/11/89	212.00	56.80	3.73
B724508	PT	087		07/19/89	20.00	5.49	3.64
B722889	PT	VQL	3P	04/26/90	348.00	97.30	3.57
B721910	PT	0H9		10/18/89	> 1000.0	281.00 >	3.56

Table 33 (Cont'd)

DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B721734	PT	06A		06/29/89	1000.0	282.00	3.55
B724423	PT	06S		07/06/89	12.20	3.47	3.53
B724382	PT	06J		07/06/89	168.00	47.80	3.51
B724413	PT	06Q		07/06/89	15.50	4.43	3.49
B722078	PT	01Y		11/08/89	130.00	37.30	3.49
B724596	PT	0A9		08/09/89	324.00	94.30	3.44
B848669	PT	1D9	11P	11/21/90	> 1000.0	291.00 >	3.44
B724728	PT	0CV		08/30/89	15.20	4.51	3.38
B721979	PT	0HX		10/25/89	> 1000.0	298.00 >	3.35
B724592	PT	0A8		08/09/89	226.00	67.70	3.34
B722628	PT	YGP	7P	08/24/90	> 1000.0	300.00 >	3.33
B722811	PT	UBL	3P	03/07/90	325.00	98.20	3.31
B721908	PT	0H9		10/18/89	328.00	99.80	3.29
B724652	PT	0B7		08/16/89	199.00	60.70	3.28
B709763	PT	2C8	13P	01/03/91	> 1000.0	316.00 >	3.16
B724855	PT	0F4		09/27/89	15.90	5.08	3.13
B724860	PT	0F5		09/27/89	204.00	65.40	3.12
B722241	PT	0K2		11/22/89	> 1000.0	320.00 >	3.12
B722052	PT	01V		11/08/89	164.00	53.00	3.10
B722117	PT	ZDX	9P	10/10/90	218.00	71.20	3.07
B724732	PT	0CW		08/30/89	29.80	9.73	3.06
B710043	PT	2CD	13P	01/04/91	> 1000.0	329.00 >	3.04
B724719	PT	0CT		08/30/89	14.80	4.98	2.97
B724714	PT	0CS		08/30/89	19.20	6.61	2.90
B724549	PT	090		08/03/89	285.00	99.00	2.88
B724553	PT	09P		08/03/89	113.00	39.70	2.84
3593	PT	05W		06/21/89	1.23	0.44	2.82
B724644	PT	0B5		08/16/89	182.00	65.60	2.77
B724455	PT	07L		07/12/89	9.95	3.61	2.75
B721722	PT	05Y		06/21/89	1000.0	365.00	2.74
B710057	PT	2IU	13P	01/17/91	2610.0	962.00	2.72
B724590	PT	0A7		08/09/89	162.00	60.00	2.71
B710110	PT	2D7	13P	01/08/91	> 1000.0	370.00 >	2.70
B721708	PT	05W		06/21/89	1000.0	371.00	2.69
B724863	PT	0F6		09/27/89	150.00	55.60	2.69
B721953	PT	01R		11/08/89	> 1000.0	372.00 >	2.69
B722182	PT	0JX		11/22/89	188.00	70.20	2.68
B710128	PT	2D8	13P	01/08/91	> 1000.0	374.00 >	2.67
B724724	PT	0CU		08/30/89	211.00	82.70	2.56
B724420	PT	06S		07/06/89	61.90	24.50	2.53
B721604	PT	YPK	8P	09/14/90	> 1000.0	399.00 >	2.51
B721755	PT	06E		06/29/89	1000.0	400.00	2.50
B848653	PT	21M	11P	01/16/91	> 3200.0	1320.0 >	2.42
B722239	PT	0K2		11/22/89	160.00	66.50	2.41
B722116	PT	ZDW	9P	10/09/90	196.00	81.70	2.40
B721731	PT	05Z		06/21/89	1000.0	423.00	2.36
B724664	PT	0B9		08/16/89	> 1000.0	425.00 >	2.36
B724394	PT	06M		07/06/89	15.90	6.80	2.34
B724633	PT	0B3		08/16/89	185.00	79.90	2.32
B722246	PT	0K3		11/22/89	171.00	75.80	2.26
B721511	PT	089		07/19/89	> 320.00	144.00 >	2.23
B721714	PT	05X		06/21/89	1000.0	450.00	2.22
B721095	PT	09K		08/03/89	184.00	83.50	2.21
B724785	PT	0DH		09/06/89	14.80	6.69	2.21
B724415	PT	06R		07/06/89	8.05	3.66	2.20
B721749	PT	088		07/19/89	120.00	55.10	2.18
B721925	PT	0HC		10/18/89	> 1000.0	463.00 >	2.16
B723297	PT	Y3B	6P	08/21/90	> 1000.0	465.00 >	2.15
B721680	PT	05S		06/21/89	1000.0	467.00	2.14
B724373	PT	089		07/19/89	211.00	99.40	2.13
B722823	PT	YIO	7P	08/30/90	> 1000.0	479.00 >	2.09
B848911	PT	1P4	12P	12/12/90	88.30	42.20	2.09
B724797	PT	0DJ		09/06/89	191.00	92.60	2.07
B724627	PT	0B2		08/16/89	10.90	5.27	2.06
B724729	PT	0CW		08/30/89	9.44	4.63	2.04
B848747	PT	21S	11P	01/17/91	> 3200.0	1570.0 >	2.04
B724373	PT	06H		06/29/89	493.00	250.00	1.97
B722087	PT	01Z		11/08/89	> 1000.0	507.00 >	1.97
B724442	PT	07J		07/12/89	> 1000.0	524.00 >	1.91
B721737	PT	06A		06/29/89	1000.0	526.00	1.90
B721743	PT	06B		06/29/89	946.00	498.00	1.90
B724436	PT	07H		07/12/89	154.00	81.00	1.90

Table 33 (Cont'd)

DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B724439	PT	07I		07/12/89	145.00	76.00	1.90
B721725	PT	05Y		06/21/89	1000.0	529.00	1.89
B724385	PT	06K		07/06/89	16.00	8.60	1.86
B710130	PT	2D8	13P	01/08/91	> 1000.0	539.00 >	1.85
B724396	PT	091		07/26/89	173.00	93.90	1.84
B721826	PT	0G1		10/04/89	> 1000.0	550.00 >	1.82
B722743	PT	YHM	7P	08/28/90	> 1000.0	549.00 >	1.82
B721348	PT	YOZ	8P	09/13/90	> 1000.0	558.00 >	1.79
B722745	PT	YHM	7P	08/28/90	> 1000.0	567.00 >	1.76
B848804	PT	2PB	11P	01/18/91	> 3200.0	1820.0 >	1.76
B848752	PT	1EF	11P	11/29/90	554.00	317.00	1.75
B721730	PT	05Z		06/21/89	159.00	91.40	1.74
B848989	PT	YIW	7P	08/31/90	> 1000.0	579.00 >	1.73
B721770	PT	06G		06/29/89	467.00	271.00	1.72
B722141	PT	0JI		11/15/89	781.00	461.00	1.69
B721787	PT	0FX		10/04/89	764.00	458.00	1.67
B722873	PT	ZSM	10	10/25/90	> 1000.0	600.00 >	1.67
B722929	PT	ZOU	10	10/24/90	> 1000.0	606.00 >	1.65
B721958	PT	0HS		10/25/89	> 1000.0	615.00 >	1.63
B722168	PT	0JK		11/15/89	255.00	157.00	1.63
B721295	PT	YOY	8P	09/13/90	> 1000.0	612.00 >	1.63
B710046	PT	2IT	13P	01/17/91	3170.0	1960.0	1.62
B724379	PT	06J		07/06/89	896.00	565.00	1.59
B724769	PT	0DE		09/06/89	> 1000.0	630.00 >	1.59
B722689	PT	YHI	7P	08/28/90	824.00	523.00	1.58
B724885	PT	0FA		09/27/89	8.52	5.44	1.57
B724667	PT	0FV		10/04/89	1.29	0.82	1.57
B848653	PT	1D7	11P	11/21/90	> 1000.0	635.00 >	1.57
B724657	PT	0B8		08/16/89	820.00	541.00	1.52
B721166	PT	09L		08/03/89	601.00	402.00	1.50
B724832	PT	0EN		09/14/89	933.00	622.00	1.50
B706269	PT	2C7	13P	01/03/91	> 1000.0	673.00 >	1.49
B710138	PT	2DA	13P	01/08/91	> 1000.0	674.00 >	1.48
B724544	PT	099		07/26/89	8.33	5.65	1.47
B722247	PT	0K3		11/22/89	103.00	70.50	1.47
B723290	PT	Y3A	6P	08/21/90	> 1000.0	680.00 >	1.47
B724720	PT	0CT		08/30/89	9.29	6.37	1.46
B722165	PT	0JK		11/15/89	> 1000.0	683.00 >	1.46
B722936	PT	ZOV	10	10/24/90	941.00	650.00	1.45
B724535	PT	097		07/26/89	9.74	6.75	1.44
B724661	PT	0B9		08/16/89	785.00	570.00	1.38
B724405	PT	06P		07/06/89	7.05	5.15	1.37
B721818	PT	0G0		10/04/89	738.00	553.00	1.33
B722006	PT	0I1		10/25/89	> 1000.0	758.00 >	1.32
B722867	PT	VQK	3P	04/26/90	> 1000.0	769.00 >	1.30
B848926	PT	1P8	12P	12/18/90	> 1000.0	771.00 >	1.30
B724509	PT	087		07/19/89	118.00	91.80	1.28
B722559	PT	YGK	7P	08/24/90	> 1000.0	787.00 >	1.27
B724530	PT	096		07/26/89	120.00	94.80	1.26
B848811	PT	2PC	11P	01/18/91	> 3200.0	2560.0 >	1.25
B723044	PT	UHW	3P	03/14/90	> 1000.0	809.00 >	1.24
B724642	PT	0B5		08/16/89	7.77	6.33	1.23
B722162	PT	0JJ		11/15/89	> 1000.0	815.00 >	1.23
B724411	PT	060		07/06/89	121.00	99.70	1.21
B724654	PT	0B7		08/16/89	7.21	5.93	1.21
B723268	PT	XP1	6P	07/24/90	> 1000.0	824.00 >	1.21
B721532	PT	09K		08/03/89	529.00	445.00	1.19
B722089	PT	0IZ		11/08/89	11.70	9.83	1.19
B724525	PT	095		07/26/89	7.23	6.13	1.18
B723062	PT	XOZ	5P	06/19/90	942.00	800.00	1.18
B724517	PT	094		07/26/89	8.65	7.40	1.17
B724716	PT	0CS		08/30/89	6.78	5.86	1.16
B715141	PT	2WG	13P	01/29/91	> 1000.0	884.00 >	1.13
B724866	PT	0F6		09/27/89	7.85	7.03	1.12
B848753	PT	2IS	11P	01/17/91	2470.0	2210.0	1.12
B718582	PT	2XE	14P	01/30/91	> 1000.0	910.00 >	1.10
B849180	PT	XIO	6P	07/13/90	628.00	582.00	1.08
B848671	PT	2IN	11P	01/16/91	> 3200.0	3000.0 >	1.07
B710151	PT	2DA	13P	01/08/91	> 1000.0	942.00 >	1.06
B722060	PT	ZDS	9P	10/09/90	852.00	811.00	1.05
B722591	PT	YGM	7P	08/24/90	> 1000.0	959.00 >	1.04
B721892	PT	0GX		10/11/89	> 1000.0	979.00 >	1.02

Table 33 (Cont'd)

DRUG #	VIR	PLT #	SHIP #	TEST DATE	TC 25	IC 50	SI
B710179	PT	2DF	13P	01/09/91	771.00	759.00	1.02
B721693	PT	05T		06/21/89	604.00	616.00	0.98
B723431	PT	ZSV	10	10/26/90	723.00	761.00	0.95
B724504	PT	086		07/19/89	6.34	6.89	0.92
B848986	PT	YIV	7P	08/31/90	560.00	628.00	0.89
B720825	PT	23Q	12P	12/20/90	881.00	1000.0	0.88
B724400	PT	060		07/06/89	6.40	7.43	0.86
B721605	PT	YPL	8P	09/14/90	673.00	781.00	0.86
B848882	PT	10A	12P	12/11/90	655.00	765.00	0.86
B848841	PT	2PC	11P	01/18/91	1280.0	1520.0	0.84
B723471	PT	ZT6	10	10/31/90	51.30	63.50	0.81
B724511	PT	092		07/26/89	6.93	8.80	0.79
B720911	PT	YLS	8P	09/08/90	637.00	805.00	0.79
B724847	PT	0EQ		09/14/89	615.00	787.00	0.78
B849037	PT	XIN	6P	07/13/90	695.00	906.00	0.77
B724656	PT	088		08/16/89	675.00	884.00	0.76
B724900	PT	0FD		09/27/89	59.80	78.90	0.76
B724547	PT	090		08/03/89	6.21	8.33	0.75
B722079	PT	01Y		11/08/89	609.00	814.00	0.75
B724510	PT	092		07/26/89	574.00	788.00	0.73
B724578	PT	0A4		08/09/89	569.00	798.00	0.71
B848881	PT	10A	12P	12/11/90	603.00	868.00	0.69
B724871	PT	0F8		09/27/89	64.30	96.50	0.67
B724631	PT	0B3		08/16/89	594.00	914.00	0.65
B722065	PT	01W		11/08/89	6.00	9.36	0.64
B848907	PT	1P4	12P	12/12/90	556.00	932.00	0.60
B721696	PT	05U		06/21/89	295.00	543.00	0.54
B724867	PT	0F7		09/27/89	4.74	9.11	0.52
B721498	PT	YPI	8P	09/14/90	338.00	644.00	0.52
B722614	PT	YGO	7P	08/24/90	491.00	1000.0	0.49
B848880	PT	109	12P	12/11/90	378.00	781.00	0.48
B721559	PT	09L		08/03/89	370.00	860.00	0.43
B724390	PT	090		07/26/89	3.87	9.20	0.42
B722227	PT	0K1		11/22/89	323.00	769.00	0.42
B722181	PT	0JL		11/15/89	38.90	96.40	0.40
B721740	PT	06B		06/29/89	94.10	275.00	0.34
B722109	PT	0JF		11/15/89	28.20	93.00	0.30
B724853	PT	0ER		09/14/89	201.00	805.00	0.25
B721541	PT	09L		08/03/89	98.80	508.00	0.19
B722824	PT	UBM	3P	03/07/90	53.70	316.00	0.17

The *in vitro* antiviral activity of the compounds in Table 33 was further confirmed in most of the compounds. Verification of the antiviral activity of these prescreen actives was tested using the primary screening (confirmatory) protocol. **(See Table 34)**

4.2.4 Confirmatory Assays (Compounds Selected from Prescreen Testing):

During this reporting period 767 compounds were received (from prescreen testing) for confirmatory testing. If a compound had an SI of ≥ 1 then it was considered as a candidate for confirmatory primary screen testing. The SI of ≥ 1 was only a preliminary endpoint that was being used and was subject to change as more data was generated. Data from the confirmatory assays are summarized in Table 34. Out of 767 confirmatory tests, 515 compounds (67%) were confirmed active during this reporting period. The criteria for activity is that the confirmatory test has to show $\geq 25\%$ reduction in CPE in one or more of the viruses tested. Failure to confirm the activity in these compounds was probably due to differences during the assay conditions:

1) In confirmatory assays the concentration range is adjusted to a more accurate semilog scale to maximize the SI and calculate the TAI and it should indicate more accurately the antiviral potential of the test compound.

2) Differences in the "differential" of the two runs can cause the compound to read positive or negative, falsely. The variability in the differential can cause false positives or false negative bias in day-to-day testing calculations, reflecting the variability in the maximum activity of the compound.

3) The metabolic rate, age, and passage number, etc., of the cells may cause the above observed variability in test compound activity.

4) Problems associated with stability and storage of the compound (i.e., different lot numbers, solubility, light sensitivity, hygroscopic, etc.).

5) Problems associated with technical execution of large numbers of plates by different technicians.

6) During the beginning of the prescreen testing (Shipment 1P - 5P), the assays were performed with confluent and stationary cellular monolayers. This procedure has a tendency to create false positive results as compared to the confirmatory assay results. In confirmatory testing actively metabolizing subconfluent monolayers have been used.

7) Two different MTT protocols are being compared. The prescreen protocol was prophylactic when we were testing drug shipments 1P - 5P. The drug was delivered to the cells before final addition of 62 $TCID_{50}$ of virus to total volume of 200 μl. The confirmatory protocol is therapeutic. The virus 32 $TCID_{50}$ is delivered onto the cells before the addition of the drug in total volume of 100 μl. In later drug shipments the same protocol was used for both prescreen and confirmatory assays.

