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AD-A211 493

HTLV III VIRUS ISOLATION STUDIES

ANNUAL/FINAL REPORT

TRAN C. CHANH

FEBRUARY 28, 1989

Supported by

U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND
Fort Detrick, Frederick, Maryland 21701-5012

Contract No. DAMD17-86-C-6280

Southwest Foundation for Biomedical Research
San Antonio, Texas 78284

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS			
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution unlimited			
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE						
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)			
6a. NAME OF PERFORMING ORGANIZATION Southwest Foundation For Biomedical Research		6b. OFFICE SYMBOL (If applicable)	7a. NAME OF MONITORING ORGANIZATION			
6c. ADDRESS (City, State, and ZIP Code) P.O. Box 28147 San Antonio, Texas 78284			7b. ADDRESS (City, State, and ZIP Code)			
8a. NAME OF FUNDING / SPONSORING ORGANIZATION U.S. Army Medical Research & Development Command		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DAMD17-86-C6280			
8c. ADDRESS (City, State, and ZIP Code) Fort Detrick Frederick, MD 21701-5012			10. SOURCE OF FUNDING NUMBERS			
			PROGRAM ELEMENT NO. 623105	PROJECT NO. 3M2- 623105H29	TASK NO. AB	WORK UNIT ACCESSION NO. 018
11. TITLE (Include Security Classification) HTLV III Virus Isolation Studies						
12. PERSONAL AUTHOR(S) Tran C. Chanh						
13a. TYPE OF REPORT Annual/Final		13b. TIME COVERED FROM 9/29/86 TO 9/28/88		14. DATE OF REPORT (Year, Month, Day) 89/2/28		
15. PAGE COUNT 8						
16. SUPPLEMENTARY NOTATION Annual covers time period 29 September 1987 - 28 September 1988						
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Human immunodeficiency virus, viral isolation, co-culture, reverse transcriptase and p24 antigen capture assay, RA 1			
FIELD	GROUP	SUB-GROUP				
06	03					
06	13		19. ABSTRACT (Continue on reverse if necessary and identify by block number) A systematic viral isolation study has been performed on peripheral blood lymphocytes obtained from Air Force personnel positive for antibodies to the human immunodeficiency virus (HIV-1) as assessed by HIV-ELISA and/or immunoblot assays. The co-culture technique employed for viral isolation involves admixing with PHA-activated PBL from normal donors as target cells in the presence of interleukin 2 (IL-2). Assays to determine reverse transcriptase (RT) activity in the culture supernatants were used to detect productive viral infectivity <u>in vitro</u> . RT-negative samples were further tested for the presence of HIV-p24 antigen. The results of this viral isolation study in combination with neurological, clinical, and immunological manifestations assessed by the Wilford Hall USAF Medical Center personnel should contribute to our increased understanding of the natural history of the acquired immunodeficiency syndrome.			
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified			
22a. NAME OF RESPONSIBLE INDIVIDUAL Mary Frances Bostian			22b. TELEPHONE (Include Area Code) 301-663-7325		22c. OFFICE SYMBOL SGRD-RMI-S	

FINAL TECHNICAL REPORT

Viral isolation has been performed on peripheral blood lymphocytes (PBL) from Air Force personnel with confirmed positive antibodies to the human immunodeficiency virus (HIV).

The PBL were obtained by Ficoll-Hypaque density centrifugation of fresh whole blood. $5 \times 10^6/5$ ml of purified PBL were co-cultured with an equal number of PHA-activated human lymphocytes from normal donors in the presence of 100 U/ml of interleukin 2 (IL-2) for a period of three weeks. Culture supernatants were collected on days 7, 10, 14, 17, and 21 of culture and frozen at -80°C for reverse transcriptase (RT) assay. The RT assay is done essentially as described (1). Cultures yielding RT activity threefold greater than control cultures were scored positive for productive infection in vitro. The culture supernatants with RT activity lower than threefold compared to that of control cultures were further assessed for the presence of HIV-p24 employing Coulter's p24 antigen capture assay which is more sensitive than the RT assay. Table 1 shows the results of the RT and the p24 antigen capture assays of all patients since September 1988. There were some RT-negative culture supernatants prior to December 1988 on which p24 antigen capture assay was not done. This was because we (in collaboration with Wilford Hall) did not complete our assessment of Coulter's p24 antigen capture assay with regard to its specificity and sensitivity until around the end of last year.

