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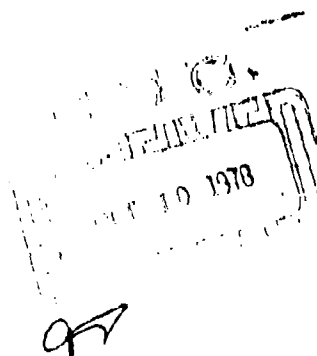
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STRUCTURAL AREA INSPECTION FREQUENCY EVALUATION (SAIFE)

Volume V. Results of Model Demonstration

Larry E. Clay
Carter J. Dinkeloo
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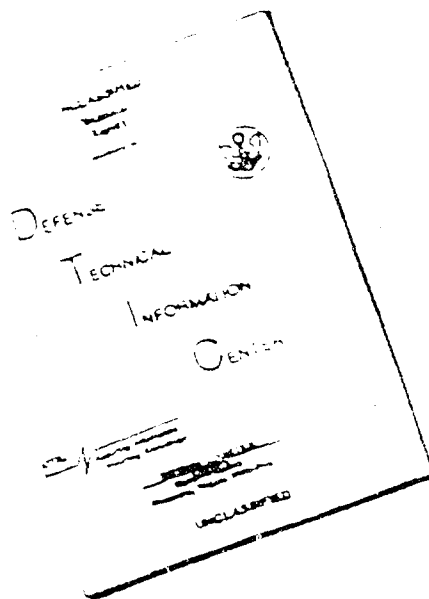
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FINAL REPORT

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16. Abstract To assist in the evaluation of proposed structural inspection programs for commercial jet transport aircraft, a logic was developed to simulate structural defects, failures, and inspections. This logic was incorporated in a computer program entitled Structural Area Inspection Frequency Evaluation (SAIFE). With the objective of quantifying the evaluation process currently used to establish and modify inspection intervals, SAIFE accounts for the following factors: (1) aircraft design analysis; (2) fatigue testing; (3) production, service, and corrosion defects; (4) probability of crack or corrosion detection; and (5) aircraft modification economics. As a five-volume document, this report covers the initial contract effort plus a subsequent parametric analysis as follows: Volume I (entitled Executive Summary) presents the SAIFE logic and documents the methodology for the decision-making processes in the simulation logic. Volume II (entitled Description of Simulation Logic) details the SAIFE simulation logic, presents the background data for the analytical functions and decision-making processes, and includes data for a typical simulation problem. Volume III (entitled Demonstration Input, Inspection Survey, and MRR Data) presents data tabulations derived from historical trends and design input data for a SAIFE demonstration problem. As the user's manual for the SAIFE computer program, Volume IV (entitled Software Documentation and User's Manual) contains detailed computer logic flow diagrams and a complete listing of the program which is written in SIMSCRIPT II.5. Volume V presents the results of the program application to a hypothetical aircraft and compares these results with the service experience of operational aircraft.		
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	meters	m
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
sq ft	square feet	0.09	square meters	m ²
sq yd	square yards	0.8	square meters	m ²
sq mi	square miles	2.6	square kilometers	km ²
acres	acres	0.4	hectares	ha
MASS (or weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.96	liters	l
gal	gallons	3.8	liters	l
cu ft	cubic feet	0.03	cubic meters	m ³
cu yd	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

1 in. = 2.54 cm exactly. For other and approximate conversions and more detail, see the Metric Conversion Tables, NBS Monograph 160-1, 1974.

Approximate Conversions from Metric Measures

When You Know	Multiply by	To Find	Symbol
LENGTH			
millimeters	0.39	inches	in
centimeters	0.4	inches	in
meters	3.3	feet	ft
meters	1.1	yards	yd
kilometers	0.6	miles	mi
AREA			
square centimeters	0.16	square inches	sq in
square meters	1.2	square yards	sq yd
square kilometers	0.4	square miles	sq mi
hectares (10,000 m ²)	2.5	acres	acres
MASS (weight)			
grams	0.035	ounces	oz
kilograms	2.2	pounds	lb
tonnes (1000 kg)	1.1	short tons	short tons
VOLUME			
milliliters	0.03	fluid ounces	fl oz
liters	2.1	pints	pt
liters	1.06	quarts	qt
liters	0.26	gallons	gal
cubic meters	35	cubic feet	cu ft
cubic meters	1.3	cubic yards	cu yd
TEMPERATURE (exact)			
Celsius temperature	9/5 times and 32	Fahrenheit temperature	°F



PREFACE

Technology Incorporated prepared this fifth volume of a five-volume report to document the simulation logic for the Structural Area Inspection Frequency Evaluation (SAIFE) in accordance with Article 11, paragraph B of Contract DOT-FA74WA-3493. (Volume V along with Volume IV completes the requirements of Phase III of the contract.) The effort is sponsored by the Aircraft Safety and Noise Abatement Division, Systems Research and Development Service of the Federal Aviation Administration.

The principal Technology Incorporated personnel engaged on this program were Mr. Carter J. Dinkeloo, project engineer, who served as principal investigator; Mr. Martin S. Moran, research engineer, who developed the model for the SAIFE computer program; and Mr. Ronald I. Rockafellow, program manager.

The contract monitors for the FAA were Messrs. Herbert Spicer and Charles Troha of the Aircraft Safety and Noise Abatement Division. The technical monitor was Mr. Arnold R. Anderjaska of the Flight Standards Division.