The results seem to indicate that prophylactic treatment with confluent stationary monolayers causes inconsistent cell infections and therefore causes numerous drugs to read as false positive. Later prescreen testing (starting with shipments 5P) was done with the same therapeutic protocol in order to evaluate more properly the correlation of actives from the prescreen to those of the confirmatory (primary screen) results. The conflicting results should be retested based upon the availability of the compound.

Recommendations of Prescreen Confirmed-Actives Based Upon the *In Vitro* Results with MTT Assay (Vero Cells)

Based upon the above mentioned variable conditions in assay procedures, which are difficult to control on a -day-to-day basis, we recommend the following:

1) Since the prescreen assay protocol has a tendency to produce false positive results, only compounds that demonstrate at least 50% reduction in viral CPE and a selectivity index of ≥ 1.0 will advance to confirmatory testing.

2) In order not to miss a possible active lead from the prescreen assay, some nontoxic compounds with an SI of ≤ 1.0 need to be retested.

3) Compounds with broad-range activity close to 50% reduction must also be retested in order not to miss an active compound that is not clearly dose responsive.

4) In confirmatory assays, compounds having antiviral activity at the "3" activity grade level or consistent repeatable grade "2" level are considered active candidate compounds.

Table 34

Confirmatory Testing of Compounds Selected From Prescreen Testing

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
15P	B604736-F046	2	3	56	11029	0	0	1	0	0	NT
15P	B604736-F047	14	5	38	11030	1	0	0	2	2	NT
15P	B604736-F057	11	4	59	11031	1	0	0	1	0	NT
15P	B631963-F015	8	6	17	11032	0	0	0	0	0	NT
15P	B631963-F016	3	23	17	11033	0	0	0	0	0	NT
15P	B634131-F031	27	40	5	11034	0,0	0,0	0,0	0,0	0,0	NT
15P	B634131-F032	18	34	1	11035	0	0	0	0	0	NT
15P	B634131-F065	33	32	22	11036	0,0	0,0	0,0	0,0	0,0	NT
15P	B634131-F068	33	46	20	11037	0	0	0	0	0	NT
15P	B642761-F016	13	12	28	11038	0	0	0	0	0	NT
15P	B642761-F017	7	9	36	11039	0	0	0	0	0	NT
15P	B642761-F018	5	10	26	11040	0	0	0	0	0	NT
15P	B644263-F106	2	1	17	11041	0	0	1	0	0	NT
15P	B644263-F107	1	27	22	11042	0	0	0	0	0	NT
15P	B678018-F243	2	2	62	11043	1	2	2	0	0	NT
15P	B678018-F244	54	13	57	11044	2	2	0	0	0	NT
15P	B676018-F245	43	10	42	11045	2	2	1	1	0	NT
15P	B678018-F246	5	17	2	11046	0	0	0	0	0	NT
4P	B708143-D032	9	–	3	7322	0	0	0	0	0	1

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
12P	B714994	1	1	25	9121	1	0	0	0	2	0
12P	B714997	0	3	26	9122	0	0	0	0	0	0
12P	B715001	40	4	11	9123	2	0	0	0	0	0
12P	B715010	0	10	1	9124	0	0	1	0	0	0
12P	B715011	0	11	6	9125	0	0	0	0	0	0
12P	B715012	1	22	14	9126	0	0	0	0	0	0
12P	B715022	1	3	18	9127	1	0	1	0	1	0
12P	B715023	0	3	16	9128	2	0	1	0	1	0
12P	B715026	0	4	25	9129	0	0	1	0	0	0
12P	B715060	7	21	26	9130	1	0	1	0	0	0
13P	B715141	15	14	52	11047	1	0	1	2	1	NT
4P	B716493-D021	14	--	33	7323	1,0	0,0	0,0	1,0	2,0	0
14P	B718574	0	70	32	11048	0	0	2	0	2	NT
14P	B718577	21	2	15	11049	0	0	0	0	1	NT
14P	B718580	1	2	29	11050	0	0	0	0	0	NT
14P	B718582	10	13	52	11051	0	0	0	1	0	NT
14P	B718583	0	0	28	11052	0	0	0	0	0	NT
14P	B718586	2	1	35	11053	0	0	1	0	1	NT
14P	B718587	0	3	24	11054	0	0	0	0	0	NT
14P	B718595	3	12	22	11055	0	0	1	0	0	NT
14P	B718598	1	12	23	11056	0	0	1	0	0	NT

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
14P	B718599	0	21	24	11057	0	0	1	0	0	NT
14P	B718603	1	1	21	11058	0	0	1	0	0	NT
14P	B718636	22	30	4	11059	0	0	0	0	1	NT
14P	B718648	25	16	27	11060	1	0	2	1	2	NT
14P	B718649	18	7	3	11061	0	0	0	0	0	NT
14P	B718656	22	7	58	11062	z1	0	0	0	2	NT
14P	B718789	30	19	0	11063	0	0	0	0	0	NT
14P	B718799	17	32	5	11064	0	0	2	0	0	NT
14P	B718807	7	19	36	11065	0	0	1	0	1	NT
14P	B718813	0	46	6	11066	0	0	1	0	0	NT
14P	B718819	0	38	23	11067	0	0	1	0	0	NT
14P	B718821	0	8	24	11068	0	0	1	0	0	NT
14P	B718838	6	32	31	11069	0	0	1	0	0	NT
14P	B718840	1	20	13	11070	0	0	0	0	1	NT
14P	B718841	7	44	33	11071	0	0	0	0	0	NT
14P	B718842	10	14	21	11072	0	0	1	0	0	NT
14P	B718843	39	11	0	11073	1	0	1	0	0	NT
14P	B718849	7	18	25	11074	0	0	0	2	0	NT
14P	B718860	38	13	0	11075	1	0	1	1	0	NT
14P	B718862	4	7	16	11076	1	0	0	2	1	NT
14P	B718876	53	6	0	11077	0	0	0	0	0	NT

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
14P	B718882	1	41	3	11078	0	0	2	0	0	NT
14P	B718889	1	27	0	11079	0	0	1	0	0	NT
14P	B718917	5	39	13	11080	0	0	1	0	0	NT
14P	B718924	6	31	8	11081	0	0	1	0	0	NT
14P	B718934	27	28	16	11082	0	0	1	0	0	NT
14P	B718935	10	16	14	11083	0	0	1	0	0	NT
14P	B718942	1	21	10	11084	0	0	1	0	0	NT
14P	B718954	2	25	8	11085	0	0	1	0	0	NT
14P	B718969	4	62	7	11086	0	0	3	2	1	NT
14P	B718978	4	17	1	11087	0	0	1	1	0	NT
14P	B718979	6	26	48	11088	0	0	1	1	0	NT
14P	B718982	0	45	21	11089	0	0	1	0	0	NT
14P	B718983	5	16	13	11090	1	0	1	1	0	NT
14P	B718990	4	13	20	11091	0	0	0	1	0	NT
14P	B718996	2	7	13	11092	0	0	0	0	0	NT
14P	B719004	6	23	19	11093	0	0	2	0	0	NT
14P	B719006	3	47	38	11094	0	0	1	1	0	NT
14P	B719007	25	25	53	11095	1	0	2	1	1	NT
14P	B719008	22	13	14	11096	1	0	1	1	0	NT
12P	B719215	26	1	8	9131	0	0	0	0	0	0
12P	B719216	16	10	15	9132	1	0	1	0	z1	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
12P	B719217	16	1	2	9133	0	0	0	0	0	0
12P	B719218	33	64	11	9134	1	0	2	0	1	0
12P	B719219	33	7	6	9135	1	0	1	0	0	0
12P	B719220	22	5	13	9136	0	0	0	0	0	0
12P	B719221	16	27	10	9137	0	0	1	0	0	0
12P	B719222	19	9	32	9138	0	0	1	0	1	0
12P	B719224	28	1	13	9139	0	0	0	0	0	0
12P	B719225	27	1	5	9140	0	0	0	0	0	0
12P	B719226	13	3	7	9141	0	0	0	0	0	0
12P	B719228	13	6	3	9142	0	0	0	0	1	0
12P	B719229	11	23	9	9143	0	0	0	0	0	0
12P	B719230	9	6	11	9144	0	0	0	0	0	0
12P	B719232	7	10	36	9145	0	0	1	0	0	0
12P	B719238	10	4	28	9146	0	0	0	0	0	0
12P	B719240	14	15	8	9147	0	0	0	0	0	0
12P	B719241	14	2	15	9148	0	0	1	0	0	0
12P	B719242	20	15	37	9149	1	0	1	2	0	1
12P	B719244	13	15	8	9150	1	0	1	1	1	0
12P	B719245	16	6	16	9151	0	0	0	1	0	0
12P	B719246	20	3	16	9152	1	0	1	1	1	0
12P	B719247	16	6	18	9153	0	0	1	2	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
12P	B719255	10	1	14	9154	0	0	0	0	0	0
12P	B719256	5	6	17	9155	0	0	0	0	0	0
12P	B719257	13	3	4	9156	0	0	0	0	0	0
12P	B719258	16	2	2	9157	1	0	0	0	0	0
12P	B719259	23	5	5	9158	0	0	0	0	0	0
12P	B719260	15	6	19	9159	0	0	0	0	0	0
12P	B719265	9	16	4	9160	1	0	1	1	0	0
12P	B719266	7	36	11	9161	1	0	1	0	0	0
12P	B719267	10	30	19	9162	0	0	2	0	0	0
12P	B719272	8	20	5	9163	1	0	2	0	0	0
12P	B719274	18	1	5	9164	2	0	0	1	0	0
12P	B719278	0	10	10	9165	0	0	1	0	0	0
14P	B720392	5	72	30	11097	0	0	2	0	0	NT
14P	B720394	21	1	0	11098	0	0	1	0	1	NT
14P	B720396	0	19	0	11099	0	0	0	0	1	NT
14P	B720398	2	72	24	11100	0	0	3	0	0	NT
14P	B720399	3	52	11	11101	0	2	2	0	0	NT
14P	B720400	23	4	0	11102	0	0	2	1	0	NT
14P	B720405	0	22	12	11103	0	0	2	0	0	NT
14P	B720409	33	5	21	11104	0	0	0	1	0	NT
14P	B720410	20	4	0	11105	0	0	0	0	0	NT

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
14P	B720412	42	5	13	11106	0	0	0	1	0	NT
14P	B720415	32	3	1	11107	0	0	1	2	0	NT
14P	B720418	4	8	22	11108	0	0	0	2	0	NT
14P	B720419	21	12	0	11109	0	0	2	0	1	NT
14P	B720424	9	5	27	11110	0	0	0	2	0	NT
14P	B720425	41	32	1	11111	0	0	2	0	0	NT
14P	B720425	–	–	–	11112	NT	NT	NT	NT	NT	NT
14P	B720427	25	28	1	11113	0	0	1	0	0	NT
14P	B720427	–	–	–	11114	NT	NT	NT	NT	NT	NT
14P	B720430	13	12	51	11115	0	0	1	2	0	NT
14P	B720430	–	–	–	11116	NT	NT	NT	NT	NT	NT
14P	B720431	14	11	8	11117	0	0	2	1	0	NT
14P	B720433	28	6	3	11118	1	0	1	2	1	NT
14P	B720434	8	19	0	11119	0	0	2	0	0	NT
14P	B720435	5	20	10	11120	0	0	0	0	0	NT
14P	B720436	28	4	0	11121	0	0	2	3	1	NT
14P	B720443	25	1	5	11122	1	2	0	2	2	NT
14P	B720445	42	4	82	11123	2	1	1	3	2	NT
8P	B720490	19	3	3	8507	0	0	0	0	0	0
8P	B720492	20	0	2	8508	0	0	0	0	0	1
8P	B720493	26	4	1	8509	0	0	0	0	0	0

	Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]						
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
8P	B720494	18	20	3	8273	0	0	0	0	0	0
8P	B720498	17	8	2	8510	0	0	1	0	0	0
12P	B720820	7	12	5	9166	1	0	2	0	0	1
12P	B720821	16	1	4	9167	1	0	1	2	0	0
12P	B720825	14	18	50	9168	1	0	1	1	0	0
12P	B720828	23	9	1	9169	1	0	1	0	0	0
12P	B720832	0	13	27	9170	0	0	1	0	0	0
12P	B720834	7	31	25	9171	0	0	2	0	0	0
4P	B720892	6	–	27	7324	0	0	0	0	0	0
4P	B720894	18	–	29	7325	0	0	0	0	0	0
4P	B720895	18	–	35	7326	0	0	0	0	0	0
4P	B720896	22	–	30	7327	0	0	0	0	0	0
4P	B720900	28	–	41	7328	1,1	0,0	0,0	0,0	0,0	0
4P	B720903	5	–	29	7329	0	0	0	0	0	0
4P	B720905	6	–	45	7330	0	0	0	0	0	0
8P	B720910	23	11	22	8511	2,2	1,0	2,1	2,2	2,2	0
8P	B720911	14	14	55	8272	1,0	0,0	1,0	2,0	1,0	0
4P	B720912	6	–	43	7331	0,0	0,0	1,0	0,0	1,1	0
4P	B720914	33	–	37	7332	2,1	0,0	1,1	0,1	2,2	0
4P	B720915	4	–	31	7333	0,0	0,0	0,0	0,0	2,2	0
4P	B720916	9	–	55	7099	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
8P	B720931	0	25	46	8274	0	0	0	1	1	0
8P	B720933	0	100	47	8513	0,1	0,0	3,3	0,1	1,1	1
8P	B720935	18	10	2	8325	0	0	0	0	0	0
4P	B720937	11	–	55	7100	0	0	0	0	0	0
4P	B720940	2	–	60	7101	0	0	0	0	0	0
4P	B720941	0	–	51	7102	0	0	0	0	0	0
4P	B720946	6	–	32	7336	0	0	1	0	1	0
4P	B720951	11	–	62	7103	0	0	0	0	0	2
4P	B720951	–	–	–	7337	NT	NT	NT	NT	NT	NT
4P	B720952	11	–	56	7104	0	0	0	0	0	0
4P	B720952	–	–	–	7338	NT	NT	NT	NT	NT	NT
4P	B720958	1	–	60	7105	0	0	0	0	0	0
4P	B720963	0	–	59	7106	0	0	0	0	1	1
8P	B720968	0	26	40	8514	1	0	1	1	0	0
4P	B720978	10	–	24	7339	1,0	1,0	1,0	0,0	1,0	0
4P	B720979	10	–	63	7107	0	0	0	0	1	0
4P	B720979	–	–	–	7340	NT	NT	NT	NT	NT	NT
4P	B720985	7	–	0	7341	1,1	0,0	0,1	1,0	0,0	0
4P	B720986	7	–	0	7342	0	0	0	0	0	0
4P	B720987	12	–	17	7343	0	0	1	0	1	0
4P	B720988	4	–	4	7344	1,0	0,0	0,1	0,0	2,0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
4P	B720989	28	–	1	7345	0	0	0	0	0	0
4P	B720990	7	–	23	7346	0	0	0	0	0	0
4P	B720994	4	–	0	7347	0,0	0,0	1,0	0,0	1,0	0
4P	B720995	7	–	0	7348	0	0	0	0	0	0
4P	B720998	8	–	1	7349	0,0	0,0	0,0	2,1	0,0	0
4P	B721000	12	–	24	7350	1,1	0,1	0,0	2,0	1,0	0
4P	B721001	3	–	3	7351	1,1	0,0	0,0	0,0	0,0	0
4P	B721002	2	–	27	7352	0	0	0	0	0	0
4P	B721005	10	–	12	7353	0	0	0	0	0	0
4P	B721006	32	–	2	7354	2,2	0,1	0,0	0,0	0,0	0
4P	B721007	36	–	8	7355	0,0	0,0	0,0	1,0	0,0	0
4P	B721011	37	–	60	7298	0,0	0,0	1,0	0,0	0,0	1
4P	B721012	32	–	36	7356	1,0	0,0	0,0	1,0	2,0	0
4P	B721013	0	–	10	7357	0	0	0	0	0	0
4P	B721015	7	–	0	7358	1,0	0,0	0,0	0,0	1,1	0
4P	B721016	0	–	34	7359	0	0	0	0	0	0
4P	B721017	0	–	39	7360	0	0	0	0	0	0
4P	B721018	3	–	32	7361	0,0	0,0	1,0	0,0	0,0	0
4P	B721019	0	–	28	7362	0,0	0,0	0,0	1,0	0,0	0
4P	B721020	4	–	10	7363	1,0	1,0	1,0	0,0	1,0	0
4P	B721021	0	–	61	7299	0	0	0	0	0	1