REFERENCE

1. Chanh, T.C., Dreesman, G.R., Kanda, P., Linette, G.P., Sparrow, J.T., Ho, D.D., and Kennedy, R.C. Induction of anti-HIV neutralizing antibodies by synthetic peptides. *EMBO J.* 5:3065-3071, 1986.

TABLE 1. HIV ISOLATION FROM PATIENTS' LYMPHOCYTES

PT #	Collection Date	RT (cpm) RESULTS						P/N	p 24	WR Stat
		Day 7	Day 10	Day 14	Day 17	Day 21				
95	09/13/88	7948 (10.8)	11881 (16.1)	6222 (8.4)	3481 (4.7)	2023 (2.7)	+	N.A.	1A	
130	09/13/88	715 (.97)	1587 (2.1)	782 (1.06)	828 (1.12)	1048 (1.42)	-	N.D.	2A	
156	09/13/88	921 (1.25)	741 (1.00)	5267 (7.1)	12727 (17)	4953 (6.7)	+	N.A.	1A	
182	09/13/88	2498 (3.4)	4400 (5.7)	4700 (6.4)	4279 (5.8)	3322 (4.5)	+	N.A.	2A	
563	09/13/88	5140 (2.3)	7229 (3.0)	6491 (2.7)	8577 (3.5)	6558 (2.7)	+	N.A.	1A	
589	09/13/88	2622 (1.0)	3156 (1.3)	6085 (2.5)	5771 (2.4)	3078 (1.28)	±	N.D.	1A	
615	09/13/88	-	-	3067 (4.17)	2459 (3.3)	1357 (1.8)	+	N.A.	1A	
663	09/13/88	13798 (18.7)	11231 (15.3)	11361 (15.4)	6661 (9.07)	4205 (5.7)	+	N.A.	1A	
833	09/13/88	714 (.9)	757 (1.01)	745 (1.01)	755 (1.02)	983 (1.33)	-	N.D.	1A	
836	09/13/88	778 (1.05)	585 (.79)	1506 (2.05)	1964 (2.6)	2074 (2.82)	±	N.D.	2B	
37	09/20/88	-	11372 (4.7)	8802 (3.6)	3100 (1.29)	2678 (1.11)	+	N.A.	6A	
136	09/20/88	-	3695 (1.53)	11937 (4.9)	8738 (3.6)	2970 (1.2)	+	N.A.	2A	
555	09/20/88	-	9502 (3.9)	13449 (5.5)	8395 (3.5)	6245 (2.59)	+	N.A.	3A	
600	09/20/88	-	13900 (5.7)	12445 (5.1)	9308 (3.8)	2380 (.99)	+	N.A.	1A	
832	09/20/88	-	15068 (6.2)	19573 (8.1)	6949 (2.8)	5448 (2.2)	+	N.A.	2A	
837	09/20/88	-	3855 (1.6)	6271 (2.6)	12285 (5.1)	6661 (2.7)	+	N.A.	1A	
2393	09/20/88	-	3200 (1.3)	3163 (1.3)	3507 (1.4)	2653 (1.1)	-	N.D.	"U"	
124	09/27/88	2016 (.8)	2966 (1.2)	4937 (2.0)	4135 (1.7)	2828 (1.1)	-	N.D.	4A	
604	09/27/88	2523 (1.0)	2981 (1.24)	4189 (1.74)	2664 (1.10)	2384 (.99)	-	N.D.	1A	
605	09/27/88	3530 (1.4)	2352 (.97)	2969 (1.23)	3001 (1.2)	3210 (1.3)	-	N.D.	2A	