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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
i	INTRODUCTION	1
II	EVOLUTION OF DEMONSTRATION STAGES	2
1.	Objectives	2
2.	Initial Demonstration Stage	2
3.	Second Demonstration Stage	3
4.	Third Demonstration Stage	4
5.	Final Demonstration Stage	5
6.	Revised Program Demonstration Stage	5
III	DEMONSTRATION RESULTS	6
1.	Analysis of the Final Demonstration Stage Output by Element Type	6
2.	Analysis of the Final Demonstration Stage Output by Inspection Level	9
3.	Comparison of Results from the Four Demonstration Stage Outputs	10
IV	SUMMARY AND CONCLUSIONS	11
	APPENDIX A. AFS-510 DEMONSTRATION.	81

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Summary of SAIFF Demonstration Results	7
2	Comparison of Cracks Detected at Each Inspection Level Per Million Flight Hours	12
3	Demonstration Results for Door Frame	13
4	Demonstration Results for Window Frame	15
5	Demonstration Results for Fuselage - Main Frame, Bottom	17
6	Demonstration Results for Fuselage - Main Frame, Side	19
7	Demonstration Results for Fuselage - Main Frame, Top.	21
8	Demonstration Results for Fuselage - Stringer, Bottom	23
9	Demonstration Results for Fuselage - Stringer, Side	25
10	Demonstration Results for Fuselage - Stringer, Top.	33
11	Demonstration Results for Wing - Access Frame. . .	43
12	Demonstration Results for Wing - Spar, Aft	45
13	Demonstration Results for Wing - Spar, Center. . .	47
14	Demonstration Results for Wing - Spar, Forward . .	49
15	Demonstration Results for Wing - Stringer, Aft . .	51
16	Demonstration Results for Wing - Stringer, Center	54
17	Demonstration Results for Wing - Stringer, Forward.	59
18	Demonstration Results for Wing Center Section - Stringer, Aft.	62
19	Demonstration Results for Wing Center Section - Stringer, Center	65

LIST OF TABLES - Concluded

<u>Table</u>		<u>Page</u>
20	Demonstration Results for Wing Center Section - Stringer, Forward	68
21	Demonstration Results for Wing Center Section - Spanwise Beam, Aft.	71
22	Demonstration Results for Wing Center Section - Spanwise Beam, Center	73
23	Demonstration Results for Wing Center Section - Spanwise Beam, Forward.	75
24	Comparison of Results in Demonstration Stages for Door Frame.	77
25	Comparison of Results in Demonstration Stages for Wing Center Section - Spanwise Beam, Aft.	78
26	Comparison of Results in Demonstration Stages for Wing Center Section - Spanwise Beam, Center	79
27	Comparison of Results in Demonstration Stages for Wing Center Section - Spanwise Beam, Forward.	80

I. INTRODUCTION

It is the mutual goal of the FAA, airframe manufacturers, and air carriers to constantly improve the structural integrity and inspection efficiency of civil aircraft. The good safety record of U.S. air carriers indicates that the current process of establishing and modifying structural inspection programs has been successful. However, with the increasing size and complexity of second- and third-generation transport aircraft, there is a need to quantify more precisely the present subjective evaluation process which relies heavily on reliability analyses of the new design and on operational experience of similar aircraft.

Because of the extreme complexity of the evaluation process, a computer simulation of all critical aircraft service life aspects was judged the most rational means for quantifying the process more exactly. As a five-volume document, this report documents the resultant Structural Area Inspection Frequency Evaluation (SAIFE) simulation logic. SAIFE accounts for the following factors: (1) aircraft design analysis; (2) component and full-scale fatigue testing; (3) production, service, and corrosion defects; (4) probability of crack or corrosion detection; and (5) aircraft modification economics. It treats these factors in a logical sequence that realistically represents the procedure currently used to establish and modify inspection intervals. SAIFE is designed to provide a repeatable method for evaluating proposed inspection programs. However, it is not intended to supplant the Maintenance Review Board or the air carrier use of the Standard Operations Specification - Aircraft Maintenance.

As Volume V, this volume presents the results of a SAIFE demonstration, namely, the SAIFE application to a hypothetical aircraft, and compares the results with the service experience of operational aircraft. In this demonstration, all routines and events in the SAIFE program were exercised. The subsequent comparison revealed that the SAIFE output is realistic. The Appendix to this volume presents the results of the parametric study.

11. EVOLUTION OF DEMONSTRATION STAGES

1. Objectives

The SAIFE demonstration was designed to exercise all the events and routines in the software program and to permit determining whether each routine and event would function as intended. To this end, input data was formulated for a hypothetical aircraft, a hybrid of the B-747 and DC-10. The input data defined a fleet of aircraft with approximately the same production rate, fleet size, and service life as the B-747. This data also defined 1369 elements for each aircraft in the fleet. These elements included all the basic aircraft component types such as spars, stringers, and frames.

The demonstration was also intended to determine whether the SAIFE logic produced results which would be realistic when compared with the actual service history of jet transport aircraft. The realization of this second objective led to four separate stages during the demonstration task. The last three stages are characterized by changes in the SAIFE logic and/or alterations to the demonstration input data.

2. Initial Demonstration Stage

The initial demonstration started with the logic and input data submitted in the draft version of Volumes II and III of this report. The logic and input data had been reviewed prior to the start of the demonstration. However, because of the complexity of the logic and the volume of input data, several unanticipated problems were encountered when the initial demonstration output was reviewed. This review was conducted after 3-1/2 percent of the elements had been processed.

The most obvious problem was the extremely large number of cracks that were occurring on each element. An investigation of this problem revealed several contributing factors. The first factor was the large fleet being evaluated, 1000 aircraft, and the long service life, 60,000 flight hours, of each aircraft. Since the resultant total exposure of 60 million flight hours was much greater than that of any one fleet now in service, the corresponding number of cracks in the sample fleet appeared to be excessive. The obvious solution to this problem was to reduce the number of aircraft in the fleet and, thereby, reduce the total fleet flight hours.

A further review of the input data revealed that there were two additional factors causing the large number of cracks. Both of these factors contributed to an unrealistically low fatigue life for most elements. Of the latter two factors, the first was the relationship between the predicted and the actual fatigue life. Since the relationship used had been developed in the early 1960's, it was considered too conservative in the light of improved analysis techniques.

The second factor causing unrealistically low fatigue lives was the predicted lives used as input to the program. Although these lives were taken from data on wide-body aircraft, it was discovered that the design life rather than the predicted mean life had been used as input. When the mean life, which is much greater than the design life, was used as input, there was considerable increase in the fatigue lives of the elements.