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
4P	B721022	0	–	32	7364	0	0	0	1	0	0
4P	B721026	3	–	37	7365	1,0	0,0	0,0	0,0	2,0	0
4P	B721029	0	–	29	7366	0	0	0	0	0	0
4P	B721030	12	–	25	7367	0	0	0	1	0	0
4P	B721031	0	–	43	7368	0,0	0,0	0,0	2,0	0,0	0
4P	B721033	10	–	2	7369	0,0	0,0	0,0	0,0	2,0	0
4P	B721034	11	–	10	7370	0	0	0	0	0	0
8P	B721035	0	28	22	8515	1	0	0	0	0	1
4P	B721040	7	–	5	7371	0	0	0	0	0	0
4P	B721042	8	–	0	7372	1,0	1,1	0,0	0,0	1,0	0
4P	B721045	13	–	17	7373	2,1	0,0	0,0	2,2	2,1	0
4P	B721050	10	–	5	7374	0,0	1,0	0,0	1,1	0,0	1
4P	B721051	47	–	15	7375	2,0	2,0	0,0	2,1	1,0	2
4P	B721052	12	–	4	7376	0	0	0	0	0	0
4P	B721053	8	–	0	7377	2,0	1,0	0,0	0,0	1,0	0
4P	B721054	35	–	15	7378	2,1	0,0	1,0	0,0	2,0	1
4P	B721055	12	–	7	7379	0,0	0,0	0,0	1,1	0,0	0
4P	B721056	10	–	20	7380	1,0	1,0	0,0	0,0	1,0	0
4P	B721058	14	–	0	7381	0,0	1,0	0,1	0,1	0,0	1
4P	B721059	19	–	4	7382	0,1	0,0	0,0	1,0	2,1	0
4P	B721060	7	–	72	7300	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
4P	B721061	1	–	81	7301	0,0	0,0	0,0	1,2	0,1	0
4P	B721062	18	–	86	7302	0,0	0,0	0,0	0,1	1,1	2,1
4P	B721063	15	–	36	7383	1,2	0,0	0,0	2,0	1,1	0
4P	B721064	8	–	80	7303	0,0	0,0	0,1	1,2	0,0	0
4P	B721173	62	–	20	7108	1,1	1,0	0,0	0,0	0,0	0
4P	B721177	10	–	9	7385	1,0	0,0	0,1	2,0	1,0	0
4P	B721178	3	–	10	7386	0,1	0,0	0,2	2,1	0,0	0
8P	B721181	20	10	4	8326	2,1	0,0	0,0	1,1	2,2	0
8P	B721192	21	5	1	8327	2,1	0,0	0,1	1,0	0,0	0
4P	B721193	0	–	23	7387	0,0	0,0	0,0	1,0	0,0	0
4P	B721196	–	–	31	7388	0	0	0	0	0	0
4P	B721211	27	–	0	8334	0	0	0	0	0	0
8P	B721213	15	3	2	8504	0	0	0	0	0	0
8P	B721220	24	8	3	8505	NT	NT	1	0	0	0
8P	B721234	18	8	0	8506	NT	NT	1	1	1	1
8P	B721236	15	22	17	8328	0	0	1	2	1	0
4P	B721256	14	–	36	7389	0	0	0	0	0	0
4P	B721257	12	–	10	7390	2,0	0,0	0,0	0,1	1,0	0
8P	B721258	18	3	11	8329	0	0	0	0	0	0
4P	B721260	10	–	21	7391	0,0	0,0	0,0	2,1	1,1	2,1
4P	B721261	8	–	19	7392	0	0	0	0	1	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
4P	B721264	6	--	6	7393	0	0	0	0	0	0
4P	B721266	3	--	12	7394	0	0	0	1	0	0
8P	B721274	27	4	2	8330	1	0	0	2	0	0
8P	B721295	12	6	60	8309	0,0	0,0	1,1	2,3	0,0	0,0
8P	B721303	0	12	40	8310	0	0	0	0	0	0
4P	B721319	1	--	39	8230	0	0	1	2	0	0
4P	B721320	9	--	38	8231	0	0	1	1	1	0
8P	B721339	18	3	24	8331	1	0	0	1	1	0
8P	B721348	8	4	56	8311	2,1	1,0	0,0	2,2	2,1	0
4P	B721374	0	--	61	7304	0	0	0	0	0	0
4P	B721377	9	--	64	7305	0	0	0	0	0	0
4P	B721378	4	--	51	7306	0	0	0	0	0	0
4P	B721392	6	--	52	7307	0	0	0	0	0	1
8P	B721413	36	2	48	8312	1,1	0,0	0,1	2,2	1,1	1
8P	B721420	7	2	37	8249	0	0	0	0	0	0
8P	B721474	4	2	41	8313	0	0	1	0	2	0
8P	B721477	3	2	42	8314	0	0	0	0	0	0
8P	B721498	0	23	56	8315	0,1	0,0	2,2	1,1	1,1	0
8P	B721520	0	0	35	8316	0	0	0	0	0	0
8P	B721543	0	27	29	8317	0	0	1	0	0	0
8P	B721579	4	43	46	8318	1,1	0,0	2,2	2,1	1,0	0

	Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]						
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
8P	B721582	3	2	30	8319	1	0	0	1	0	0
4P	B721584	40	–	8	8335	1	1	0	0	0	0
4P	B721586	32	–	0	8336	1	0	0	0	1	0
4P	B721588	35	–	2	8337	1	1	1	0	0	2
4P	B721592	28	–	59	7308	0,0	0,0	1,1	0,2	0,0	0
8P	B721594	1	6	35	8320	0	0	0	0	0	0
4P	B721595	14	–	55	7309	0	0	0	0	0	0
4P	B721596	11	–	52	7310	0,0	0,0	1,0	0,0	0,0	1
8P	B721598	6	1	27	8321	0	0	0	1	0	0
8P	B721601	0	1	38	8322	0	0	0	1	0	0
4P	B721602	12	–	44	7395	1,1	0,0	0,0	1,1	1,0	0
8P	B721604	18	2	72	8323	0	0	0	0	1	0
8P	B721605	0	14	52	8500	0	0	1	1	1	1
8P	B721607	0	0	33	8501	0	0	0	0	0	0
4P	B721610	5	–	22	7396	0	0	0	0	0	2
4P	B721611	10	–	50	7311	1,0	0,0	0,0	1,0	0,0	1
8P	B721612	0	9	37	8502	1	0	1	0	0	0
4P	B721614	7	–	44	7397	0	0	0	0	0	0
4P	B721615	5	–	24	7398	0	0	0	0	0	0
4P	B721616	34	–	32	7399	1,1	0,0	0,1	2,2	1,1	0
4P	B721617	9	–	45	7400	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
8P	B721618	0	3	32	8503	1	0	0	0	0	1
4P	B721619	5	--	45	7401	0	0	0	0	0	0
8P	B721621	0	1	30	8324	0	0	0	0	0	0
4P	B721625	6	--	40	7402	0	0	0	0	0	0
4P	B721628	3	--	39	7403	0,1	0,0	0,2	1,1	0,0	0
4P	B721630	6	--	41	7404	0	0	0	0	0	0
12P	B721643	15	12	17	9172	1	1	2	0	1	0
4P	B721645	22	--	24	8338	1	0	0	0	0	0
1P	B721690	16	--	90	6241	0	0	0	0	0	NR
1P	B721693	19	--	62	6242	0	0	0	0	0	NR
1P	B721702	54	--	69	6243	0,1	0,0	0,0	3,0	0,0	NR
1P	B721714	52	--	70	6244	0	0	0	0	0	NR
1P	B721728	74	--	78	6245	0	0	0	1	0	NR
1P	B721729	22	--	49	6246	0,1	0,0	1,1	1,0	0,1	NR
10P	B721746	11	6	0	9173	2	0	2	2	2	0
1P	B721749	5	67	100	6584	0,1	0,0	1,0	1	0,0	NR
1P	B721754	51	--	77	6247	0	0	0	1	0	NR
10P	B721777	0	31	0	9174	0	0	1	0	0	0
10P	B721778	16	6	0	8379	0	0	1	0	0	0
10P	B721781	12	5	46	8380	1	0	0	1	0	0
10P	B721786	0	18	14	9175	0	0	2	0	0	0

	Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]						
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
3P	B721787	10	–	76	6585	0	0	0	0	0	0
3P	B721818	23	–	67	6586	0	0	0	0	0	0
1P	B721823	82,59	–	100,100	6248	0,0	0,0	1,0	2,0	0,0	0
3P	B721826	31	–	66	6587	0	0	0	0	0	0
3P	B721838	19	–	66	6588	1,1	0,0	0,0	1,0	0,0	0
9P	B721860	0	17	24	9176	1	0	1	0	0	1
9P	B721863	0	23	38	8516	1	0	1	1	1	1
9P	B721877	10	1	15	9177	0	0	0	0	0	0
3P	B721880	50	–	76	6589	2,0	0,0	0,0	1,0	1,0	0
9P	B721881	0	–	2	8517	1	0	1	0	0	0
9P	B721883	0	2	23	8518	0	0	0	0	0	0
3P	B721892	12	–	50	6590	0	0	0	0,0	0	0
3P	B721899	100	–	61	6591	1,1	0,0	0,0	1,0	1,0	0
3P	B721905	15	65	28	6592	1,1	0,0	0,0	1,0	1,0	0
3P	B721908	1	–	50	6593	0	0	0	0	0	0
3P	B721910	32	–	98	6594	1,0	0,0	0,0	1,0	0,0	0
3P	B721917	0	–	76	6595	0	0	0	0	0	0
3P	B721925	6	–	67	6596	0	0	0	0	0	0
3P	B721953	5,99	–	38,84	6597	0	0	0	0	0	0
3P	B721958	0	–	58	6598	0	0	0	0	0	0
3P	B721979	49	–	94	6599	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
3P	B722006	29	–	56	6600	0	0	0	0	0	0
9P	B722033	2	21	34	8519	3	0	0	0	0	0
9P	B722038	11	16	4	9178	0	0	1	0	0	0
3P	B722048	–	–	79	6601	1,0	0,0	0,0	2,0	0,0	0
3P	B722052	3	–	68	6602	0	0	0	0	0	0
3P	B722054	32	–	87	6603	1,0	0,0	0,0	2,0	0,0	0
9P	B722055	28	13	25	9179	0	0	1	0	0	0
9P	B722060	26	2	55	9180	1	0	0	0	0	0
9P	B722072	13	1	0	9181	0	0	0	0	0	0
3P	B722076	23	–	71	6604	1,1	0,0	0,0	1,0	1,0	0
3P	B722077	41	–	66	6605	1,1	1,0	1,1	1,0	1,0	0
3P	B722078	36	–	68	6606	1,1	0,0	0,0	0,0	0,0	0
3P	B722080	47	–	57	6607	1,1	0,0	0,0	2,0	1,0	0
3P	B722081	30	–	55	6608	1,1	0,0	0,0	1,0	0,0	0
3P	B722087	59	–	71	6609	0	0	0	0	0	0
3P	B722089	3	–	50	6610	0	0	0	0	0	0
3P	B722091	8	–	98	6611	0	0	0	1	0	0
3P	B722094	10	–	63	6612	0	0	0	1	0	0
9P	B722098	9	2	5	9182	0	0	0	0	0	0
3P	B722109	52	–	51	6613	1,0	0,0	0,0	0,0	0,0	0
3P	B722111	76	–	47	6614	1	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
9P	B722116	73	3	55	9183	2	1	0	0	1	1
9P	B722117	46	27	58	9184	2	2	0	1	2	0
3P	B722141	17	–	63	6615	0	0,0	0	0	0	0
9P	B722161	2,5	1,5	31,34	9185	1	0	0	0	1	1
3P	B722162	12	–	55	6616	1	0	0	0	0	0
3P	B722165	79	–	58	6617	2,0	2,0	0,0	0,0	0,0	0
3P	B722168	23	–	82	6618	2,0	0,0	0,0	0,0	0,0	0
9P	B722172	2	25	14	9186	0	0	1	0	0	0
9P	B722174	14	10	30	8366	0	0	0	2	0	0
9P	B722174	14	10	30	9187	0	0	0	0	0	0
9P	B722179	25	1	17	9188	1	1	0	0	1	1
3P	B722181	51	–	51	6619	1	0	0	0	0	0
3P	B722182	88	–	58	6620	2	0	0	0	0	0
3P	B722183	90	–	76	6621	1	0	0	0	0	0
9P	B722184	0	22	49	8367	1	0	1	1	1	1
9P	B722186	23	1	17	9189	1	0	0	0	0	0
9P	B722190	22	0	4	9190	0	0	0	0	0	0
9P	B722194	20	1	4	9191	0	0	0	0	0	0
9P	B722198	0	30	12	9192	1	0	1	0	0	0
9P	B722199	0	28	28	9193	1	0	1	0	0	0
9P	B722210	1	2	13	8363	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
9P	B722215	15	1	10	9194	0	0	0	0	0	0
3P	B722222	46	–	90	6622	0,0	0,0	0,0	1,0	0,0	0
3P	B722224	4	–	79	6623	1,0	0,0	0	1,0	0,0	0
3P	B722228	49	–	91	6624	0	0	0	0	0	0
9P	B722229	2,30	12	25,5	9195	1	0	1	0	0	0
3P	B722230	23,1	35	72,35	6625	0,0	0,0	0	1,0	0,0	0
9P	B722231	0,13	17	40,38	8368	1	0	1	2	1	1
9P	B722233	26	0	0	9196	0	0	0	0	0	0
9P	B722234	11	23	21	9197	0	0	1	0	1	0
9P	B722236	19	0	6	9198	0	0	0	0	0	0
3P	B722239	78,9	2	59,32	6626	0	0	0	0	0	0
9P	B722240	16	4	29	8364	3,1	2,0	0,0	1,1	1,0	0
3P	B722241	100	–	78	6627	0	0	0	0	0	0
9P	B722242	6,47	2	45,6	9199	1	2	0	0	0	0
9P	B722244	0,0	25	17,9	9200	0	1	0	0	0	0
9P	B722245	0,14	0	17,0	9201	0	0	0	0	0	0
3P	B722246	63,10	4	56,36	6628	2	0	0	0	0	0
3P	B722247	61,0	2	56,2	6629	1	0	0	0	0	1
9P	B722248	0,64	5	29,3	9202	1	2	0	0	0	0
9P	B722255	0	26	0	9203	1	1	0	0	1	0
9P	B722256	0	13	0	9204	1	1	1	0	1	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
9P	B722278	13	2	0	8365	0	0	0	0	0	0
7P	B722279	13	1	60	8238	0	0	0	1	0	1
7P	B722280	5	0	63	8239	0	0	0	1	0	2,2
10P	B722504	5	32	8	9205	1	0	1	0	0	0
10P	B722506	4	22	1	8381	0	0	0	0	0	0
10P	B722508	9	20	41	8382	1	0	1	1	0	0
10P	B722510	0	37	5	8383	1	0	1	0	0	0
3P	B722518	64	--	0	7109	1,0	0,0	0,0	0,0	0,0	0
3P	B722525	0	--	79	7110	0,0	0,0	0,1	1,0	0,2	3,2
7P	B722559	28	14	56	8240	2,2	0,0	1,2	2,2	1,2	1
7P	B722566	29	6	14	8270	1,1	0,0	2,2	2,1	0,1	1
7P	B722591	15	3	51	8241	1,1	0,0	2,1	1,1	1,0	1
7P	B722607	0	2	54	8242	0	0	1	0	0	0
7P	B722614	1	4	50	8243	1	0	0	0	0	0
7P	B722628	1	3	61	8244	1	0	1	0	0	0
7P	B722632	0	1	57	8245	0	0	0	0	0	0
7P	B722634	4	1	65	8246	0	0	0	0	0	0
7P	B722635	20	1	12	8512	1	0	1	0	0	0
7P	B722666	0	1	28	8247	1	0	1	0	0	0
7P	B722668	1	5	42	8248	1,1	0,0	1,1	0,1	1,0	1
7P	B722689	2	15	67	8228	1,2	0,0	0,1	2,2	1,2	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
7P	B722733	25		0	8339	0,0	0,0	0,0	0,2	0,0	0,0
7P	B722743	4	10	68	8250	0,0	0,0	0,0	2,1	2,1	0
7P	B722745	1	11	65	8251	2,0	0,0	1,1	2,2	2,2	0
3P	B722752	19	--	0	7405	0,0	0,0	0,0	2,0	1,0	0
7P	B722757	0	17	13	8229	1,0	0,0	1,1	2,1	0,1	1
7P	B722778	0	8	33	8252	0	0	1	0	0	1
7P	B722785	0	9	49	8253	1	0	1	1	1	0
3P	B722805	1	--	57	7111	0	0	0	0	0	0
3P	B722808	5	--	61	7112	0	0	0	0	0	1
3P	B722811	3	--	50	7113	0	0	0	0	0	0
7P	B722823	3	1	73	8271	2,2	0,0	0,0	2,2	3,2	0
3P	B722824	100	--	100	7114	0	0	0	0	0	0
3P	B722849	7	--	55	7115	0	0	0	0	0	0
3P	B722854	11,18	--	19,28	7406	0,1	0,0	0,0	2,2	1,0	0
3P	B722858	9,18	--	13,30	7407	1,1	1,1	0,0	0,0	1,0	1
7P	B722866	0,20	--	22,36	8340	0,0	0,0	0,0	0,0	0,0	0
3P	B722867	0,0	--	49,54	7312	0	0	0	0	0	0
3P	B722871	24,9	--	71,0	7313	0	0	0	0	0	0
10P	B722872	8	18	25	8413	0	0	0	0	0	0
10P	B722872	8	18	25	9208	0	0	1	0	0	0
10P	B722873	36	7	64	8373	2,1	0,0	1,1	1,0	0,0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
10P	B722873	36	7	64	9209	1	0	1	0	0	0
3P	B722874	3,2	--	76,30	7314	0,0	0,0	0,0	1,0	0,0	0
10P	B722876	15	0	2	8388	0	0	0	0	0	0
10P	B722876	15	0	2	9210	0	0	0	0	0	0
10P	B722883	9,5,2	15,2	16,55	7315	0	0	0	1	0	0
3P	B722883	9,5,2	15,2	16,55	7315	0	0	0	1	0	0,0
10P	B722884	12	0	10	8389	0	0	0	0	0	0
10P	B722884	12	0	10	9212	1	0	0	0	0	0
10P	B722886	0,0,8	3	21,61,40	7316	0	0	0	1	0	0,0
3P	B722886	0,0,8	28	21,61,40	7316	0	0	0	1	0	0,0
3P	B722889	4,3,8	28	19,51,17	7317	0	0	0	0	0	0,0
10P	B722889	4,3,8	28	19,51,17	7317	0	0	0	0	0	0,0
10P	B722890	13	31	19	8390	0	0	0	0	0	0
10P	B722890	13	31	19	9215	0	0	0	0	0	0
10P	B722899	0	26	34	9216	0	0	1	0	0	0
10P	B722902	8	5	22	8374	3,2	2,1	2,2	2,1	3,2,2	0
10P	B722902	8	5	22	9217	2	1	1	1	3	0
3P	B722904	6,13	--	33,52	7318	0	0	0	1	0	0
10P	B722905	8	17	3	9218	0	0	0	0	0	0
10P	B722908	0	19	0	9219	1	0	1	0	0	0
10P	B722909	22	8	4	8391	0,0,0	0,0,0,0	0,1,0	0,0,1	0,0,0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
10P	B722911	0	23	5	8220	1	0	0	0	0	0
10P	B722914	1	39	0	9221	1	0	2	0	0	0
10P	B722915	4	29	37	8375	0,0	0,0	1,0	2,1	0,0,0	0
10P	B722915	4	29	37	9222	1	0	1	0	0	0
10P	B722917	3	25	4	9223	1	0	0	0	0	0
10P	B722921	25	14	25	8376	1,1	0,1	1,0	2,2	2,1	1
10P	B722921	25	14	25	8392	NT	NT	NT	NT	NT	NT
10P	B722922	4	12	6	8337	1	1	1	0	0	2
10P	B722922	4	12	6	9224	0	0	0	0	0	0
10P	B722926	6	27	40	9225	1	2	1	2	0	0
10P	B722929	1	15	64	8414	0	0	1	1	0	0
10P	B722931	12	20	4	9226	0	0	1	1	0	0
10P	B722932	7	30	15	9227	0	2	1	2	0	0
10P	B722933	20	8	3	8364	3,1	2,0	0,0	1,1	1,0	0
10P	B722935	4	21	19	9228	0	0	1	1	0	0
10P	B722936	6	42	62	9229	1	0	1	2	0	0
10P	B722937	21	10	17	8369	1	0	1	0	0	0
10P	B722938	6	30	13	9230	0	0	1	0	0	0
10P	B722942	13	33	11	8386	0	0	1	0	0	0
10P	B722944	6	29	9	9231	0	0	0	0	0	0
10P	B722950	6	27	10	9232	1	0	1	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
10P	B722965	10	32	21	8370	2,0	0,0	1,0	1,1	3,2	1
10P	B722965	10	32	21	9233	0	0	0	0	3	0
10P	B722976	8	20	4	9234	0	0	0	1	0	0
10P	B722987	8	30	3	9235	1	2	0	2	1	0
12P	B722992	4	20	0	9236	0	0	2	0	0	0
3P	B722997	27	--	9	8341	0,0	0,0	0,0	0,0	0,0	0,0
10P	B723035	7	39	27	8371	2,1	0,0	1,1	1,1	0,0	0
3P	B723037	9	--	56	7116	0,0	0,0	1,2	1,2	0,0	0
3P	B723044	15	--	52	7117	0	0	0	0	0	0
10P	B723047	12	19	29	8372	2,2	2,2	1,0	1,2	0,0	0
5P	B723061	0	63	0	7443	0	0	0	0	0	NT
5P	B723062	43	28	54	7445	0,2	2,3	0,0	0,2	0,0	NT
5P	B723064	0	49	7	8196	0,0	0,0	0,0	0,0	0,0	0
5P	B723089	5	22	8	8197	0,0	0,0	0,0	0,0	0,0	0
5P	B723096	2	84	10	7439	1,0	0,0	1,0	0,2	1,1	NT
3P	B723106	14	--	0	7408	0,0	0,0	0,0	2,0	0,0	0
3P	B723107	13	--	1	7409	0,0	0,0	0,0	1,0	1,0	0
3P	B723110	7	--	14	7410	0,0	0,0	0,0	2,0	1,0	0
5P	B723123	72	5	9	7438	2,2	1,1	0,0	0,1	0,0	NT
3P	B723126	27	--	10	8342	1	1	0	0	1	0
5P	B723136	7	53	3	7446	0	0	0	0	0	NT