612	09/27/88	3476 (1.4)	2279 (.94)	7912 (3.2)	5821 (2.4)	4272 (1.7)	+	N.A.	1A	
626	09/27/88	992 (.988)	6365 (6.3)	1195 (1.2)	6820 (6.8)	-	+	N.A.	3B	
678	09/27/88	3126 (1.3)	4152 (1.7)	4190 (1.7)	8289 (3.4)	2930 (1.2)	+	N.A.	2A	
839	09/27/88	2659 (1.1)	4930 (2.0)	6592 (2.7)	5051 (2.1)	2010 (.83)	±	N.D.	1A	
121	10/04/88	1070 (2.0)	1125 (2.15)	1014 (1.9)	1270 (2.4)	1253 (2.4)	-	N.D.	2B	
161	10/04/88	983 (1.9)	1031 (1.97)	1019 (1.9)	1647 (3.1)	1088 (2.1)	+	N.D.	1A	
321	10/04/88	1650 (3.15)	1564 (2.99)	1770 (3.4)	1284 (2.45)	1638 (3.1)	+	N.D.	4A	
635	10/11/88	1663 (3.2)	1065 (2.0)	1071 (2.0)	1055 (2.0)	1206 (2.3)	+	N.A.	1A	
68	10/18/88	1724 (3.3)	1191 (2.3)	1245 (2.4)	1214 (2.3)	1161 (2.2)	+	N.A.	2A	
105	10/18/88	969 (1.8)	1200 (2.3)	1068 (2.0)	1115 (2.1)	-	-	N.D.	2A	
392	10/18/88	1050 (2.0)	1709 (3.3)	-	-	-	+	N.A.	2A	
613	10/18/88	1063 (2.0)	1144 (2.2)	-	-	-	-	N.D.	2A	
660	10/18/88	1605 (3.1)	1223 (2.3)	1367 (2.6)	1459 (2.8)	-	+	N.A.	1A	
848	10/25/88	1337 (1.3)	56652 (56.5)	16646 (16.6)	2188 (2.2)	2822 (2.8)	+	N.A.	1A	
610	10/25/88	2302 (2.3)	10703 (10.7)	45745 (45.6)	9653 (9.6)	1709 (1.7)	+	N.A.	1A	
195	11/01/88	4411 (4.4)	3303 (3.3)	1940 (1.9)	1200 (1.2)	-	+	N.A.	5A	
196	11/01/88	2033 (2.0)	2544 (2.5)	4595 (4.6)	10352 (10.3)	-	+	N.A.	1A	
552	11/01/88	5975 (5.9)	3400 (3.4)	22075 (21.9)	26921 (26.8)	-	+	N.A.	1A	
627	11/01/88	7818 (7.8)	1177 (1.2)	2745 (2.7)	4158 (4.1)	-	+	N.A.	1A	
850	11/01/88	13793 (13.7)	1502 (1.5)	2359 (2.3)	1637 (1.6)	-	+	N.A.	3A	
851	11/01/88	1361 (1.4)	15380 (15.3)	22204 (22.1)	1175 (1.2)	-	+	N.A.	1A	
187	11/22/88	-	-	-	920 (.797)	1859 (1.6)	-	+	2A	
571	11/22/88	-	-	-	2016 (1.7)	991 (.858)	-	No sup. on hand	6B	
80	11/29/88	-	1251 (1.08)	428 (.37)	1539 (1.3)	1092 (.946)	-	+	5B	
679	11/29/88	-	2282 (1.97)	897 (.777)	7417 (6.4)	1069 (.926)	+	N/A	1A	
685	11/29/88	-	2571 (2.2)	1382 (1.19)	1115 (.966)	-	-	+	2A	
770	11/29/88	-	4435 (3.8)	745 (.645)	2559 (2.2)	351 (.30)	+	N/A	1B	