During this review it was also determined that the SAFE logic should include the effects of sampling inspections at overhaul (D-level). Because of the limited time available to make this change, it was determined that reducing the probability of defect detection would be the most effective means of simulating the sampling effect. In addition, an optional output format was needed to provide more specific information on the events that lead to structural failures. Such a format had been used early in the development program but was later omitted because of its excessive output volume. Consequently, it was decided that this format should be restored as an option along with the capability of selecting aircraft numbers and elements to reduce the volume.

3. Second Demonstration Stage

Prior to restarting the demonstration, the following changes were made to the logic and the input data:

- a) The number of aircraft in the fleet was reduced from 1000 to 500.
- b) The relationship between the predicted and the actual fatigue life was revised to yield statistically higher actual fatigue lives.
- c) All predicted fatigue lives in the input data were changed from design life to predicted mean life.
- d) The percent reduction in inspection intervals was increased appreciably to provide more realistic changes.
- e) The lowest internal inspection level for each element was reviewed and, wherever required, revised to a higher level.
- f) Logic to account for the effect of sampling inspections was added. This logic reduced the probability of defect detection in direct proportion to the percentage of the fleet being sampled.

After processing 30% of the elements, the output data was reviewed. This review revealed that the foregoing changes had successfully reduced the number of cracks but that the number of failures was still unrealistically high. This problem was attributed to two factors: First, the sampling logic for the D-level inspection had appreciably reduced the number of cracks

detected at this level. Second, the SAIFE logic did not allow a crack that originated internally to eventually appear externally. Therefore, the defect was never exposed to lower level inspections as it would be in a real world situation.

Consequently, it was decided to change the logic for the sampling inspections in order to improve the number of defects detected at overhaul but not to make any changes concerning the second factor at this time. It was felt that making too many modifications at one time would make it difficult to determine the effect of each modification on the output.

The review of the second demonstration stage output also revealed that the intervals for the C-level and D-level inspections were frequently as low as 10 flight hours. Since the program criteria for reducing inspection intervals are applied only to the C-level and D-level inspections, this resulted in C-level and D-level inspections occurring more often than either A-level or B-level inspections. To prevent this, it was decided that minimum C-level and D-level intervals should be established.

4. Third Demonstration Stage

Before again restarting the demonstration, the following changes were made to the logic:

- a) The sampling logic was revised so that only designated aircraft were inspected. However, the probability of detecting large defects on these designated aircraft could approach 99%.
- b) The interval for each of the inspection levels was set so that it could never be less than the initial interval of the preceding inspection level. For example, the D-level inspection interval could never be less than the initial C-level inspection interval, that is 1000 hours.

The results of these changes were apparent after processing only 13% of the elements. Although the minimum inspection interval produced the desired effect, the revision of the sampling inspection logic not only did not reduce the number of structural failures but, in fact, increased the number slightly.

Consequently, it was decided that the sampling inspection logic used in the second demonstration should be restored and that other logic be added so that cracks originating internally would eventually be detectable externally.

5. Final Demonstration Stage

Before restarting the demonstration for the final run, the following changes were made to the logic:

- a) Cracks that originated internally were allowed to appear externally when the crack length equaled the critical length.
- b) The sampling inspection logic used in the second demonstration stage was restored. This logic reduced the probability of defect detection in proportion to the percentage of the fleet being sampled.
- c) The detailed output format that had been previously used was restored as an option for the final demonstration.

The demonstration output resulting from the final SAIFE logic and input data is detailed in the following section.

6. Revised Program Demonstration Stage

The appendix includes a complete description of the results and analysis from the parametric study.

III. DEMONSTRATION RESULTS

1. Analysis of the Final Demonstration Stage Output by Element Type

Since both the SAIFE demonstration output and the MRR/SDR service history data are extremely voluminous, this report presents only summary tables of the most pertinent facts. Table 1 lists the 21 element types analyzed in the SAIFE demonstration along with the following information:

- a) Reference to a following table that contains more detailed, but still summarized, data, including the number of cracks and corruptions detected at each inspection level, the number of production and service defects, and the number of failures and fail-safe damage occurrences.
- b) The ratio of the number of cracks detected in the SAIFE output to the number of cracks reported on MRR/SDR's.
- c) The number of structural failures per million flight hours predicted by SAIFE.
- d) The ratio of the number of first cracks occurring to the number of cracks detected by SAIFE.

When comparing the service history with the SAIFE demonstration output, four factors that affect the two data sets must be considered. The net result of these factors should be more defects in the SAIFE output than in the service history. Of these four factors, the first three increase the number of defects presented in the demonstration output, but the fourth decreases the number of defects. The four factors are as follows:

- a) The MRR/SDR data represents generally the first half of the service life of aircraft because the data were collected from the U.S. air carrier fleet while the SAIFE output represents the entire service life of all the aircraft in a given fleet.
- b) Not all aircraft defects are reported in the MRR/SDR documents.
- c) The service history is based on narrow-body aircraft which have fewer elements than the hypothetical wide-body aircraft used in the demonstration.
- d) Improved analysis techniques, design criteria, and manufacturing methods should result in fewer defects on the wide-body aircraft represented in the demonstration than on the narrow-body aircraft reported in the MRR/SDR's.