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
5P	B723139	49	8	5	8262	2,1	0,0	0,2	2,1	1,0	0
5P	B723141	100	69	3	7440	0	0	0	0	0	NT
5P	B723143	5	6	0	7442	0	0	0	0	0	NT
5P	B723148	3	73	0	7441	0	0	0	0	0	NT
5P	B723159	0	49	0	8198	0	0	0,1	1,0	1,0	1
5P	B723160	0	28	0	8199	0	0	0,1	1,0	1,0	0
5P	B723169	48	14	27	9238	1	1	0	2	0	0
5P	B723172	4	1	26	9239	0	0	0	0	0	0
5P	B723199	35	16	14	8263	2,1	2,2	0,1	2,2	1,0	0
5P	B723201	28	15	0	8264	1	0	0	0	0	0
5P	B723203	0	60	6	7444	0,0	0,0	1,2	0,0	0,0	NT
5P	B723223	0	45	4	8332	2,1	0,0	1,1	2,1	2,1	1
5P	B723230	21	4	2	8265	1	0	0	0	0	0
5P	B723233	0	38	3	8200	0	0	1,1	0,0	0,0	1
5P	B723240	0	59	0	8333	1	0	1	0	0	1
5P	B723245	3	6	48	8232	0	0	0	0	0	0
5P	B723247	0	71	34	8201	0	0	1,1	0,0	1,0	0
6P	B723250	--	64	--	8212	0,2	0,0	2,2	1,2	1,1	1
6P	B723256	0	--	27	8213	0	0	1	1	0	0
6P	B723261	0	--	29	8214	0	0	1	0	0	0
6P	B723262	12	--	44	8215	0	0	1	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
6P	B723266	19	–	36	8267	1	0	0	1	1	0
6P	B723268	11	–	51	8216	1	0	0,0	0,0	0,1	0
6P	B723275	49	–	49	8217	1	0	0,0	1,0	1,0	0
6P	B723278	9	–	57	8218	1,1	0,0	1,1	2,1	1,0	1
6P	B723279	45	–	42	8268	2,1	1,0	0,0	1,1	0,0	0
6P	B723285	3	–	17	8219	1,0	0,0	0,1	2,1	0,1	1
6P	B723286	23	–	39	8220	0	0	1	1	0	0
6P	B723289	21	–	39	8221	1,1	2,2	2,3	1,1	0,1	0
6P	B723290	28	–	59	8222	1,1	0,0	1,1	1,1	1,1	0
6P	B723297	3	–	73	8223	0	0	1	1	0	1
6P	B723298	35	–	39	8224	1,1	0,0	1,1	2,1	0,0	0
6P	B723300	30	–	29	8269	2,1	0,0	1,1	1,1	0,2	0
6P	B723306	48	28	7	8225	2,2	0,0	0,0	1,1	0,0	0
6P	B723315	0	74	14	8226	0	0	1	1	0	0
6P	B723318	7	50	0	8227	0	0	1	1	1	1
6P	B723322	0	78	33	8210	0	0	0,0	0,0	0,0	0
6P	B723364	38	57	42	8211	1	0,0	1,1	0,0	1,0	0
6P	B723398	21	10	32	8266	1	0	0	0	0	1
6P	B723400	1	38	37	8202	0	0	1,0	0,0	0,0	0
6P	B723401	1	27	25	8203	0	0	0,0	0,0	0,0	0
6P	B723409	0	59	32	8204	0	0	1,1	0,0	1,1	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
6P	B723410	22	43	35	8205	1	1	0,1	1,1	0,0	0
6P	B723412	53	22	46	8206	1	1	0,0	1,0	0,0	0
6P	B723413	22	36	35	8207	0	0	0,0	0,0	0,0	0
6P	B723414	0	75	26	8208	0	0	1,1	1,1	1,0	1
12P	B723420	5	14	5	9240	0	0	0	0	0	0
10P	B723424	0	24	2	9241	1	0	0	0	0	0
10P	B723425	0	22	2	9242	0	0	0	1	0	0
10P	B723426	1	27	4	9243	0	0	0	0	0	0
10P	B723427	51	21	16	8393	0	0	0	0	0	0
10P	B723428	42	9	24	8394	1	0	0	0	1	0
10P	B723429	0	18	0	9244	0	0	0	0	0	0
10P	B723430	0	30	2	9245	0	0	0	1	0	0
10P	B723431	15	65	56	8378	2,1	0,0	1,1	3,2	2,2	0
10P	B723432	6	45	18	9246	0	0	1	2	0	0
10P	B723435	26	5	0	9247	2	0	0	0	0	0
10P	B723436	50	4	11	9248	2	2	1	2	3	0
10P	B723438	19	2	8	9249	0	0	1	0	1	0
10P	B723441	55	2	3	9250	1	0	0	0	0	0
10P	B723444	15	5	0	9251	1	0	0	0	0	0
10P	B723448	0	26	4	8403	1	0	1	0	0	0
10P	B723449	0	31	4	9252	0	0	1	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
10P	B723452	18	2	7	9253	0	1	2	2	0	0
10P	B723455	0	20	17	9254	0	0	1	0	1	0
10P	B723457	5	17	26	8404	2	0	1	1	0	0
10P	B723459	46	1	40	9255	0	1	0	1	1	0
10P	B723460	24	24	32	8395	2,1	0,0	2,1	0,0	0,0	0
10P	B723463	10	46	39	8396	1,1,1	0,0	2,1	1,1	0,0	1
10F	B723465	0	65	2	8397	1,1	0,0	1	0,1	1,0	1
10P	B723466	2	6	35	9256	0	0	1	1	0	0
10P	B723467	7	37	19	9257	0	0	0	0	1	0
10P	B723468	6	24	11	8398	1,1	0,0	2,2,1	0,0	0,0	1
10P	B723471	4	4	62	9258	0	0	1	2	0	0
10P	B723472	2	18	22	8399	1,0	0,0	1,1	0,0	0,0	2
10P	B723473	5	25	14	9259	0	0	0	2	0	1
10P	B723474	4	23	2	8400	1	0	2	0	0	2
10P	B723475	3	24	1	8401	0	0	0	0	0	0
10P	B723477	8	3	15	9260	0	0	0	0	0	0
10P	B723482	3	23	14	8402	0	0	0	0	0	0
10P	B723483	6	7	16	9261	0	0	1	1	0	0
10P	B723484	19	4	20	9262	0	1	1	0	1	0
10P	B723485	44	4	15	9263	0	1	1	2	1	0
10P	B723486	1	34	7	9264	0	0	2	0	2	1

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
10P	B723487	4	27	24	8265	0	0	1	1	1	0
10P	B723493	0		19	9266	0	0	0	1	0	0
10P	B723801	14	16	16	9267	2	0	2	0	0	1
10P	B723802	4	79	7	9268	0	0	2	0	0	0
10P	B723807	5	62	48	9269	0	0	1	2	1	0
1P	B724373	2	50	100	6630	0	0	0	0	0	0
1P	B724379	19	--	66	6631	0	0	0	0	0	0
1P	B724382	15	--	70	6632	2,0	0,0	0,0	0	0,0	0
1P	B724384	8	--	70	6633	1,0	0,0	0,0	0	0,0	0
1P	B724385	6	--	53	6634	0	0	0	0	0	0
1P	B724387	20	--	65	6635	0	0	0	0	0	0
1P	B724394	9	--	60	6636	1,0	0,0	0,0	0	0,0	0
1P	B724396	9	--	51	6637	0	0	0	0	0	0
1P	B724405	4	--	66	6638	0	0	0	0	0	0
1P	B724406	3	--	20	6639	0,1	0,0	0,0	0,0	1,0	0
1P	B724411	1	--	50	6640	0	0	0	0	0	0
1P	B724413	5	--	74	6641	0	0	0	0	0	0
1P	B724415	11	--	72	6642	0	0	0	0	0	0
1P	B724416	1	--	75	6643	1,0	0,0	0,0	1,0	0,0	0
1P	B724417	0	--	84	6644	1,0	0,0	0,0	0,0	1,0	0
1P	B724418	5	--	80	6645	1,0	0,0	0,0	0,0	0,0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
1P	B724420	0	--	0	6646	1,0	0,0	0,0	1,0	0,0	0
1P	B724423	25	--	77	6647	0	0	0	0	0	0
1P	B724433	7	--	77	6648	1,0	0,0	0,0	0,0	0,0	0
1P	B724434	9	--	61	6649	0	0	0	0	0	0
1P	B724436	28	--	55	6650	0	0	0	0	0	0
1P	B724439	0	--	56	6651	1,0	0,0	0,0	0,0	0,0	0
1P	B724442	59	--	64	6652	0	0	0	0	0	0
1P	B724447	10	--	64	6653	1,0	0,0	0,0	1,0	1,0	0
1P	B724453	7	--	67	6654	1,0	0,0	0,0	0,0	1,0	0
1P	B724455	12	--	78	6655	1,0	0,0	0,1	0,0	0,0	0
1P	B724456	30	--	96	6656	0,0	0,0	0,0	1,1	1,0	0
1P	B724457	17	--	86	6657	1,0	0,0	0,0	1,1	0,0	0
1P	B724458	12	--	88	6658	0	0	0	0	0	0
1P	B724466	75	--	73	6659	0	0	2,0	0	1	0
1P	B724468	50	--	36	6660	0,0	0,0	1,1	0,1	0,0	1
1P	B724508	9	--	65	6661	0	0	0	0	0	0
1P	B724509	30	--	52	6662	0	0	0	0	0	0
1P	B724512	11	--	62	6663	0	0	0	1	0	0
1P	B724517	23	--	57	6664	1	0	0	0	0	0
1P	B724519	19	--	76	6665	0	0	0	0	0	0
1P	B724521	4	--	97	6666	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
1P	B724525	20	--	61	6667	0	0	0	1	0	0
1P	B724526	37	--	66	6668	1	0	0	0	0	0
1P	B724527	0	--	76	6669	0	0	0	0	0	0
1P	B724530	60	--	51	6670	0	0	0	0	0	0
1P	B724535	12	--	57	6671	0	0	0	0	0	0
1P	B724544	16	--	63	6672	0	0	0	0	0	0
1P	B724546	14	--	42	6249	0,0	0,0	0,0	2,1	0,0	NR
1P	B724549	0	--	50	6673	0	0	0	0	0	0
1P	B724553	44	--	75	6674	0	0	0	0	0	0
1P	B724558	1	--	59	6675	1,1	0,1	1,1	1,0	2,0	1
1P	B724566	25	--	85	6676	1,1	0,0	0,0	0,1	0,0	0
1P	B724586	0	--	76	6677	0	0	0	1	0	0
1P	B724590	2	--	63	6678	0	0	0	0	0	0
1P	B724592	81	--	56	6679	1	1	0	0	0	0
1P	B724596	11	--	51	6680	0	0	0	1	0	NT
1P	B724607	0	--	70	6681	1	0	0	1	0	0
1P	B724610	76	--	21	6682	0	0	0	1	0	0
1P	B724618	88	--	24	6683	2	1	0	0	0	0
1P	B724627	18	--	68	6684	0	0	0	0	0	0
1P	B724633	3	--	54	6685	0	0	0	0	0	0
1P	B724642	5	--	62	6686	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
1P	B724644	12	–	61	6687	0,0	0,0	0,0	0,0	0,0	0
1P	B724652	13	–	64	6688	0	0	0	0	0	0
1P	B724654	54	–	63	6689	0	0	0	0	0	0
1P	B724657	56	–	68	6690	0	0	0	0	0	0
1P	B724661	15	–	60	6691	0	0	0	0	0	0
1P	B724664	32	–	72	6692	0	0	0	0	0	0
1P	B724667	16	–	55	6693	0	0	0	0	0	0
1P	B724670	29	–	60	6249	1,1	0,0	0,0	1,1	0,0	NR
1P	B724697	40	–	72	6251	0,0	0,0	0,0	1,0	0,0	NR
1P	B724698	29	–	75	6252	0	0	0	1	0	NR
1P	B724701	80	–	33	6253	0,0	0,0	0,0	0,0	0,0	NR
1P	B724712	13	–	79	6254	1	0	0	0	0	NR
1P	B724714	15	–	61	6255	0,0	0,0	0,0	1,0	0,0	NR
1P	B724716	22	–	61	6256	2,1	1,1	0,0	1,0	0,0	NR
1P	B724719	17	–	70	6257	0	0	0	0	0	NR
1P	B724720	5	–	62	6258	1,1	0,0	0,0	1,0	0,0	NR
1P	B724722	21	–	83	6259	0	0	0	0	0	NR
1P	B724724	14	–	54	6694	0	0	0	0	0	0
1P	B724728	22	–	76	6695	0	0	0	0	0	0
1P	B724729	28	–	71	6696	0	0	0	0	0	0
1P	B724731	60	–	41	6260	0	0	0	0	0	NR