RT (cpm) RESULTS

PT #	Collection		RT (cpm) RESULTS					P/N	p 24	WR Stat
	Date	Day 7	Day 10	Day 14	Day 17	Day 21				
852	11/29/88	-	1267 (1.09)	1018 (.88)	1246 (1.07)	721 (.52)	-	+	1A	
109	12/13/88	1911 (2.69)	2313 (3.26)	1079 (1.5)	1064 (1.5)	820 (1.15)	+	N/A	6B	
380	12/13/88	853 (1.2)	1044 (1.47)	1758 (2.47)	1585 (2.2)	985 (1.38)	-	+	2A	
624	12/13/88	910 (1.28)	802 (1.1)	1131 (1.59)	717 (1.0)	790 (1.1)	-	+	2A	
863	12/13/88	1698 (2.39)	1510 (2.1)	924 (1.3)	1106 (1.55)	1112 (1.56)	-	+	5A	
864	12/13/88	1173 (1.65)	1168 (1.6)	1099 (1.55)	1035 (1.45)	644 (.908)	-	+	5A	
865	12/13/88	861 (1.2)	979 (1.38)	1578 (2.2)	1510 (2.1)	1211 (1.7)	-	+	2A	
219	12/06/88	1514 (1.65)	4743 (5.18)	1071 (1.17)	1112 (1.2)	1414 (1.5)	+	N/A	1A	
222	12/06/88	1394 (1.5)	2464 (2.69)	1988 (2.17)	1931 (2.1)	2361 (2.58)	±	+	6B	
604	12/06/88	1163 (1.27)	1510 (1.65)	1736 (1.89)	1577 (1.7)	2229 (2.4)	-	+	1A	
634	12/06/88	1888 (2.06)	1688 (1.8)	3603 (3.9)	1338 (1.46)	1526 (1.66)	+	N/A	2A	
860	12/06/88	1211 (1.3)	1416 (1.5)	1593 (1.7)	2214 (2.4)	1579 (1.7)	-	+	1A	
862	12/06/88	1157 (1.26)	903 (.987)	1586 (1.7)	1385 (1.5)	4398 (4.8)	+	N/A	1A	
5734	12/06/88	1097 (1.2)	1655 (1.8)	3922 (4.29)	1859 (2.0)	1633 (1.78)	+	N/A	"U"	
466	12/20/88	1686 (1.46)	491 (.425)	1302 (1.1)	707 (.61)	739 (.64)	-	-	2B	
514	12/20/88	1004 (.87)	940 (.81)	1369 (1.18)	622 (.538)	869 (.75)	-	+	2A	
709	12/20/88	938 (.81)	2814 (2.4)	857 (.74)	331 (.286)	2557 (2.2)	-	+	5A	
797	12/20/88	435 (.376)	768 (665)	742 (.64)	417 (.36)	838 (.726)	-	+	2A	
89	1/10/89	746 (1.2)	603 (.97)	472 (.76)	916 (.467)	945 (1.27)	-	-	1A	
157	1/10/89	675 (1.08)	526 (.847)	729 (1.17)	794 (.405)	490 (.66)	-	-	4A	
228	1/10/89	692 (1.1)	441 (.71)	462 (.74)	1124 (.5741)	858 (1.16)	-	-	2B	
383	1/10/89	634 (1.0)	766 (1.2)	537 (.86)	924 (.47)	955 (1.29)	-	-	1A	
526	1/10/89	925 (1.48)	489 (.787)	403 (.648)	1009 (.51)	746 (1.008)	-	-	2B	
590	1/10/89	708 (1.1)	645 (1.0)	464 (.747)	1118 (.57)	475 (.64)	-	-	2A	