TABLE 1. SUMMARY OF SAIPE DEMONSTRATION RESULTS

Element Type	(a) Reference Table No.	(b) SAIPE Cracks/ MRR/SDR Cracks	(c) SAIPE Failures Per Million Flight Hours	(d) First Cracks Occurring/ Cracks Detected
Door frame	3	2.16	0.00	1.62
Window frame	4	32.06	0.00	1.66
Fuselage - main frame, bottom	5	0.87	0.00	9.47
- main frame, side	6	4.34	0.10	1.21
- main frame, top	7	0.53	0.00	10.13
- stringer, bottom	8	4.38	0.00	2.00
- stringer, side	9	2.22	0.07	2.15
- stringer, top	10	1.92	0.07	2.33
Wing - access frame	11	4.30	0.00	2.03
- spar, aft	12	0.46	0.00	1.38
- spar, center	13	13.85	0.00	1.84
- spar, forward	14	1.31	0.00	1.77
- stringer, aft	15	6.36	0.00	1.62
- stringer, center	16	8.94	0.00	1.55
- stringer, forward	17	4.83	0.00	1.61
Wing Center Section				
- stringer, aft	18	4.42	0.00	1.50
- stringer, center	19	1.90	0.00	1.78
- stringer, forward	20	0.15	0.00	1.57
- spanwise beam, aft	21	0.55	0.00	1.70
- spanwise beam, center	22	0.57	0.00	1.50
- spanwise beam, forward	23	0.13	0.00	1.57

In column (b) of Table 1, the ratios of the number of cracks detected in the SAIPE output to the number of cracks reported on MRR/SDR's vary widely. For 14 of the 21 element types, the ratios are greater than 1.00, which is the expected result in view of the four factors affecting the comparison of the two data sets.

Of these 14 element types, two have ratios larger than would be expected. For the first element type, WINDOW FRAMES, the fatigue lives in the SAIPE input were apparently underestimated, although the available manufacturers' data were reviewed thoroughly before the final demonstration was initiated. For the second element type, WING - SPAR, CENTER, the ratio is understandably high since only about 25% of the aircraft reported in the MRR/SDR's have center wing spars.

For the remaining seven element types, the ratios are less than 1.00. These ratios indicate that either the fatigue lives of the elements were overestimated or the lowest level of inspection was incorrect and consequently not enough cracks were detected by the SAIPE logic.

The failure data presented in column (c) of Table 1 is difficult to analyze because of the extremely low probability of a failure actually occurring in service. However, the complete lack of failures in the wing elements is notable. There have been at least two instances of wing spar failure on turboprop aircraft in the last 10 years. While the aircraft simulated by SAIPE was a turboprop, and not a turboprop, the two designs are similar enough to expect that some wing failures would have occurred in the demonstration. Although the extremely low failure rate, one or two failures per 60 million flight hours, makes it impossible to determine whether or not the model is not functioning properly, several reviews of the model logic during the demonstration indicated that the model was performing as designed.

Finally, column (d) of Table 1 lists for each element type the ratio of the number of first cracks occurring to the number of cracks detected. This data cannot be compared with the service history since aircraft retired from service are rarely inspected to obtain this type of data. The ratios are between 1.50 and 2.33 except for two element types whose ratios are 9.47 and 10.13. These high ratios are attributed to a combination of three factors: relatively short fatigue lives, slow crack growth rate, and long critical crack length. This combination results in many cracks occurring during the service life of the aircraft; but since these cracks remain small for a long period of time, they are difficult to detect.

2. Analysis of the Final Demonstration Stage Output by Inspection Level

The number of cracks detected per million flight hours at each inspection level along with the associated percentage of total cracks is presented in Table 2 for both the SAIFE and the MRR/SDR data. The MRR/SDR service history shows that as the inspection level progresses from preflight to overhaul, the percentage of cracks detected increases. This progressive increase can be attributed to the larger portions of the aircraft being inspected and the increasing probability of detection associated with the higher inspection levels.

The SAIFE data shows a similar progression except for the overhaul inspection level. The decrease in the percentage of cracks detected at this level can be attributed to the method used in the SAIFE logic for conducting sampling inspections at the overhaul level. This method sets the maximum probability of detection equal to the sampling percentage; that is, if only 25% of the fleet is inspected at the overhaul inspection, then the maximum probability of detecting cracks, on a fleet-wide basis, is only 25% of the original maximum probability. The problem is complicated by the fact that the maximum probabilities of detection for the lower inspection levels are based on the total number of cracks detected and reported in MRR/SDR's. These cracks include those reported from overhaul inspections which were conducted on a sampling basis. It, therefore, appears that the effects of sampling inspections may be accounted for twice in SAIFE or, alternatively, that these effects were not correctly accounted for in the data for the lower level inspections.

Tables 3 through 23 compare the SAIFE demonstration results with the MRR/SDR data for each of the element types. Included in each table is the SAIFE summary output for that element type. In addition to the summary output, some of the tables contain SAIFE output for specific element stations.

Table 9 contains the SAIFE output for the FUS-STR-SID stations 1660, 1760, and 1940. Each of these stations on certain aircraft had cracks which grew to the fail-safe crack length during the service life of the aircraft. Since some aircraft had structural failures because of the cracks at stations 1660 and 1940, Table 9 includes the SAIFE "long list" output for both of these stations. This output tracks the structural history of aircraft with element failures.

Of all the FUS-STR-SID stations, station 1760 had the largest number of first crack initiations, namely 53, which can be attributed to its initially short ACTUAL AVERAGE FATIGUE LIFE. This short life (less than two times the aircraft service life) caused the production modification.

Table 10 contains the SAIFE output for the FUS-STR-TOP stations 1080, 1160, and 1760. Stations 1080 and 1160 on certain aircraft had cracks which grew to the fail-safe crack length during the service life of the aircraft. Table 10 also includes the SAIFE "long list" output for stations 1080 and 1300 since aircraft sustained structural failures because of cracks at these two stations. Station 1760 is included in Table 10 because it had the largest number of first crack initiations, namely 52. As above, this large number can be attributed to the initially short ACTUAL AVERAGE FATIGUE LIFE for station 1760. Again, this short life caused a production modification.

Table 16 contains the SAIFE output for the WNG-STR-LSC stations 0294 and 0669. Although the number of crack initiations at station 0294 was relatively small, this station had a sufficiently large crack occurring early enough in the simulation to prompt a retrofit structural modification because of economic considerations. Of all the WNG-STR-LSC element stations, station 0669 had the largest number of crack initiations, namely 64. Again, this large number can be attributed to the initial short fatigue life and caused a production modification.