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
1P	B724732	0	–	51	6697	1,0	0,0	1,0	0,0	0,0	1
1P	B724740	47	–	85	6261	0,0,0	0,0	1,0	0	0,0	NR
1P	B724762	7	–	79	6262	1	0	0	0	0	NR
1P	B724764	28	–	82	6263	1	0	0	0	0	NR
1P	B724769	4	–	63	6264	0	0	0	0	0	NR
1P	B724772	58	–	–	6698	0	0	0	0	0	0
1P	B724781	13	–	84	6265	1,1	0,0	0,0	0,0	0,0	NR
1P	B724783	17	–	79	6699	0,0	0,0	1,0	0,0	0,0	0
1P	B724785	8	–	60	6700	0	0	0	0	0	0
1P	B724797	0	–	52	6266	0	0	0	0	0	NR
1P	B724812	55	–	33	6701	0	0	0	0	0	NT
1P	B724819	3	–	5	6267	0	0	0	0	0	NR
1P	B724820	24	–	90	6268	1,1	1,0	0,0	0,0	0,0	NR
1P	B724825	38	–	74	6269	1	0	0	0	0	NR
1P	B724832	4	–	61	6702	1,0	0,0	0,0	0,0	0,0	0
1P	B724844	71	–	32	6270	0	0	0	0	0	NR
1P	B724847	26	–	56	6271	0	0	0	1	0	NR
1P	B724852	60	–	36	6272	0	0	0	0	0	NR
1P	B724853	4	–	55	6273	0	0	0	0	0	NR
1P	B724855	10	–	69	6703	0	0	0	0	0	0
1P	B724860	1	–	61	6274	1,1	0,0	0,0	0,0	0,0	NR

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
1P	B724863	59	–	64	6275	1	0	0	0	0	NR
1P	B724866	16	–	58	6704	0	0	0	0	0	0
1P	B724871	0	–	51	6276	0	0	0	0	0	NR
1P	B724885	24	–	65	6705	0	0	0	0	0	0
1P	B724886	25	–	61	6277	0	0	0	0	0	NR
4P	B724983	28	–	8	7411	0	0	0	0	0	0
4P	B724984	21	–	0	7412	0	0	0	0	0	0
4P	B724990	12	–	6	7413	0	0	0	0	0	1,2
1P	B724898	88	–	39	6706	1	0	0	0	0	0
7P	B848622	3	1	29	8254	1	0	0	0	0	0
7P	B848628	0	2	23	8255	1	0	0	0	1	0
11P	B848631	1,5	1,16	13,45	9270	0	0	1	2	0	0
11P	B848633	0	5	22	9271	0	0	0	2	0	0
11P	B848634	7	1	13	9272	0	0	0	0	0	0
11P	B848635	0	0	17	9273	0	0	0	0	0	0
11P	B848649	6	40	19	9274	1	0	0	0	1	2
11P	B848650	4	8	13	9275	0	0	0	0	0	0
11P	B848653	0,41	9,79	61,76	9276	0	1	2	2	2	0
11P	B848654	0,9	2,9	22,21	9277	0	0	0	0	0	0
11P	B848656	0,5	1,9	11,28	9278	0	0	1	0	0	0
11P	B848657	0	0	15	9279	0	0	0	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
11P	B848659	0	1	15	9280	0	0	0	0	0	0
11P	B848660	0	2	11	9281	0	0	0	0	0	0
11P	B848662	0	1	26	9282	0	0	0	0	0	0
11P	B848663	0	2	18	9283	0	0	0	0	0	0
11P	B848669	0,3	2,2	82,36	9284	0	0	0	0	1	3,3
11P	B848670	0,8	3,10	19,19	9285	0	0	0	0	0	0
11P	B848671	1,7	1,2	4,51	9286	0	0	0	0	0	0
11P	B848673	0	4	21	9287	0	0	0	0	0	0
11P	B848676	0	1	27	9288	0	0	0	0	0	0
11P	B848678	0	3	16	9289	1	0	0	0	0	0
11P	B848679	0	1	15	9290	1	0	0	0	0	0
11P	B848681	0	2	22	9291	0	0	0	0	0	0
11P	B848691	2,7	0,0	2,61	9292	1	0	0	0	0	0
11P	B848699	0,18	0,9	35,11	9293	1	0	1	0	0	1
11P	B848700	5	1	39	9294	0	0	1	0	0	0
11P	B848703	5	2	25	9295	0	0	0	0	0	0
11P	B848706	0	2	30	9296	0	0	1	0	0	0
11P	B848709	4	18	22	9297	0	0	1	0	0	0
11P	B848711	0	12	23	9298	0	1	2	0	0	0
11P	B848716	1	1	26	9299	0	0	0	0	0	1
11P	B848717	0	3	36	9300	0	0	1	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
11P	B848720	1	4	24	9301	1	0	1	1	0	0
11P	B848722	3,2	1,1	3,11	9302	1	0	0	1	0	0
11P	B848724	2	0	31	9303	2	1	0	1	0	0
11P	B848725	5,5	1,1	3,23	9304	0	1	0	1	0	0
11P	B848727	2,19	3,73	5,18	9305	1	0	1	1	0	0
11P	B848728	0,0	1,1	3,18	9306	1	0	0	1	0	0
11P	B848729	0	1	35	9307	1	0	0	1	0	0
11P	B848730	6,0	4,6	1,4	9308	0	0	1	1	0	0
11P	B848731	4,0	5,6	4,6	9309	0	0	0	1	0	0
11P	B848732	0	5	34	9310	1	0	1	1	0	0
11P	B848733	0,0	1,0	8,12	9311	0	0	0	1	0	0
11P	B848734	0,0	1,0	3,23	9312	0	0	0	0	0	0
11P	B848735	3,1	0,0	11,16	9313	0	0	0	1	0	0
11P	B848736	2,1	6,18	9,19	9314	0	0	1	1	0	0
11P	B848737	6,5	0,1	1,8	9315	1	0	0	1	0	0
11P	B848738	1,0	1,3	9,26	9316	1	0	0	1	0	0
11P	B848739	1	14	35	9317	2	0	1	2	0	0
11P	B848740	5,0	2,9	7,26	9318	1	0	1	1	0	0
11P	B848741	8	6	36	9319	1	0	0	2	1	0
11P	B848742	3,1	0,3	0,5	9320	1	0	0	0	1	0
11P	B848745	0	2	25	9321	0	0	1	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
11P	B848747	0,0	4,9	43,46	9322	1	1	1	2	0	0
11P	B848748	0	4	35	9323	0	0	0	1	2	0
11P	B848749	0	1	42	9324	1	0	0	2	0	0
11P	B848750	0	5	88	9325	0	0	0	2	0	0
11P	B848751	0	4	23	9326	0	0	0	0	0	0
11P	B848752	5,50	2,22	74,86	9327	1	0	1	2	2	0
11P	B848753	0,0	9,18	22,54	9328	0	0	0	0	2	0
11P	B848755	3	3	20	9329	1	0	0	0	0	0
11P	B848757	0,0	0,0	8,17	9330	0	0	0	0	0	0
11P	B848767	4	1	28	9331	0	0	0	0	0	0
11P	B848771	7,5	2,0	0,9	9332	0	0	0	0	1	0
11P	B848774	0,0	1,1	0,4	9333	0	0	0	0	0	0
11P	B848782	1	1	17	9334	0	0	0	0	0	0
11P	B848788	1	3	18	9335	0	0	0	0	0	0
11P	B848790	3	1	27	9336	0	0	0	0	0	0
11P	B848792	0	1	31	9337	0	0	0	1	1	0
11P	B848793	0,0	4,21	5,41	9338	0	0	0	0	2	0
11P	B848794	16	7	39	9339	0	0	1	2	0	0
11P	B848795	41,0	0,6	0,43	9340	0	0	0	0	0	0,0
11P	B848796	22,0	0,27	0,7	9341	0	0	0	0	1	0
11P	B848797	0,11	2,40	21,16	9342	0	0	1	2	1	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
11P	B848798	0,4	1,6	0,17	9343	0	0	0	0	0	0
11P	B848800	24	3	2	9344	0	0	1	0	0	0
11P	B848801	5	21	9	9345	0	0	0	0	0	0
11P	B848804	0,0	0,12	0,66	9346	0	0	0	0	0	0
11P	B848805	0,0	1,9	4,16	9347	0	0	0	0	0	0
11P	B848808	0,0	1,14	1,2	9348	0	0	1	0	0	0
11P	B848809	9,17	3,44	0,17	9349	0	0	1	0	0	0
11P	B848810	0,0	2,12	1,19	9350	1	0	2	1	0	0
11P	B848811	0,1	1,42	3,55	9351	1	0	1	0	0	0
11P	B848814	0,20	0,32	2,40	9352	1	0	1	0	0	0
11P	B848816	0	1	25	9353	0	0	1	0	0	0
9P	B848820	2	11	7	9354	0	0	0	1	2	0
11P	B848838	0	10	32	9355	0	0	0	0	0	0
11P	B848839	0,5	4,21	3,43	9356	1	0	1	0	0	0
11P	B848841	0,0	8,25	8,55	9357	1	0	1	0	0	1
11P	B848843	2,0	2,12	0,27	9358	1	0	1	0	0	0
11P	B848845	0,0	2,24	19,21	9359	1	0	1	0	0	0
11P	B848848	1,0	1,10	0,26	9360	0	0	2	0	0	0
11P	B848861	0	2	25	9361	1	0	0	0	0	0
12P	B848864	3	25	23	9362	1	0	1	0	1	1
12P	B848866	0	2	2	9363	0	0	1	0	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
12P	B848869	6	20	15	9364	2	0	0	0	2	0
12P	B848870	5	32	32	9365	1	0	1	0	1	0
12P	B848873	5	2	34	9366	0	0	2	0	0	0
12P	B848874	3	0	39	9367	0	0	0	0	0	1
12P	B848876	0	1	23	9368	0	0	0	0	0	0
12P	B848879	4	9	40	9369	0	0	0	0	0	1
12P	B848880	2	1	56	9370	1	0	1	0	0	1
12P	B848881	0	0	53	9371	1	0	0	0	1	1
12P	B848882	0	0	57	9372	1	0	1	0	0	1
12P	B848883	0	2	45	9373	1	0	0	0	0	1
12P	B848892	0	12	4	9374	1	0	1	0	0	1
12P	B848893	0	15	28	9375	0	0	1	0	0	1
12P	B848895	1	16	23	9376	0	0	1	1	0	0
12P	B848896	1	9	35	9377	0	0	0	1	0	0
12P	B848897	0	12	30	9378	0	0	1	1	0	0
12P	B848899	10	4	29	9379	0	0	1	1	0	0
12P	B848900	0	6	48	9380	0	0	0	1	0	0
12P	B848901	0	7	45	9381	0	0	2	1	0	2
12P	B848903	0	6	47	9382	0	0	0	1	0	0
12P	B848904	1	11	44	9383	0	0	0	1	0	0
12P	B848905	18	8	19	9384	0	0	1	1	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
12P	B848906	0	12	35	9385	0	0	0	1	1	0
12P	B848907	0	30	52	9386	0	0	0	1	0	0
12P	B848909	4	6	31	9387	0	0	1	1	0	0
12P	B848911	0	54	79	9388	1	0	1	2	1	1
12P	B848913	0	3	44	9389	0	0	2	2	0	1
12P	B848914	19	0	23	9390	0	0	0	0	0	0
12P	B848916	18	0	7	9391	1	0	0	2	1	0
12P	B848917	22	0	0	9392	0	0	0	0	1	0
12P	B848920	1	5	31	9393	0	0	1	2	1	1
12P	B848921	1	3	48	9394	0	0	3	2	3	0
12P	B848924	13	1	3	9395	1	0	0	0	0	0
12P	B848926	1	2	56	9396	1	0	0	2	0	0
7P	B848985	0	1	47	8256	0	0	0	1	0	0
7P	B848986	9	3	58	8257	1	0	0	1	0	0
7P	B848989	0	0	64	8258	0	0	1	1	0	0
7P	B848990	0	1	53	8259	1,1	0,0	0,0	2,2	0,0	0
7P	B848991	0	1	40	8260	1,1	0,0	1,1	2,2	0,0	0
7P	B848992	12	3	44	8261	2,2	0,0	1,1	1,2	1,0	0
6P	B849022	13	18	58	8233	1,0	0,0	0,0	2,2	0,0	0
6P	B849035	16	9	60	8234	1,1	0,0	1,1	2,2	0,0	0
6P	B849037	11	6	51	8235	0	0	1	1	0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
6P	B849177	4	57	30	8209	0	0	0,0	0,0	0,0	0
6P	B849179	8	7	64	8236	1	0	0	2	0	0
6P	B849180	0	8	56	8237	1,2	0,0	1,0	2,2	0,1	0
10P	B849239	9	21	48	9397	0	0	0	0	0	0
10P	B849240	0	40	0	9398	0	0	1	0	0	1
10P	B849259	27	9	18	8387	1	0	0	0	0	0
14P	GRP18058	0	1	29	11124	0	0	0	0	0	NT
14P	GRP18060	0	1	34	11125	0	0	0	0	0	NT
14P	GRP18061	0	4	34	11126	0	0	0	0	0	NT
14P	GRP18062	32	1	0	11127	0	0	0	0	0	NT
14P	GRP18063	3	17	48	11128	0	0	0	0	0	NT
14P	GRP18066	84	5	3	11129	0	0	0	0	0	NT
14P	GRP18068	20	3	1	11130	0	0	0	0	0	NT
4P	GRP19380	78	--	16	7319	2,0	2,0	0,0	1,0	0,0	0
4P	GRP19381	35	--	15	4280	2,2,2	3,2,1	0,0,0	0,1,2	0,0,1	0
4P	GRP19386	3	--	77	7320	1,1	0,0	1,0	1,2	2,1	1
4P	GRP19396	61	--	9	7321	2,0	2,0	0,0	0,0	1,0	0
4P	GRP19416	9	--	7	7414	0,1	0,0	0,0	2,1	0,0	1
4P	GRP19418	0	--	28	7415	0,0	0,0	0,0	2,0	1,0	0
4P	GRP19422	8	--	31	7416	0,1	0,0	0,1	1,1	1,0	0
4P	GRP19423	3	--	14	7417	0,0	0,0	0,0	2,0	1,0	0

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
4P	GRP19424	3	–	27	7418	0,0	0,0	0,0	3,0	3,2	2
4P	GRP19425	0	–	13	7419	0	0	0	0	1	2
4P	GRP19427	0	–	12	7420	0	0	0	0	0	0
4P	GRP19432	0	–	10	7421	0	0	0	1	0	0
4P	GRP19433	0	–	18	7422	0	0	0	0	0	0
4P	GRP19434	15	–	14	7423	0	0	0	0	1	0
4P	GRP19435	6	–	25	7424	0,2	0,0	0,0	2,2	1,0	2
4P	GRP19437	20	–	5	7425	0	0	0	0	0	0
4P	GRP19438	0	–	14	7426	0	0	0	0	0	0
4P	GRP19439	23	–	6	7427	1,0	0,0	0,0	0,1	2,1	1
4P	GRP19440	15	–	6	7428	1,1	0,0	0,0	0,0	0,1	0
4P	GRP19441	11	–	27	7429	0,0	0,0	0,0	0,1	2,0	0
4P	GRP19442	20	–	20	7430	1,0	0,0	0,0	0,2	3,1	0
4P	GRP19446	7	–	9	7431	0	0	0	0	1	0
4P	GRP19447	9	–	20	7432	0	0	0	0	1	0
4P	GRP19448	6	–	8	7433	2,2	2,2	0,0	0,0	0,0	0
4P	GRP19449	5	–	6	7434	0,2	0,0	0,0	1,2	2,2	0
4P	GRP19450	–	–	8	7435	0,1	0,0	0,0	0,1	1,1	0
16P	GRP19457	10	23	32	11131	2	1	2	2	2	NT
16P	GRP19458	14	26	31	11132	1	0	0	1	0	NT
16P	GRP19459	13	8	83	11133	2	0	0	3	2	NT