684	1/10/89	860 (1.38)	536 (.86)	209 (.336)	797 (.407)	591 (.799)	-	-	2A	
694	1/10/89	1168 (1.88)	555 (.89)	391 (.629)	939 (.479)	721 (.9756)	-	-	2A	
697	1/10/89	566 (.91)	490 (.789)	683 (1.09)	1014 (.517)	1022 (1.38)	-	+	2A	
699	1/10/89	793 (1.27)	501 (.806)	576 (.927)	261 (.13)	1340 (1.8)	-	-	1B	
757	1/10/89	785 (1.26)	401 (.645)	626 (1.0)	885 (.45)	817 (1.105)	-	-	2B	
867	1/10/89	2430 (3.9)	1406 (2.26)	608 (.979)	740 (.377)	840 (1.135)	+	N/A	1A	
869	1/10/89	531 (.855)	393 (.63)	481 (.77)	1049 (.535)	627 (.849)	-	-	1A	
871	1/10/89	627 (1.0)	438 (.705)	620 (.998)	1000 (.51)	1024 (1.38)	-	-	1A	
655	1/17/89	2061 (.655)	2876 (.91)	2298 (.73)	2942 (.935)	1827 (.58)	-	-	1A	
712	1/17/89	2567 (.816)	2477 (.787)	2543 (.808)	2422 (.77)	2167 (.689)	-	-	1A	
726	1/17/89	2063 (.656)	2750 (.87)	1812 (.576)	2051 (.65)	2081 (.66)	-	-	2A	
876	1/17/89	2186 (.69)	2025 (.64)	2006 (.638)	2134 (.678)	1962 (.62)	-	-	1A	
176	1/23/89	2719 (.86)	2389 (.759)	2737 (.87)	2681 (.85)	2325 (.739)	-	-	4B	
293	1/23/89	2151 (.68)	2484 (.79)	2065 (.656)	2250 (.715)	2724 (.866)	-	+	1A	
735	1/23/89	3407 (1.08)	2618 (.83)	2559 (.81)	2215 (.70)	2347 (.746)	-	+	1A	
233	1/23/89	3073 (.977)	2965 (.94)	3522 (1.12)	4422 (1.4)	2701 (.859)	-	+	6A	
768	1/23/89	2950 (938)	2752 (.875)	2915 (.927)	2548 (.81)	2365 (.75)	-	+	2A	
170	1/23/89	2635 (.838)	2814 (.895)	2075 (.66)	2670 (.849)	1644 (.52)	-	-	4B	
415	1/23/89	3377 (1.07)	2796 (.889)	2031 (.646)	1869 (.59)	2049 (.65)	-	-	2B	
245	1/23/89	2402 (.76)	2721 (.865)	2281 (.725)	2554 (.81)	2387 (.759)	-	+	2A	
343	1/23/89	3151 (1.0)	6763 (2.15)	5967 (1.89)	6492 (2.06)	3447 (1.09)	-	+	2A	
91	1/24/89	538 (.727)	645 (.87)	652 (.64)	588 (.578)	740 (.727)	-	-	3A	
287	1/24/89	682 (.92)	604 (.816)	648 (.637)	692 (.68)	583 (.57)	-	-	1A	
293	1/24/89	657 (.888)	698 (.94)	499 (.49)	671 (.659)	1286 (1.26)	-	-	1A	
323	1/24/89	863 (1.16)	934 (1.26)	607 (.596)	1267 (1.2)	593 (.58)	-	+	1A	