3. Comparison of Results from the Four Demonstration Stage Outputs

Tables 24 through 27 compare the four demonstration stage outputs for four element types:

<u>Element</u>	<u>Table</u>
Door frame	24
Wing Center Section	
- spanwise beam, aft	25
- spanwise beam, center	26
- spanwise beam, forward	27

The comparison of the results of the first two demonstration outputs shows the effects of reducing the number of aircraft in the fleet by a factor of 2.0 and increasing the actual fatigue life by a factor of 3.3.

The comparison of the results of the second and final demonstration outputs shows the effects of introducing sampling inspections in the overhaul inspection logic and of allowing cracks that originated internally to appear externally and then become subject to inspection at a lower level.

IV. SUMMARY AND CONCLUSIONS

- (1) With some minor refinement changes, the SAIFE model can be used by the FAA, air carriers, or aircraft manufacturers to conduct the following types of evaluations: (a) Design - the effects of changing fatigue life, corrosion resistance, or crack growth on design, (b) Cost - the effect of increasing cost on modification versus repair decisions, and (c) Operational - the relative effects of increasing the inspection interval or of changing the inspection of individual elements from one inspection level to another.
- (2) Of the 21 element types summarized in the SAIFE demonstration output, 14 had ratios of SAIFE cracks to service history cracks that were within the expected range, that is, greater than 1.00. Of those 14 element types, 2 had ratios that were too high to be realistic. The remaining seven had ratios that were considerably less than 1.00.
- (3) The SAIFE model is slightly unconservative in predicting failures; that is, it predicts too few structural failures.
- (4) The SAIFE and the service history data for the percentage of cracks detected at each inspection level do not compare well. This discrepancy is primarily due to the method used in SAIFE to account for the sampling effects at the overhaul inspection.
- (5) During the studies conducted for the preparation of Volume II, it was noted that phenomena related to corrosion, production defects, and service damage are not well documented in either MRR/SDR's or analytical studies and that they consequently require further study.

TABLE 2 COMPARISON OF CRACKS DETECTED AT EACH
INSPECTION LEVEL PER MILLION FLIGHT HOURS

	SAIFE		MRR/SDR	
	<u>Cracks Detected</u>	<u>% of Total</u>	<u>Cracks Detected</u>	<u>% of Total</u>
Preflight	23.58	11.1	2.87	4.3
Service	56.97	26.7	7.93	11.8
Phase	80.26	37.6	10.94	16.3
Overhaul	26.15	12.3	24.21	36.1
Special	26.23	12.3	21.14	31.5
Total	213.19	100.0	67.09	100.0

TABLE 3. DEMONSTRATION RESULTS FOR DOOR FRAME

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.53	0.16
Service	0.60	0.08
Phase	2.63	0.93
Overhaul	0.13	0.55
Special	0.00	0.08
Total	3.89	1.80
Corrosion Detected		
Preflight	0.47	0.00
Service	0.30	0.06
Phase	1.00	0.12
Overhaul	0.00	0.12
Special	0.00	0.00
Total	1.77	0.30
Fail-Safe Damage	0.00	0.02
Failures	0.00	----
Service Damage	0.27	0.15
Production Defects	0.00	0.00

TABLE 3 - Concluded

AIRCRAFT TYPE: HYBRID				AIRCRAFT SERVICE LIFE: 60000 HOURS			
NUMBER OF AIRCRAFT IN FLEET: 500				SUMMARY OF STRUCTURAL ELEMENT: FUS-DOOR-FRM			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS							
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS				
189	55	A	0				
436	165	436	----				
59903	59175	55949	----				
42731	20802	25016	----				
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION							
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL	SPECIAL			
16	18	79	4	0			
.69	.84	.34	.55	0.			
1.67	1.62	2.40	1.65	0.			
1.09	.86	.96	.99	0.			
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION							
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL	SPECIAL			
14	9	30	0	0			
1.28	.98	.97	0.	0.			
2.36	1.90	16.73	0.	0.			
1.83	1.36	4.29	0.	0.			
INSPECTION INTERVALS(HRS)							
INITIAL	25	1000	12000				
SHORTEST	25	1000	12000				
LONGEST	25	1953	23436				
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0							
NUMBER OF STRUCTURAL MODIFICATIONS: 2							
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0							
STRUCTURAL FAILURES				RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH			
AIRCRAFT NO.	FLY. HOURS	AIRCRAFT NO.	FLY. HOURS				
-----	-----	-----	-----				

TABLE 4. DEMONSTRATION RESULTS FOR WINDOW FRAME

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.06
Service	5.17	0.06
Phase	21.40	0.12
Overhaul	3.20	0.67
Special	5.17	0.18
Total	34.94	1.09
Corrosion Detected		
Preflight	0.00	0.02
Service	0.03	0.00
Phase	0.20	0.02
Overhaul	0.03	0.02
Special	0.00	0.02
Total	0.26	0.08
Fail-Safe Damage	0.00	0.02
Failures	0.00	----
Service Damage	0.93	0.18
Production Defects	0.13	0.00

TABLE 4 - Concluded

AIRCRAFT TYPE: HYBRID				AIRCRAFT SERVICE LIFE: 60000 HOURS			
NUMBER OF AIRCRAFT IN FLEET: 500				SUMMARY OF STRUCTURAL ELEMENTS: FUS-WING-FRM			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS							
FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
-----		-----		-----		-----	
1739		10		28		4	
1869		17482		2857		-----	
59985		58569		57992		-----	
43708		38366		30940		-----	
OCCURRENCES							
MIN(HRS)		B-LEVEL		C-LEVEL		D-LEVEL	
-----		-----		-----		-----	
0		155		642		96	
0.		.48		.27		.17	
0.		1.28		3.26		2.23	
0.		.88		.86		.84	
OCCURRENCES							
MIN(IN)		B-LEVEL		C-LEVEL		D-LEVEL	
-----		-----		-----		-----	
0		155		642		96	
0.		.48		.27		.17	
0.		1.28		3.26		2.23	
0.		.88		.86		.84	
OCCURRENCES							
MIN(SQ.IN)		B-LEVEL		C-LEVEL		D-LEVEL	
-----		-----		-----		-----	
0		1		6		1	
0.		1.28		1.52		6.39	
0.		1.28		5.65		6.39	
0.		1.28		2.73		6.39	
INSPECTION INTERVALS(HRS)							
INITIAL		200		1000		12000	
SHORTEST		200		204		1677	
LONGEST		200		2785		25436	
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 218							
NUMBER OF STRUCTURAL MODIFICATIONS: 9							
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0							
STRUCTURAL FAILURES				RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH			
AIRCRAFT NO.		FLT. HOURS		AIRCRAFT NO.		FLT. HOURS	
-----		-----		-----		-----	
-----		-----		-----		-----	
-----		-----		-----		-----	