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
16P	GRP19462	0	30	72	11134	0	0	1	0	3	NT
16P	GRP19463	11	3	52	11135	1	0	0	2	0	NT
16P	GRP19464	13	19	17	11136	0	0	1	0	0	NT
16P	GRP19465	0	19	16	11137	1	0	0	0	1	NT
16P	GRP19467	27	1	5	11138	0	0	1	1	1	NT
16P	GRP19469	7	5	48	11139	1	0	1	2	1	NT
16P	GRP19470	7	15	23	11140	0	0	1	2	1	NT
16P	GRP19471	0	15	41	11141	0	0	0	0	1	NT
16P	GRP19472	0	2	46	11142	0	0	0	0	0	NT
16P	GRP19473	42	27	23	11143	1	0	1	0	0	NT
16P	GRP19474	1	12	35	11144	1	0	2	2	1	NT
16P	GRP19479	21	13	2	11145	0	0	0	0	0	NT
16P	GRP19480	2	12	39	11146	0	0	0	0	0	NT
16P	GRP19481	4	30	46	11147	0	0	0	0	1	NT
16P	GRP19481	4	30	46	11148	NT	NT	NT	NT	NT	NT
16P	GRP19486	0	17	35	11149	1	0	1	0	0	NT
16P	GRP19490	0	63	52	11150	0	0	2	2	1	NT
16P	GRP19491	0	49	45	11151	0	0	1	0	0	NT
16P	GRP19492	0	2	50	11152	0	0	0	1	0	NT
16P	GRP19493	0	2	28	11153	1	1	1	0	0	NT
16P	GRP19501	1	21	31	11154	0	0	0	1	0	NT

		Results of Prescreen Testing[a]				Results of Primary Screen Testing[b]					
Shipment No.	Prescreen No.	YF	VE	PT	AVS No.	YF	JE	VE	PT	SF	VV
16P	GRP19502	27	41	28	11155	0	1	2	2	0	NT
16P	GRP19509	0	2	35	11156	0	0	1	1	0	NT
16P	GRP19510	7	8	33	11157	0	0	1	0	0	NT
16P	GRP19511	0	12	57	11158	0	0	1	0	0	NT
16P	GRP19512	2	4	29	11159	0	0	0	0	0	NT
16P	GRP19514	15	1	12	11160	0	0	1	0	0	NT
4P	GRP21185	2	--	43	7436	0	0	0	0	0	0
4P	GRP21186	--	--	11	7437	0	0	0	0	0	0
16P	GRP21188	11	43	34	11161	0	0	0	1	0	NT
16P	GRP21189	13	0	32	11162	0	0	0	1	0	NT
16P	GRP21190	13	0	9	11163	0	0	0	0	0	NT
16P	GRP21191	14	0	21	11164	0	0	0	0	0	NT
16P	GRP21194	11	4	45	11165	0	0	0	0	0	NT
16P	GRP21195	5	3	50	11166	1	0	0	2	0	NT
16P	GRP21197	1	30	47	11167	0	0	0	0	0	NT
16P	GRP21199	8	23	2	11168	0	0	2	1	1	NT
16P	GRP21201	11	0	20	11169	0	0	0	0	0	NT
16P	GRP21205	3	70	25	11170	0	0	1	0	1	NT
16P	GRP21207	30	24	47	11171	1	0	0	0	0	NT
16P	GRP21214	0	36	16	11172	0	0	1	0	0	NT

a = Maximum percent reduction in CPE observed in the assay.

b = Explanation for Abbreviations/Numbers (Each number represents one test):

3 = Active at the 95% level (% reduction in viral CPE of ≥95% at one or more concentrations).

2 = Active at the 50% level (% reduction in viral CPE of ≥50% to ≤94% at one or more concentrations).

1 = Active at the 25% level (% reduction in viral CPE at ≥25% to ≤49% at one or more concentrations).

0 = Inactive (<25% reduction in viral CPE at all concentrations).

NT = Not Tested.

NR = Not Required.

Note: Symbols are separated by commas where more than one test was performed (i.e. "1,0" designates two tests, one was active at the 25% level and the second test was inactive).

4.3. Antiviral Evaluations *In Vivo*:

4.3.1. Pichinde Virus in MHA Hamsters:

A total of 19 compounds were assessed for efficacy against Pichinde *in vivo*. These compounds are listed in **Table 35**. Of the compounds evaluated, only 2 (AVS 01 and AVS 206) had significant activity against Pichinde virus *in vivo*. AVS 01 is ribavirin, which has broad spectrum activity against RNA viruses. The compound was able to decrease the mortality and increase the average day of death in virus-infected hamsters. The antiviral efficacy of ribavirin was dose-dependent with the greatest efficacy demonstrated at a dose of 150 mg/kg/day. Dose levels above this were toxic to the hamsters.

AVS 206, an analog of AVS 01, was also active against Pichinde virus *in vivo*. At 100 mg/kg/day AVS 206 increased the average day of death; however, there was no significant reduction in the mortality. The results of this assay are presented in **Table 36**. A second assay of this compound was conducted at a dose level of 200 mg/kg/day administered on a qld x 12 days schedule with the first dose administered on the day preceding virus challenge. In this study, AVS 206 reduced mortality and prolonged the average day of death significantly **(Table 37)**. These results were encouraging and led to an additional study with AVS 206. For this, AVS 206 was administered at doses of 1000, 500, 250 and 200 mg/kg/day on a qld x 10 days schedule beginning on the day before virus challenge. AVS 01 (ribavirin) was administered to hamsters at 500, 200 and 100 mg/kg/day on the same treatment schedule for comparison. As shown in **Table 38**, AVS 206 was toxic at 1,000 and 500 mg/kg/day while the 250 and 200 mg/kg/day dose levels reduced mortality markedly. In contrast, AVS 01 was toxic at doses of 200 mg/kg/day and higher. These results indicate that the ribavirin analog, AVS 206, may be less toxic than ribavirin although no enhancement in antiviral activity was noted with this carboxamidine analog of ribavirin.

AVS 1046 was considered a candidate for further testing against arenavirus infections. As shown in **Table 39**, treatment with AVS 1046 prolonged the ADD in Pichinde-infected hamsters in a dose-dependent manner. Since the compound was well tolerated at the highest test dose (100 mg/kg/day) further testing at higher doses was recommended; however, there was no drug available for the studies.

Of the 19 compounds evaluated against Pichinde virus only 2 demonstrated good potential for treatment of arenaviral infections. These compounds, AVS 001 and AVS 206, significantly reduced virus induced mortality. Other compounds (AVS 79, 94, 111, 167, 332, 346, 925, 1046 and 1250) which were tested at concentrations below the maximum tolerated dose were not available in quantities sufficient for further evaluations. These compounds should be re-tested at higher dose levels when sufficient compound quantities become available.

Several problems are present in the Pichinde virus infection model. First, the virus only produced disease in inbred strain MHA hamsters. These hamsters are only available from 1 commercial source. The disease is more severe in the female than in the male hamster which must be considered during design of the experimental protocol. Thirdly, the viral infection is complicated by gastrointestinal disease which is presumed to be of bacterial origin. Attempts to treat the gastrointestinal disease with oral tetracyclines did not prove effective in our hands. Studies with AVS 01 indicate that the greatest antiviral efficacy was achieved if treatments were administered on a 10 day schedule rather than a 7 day schedule. The critical timepoint for administration of AVS 001 appears to be between days 2 and 6 post-infection. If this model is pursued for further antiviral drug testing, we recommend that tissue virus titers be evaluated in addition to monitoring mortality and ADD.

Table 35

Compounds Assessed Against Pichinde Virus *In Vivo*

AVS #	Activity	Maximum tolerated dose	Recommendation
01	yes	150 mg/kg/day	positive control drug
52	no	10 mg/kg/day	inactive
79	no	>100 mg/kg/day	retest at higher doses
94	no	>100 mg/kg/day	retest at higher doses
111	no	>150 mg/kg/day	retest at higher doses
148	no	10 mg/kg/day	inactive
167	no	>32 mg/kg/day	retest at higher doses
206	yes	250 mg/kg/day	pursue further
215	no	32 mg/kg/day	inactive
253	no	32 mg/kg/day	inactive
272	no	32 mg/kg/day	inactive
332	no	>100 mg/kg/day	retest at higher doses
346	no	>60 mg/kg/day	retest at higher doses
347	no	<5 mg/kg/day	retest at higher doses
360	no	10 mg/kg/day	inactive
646	no	10 mg/kg/day	inactive
925	no	>100 mg/kg/day	retest at higher doses
1046	possible	>100 mg/kg/day	retest at higher doses
1250	no	>100 mg/kg/day	retest at higher doses

Table 36

ANTIVIRAL EFFICACY OF AVS-206

Virus: Pichinde
Dosage Schedule: q1d x 7
Starting: Day 0

	UNINFECTED	INFECTED	GMTD[c]	VR[d]
Untreated	0/5[a]	10/10 (10.1 ± 1.1)[b]	10.1	0.9
PBS	0/5	10/10 (10.8 ± 3.3)	10.4	1.0
100 mg/kg AVS 206	0/5	8/10 (15.3 ± 2.4)	17.1	1.6
32 mg/kg AVS 206	0/5	9/10 (14.0 ± 2.2)	14.9	1.4
10 mg/kg AVS 206	0/5	9/10 (13.1 ± 2.5)	13.9	1.3
3.2 mg/kg AVS 206	0/5	10/10 (10.4 ± 1.3)	10.3	1.0
100 mg/kg Ribavirin	0/5	7/10 (16.3 ± 1.8)	19.1	1.8

[a] # dead/# treated

[b] $\text{ADD} = \frac{\sum [(\text{day of death}) \times (\#\ \text{dead that day})]}{\text{total number of dead}} \pm \text{S.D.}$

[c] GMTD = geometric mean time to death

[d] $\text{VR} = \frac{\text{GMTD of Experimental}}{\text{GMTD of PBS Control}}$

Table 37

RESULTS OF RETESTING AVS-206

Virus: Pichinde
Dosage Schedule: q1d x 12
Starting: Day -1

	UNINFECTED	INFECTED	GMTD[c]	VR[d]
Untreated	0/5[a]	10/10 (9.5 ± 1.3)[b]	9.4	1.0
PBS	0/5	10/10 (9.7 ± 0.9)	9.7	1.0
200 mg/kg AVS 206	0/5	4/10[e] (18.8 ± 1.5)[f]	23.8	2.5
100 mg/kg Ribavirin	1/5 (18.0 ± 0.0)	3/10[gh] (21.7 ± 4.5)[i]	25.8	2.7
Virus Titration				
1 X 107 pfu/hamster		5/5 (9.0 ± 1.2)		
1 X 106 pfu/hamster		5/5 (8.6 ± 1.1)		
1 X 105 pfu/hamster		5/5 (9.2 ± 0.4)		
1 X 104 pfu/hamster		5/5 (10.0 ± 1.6)		
1 X 103 pfu/hamster		5/5 (9.4 ± 1.1)		
1 X 102 pfu/hamster		5/5 (10.2 ± 1.9)		
1 X 101 pfu/hamster		5/5 (9.8 ± 1.3)		

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[a] # dead/# treated

[b] ADD = $\frac{\sum [(\text{day of death}) \times (\#\text{ dead that day})]}{\text{total number of dead}}$ ± S.D.

[c] GMTD = geometric mean time to death

[d] VR = $\frac{\text{GMTD of Experimental}}{\text{GMTD of PBS Control}}$

[e] Fishers' Exact Test comparing % mortality AVS 206 & PBS p = .005

[f] T-test of ADD p = <10-6

[g] Fishers' Exact Test comparing % mortality ribavirin & PBS p = .0015

[h] Fishers' Exact Test comparing % mortality ribavirin & AVS 206 p = 0.5

[i] T-test of ADD p = .000003

Table 38

Antiviral Efficacy of AVS-206 and Ribavirin (AVS-01)

Virus: Pichinde
Treatment: q1d x 10 days starting on the day preceding virus challenge

	No. Dead/ No. Uninfected[a]	No. Dead/ No. Infected[a]	GMTD[b]	VR[c]
Untreated	0/10	10/10 (9.8 ± 0.9)	9.8	NA
PBS	0/10	10/10 (9.0 ± 1.3)	8.9	1.0
1000 mg/kg AVS-206	4/4 (5.0 ± 0.0)	10/10 (5.0 ± 0.8)	4.9	0.6
500 mg/kg AVS-206	4/4 (8.5 ± 0.6)	10/10 (8.4 ± 1.5)	8.3	0.9
250 mg/kg AVS-206	0/5	1/10[d] (23.0 ± 0.0)[e]	27.5	3.1
200 mg/kg AVS-206	0/5	2/10[f] (25.0 ± 2.8)[g]	27.4	3.1
1000 mg/kg AVS-01	5/5 (3.6 ± 0.5)	Not done		
500 mg/kg AVS-01	5/5 (5.2 ± 0.4)	10/10 (5.7 ± 1.3)	5.6	0.6
250 mg/kg AVS-01	5/5 (7.6 ± 2.4)	Not done		
200 mg/kg AVS-01	3/5 (10.7 ± 1.5)	8/10 (12.8 ± 4.4)[h]	14.4	1.6
100 mg/kg AVS-01	0/5	3/10[i] (18.7 ± 8.1)[j]	24.4	2.7
Virus challenge				
1×10^6 pfu	NA	5/5 (8.4 ± 0.9)	8.4	NA
1×10^5 pfu	NA	5/5 (9.0 ± 1.2)	8.9	NA
1×10^4 pfu	NA	5/5 (8.2 ± 0.4)	8.2	NA
1×10^3 pfu	NA	5/5 (9.4 ± 0.5)	9.4	NA
1×10^2 pfu	NA	5/5 (9.0 ± 0.7)	9.0	NA
10 pfu	NA	5/5 (10.0 ± 1.6)	9.9	NA

a. No. in parentheses = Average Day of Death ± 1 Standard Deviation (ADD ± SD)

$$ADD = \frac{\Sigma[(\text{day of death}) \times (\text{number dead that day})]}{\text{total number of dead}}$$

b. GMTD = Geometric Mean Time to Death

$$GMTD = x\sqrt{n_1 \cdot n_2 \cdot n_x}$$ where n = day of death, x = total number of animals

All survivors are calculated as dying on Day 28

c. VR = GMTD of Experimental/GMTD of Diluent-Treated Control
d. Fisher's Exact Test comparing mortality of PBS-treated vs drug treated $p = 5.9 \times 10^{-5}$
e. Student's T-test comparing ADD of PBS-treated vs drug treated $p = 3.5 \times 10^{-6}$
f. Fisher's Exact Test comparing mortality of PBS-treated vs drug treated $p = 3.6 \times 10^{-4}$
g. Student's T-test comparing ADD of PBS-treated vs drug treated $p < 10^{-6}$
h. Student's T-test comparing ADD of PBS-treated vs drug treated $p = .02$
i. Fisher's Exact Test comparing mortality of PBS-treated vs drug treated $p = 1.6 \times 10^{-3}$
j. Student's T-test comparing ADD of PBS-treated vs drug treated $p = .002$

Table 39

ANTIVIRAL EFFICACY OF AVS-1046

Virus: Pichinde
Dosage Schedule: q1d x 7
Starting: Day 0

	UNINFECTED	INFECTED	GMTD[c]	VR[d]
Untreated	0/5[a]	10/10 (10.5 ± 1.8)[b]	10.4	1.0
0.4% CMC in PBS	0/5	10/10 (10.8 ± 3.5)	10.4	1.0
100 mg/kg AVS 1046	0/5	10/10 (13.7 ± 2.9)	13.4	1.3
32 mg/kg AVS 1046	0/5	9/10 (12.3 ± 2.7)	13.1	1.3
10 mg/kg AVS 1046	0/5	10/10 (12.4 ± 4.7)	11.8	1.1
3.2 mg/kg AVS 1046	0/5	9/10 (10.9 ± 2.3)	11.8	1.1
100 mg/kg Ribavirin	0/5	7/9 (15.9 ± 3.3)	17.7	1.7

[a] # dead/# treated

[b] ADD = $\frac{\Sigma\,[(\text{day of death}) \times (\#\text{ dead that day})]}{\text{total number of dead}} \pm$ S.D.