RT (cpm) RESULTS

PT #	Collection		RT (cpm) RESULTS					P/N	p 24	WR Stat
	Date	Day 7	Day 10	Day 14	Day 17	Day 21				
465	1/24/89	947 (.28)	801 (1.08)	728 (.715)	768 (.755)	625 (.61)	-	-	1A	
545	1/24/89	506 (.68)	607 (.82)	793 (.779)	1246 (1.2)	874 (.859)	-	-	1A	
729	1/24/89	791 (1.07)	1202 (1.6)	4516 (4.4)	833 (.818)	793 (.779)	+	N/A	2B	
777	1/24/89	524 (.709)	780 (1.05)	1565 (1.5)	1065 (1.0)	836 (.82)	-	-	1B	
322	1/31/89	2630 (.836)	2968 (.94)	2894 (.92)	2779 (.88)	1876 (.59)	-	+	2B	
326	1/31/89	2647 (.84)	2422 (.77)	1978 (.629)	1975 (.628)	2240 (.71)	-	+	2A	
377	1/31/89	2296 (.73)	2533 (.805)	2240 (.71)	2194 (.697)	1699 (.54)	-	+	2B	
570	1/31/89	2483 (.789)	2106 (.669)	2574 (.818)	2119 (.67)	2231 (.709)	-	+	2B	
650	1/31/89	3629 (1.15)	3518 (1.1)	2500 (.79)	3259 (1.0)	2193 (.697)	-	+	3A	
822	1/31/89	2372 (.75)	2238 (.711)	2250 (.715)	2164 (.688)	1783 (.567)	-	+	2A	
884	1/31/89	1802 (.57)	2633 (.837)	2185 (.695)	2310 (.73)	1744 (.55)	-	+	1A	
886	1/31/89	2496 (.79)	1982 (.63)	2491 (.79)	1527 (.485)	2317 (.737)	-	-	1A	
88	2/07/89	1183 (1.3)	912 (1.0)	1409 (1.55)	877 (.968)	1881 (2.07)	-	+	2A	
234	2/07/89	1567 (1.7)	1088 (1.2)	801 (.88)	906 (1.0)	849 (.937)	-	-	2A	
580	2/07/89	2343 (2.58)	730 (.806)	1223 (1.3)	659 (.726)	905 (.99)	±	-	1A	
658	2/07/89	1296 (1.4)	984 (1.08)	1063 (1.17)	804 (.88)	556 (.61)	-	-	1A	
677	2/07/89	778 (.859)	971 (1.07)	721 (.795)	1298 (1.4)	1001 (1.1)	-	-	1A	
720	2/07/89	1093 (1.2)	960 (1.05)	1227 (1.35)	1399 (1.5)	1846 (2.0)	-	+	2B	
733	2/07/89	924 (1.0)	955 (1.05)	998 (1.1)	806 (.89)	698 (.77)	-	-	2A	
768	2/07/89	3121 (3.44)	730 (.806)	903 (1.0)	1043 (1.15)	629 (.69)	+	+	2A	
879	2/07/89	771 (.85)	792 (.87)	634 (.699)	940 (1.0)	688 (.759)	-	-	1A	
881	2/07/89	1648 (1.8)	851 (.939)	657 (.725)	1808 (1.99)	887 (.979)	-	-	1A	
890	2/07/89	1033 (1.1)	918 (1.0)	766 (.845)	857 (.945)	970 (1.07)	-	+	2A	
245	2/14/89			CONTAMINATED						
392	2/14/89	576 (.67)	931 (1.08)	982 (1.14)	1106 (1.29)	1029 (1.2)	-	+	2A	
401	2/14/89	1092 (1.27)	2337 (2.7)	1915 (2.2)	1444 (1.68)	915 (1.06)	±	+	1A	
458	2/14/89	384 (.448)	696 (.81)	3774 (4.4)	702 (.82)	352 (.41)	+	N/A	2B	
473	2/14/89	645 (.75)	3348 (3.9)	2385 (2.7)	3260 (3.8)	1441 (1.68)	+	+	2A	
705	2/14/89	435 (.508)	591 (.689)	1004 (1.17)	3058 (3.57)	495 (.578)	+	N/A	1A	
708	2/14/89	298 (.348)	2342 (2.7)	251 (.29)	524 (.61)	1202 (1.4)	±	-	2A	
721	2/14/89	489 (.57)	846 (.987)	1492 (1.7)	642 (.75)	985 (1.15)	-	+	2A	
723	2/14/89	1831 (2.1)	3656 (4.27)	367 (.429)	612 (.715)	1416 (1.65)	+	N/A	1B	
892	2/14/89	400 (.467)	9104 (10.6)	3438 (4.0)	469 (.548)	1271 (1.48)	+	N/A	1A	
36	2/21/89	958 (1.05)	725 (.80)	567 (.625)	1219 (1.3)	1187 (1.3)	-	-	2B	
203	2/21/89	1782 (1.96)	1584 (1.7)	1904 (2.1)	1743 (1.9)	1293 (1.4)	-	+	5A	
358	2/21/89	1024 (1.1)	878 (.969)	1080 (1.19)	860 (.949)	855 (.94)	-	+	1A	
479	2/21/89	878 (.969)	808 (.89)	1504 (1.66)	965 (1.06)	2089 (2.3)	-	+	2A	
889	2/21/89	2486 (2.7)	2133 (2.35)	2081 (2.3)	1910 (2.1)	1246 (1.4)	±	+	6B	
257	2/28/89	1161 (.61)	1344 (.71)	1218 (.64)	1169 (.615)	1224 (.64)	-	+	2A	
271	2/28/89	1435 (.755)	1317 (.69)	1114 (.586)	898 (.47)	733 (.386)	-	+	1A	
274	2/28/89	1195 (.63)	1068 (.56)	1280 (.67)	1299 (.68)	1146 (.60)	-	+	1A	
330	2/28/89	1127 (.59)	2054 (1.08)	919 (.48)	1462 (.769)	1221 (.64)	-	+	2A	
363	2/28/89	955 (.50)	1246 (.656)	680 (.36)	1225 (.65)	641 (.34)	-	-	1A	
532	2/28/89	988 (.52)	767 (.40)	887 (.47)	2349 (1.2)	744 (.39)	-	+	2B	
778	2/28/89	884 (.465)	1236 (.65)	1104 (.58)	746 (.39)	990 (.52)	-	+	1A	
894	2/28/89	441 (.23)	1198 (.63)	624 (.33)	1134 (.597)	930 (.49)	-	+	1A	
897	2/28/89	1071 (.56)	728 (.38)	1594 (.84)	692 (.36)	930 (.49)	-	-	1A	
899	2/28/89	904 (.48)	628 (.33)	1393 (.73)	742 (.39)	533 (.28)	-	-	1A	
034	3/07/89	3050 (.989)	2541 (.82)	2935 (.95)	3284 (1.06)	2128 (.69)	-	-	1A	