TABLE 5. DEMONSTRATION RESULTS FOR FUSELAGE - MAIN FRAME,
BOTTOM

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.20	0.57
Service	0.23	0.67
Phase	0.20	0.47
Overhaul	2.53	1.53
Special	0.00	0.38
Total	<u>3.16</u>	<u>3.62</u>
Corrosion Detected		
Preflight	0.03	0.34
Service	0.00	1.10
Phase	0.00	0.41
Overhaul	0.10	1.99
Special	0.00	0.55
Total	<u>0.13</u>	<u>4.39</u>
Fail-Safe Damage	0.00	0.22
Failures	0.00	----
Service Damage	1.03	0.44
Production Defects	0.20	0.06

TABLE 5 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT TYPE: HYBRID		AIRCRAFT SERVICE LIFE: 40000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: FUS-MFR-OUT					
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS					
FIRST CRACK	EXPOSITION	SERVICE DAMAGE	PRODUCTION DEFECTS		
900	17	51	6		
449	9630	2615			
50094	50941	50910			
45376	34694	33513			
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION					
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL	
6	7	6	76	0	
.59	.45	.38	.30	0.	
.78	.69	.66	4.30	0.	
.70	.61	.50	1.75	0.	
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION					
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL	
1	0	0	3	0	
1.93	0.	0.	10.69	0.	
1.93	0.	0.	62.91	0.	
1.93	0.	0.	88.37	0.	
INSPECTION INTERVALS (HRS)					
25	200	1000	12000		
25	200	1000	12000		
25	200	1953	23438		
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0					
NUMBER OF STRUCTURAL MODIFICATIONS: 2					
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0					
AIRCRAFT NO.	STRUCTURAL FAILURES	STA. NO.	RESIDUAL STRENGTH	FLY. HOURS	STRENGTH STA. NO.
	FLY. HOURS		AIRCRAFT NO.		

TABLE 6. DEMONSTRATION RESULTS FOR FUSELAGE - MAIN FRAME,
SIDE

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.34
Service	6.70	0.69
Phase	9.00	0.76
Overhaul	4.97	3.57
Special	5.57	0.69
Total	26.24	6.05
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.07
Phase	0.03	0.07
Overhaul	0.13	0.54
Special	0.17	0.07
Total	0.33	0.75
Fail-Safe Damage	0.07	0.04
Failures	0.10	----
Service Damage	0.77	0.33
Production Defects	0.13	0.15

TABLE 6 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
AIRCRAFT TYPE: W-55B10			
SUMMARY OF STRUCTURAL ELEMENTS FUSelage-SIN			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CRACKS	SERVICE DAMAGE	PRODUCTION DEFECTS
552	16	23	4
416	771	616	-----
50997	50976	57971	-----
43004	33506	26702	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	261	270	149
0.	1.01	.62	.61
0.	12.14	30.86	10.36
0.	16.02	10.65	4.99
SPECIAL			
167			
18			
14.19			
5.46			
NUMBER AND AGE OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	0	1	4
0.	0.	1.49	9.67
0.	0.	1.49	21.60
0.	0.	1.49	16.63
SPECIAL			
5			
1.59			
35.37			
21.51			
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTEST	25	200	1433
LONGEST	25	200	21438
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 214			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES			
AIRCRAFT NO.	FLY. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
207	27401	1920	1920
371	21558	1920	1920
404	37396	1920	1920
		202	45682
		371	39058

TABLE 7. DEMONSTRATION RESULTS FOR FUSELAGE - MAIN FRAME, TOP

	Defects Per Million <u>SAIFR</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	0.60	2.86
Overhaul	2.37	1.57
Special	0.00	1.14
Total	2.97	5.57
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	0.00	0.00
Overhaul	0.20	0.00
Special	0.00	0.00
Total	0.20	0.00
Fail-Safe Damage	0.00	0.00
Failures	0.00	---
Service Damage	1.03	0.02
Production Defects	0.20	0.15

TABLE 7 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 40000 HOURS		
SUMMARY OF STRUCTURAL ELEMENT: FUS-WFR-TOP				
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS				
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS	
902	17	51	6	
255	9630	2615		
59905	59901	59910		
43067	3469A	33513		
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION				
A-LEVEL	R-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
0	0	1A	71	0
0.	0.	.32	.21	0.
0.	0.	1.47	2.99	0.
0.	0.	.AA	1.48	0.
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION				
A-LEVEL	R-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
0	0	0	6	0
0.	0.	0.	12.0A	0.
0.	0.	0.	48.86	0.
0.	0.	0.	23.6A	0.
INSPECTION INTERVALS(HRS)				
25	200	1000	12000	
25	200	4A	6203	
25	200	1053	23438	
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1				
NUMBER OF STRUCTURAL MODIFICATIONS: 2				
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0				
STRUCTURAL FAILURES		STA. NO.		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	FLT. HOURS	STA. NO.