[c] GMTD = geometric mean time to death

[d] VR = $\frac{\text{GMTD of Experimental}}{\text{GMTD of PBS Control}}$

4.3.2. Venezuelan Equine Encephalomyelitis Virus (VE):

A total of 6 compounds were received for testing against VE. These compounds are listed in **Table 40**. None of the compounds had significant activity against VE induced mortality; however, 5 of the 6 compounds were not available for testing at maximum tolerated dose levels. Thus, it is possible that these compounds may show activity against VE if higher dose levels are tested.

Because of the problem of limited compound availability, we initiated studies to develop a target organ model for VE. For these studies, a series of experiments were conducted to determine the lethal doses of VE following intracranial challenge. The cumulative results of these experiments are presented in **Table 41**. From this a challenge inoculum of 0.03 ml of a $10^{-8.3}$ dilution of the VEE virus stock was selected for a chemotherapy study. We had identified a compound, 3 nitro-3-deazauridine (3N-3DU), from other studies which had potential as a chemotherapeutic agent against alphaviruses.

The effect of a single intracranial dose of 40 mg of 3N-3DU/kg on VEE infection was assessed. Mice (10/group) were challenged intracranially with 0.03 ml of a $10^{-8.3}$ dilution of VEE stock virus and treated 6 or 8 or 10 hours later with 0.03 ml of PBS or 3N-3DU intracranially. Mice receiving 40 mg/kg 3N-3DU at 8 hr post virus challenge had a mortality rate of 25% compared to 70% in the PBS treated group. In addition, the ADD for the 3N-3DU treated group was significantly increased ($p = 0.049$). These results are shown in **Table 42**. Thus, the target organ approach may be a viable alternative for assessing compounds available in limited quantities. Unfortunately, changes in the contract workscope prevented us from pursuing development of this potential model system.

Several recommendations can be made from our studies with this VEE animal model system. First, a less severe challenge virus would be preferable to the Trinidad donkey strain used in our studies. This virus, even at low inoculum doses, is a severe challenge in mice. Since most compounds are available in very limited quantities and little, if any, is known about their pharmacokinetics it is difficult to select an appropriate treatment dose and schedule. Therefore, it is difficult to demonstrate antiviral efficacy in preliminary studies. A second possible improvement would be to quantitate virus titers in the tissues rather than simply monitoring mortality and ADD. This may provide better evidence for antiviral efficacy. Thirdly, the target organ model may be a viable preliminary screening tool for assessing potential chemotherapeutic efficacy. Positive results from this system could be used to identify lead compounds for re-synthesis.

Table 40

Compounds Received for Testing Against Venezuelan Equine Encephalomyelitis Virus

AVS #	Activity	Maximum tolerated dose	Recommendation
79	no	100 mg/kg	inactive
206	no	> 1,000 mg/kg	retest at higher doses
272	no	> 100 mg/kg	retest at higher doses
347	no	> 32 mg/kg	retest at higher doses
360	no	> 100 mg/kg	retest at higher doses
646	no	> 100 mg/kg	retest at higher doses

Table 41

Cumulative Results of Intracranial Challenge with Venezuelan Equine Encephalomyelitis Virus in Mice

Challenge Dose (0.03 ml)	#dead challenged	% Mortality
PBS	0/29	0%
10^{-6} dilution of VEE	10/10	100%
10^{-7} dilution of VEE	10/10	100%
$10^{-7.1}$ dilution of VEE	20/20	100%
$10^{-7.4}$ dilution of VEE	20/20	100%
$10^{-7.7}$ dilution of VEE	18/20	90%
10^{-8} dilution of VEE	19/30	63%
$10^{-8.3}$ dilution of VEE	12/20	60%
$10^{-8.6}$ dilution of VEE	6/19	32%
$10^{-8.9}$ dilution of VEE	0/10	0%
10^{-9} dilution of VEE	2/10	20%

Table 42
Mortality in VEE Challenged Mice Receiving a Single Dose of 3N-3DU

Treatment Groups	No. Dead/No. Treated	ADD + 1 SD
Uninfected Mice		
Untreated control	0/5	N/A
Sham-infected IC	0/5	N/A
Sham-infected + PBS IC	0/5	N/A
Sham-infected + 40 mg/kg 3N-3DU IC	0/4	N/A
Virus-Infected Mice		
Untreated control	2/5	6.5 +/- 0.7
Placebo (PBS) 6 hrs	6/10	6.3 +/- 0.8
Placebo (PBS) 8 hrs	7/10	5.4 +/- 0.5
Placebo (PBS) 10 hrs	5/10	5.8 +/- 1.5
40 mg/kg 3N-3DU 6 hrs	6/10 (.68)	5.8 +/- 0.8
40 mg/kg 3N-3DU 8 hrs	2/8 (.077)	6.5 +/- 0.7 (.049)
40 mg/kg 3N-3DU 10 hrs	5/8 (.56)	6.5 +/- 1.2 (.52)

4.3.3. **Japanese Encephalitis Virus (JE):**

During the course of this contract, extensive attempts were made to establish a reproducible JE virus model in outbred Swiss mice with the Nakayama strain of JE. The only reproducible challenge identified with this virus strain in outbred Swiss mice was following intracerebral inoculation. Since a less severe challenge was desirable, we began studies with the Beijing strain of JE in inbred C57Bl/6 mice. These studies resulted in development of a lethal JE virus model. The challenge inoculum, prepared by serial *in vivo* passage through the CNS tissues of 4 week-old C57Bl/6 mice, was reproducibly lethal following intraperitoneal inoculation into C57Bl/6 mice.

A total of 13 compounds was received for testing against JE *in vivo*. These compounds are listed in **Table 43**. Of these, 7 had demonstrable activity against JE *in vivo*. These compounds were AVS #360, 361, 2811, 2812, 2979, 2980 and 5587.

As can be seen in **Table 44**, AVS 360 demonstrated some antiviral efficacy as the mortality rate in treated mice was 70% compared to 100% in the diluent-treated controls. The ADD of AVS 360 treated mice was not prolonged compared to the diluent-treated controls. Further studies with alternate dose, route and treatment schedules may provide improved antiviral efficacy.

A second assay of AVS 360 was conducted at dose levels of 300 and 150 mg/kg/day on a qld x 7 days schedule. The results, shown in **Table 45**, indicate a possible antiviral effect in that the mortality was slightly decreased. Since the maximum tolerated dose was not achieved it is possible that greater activity might be demonstrable. Additional testing of this compound at higher doses on alternate treatment schedules is recommended.

AVS 361 was initially tested at doses of 6, 4 and 2 mg/kg/day administered qld x 7 days starting the day preceding virus challenge. As shown in **Table 46**, AVS 361 was toxic at 6 mg/kg. At 4 mg/kg, the compound completely suppressed virus-induced mortality while the 2 mg/kg dose level did not significantly suppress mortality. However, the 2 mg/kg dose level did prolong the ADD significantly. A second assay with this compound confirmed its antiviral activity. The results, shown in **Table 47**, vary slightly from the first experiment with regard to the toxic dose level. In the second study, AVS 361 was tolerated at 6 mg/kg and this dose significantly reduced mortality. At 4 mg/kg the ADD was significantly prolonged although the mortality was not significantly decreased. The variance in toxic dose levels between the two assays could have resulted from differences in the compound since separate shipments were used for the two assays. Another potential source of variance is the preparation of the dosing solutions. The conclusion from these studies is that AVS 361 has potential for anti-JE activity *in vivo*. Although the window between toxic and therapeutic doses is narrow, it may be possible to enhance the antiviral effect by altering compound formulations, administration routes and by synthesizing analogs of this compound.

AVS 2563 may have an effect against JE. As shown in **Table 45**, the highest dose level tested, 45 mg/kg/day, reduced mortality slightly. Since the maximum tolerated dose was not achieved it would be advisable to retest this compound at higher dose levels before it is excluded as inactive.

AVS 2811 was initially tested at 25, 12.5 and 6.25 mg/kg/day on a qld x 7 days schedule beginning on the day preceding virus challenge. As shown in **Table 46**, the 25 mg/kg/day dose produced 80% mortality in the toxicity control mice. However, the virus-infected mice receiving this dose had only 40% mortality compared to 100% mortality in the virus-infected diluent treated mice. At the 12.5 and 6.25 mg/kg dose levels the mortality was 80% in the virus-infected mice with a slight prolongation of the ADD. This compound was assessed in a second study at doses of 20, 10 and 5 mg/kg/day. In this study the drug diluent was HPC obtained from the NCI in contrast to 2% alcohol in saline used for the first study. As shown in **Table 47**, the 20 mg/kg dose level was uniformly toxic. However, the 10

mg/kg/day dose level significantly reduced virus induced mortality. The 5 mg/kg dose level was ineffective in reducing mortality. The studies differ slightly with regard to toxicity and effective doses. This may be the result of differences in (1) the compound (received in separate shipments); (2) the drug preparation or (3) the drug diluent used in the 2 assays. In conclusion, AVS 2811 has some activity against JE virus *in vivo* and further studies should be pursued.

AVS 2812 was assayed for activity against JE virus at doses of 6, 3 and 1 mg/kg/day on a qld x 7 days schedule beginning on the day preceding virus challenge. As shown in Table 46, the 6 mg/kg dose level resulted in 80% mortality in the toxicity control mice with a 56% mortality in the virus-infected mice. At 3 mg/kg, AVS 2812 was not toxic to the toxicity control mice and it reduced mortality significantly in the virus-infected mice. Similarly, the 1 mg/kg dose level also decreased mortality. A retest of AVS 2812 at the same dose levels confirmed the activity as shown in Table 47. Although the window between toxicity and efficacy is narrow, this compound and analogs of it should be pursued in further studies.

AVS 2979 was initially evaluated at doses of 200, 100 and 50 mg/kg/day which were toxic. The compound was tested at 30 and 15 mg/kg/day on a qld x 7 days schedule beginning the day preceding virus challenge. The 30 mg/kg dose administered subcutaneously reduced mortality to 40% compared to 80% in the diluent-treated control mice. The mortality was reduced to 30% when treatment with 15 mg/kg was administered subcutaneously. This same dose level administered intraperitoneally only reduced mortality to 60% compared to the diluent-treated control of 78%. In this study, the subcutaneous route was superior to the intraperitoneal route. These results, shown in Table 48, indicate potential activity for AVS 2979. Testing at doses of 10 mg/kg and lower did not provide evidence of antiviral efficacy. Further studies with this compound are recommended.

AVS 2980 was tested at doses of 40, 20 and 10 mg/kg/day on a qld x 7 days schedule beginning on the day preceding virus challenge. At 40 mg/kg, AVS 2980 was not lethally toxic; however, it did produce weight loss in the toxicity control mice. This dose level significantly reduced mortality in the virus-infected mice. At 20 mg/kg, AVS 2980 reduced mortality to 40% compared to 100% mortality in the diluent-treated virus-infected mice. No activity was present at the 5 mg/kg dose level. These results, shown in Table 47, indicate significant potential for AVS 2980 although the effective and toxic dose levels are not significantly different. Further studies with this compound and its analogs are recommended.

AVS 5587 was significantly effective in reducing JE virus-induced mortality. The toxicity control mice receiving 200 mg/kg/day did not suffer any detectable drug toxicity as they gained weight throughout the experimental observation period. The virus-infected mice receiving 200 mg/kg/day had a mortality rate of 10% which is significantly reduced from the 100% mortality occurring in the diluent-treated, virus-infected mice. The virus-infected mice receiving 100 mg/kg/day had a mortality rate of 20% which also represents a significant reduction. At 50 mg/kg, AVS 5587 reduced mortality to 10%. In addition to reducing the mortality rates these dose levels also significantly prolonged the ADD. Doses of 10 mg/kg and lower were not effective in altering virus-induced mortality. These results, shown in Table 49, indicate significant potential for AVS 5587 as a chemotherapeutic agent. The results of this assay should be confirmed and further dose, route, schedule studies should be conducted. Of all the compounds demonstrating anti-JE activity, this compound may be most desirable as the window between toxicity and efficacy is broader than that seen with the other compounds. Further studies of this compound and its analogs are strongly recommended.

Table 43

Compounds Received for Testing Against Japanese Encephalitis Virus *In Vivo*

AVS #	Activity	Maximum tolerated dose	Recommendation
111	no	>320 mg/kg/day	retest at higher dose levels
215	no	64 mg/kg/day	inactive
257	no	>320 mg/kg/day	retest at higher dose levels
272	no	>53 mg/kg/day	retest at higher dose levels
360	yes	>300 mg/kg/day	retest at higher dose levels
361	yes	6 mg/kg/day	evaluated for potential use
2563	possible	>45 mg/kg/day	retest at higher dose levels
2811	yes	12.5 mg/kg/day	evaluated for potential use
2812	yes	3 mg/kg/day	evaluated for potential use
2979	yes	30 mg/kg/day	evaluated for potential use
2980	yes	>40 mg/kg/day	evaluated for potential use
4113	no	>32 mg/kg/day	retest at higher dose levels
5587	yes	>200 mg/kg/day	evaluate for potential use

Table 44

Antiviral Evaluation of AVS-360 (JE Virus)

Treatment	No. dead/ No. uninfected	No. dead/ No. infected[a]	GMTD[b]	VR[c]
Compounds administered subcutaneously q1d x 7 days starting day -1				
Untreated	0/5	10/10 (13.6 ± 1.5)	13.5	NA[d]
0.4% CMC in PBS	0/5	10/10 (12.3 ± 2.8)	12.1	NA
250 mg/kg AVS-360	0.5	7/10 (12.0 ± 2.5)	15.2	1.3

[a] ADD ± 1SD = Average Day of Death ± 1 Standard Deviation

$$ADD = \frac{\Sigma\,[(\text{day of death}) \times (\text{number dead that day})]}{\text{total number of dead}}$$

[b] GMTD = Geometric Mean Time to Death

$$GMTD = x\sqrt{n_1 \bullet n_2 \bullet n_x}$$ where n = day of death, x = total number of animals

All survivors are calculated as dying on Day 28

[c] VR = Virus Rating

VR = GMTD of Experimental/GMTD of Diluent-Treated Control

[d] NA = Not Applicable

Table 45

In Vivo Antiviral Efficacy of AVS-360
and AVS-2563 Against JE Virus

Treatment	No. Dead/ No. Uninfected	ADD + SD	No. Dead/ No. Infected	ADD +SD	p value[a]	p value[b]
Compounds administered subcutaneously q1d x 7 days starting day -1						
Untreated	0/5		10/10	12.1 ± 4.9	0.5	0.21
0.4% CMC in PBS	0/5	1.2 ± 0.5	9/10	14.3 ± 1.5	-	-
AVS-360						
300 mg/kg	0/5		7/10	13.6 ± 1.3	0.29	0.245
150 mg/kg	0/5		8/10	13.5 ± 1.3	0.5	0.244
Compounds administered intraperitoneally q1d x 7 days starting day -1						
0.4% CMC in PBS	0/5		10/10	13.4 ± 2.6	-	-
AVS-2563						
45 mg/kg	0/5		7/10	13.9 ± 2.2	0.11	0.706
30 mg/kg	0/5		10/10	13.1 ± 1.7	1.0	0.759
15 mg/kg	0/5		9/10	13.0 ± 2.7	0.5	0.743

[a] p = value using Fisher's Exact Test comparing mortality to diluent-treated control.
[b] p = value using Student's T-test comparing experimental ADD to diluent-treated control.