RT (cpm) RESULTS

PT #	Collection		RT (cpm) RESULTS					P/N	p 24	WR Stat
	Date	Day 7	Day 10	Day 14	Day 17	Day 21				
511	3/07/89	3481 (1.1)	2909 (.94)	3528 (1.1)	3041 (.986)	3234 (1.0)	-	+	3A	
514	3/07/89	3096 (1.0)	3838 (1.2)	2406 (.78)	3140 (1.0)	3430 (1.1)	-	-	2A	
583	3/07/89	2732 (.89)	3358 (1.08)	4124 (1.3)	3457 (1.1)	3388 (1.09)	-	+	1A	
599	3/07/89	3100 (1.0)	2955 (.958)	2781 (.90)	4079 (1.3)	3383 (1.09)	-	-	2B	
637	3/07/89	2655 (.86)	2845 (.92)	3786 (1.2)	3994 (1.3)	3849 (1.2)	-	+	4A	
900	3/07/89	3520 (1.1)	2831 (.92)	3371 (1.1)	2962 (.96)	3143 (1.0)	-	-	1A	
114	3/14/89	2711 (.87)	2050 (.66)	2223 (.71)	2357 (.757)	2324 (.746)	-	-	3A	
123	3/14/89	2723 (.87)	5601 (1.79)	2255 (.72)	2743 (.88)	2610 (.838)	-	-	3A	
510	3/14/89	2354 (.756)	2823 (.91)	2183 (.70)	3782 (1.2)	2100 (.67)	-	-	1A	
792	3/14/89	2433 (.78)	2465 (.79)	2036 (.65)	2906 (.93)	2502 (.80)	-	-	1A	
878	3/14/89	2675 (.859)	2800 (.899)	2271 (.73)	3341 (1.1)	2869 (.92)	-	-	1B	
898	3/14/89	2743 (.88)	2246 (.72)	2347 (.75)	2854 (.916)	-	-	-	1A	
215	3/21/89	3389 (1.08)	2766 (.89)	3534 (1.1)	2314 (.74)	2880 (.925)	-	-	1A	
339	3/21/89	3498 (1.1)	3038 (.975)	2467 (.79)	4460 (1.4)	2555 (.82)	-	-	2A	
769	3/21/89	2627 (.84)	2933 (.94)	2991 (.96)	2897 (.93)	2636 (.85)	-	-	1A	
902	3/21/89	2745 (.88)	4180 (1.3)	2557 (.82)	2703 (.87)	4545 (1.5)	-	-	1A	
231	3/28/89	2150 (.68)	2259 (.72)	1932 (.61)	2295 (.73)	1935 (.615)	-	+	2A	
251	3/28/89	2802 (.89)	2390 (.76)	2367 (.75)	2010 (.64)	2388 (.76)	-	+	1A	
258	3/28/89	2032 (.65)	2784 (.885)	1775 (.56)	2374 (.75)	2111 (.67)	-	+	2A	
303	3/28/89	2335 (.74)	1817 (.577)	2071 (.658)	1946 (.619)	2016 (.64)	-	-	1A	
327	3/28/89	2158 (.69)	1836 (.58)	1959 (.62)	2222 (.71)	2180 (.69)	-	+	1A	
713	3/28/89	2175 (.69)	1948 (.62)	2574 (.82)	2326 (.74)	2143 (.68)	-	+	1A	
764	3/28/89	3994 (1.3)	6501 (2.1)	4348 (1.4)	4362 (1.4)	2937 (.93)	-	+	1A	
903	3/28/89	2124 (.675)	2061 (.655)	2186 (.69)	2313 (.735)	2036 (.647)	-	+	"U"	