TABLE 8. DEMONSTRATION RESULTS FOR FUSELAGE - STRINGER, BOTTOM

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	3.63	0.57
Service	3.20	0.67
Phase	2.67	0.47
Overhaul	2.40	1.53
Special	3.97	0.38
Total	15.87	3.62
Corrosion Detected		
Preflight	3.13	0.34
Service	2.07	1.10
Phase	0.77	0.41
Overhaul	1.17	1.99
Special	0.57	0.55
Total	7.71	4.39
Fail-Safe Damage	0.00	0.22
Failures	0.00	----
Service Damage	0.63	0.44
Production Defects	0.13	0.06

TABLE 8 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT TYPE: HYBRID		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: FUS-SIR-RGT					
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS					
FIRST CRACK		CORROSION		SERVICE DAMAGE	
-----		-----		-----	
950	275	19	4	-----	
924	47	924	-----	-----	
5997	59070	58241	-----	-----	
43183	24572	27960	-----	-----	
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION					
A-LEVEL		B-LEVEL		C-LEVEL	
-----		-----		-----	
109	96	72	D-LEVEL		SPECIAL
57	.44	.27	-----		-----
6.06	5.49	3.70	.26		.13
1.85	1.15	.60	2.74		3.07
			1.26		1.34
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION					
A-LEVEL		B-LEVEL		C-LEVEL	
-----		-----		-----	
90	62	23	D-LEVEL		SPECIAL
1.03	.86	.84	-----		-----
3.88	3.00	3.02	35		17
1.73	1.59	1.44	.93		1.58
			128.50		59.67
			80.81		28.20
INSPECTION INTERVALS(HRS)					
INITIAL	25	1000	12000		
SHORTEST	25	204	1570		
LONGEST	25	1953	23434		
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 78					
NUMBER OF STRUCTURAL MODIFICATIONS: 5					
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0					
STRUCTURAL FAILURES		AIRCRAFT NO.		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
FLT. HOURS	STA. NO.	FLT. HOURS	STA. NO.	STA. NO.	
-----	-----	-----	-----	-----	

TABLE 9. DEMONSTRATION RESULTS FOR FUSELAGE - STRINGER, SIDE

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.34
Service	3.33	0.69
Phase	4.40	0.76
Overhaul	2.87	3.57
Special	3.33	0.69
Total	13.43	6.05
Corrosion Detected		
Preflight	0.00	0.00
Service	0.47	0.07
Phase	0.97	0.07
Overhaul	0.23	0.54
Special	0.20	0.07
Total	1.87	0.75
Fail-Safe Damage	0.37	0.04
Failures	0.07	----
Service Damage	0.63	0.33
Production Defects	0.30	0.15

TABLE 9 - Continued

AIRCRAFT TYPE: HYBRID		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: FUS-SIN-SID			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
000	69	19	10
1497	505A	3922	-----
59095	57923	57792	-----
43455	36842	34894	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	M-LEVEL	C-LEVEL	D-LEVEL
0	100	132	86
0.	.42	.31	.30
0.	10.71	38.10	4.66
0.	1.96	5.03	1.42
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	M-LEVEL	C-LEVEL	D-LEVEL
0	14	29	7
0.	.46	1.02	4.95
0.	3.30	14.15	73.03
0.	1.45	4.43	19.99
SPECIAL			
100			6
.14			4.92
4.77			45.61
1.27			30.63
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTEST	25	200	1570
LONGEST	25	2745	23638
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 100			
NUMBER OF STRUCTURAL MODIFICATIONS: 2			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES			
AIRCRAFT NO.	FLY. HOURS	STA. NO.	FLY. HOURS
540	49014	1666	42917
523	54028	1920	51619
			46086
			29827
			55024
			48770
			48680
			56750
			55284
			57010
			44736
RESTORAL STRENGTH EQUALS FAIL-SAFE STRENGTH			
AIRCRAFT NO.	FLY. HOURS	STA. NO.	FLY. HOURS
490			0200
196			0460
350			1660
24			1720
208			1740
34			1760
174			1820
47			1860
323			1940
270			2160
103			2240

TABLE 9 - Continued

NUMBER OF AIRCRAFT IN FLEET: 504
 AIRCRAFT TYPE: MYRRIID
 AIRCRAFT SERVICE LIFE: 68000 HOURS
 STRUCTURAL ELEMENTS: FUS-STR-SID-1000
 ACTUAL AVERAGE FATIGUE LIFE: 183281 HOURS

PREDICTED AVERAGE FATIGUE LIFE: 177600 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	14	2	0	0
MIN(MRS)	19415	18599	0	0
MAX(MRS)	57875	39122	0	0
AVG(MRS)	47604	24861	0	0

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	1	0
MIN(IN)	0.	0.	0.	1.80	0.
MAX(IN)	0.	0.	0.	1.80	0.
AVG(IN)	0.	0.	0.	1.89	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	2	0	0
MIN(SQ.IN)	0.	0.	4.60	0.	0.
MAX(SQ.IN)	0.	0.	4.91	0.	0.
AVG(SQ.IN)	0.	0.	8.76	0.	0.

INSPECTION INTERVALS(MRS)

INITIAL	25	200	1000	12000
2	25	200	1250	15000
3	25	200	1563	18750
4	25	200	1953	23438
5	25	200	2488	30203
6	25	200	3154	39254

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1

NUMBER OF STRUCTURAL MODIFICATIONS: 0

FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 183281 HOURS

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES
 AIRCRAFT NO. 350
 FLT. HOURS 89016

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
 AIRCRAFT NO. 350
 FLT. HOURS 86088

TABLE 9 - Continued

AIRCRAFT TYPE: HYBRID
 NUMBER OF AIRCRAFT IN FLEET: 500
 AIRCRAFT SERVICE LIFE: 60000 HOURS
 STRUCTURAL ELEMENT: FUS-STP-SD-1760
 ACTUAL AVERAGE FATIGUE LIFE: 104352 HOURS
 PREDICTED AVERAGE FATIGUE LIFE: 175380 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
	-----	-----	-----	-----
OCCURRENCES	53	0	1	0
MIN(HRS)	16166	0	28314	-----
MAX(HRS)	59995	0	28314	-----
AVG(HRS)	42214	0	28314	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
	-----	-----	-----	-----	-----
OCCURRENCES	0	0	0	12	11
MIN(IN)	0.	0.	.33	.35	.55
MAX(IN)	0.	0.	17.52	2.57	4.77
AVG(IN)	0.	0.	3.53	1.56	1.44

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LFVFL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
	-----	-----	-----	-----	-----
OCCURRENCES	0	0	0	0	0
MIN(SQ.IN)	0.	0.	0.	0.	0.
MAX(SQ.IN)	0.	0.	0.	0.	0.
AVG(SQ.IN)	0.	0.	0.	0.	0.