Table 46

Antiviral Efficacy of AVS-361, AVS-2811 and AVS-2812 Against JE Virus

	No. Dead/ No. Uninfected[a]		GMTD[b]	No. Dead/ No. Infected[a]		GMTD[b]	VR[c]
Untreated	0/5			10/10	(14.0 ± 1.8)	13.9	NA
2% alc/saline	0/5			10/10	(12.8 ± 1.3)	12.7	1.0
AVS-361							
6 mg/kg	3/5	(2.7 ± 0.6)	6.8	7/10	(4.0 ± 2.4)[d]	6.5	0.5
4 mg/kg	0/5			0/10[e]		28.0	2.2
2 mg/kg	0/5			8/10	(16.3 ± 1.9)[f]	18.0	1.4
AVS-2811							
25 mg/kg	4/5	(4.8 ± 3.1)	6.0	4/10[g]	(10.5 ± 6.7)	16.1	1.3
12.5 mg/kg	0/5			8/10	(14.0 ± 1.8)	16.0	1.3
6.25 mg/kg	0/5			8/10	(13.5 ± 1.5)	15.6	1.2
AVS-2812							
6 mg/kg	4/5	(6.0 ± 1.4)	8.0	5/9[h,i]	(6.4 ± 3.1)[j]	15.8	1.2
3 mg/kg	0/5			2/10[k]	(17.5 ± 7.8)[l]	25.2	2.0
1 mg/kg	0/5			6/10[m]	(15.7 ± 3.4)[n]	19.5	1.5
Sham-infected	0/10						
4 x challenge	NA		NA	5/5	(13.4 ± 1.1)	13.4	NA
2 x challenge	NA		NA	5/5	(12.2 ± 1.1)	12.2	NA
1 x challenge	NA		NA	5/5	(12.4 ± 2.7)	12.1	NA
0.5 x challenge	NA		NA	5/5	(13.4 ± 1.1)	13.4	NA

[a] No. in parentheses = Average Day of Death ± 1 Standard Deviation (ADD ± 1SD)

$$ADD = \frac{\sum [(\text{day of death}) \times (\text{number dead that day})]}{\text{total number of dead}}$$

[b] GMTD = Geometric Mean Time to Death

$$GMTD = x\sqrt{n_1 \cdot n_2 \cdot n_x}$$ where n = day of death, x = total number of animals

All survivors are calculated as dying on Day 28

[c] VR = GMTD of Experimental/GMTD of diluent-treated Control.
[d] T-test of ADD vs. diluent-treated controls $p < 10^{-6}$.
[e] Fishers' Exact Test of exptal vs. control mortality $p = 5 \times 10^{-6}$.
[f] T-test of ADD vs. diluent-treated controls $p = 3.4 \times 10^{-4}$.
[g] Fishers' Exact Test of exptal vs. control mortality $p = 5.4 \times 10^{-3}$.
[h] One animal sacrificed on day 28 due to head tilt not included in data.
[i] Fishers' Exact Test of exptal vs. control mortality p = 0.047.
[j] T-test of ADD vs. diluent-treated controls $p = 7 \times 10^{-5}$.
[k] Fishers' Exact Test of exptal vs. control mortality $p = 3.6 \times 10^{-4}$.
[l] T-test of ADD vs. diluent-trated controls p = .052.
[m] Fishers' Exact Test of exptal vs. control mortality p = 0.04.
[n] T-test of ADD vs. diluent-treated controls p = .031.

Table 47

Antiviral Efficacy of Selected AVS Compounds Against JE Virus

Treatment	No. dead/ No. uninfected	No. dead/ No. infected[a]	GMTD[b]	VR[c]
Untreated	0/5	10/10 (12.2 ± 2.5)	11.9	NA[d]
2% alc/saline	0/5	10/10 (12.4 ± 2.6)	12.1	NA
AVS-361				
6 mg/kg	0/5	1/10[e] (15.0 ± 0.0)[f]	26.3	2.2
4 mg/kg	0/5	7/10[g] (15.4 ± 2.0)[h]	18.4	1.5
2 mg/kg	1/5 (28.0 ± 0.0)	9/10 (11.6 ± 1.4)	12.5	1.0
AVS-2812				
6 mg/kg	3/5 (7.0 ± 5.0)	10/10 (6.9 ± 2.8)[i]	6.3	0.5
3 mg/kg	0/5	1/10[j] (15.0 ± 0.0)[k]	26.3	2.2
1 mg/kg	0/5	9/10 (15.1 ± 1.2)[l]	16.0	1.3
NCI/HPC	0/5	10/10 (12.6 ± 1.2)	12.6	NA
AVS-2811				
20 mg/kg	5/5 (2.6 ± 1.3)	10/10 (3.5 ± 2.2)[m]	2.8	0.2
10 mg/kg	0/5	4/10[n] (13.3 ± 1.0)[o]	20.7	1.6
5 mg/kg	0/5	9/10 (13.4 ± 1.9)	14.4	1.1
AVS-2980				
40 mg/kg	0/5	2/10[p] (9.5 ± 4.9)[q]	22.2	1.8
20 mg/kg	0/5	4/10[r] (15.0 ± 2.6)[s]	21.7	1.7
10 mg/kg	0/5	9/10 (13.6 ± 1.9)	14.4	1.1

[a] The numbers in parentheses are the ADD ± SD = average day of death ± 1 standard deviation

$$ADD = \frac{\Sigma\,[(\text{day of death}) \times (\text{number dead that day})]}{\text{total number of dead}}$$

[b] GMTD = Geometric Mean Time to Death

$GMTD = x\sqrt{n_1 \cdot n_2 \cdot n_x}$ where n = day of death, x = total number of animals

All survivors are calculated as dying on Day 28

[c] VR = Virus Rating

VR = GMTD of Experimental/GMTD of Diluent-Treated Control

[d] NA = Not Applicable
[e] Fisher's Exact Test $p = 5.95 \times 10^{-5}$.
[f] Student's t-test p = .36.
[g] Fisher's Exact Test p = .105.
[h] Student's t-test p = .02.
[i] Student's t-test $p = 2.7 \times 10^{-4}$.
[j] Fisher's Exact Test $p = 5.95 \times 10^{-5}$.
[k] Student's t-test p = .36.
[l] Student's t-test p = .01.
[m] Student's t-test = $< 10^{-6}$.
[n] Fisher's Exact Test $P = 5.4 \times 10^{-3}$.
[o] Student's t-test p = .35.
[p] Fisher's Exact Test $p = 3.6 \times 10^{-4}$.
[q] Student's t-test p = .06.
[r] Fisher's Exact Test $p = 5.4 \times 10^{-3}$.
[s] Student's t-test p = .03.

Table 48

In Vivo Testing of AVS-2979 Against JE Virus Challenge

Virus: JE
JE Experiment No. 38
Treatment: q1d x 7, starting Day -1

Treatment Group	No. Dead/ No. Uninfected	No. Dead/ No. Infected	ADD ± 1 SD[a]
Administered Subcutaneously			
Untreated	0/5	9/10	12.1 ± 2.0
0.4% CMC	0/5	8/10	13.6 ± 1.8
30 mg/kg AVS-2979	0/5	4/10 [b]	14.3 ± 1.3 [c]
15 mg/kg AVS-2979	0/5	3/10 [d]	16.0 ± 1.7 [e]
Administered Intraperitoneally			
0.4% CMC	0/5	7/9	15.1 ± 2.4
15 mg/kg AVS-2979	0/5	6/10 [f]	11.8 ± 1.2 [g]

[a] ADD ± 1SD = Average Day of Death ± 1 Standard Deviation
[b] Fisher's exact test versus diluent treated control p = 0.085
[c] Student's t-test versus diluent treated control p = 0.55
[d] Fisher's exact test versus diluent treated control p = 0.035
[e] Student's t-test versus diluent treated control p = 0.077
[f] Fisher's exact test versus diluent treated control p = 0.37
[g] Student's t-test versus diluent treated control p = 0.011

Table 49

Results of Testing AVS-5587 Against
Japanese Encephalitis Virus Challenge

JE Experiment No. 41

Treatment	No. Dead/ No. Uninfected	No. Dead/ No. Infected	p[a]	ADD + 1 SD[b]	p[c]
Untreated	0/5	10/10	--	13.4± 2.1	--
0.4% CMC	0/5	10/10	--	13.5± 1.1	--
AVS-5587					
200 mg/kg	0/5	1/10	0.00006	17.0± 0.0	0.013
100 mg/kg	0/5	2/10	0.00036	20.0± 1.4	0.00002
50 mg/kg	0/5	1/10	0.00006	18.0± 0.0	0.003
10 mg/kg	0/5	9/10	--	14.2± 1.3	0.20
5 mg/kg	0/5	10/10	--	13.9± 1.8	0.55
1 mg/kg	0/5	10/10	--	14.0± 1.8	0.45
0.5 mg/kg	0/5	7/10	0.11	14.4± 1.6	0.17
0.1 mg/kg	0.5	9/10	0.5	13.1± 2.1	0.61

[a] p value resulting from Fisher's Exact test comparison of the mortality rates of drug-treated, virus-infected to diluent-treated, virus-infected control mice.

[b] ADD ± 1 SD = Average Day of Death ± 1 Standard Deviation.

[c] p value resulting from Student's t-test comparison of the ADD of drug-treated, virus-infected to diluent-treated, virus-infected control mice.

4.3.4. Vaccinia Virus (VV):

A total of 9 compounds were assayed for activity against VV *in vivo*. These compounds are listed in **Table 50**. Four of the compounds were assessed for activity in the intracranial challenge model. These included AVS 1752 (ara-A; positive control drug), 1985, 1986 and 1987. Of these, only AVS 1752 had demonstrable activity against the virus induced mortality. All 9 compounds had some degree of activity against virus-induced tailpox lesions.

The cumulative results from these assays are presented in **Table 51**. The compound with the greatest activity other than the positive control drug (AVS 1752) was AVS 3679. In the first assay of this compound the activity was not marked. However, a second assay indicated significantly greater activity. This difference is believed to have resulted from changes in the drug preparation. In the second assay the compound was solubilized immediately prior to administration whereas in the first assay less consideration were given to drug stability.

Following AVS 3679 the greatest activity was seen with AVS 4225 then AVS 2875. Beyond these there were no marked differences in activity.

Since all of the compounds had some antiviral efficacy they should all be considered for additional dose, route and schedule studies. Additional information provided by pharmacokinetics studies would be beneficial in establishing the appropriate dose, route and schedule for maximal therapeutic efficacy. Consideration should be given to trying constant drug administration via Alzet® pumps or repeated daily dosing. The oral bioavailability should also be determined and the anti-vaccinia virus activity assessed using repeated daily oral dosing.

Table 50

Compounds Received for Testing Against *In Vivo* Vaccinia Virus

AVS #	IC Challenge Activity	Tailpox Activity	Maximum tolerated dose	Recommendation
1752 (Ara-A)	yes	yes	>400 mg/kg/day	further studies
1985	no	yes	>293 mg/kg/day	further studies
1986	no	yes	250-500 mg/kg/day	further studies
1987	no	yes	>320 mg/kg/day	further studies
1988	ND	yes	300 mg/kg/day	further studies
2875	ND	yes	>320 mg/kg/day	further studies
2994	ND	yes	300 mg/kg/day	further studies
3679	ND	yes	>300 mg/kg/day	further studies
4225	ND	yes	>300 mg/kg/day	further studies

ND - not done

Table 51

Activity of Selected AVS Compounds vs Vaccinia Virus (Tailpox Counts)

AVS #	% Reduction in Mean Tailpox Counts	% Reduction in Median Tailpox Counts
1752		
300 mg/kg	58%	76%
300 mg/kg	52%	83%
400 mg/kg	20%	47%
400 mg/kg[1]	60%	88%
300 mg/kg	77%	88%
300 mg/kg	46%	45%
300 mg/kg	56%	38%
400 mg/kg	73%	ND
1985		
293 mg/kg	55%	55%
325 mg/kg	5%	44%
325 mg/kg	37%	47%
1986		
250 mg/kg	39%	61%
300 mg/kg	54%	86%
100 mg/kg[1]	69%	77%
1987		
320 mg/kg	39%	51%
1988		
300 mg/kg	31%	64%
2875		
300 mg/kg	50%	50%
2994		
300 mg/kg	38%	52%
4225		
300 mg/kg	57%	67%
3679		
300 mg/kg	27%	45%
300 mg/kg	97%	100%
100 mg/kg[1]	55%	67%

[1]Compounds administered subcutaneously rather than intraperitoneally.

5. DISCUSSION

Around 305 AVS compounds demonstrated antiviral activity at greater than 50% reduction levels against the Vaccinia Virus. Out of these, 34 AVS compounds appeared to have excellent *in vitro* antiviral potential with antiviral values that reached better than 95% reduction levels with TAI values that ranged from 11% to 83%. The best of these active leads should be studied further.

One hundred (100) compounds demonstrated *in vitro* antiviral activity at greater than or equal to 50% reduction levels against the Adenovirus. Some of the compounds found to be most effective against AD2 were: AVS-2296, 2700, 2980, 2986, 3593, 4070 and 4167.

We have performed 7654 *in vitro* antiviral assays against the YF Virus including the quality control tests. Around 306 mpounds demonstrated antiviral activity at greater than 50% reduction levels. Out of these assays, 62 AVS compounds appeared to have excellent *in vitro* antiviral potential with antiviral values that reached better than 95% reduction levels with TAI values that ranged from 5% to 99%. These results warrant that the best of these active leads would be studied further.

In this contract period, we performed 7873 *in vitro* antiviral assays against the JE Virus including quality control tests. Around 206 compounds demonstrated antiviral activity at greater than 50% reduction levels. Out of these assays, 45 AVS compounds appeared to have excellent *in vitro* antiviral potential with antiviral values that reached better than 95% reduction levels with TAI values that ranged from 9% to 95%. The results warrant that the best of these active leads would be studied further.

Against VE virus, 7319 *in vitro* antiviral assays were performed during this contract period including the quality control tests. Around 193 compounds demonstrated antiviral activity at greater than 50% reduction levels. Out of these assays, 15 AVS compounds appeared to have excellent *in vitro* antiviral potential with antiviral values that reached better than 95% reduction levels with TAI values that ranged from 7% to 87%. These results warrant that the best of these active leads would be studied further.

During this contract period, we performed 8221 *in vitro* antiviral assays against the PT virus including the quality control tests. Around 635 compounds demonstrated antiviral activity at greater than 50% reduction levels. Out of these assays, 107 AVS compounds appeared to have excellent *in vitro* antiviral potential with antiviral values that reached better than 95% reduction levels with TAI values that ranged from 10% to 96%. These results definitely warrant that the best out of these active leads would be studied further.

We performed 7833 *in vitro* assays against the SF virus including the quality control tests. Around 566 compounds demonstrated antiviral activity at greater than 50% reduction levels. Out of these assays, 95 AVS compounds appeared to have excellent *in vitro* antiviral potential with antiviral values that reached better than 95% reduction levels with TAI values that ranged from 5 - 97%. These results warrant that the best of these active leads would be studied further.

We have performed 2276 *in vitro* antiviral assays against the Pichinde Virus including the positive control tests. Around 197 compounds demonstrated antiviral activity at greater than 50% reduction levels and therapeutic indices of > 1.0. Five compounds (AVS-0646, 0140, 0148, 2350 and 3189) produced therapeutic indices of > 100. The results warrant that the best of these active leads would be studied further.

The prescreen protocol has successfully identified potential active materials (~5%) for further confirmatory testing. Confirmatory testing of these potential active compounds were carried out in the primary screen against a broader range of more virulent viruses (VV, YF, JE, VE, PT or SF). Sixty-seven percent (515/767) of the prescreen compounds showed some degree of activity against one or more of these more virulent viruses.

During the time that we conducted primary HIV testing on this contract, 14 AVS compounds produced anti-HIV activity with Therapeutic Indices that ranged from >54 to >1000. One NCI compound, NSC 614846 demonstrated significant activity comparable to the positive control drug, ddC. Several compounds showed confirmed anti-HIV activity versus the Feline and Simian Viruses (AVS-0001, 999, 2285 and 2639). AVS-0001 and AVS-2639 were active against the Murine Virus (MAIDS).

From the active *in vitro* lead compounds, the following have been advanced to appropriate *in vivo* animal model studies with the following results:

A total of 19 compounds were assessed for efficacy against Pichinde Virus in hamsters. Out of the compounds evaluated, only 2 (AVS-0001 and AVS-0206) had significant activity against Pichinde Virus *in vivo*. Both compounds demonstrated good potential for treatment of arenaviral infections.

None of the six compounds that we received to be tested against VE in mice had significant antiviral activity. However, five of the six compounds were not available in sufficient amounts for testing at maximum tolerated dose levels. Thus, it is possible that these compounds may show activity against VE if higher dose levels are tested.

A total of 13 compounds were received for testing against JE in mice. Out of these compounds, 7 had demonstrable activity against JE *in vivo*. These compounds were AVS-360, 361, 2811, 2812, 2979, 2980 and 5587. Of all the compounds demonstrating anti-JE activity, AVS-5587 may be the most desirable as the window between toxicity and efficacy is broader than that seen with the other compounds. Further studies of this compound and its analogs are strongly recommended.

Nine compounds were assayed for activity against VV in mice. Four of the compounds were assessed for activity in the intracranial challenge model. These included AVS-1752 (Ara-A; positive control drug), 1985, 1986 and 1987. Of these, only AVS-1752 had demonstrable activity against the virus induced mortality. All 9 compounds had some degree of activity against virus-induced tailpox lesions. The compound with the greatest activity other than the positive control drug (AVS-1752) was AVS-3679. Following AVS-3679 the greatest activity was seen with AVS-4225 then AVS-2875. Beyond these there were no marked differences in activity.

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8. ABSTRACTS/PUBLICATIONS

Kirsi, J.J., W.M. Shannon, T.P. Monath and J.W. Huggins. An evaluation of human recombinant interferon β(rIFN-β) against selective positive- and negative-stranded RNA viruses using an MTT-assay procedure. Antiviral Research 13:*S*7 p. 66 (#53), 1990.

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