TABLE 9 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 60000 HOURS

STRUCTURAL ELEMENT: FUS-STR-310-1769

PREDICTED AVERAGE FATIGUE LIFE: 175380 HOURS

ACTUAL AVERAGE FATIGUE LIFE: 104352 HOURS

INSPECTION INTERVALS(HRS)

INITIAL	25	200	1000	12000
2	25	200	1000	12000
3	25	200	1250	15000
4	25	200	1563	18750
5	25	200	1953	23438
6	25	200	684	8283
7	25	200	239	2871
8	25	200	299	3589
9	25	200	376	4486
10	25	200	467	5608
11	25	200	584	7010
12	25	200	730	8762
13	25	200	250	3067
14	25	200	319	3833
15	25	200	399	4792
16	25	200	399	1677
17	25	200	499	2096
18	25	200	624	2620
19	25	200	780	3276
20	25	200	975	4096
21	25	200	1219	5118
22	25	200	1523	6398
23	25	200	533	2239
			660	2799

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 4

NUMBER OF STRUCTURAL MODIFICATIONS: 1

FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 129189 HOURS

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

AIRCRAFT NO. FLT. HOURS

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO.

FLT. HOURS

48770

34

TABLE 9 - Continued

NUMBER IN AIRCRAFT IN FLEET: 500		AIRCRAFT TYPE: HYPERIO		AIRCRAFT SERVICE LIFE: 6000 HOURS	
STRUCTURAL ELEMENT: FUS-SID-SIC-1940		PREDICTED AVERAGE FATIGUE LIFE: 30960 HOURS		ACTUAL AVERAGE FATIGUE LIFE: 37750 HOURS	
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS					
FIRST CRACK		CORROSION		SERVICE DAMAGE	
-----		-----		-----	
OCCURRENCES		0		0	
MIN(MRS)		0		0	
MAX(MRS)		0		0	
AVG(MRS)		0		0	
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION					
A-LEVEL		B-LEVEL		C-LEVEL	
-----		-----		-----	
OCCURRENCES		0		0	
MIN(IN)		0		0	
MAX(IN)		0		0	
AVG(IN)		0		0	
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION					
A-LEVEL		B-LEVEL		C-LEVEL	
-----		-----		-----	
OCCURRENCES		0		0	
MIN(SQ.IN)		0		0	
MAX(SQ.IN)		0		0	
AVG(SQ.IN)		0		0	
INSPECTION INTERVALS(MRS)					
INITIAL		250		1000	
2		200		1250	
3		250		1563	
4		200		1953	
5		200		600	
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1					
NUMBER OF STRUCTURAL MODIFICATIONS: 0					
FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 37750 HOURS					
NUMBER OF AIRCRAFT MODIFIED IN SERVICE:					
STRUCTURAL FAILURES					
AIRCRAFT NO.					
FLY. HOURS					
RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH					
AIRCRAFT NO.					
FLY. HOURS					
5528					

TABLE 9 - Continued

AIRCRAFT TYPE: MYHRIU
NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS
STRUCTURAL ELEMENT: FUS-RIN-BID-1660
PREDICTED AVERAGE FATIGUE LIFE: 177600 HOURS ACTUAL AVERAGE FATIGUE LIFE: 185281 HOURS

INITIAL INSPECTION INTERVALS

A-LEVEL	25 HOURS
B-LEVEL	200 HOURS
C-LEVEL	1000 HOURS
D-LEVEL	12000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED
C-LEVEL INTERVAL NOW 1250 HOURS
D-LEVEL INTERVAL NOW 15000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED
C-LEVEL INTERVAL NOW 1500 HOURS
D-LEVEL INTERVAL NOW 18750 HOURS

A/C NO. 350 ENTERS SERVICE 30050 HOURS FROM START OF SIMULATION

1ST CRACK INITIATION PROJECTED AT	19415 FLIGHT HOURS
2ND CRACK INITIATION PROJECTED AT	40050 FLIGHT HOURS
3RD CRACK INITIATION PROJECTED AT	184740 FLIGHT HOURS
SLOW CRACK GROWTH RATE =	.000100 INCHES/HOUR
FAST CRACK GROWTH RATE =	.000622 INCHES/HOUR

D-LEVEL INSPECTION PERFORMED ON A/C NO. 350 AT 12000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED
C-LEVEL INTERVAL NOW 1953 HOURS
D-LEVEL INTERVAL NOW 23030 HOURS

A/C NO. 350 EXPERIENCES 1ST CRACK INITIATION AT 19415 HOURS
CRACK INITIATED INTERNALLY
ELEMENT FAILURE PROJECTED AT 40016 FLIGHT HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 350 AT 24000 HOURS

A/C NO. 350 HAS INTERNAL FIRST CRACK BECOME EXTERNAL AT 2.76 INCHES AND 44093 FLIGHT HOURS

A/C NO. 350 REACHES FAIL-SAFE STRENGTH AT 46000 FLIGHT HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 350 AT 47030 HOURS

A/C NO. 350 EXPERIENCES ELEMENT FAILURE AT 40016 FLIGHT HOURS
SUM OF CRACK LENGTHS AT FAILURE = 31.30 INCHES
RESIDUAL STRENGTH AT FAILURE = .73 ULTIMATE

INSPECTION INTERVAL DECREASE IMPLEMENTED
C-LEVEL INTERVAL NOW 684 HOURS
D-LEVEL INTERVAL NOW 8203 HOURS

FLEET WIDE SPECIAL INSPECTION PERFORMED

INSPECTION INTERVAL INCREASE IMPLEMENTED
C-LEVEL INTERVAL NOW 854 HOURS
D-LEVEL INTERVAL NOW 10254 HOURS

TABLE 9 - Concluded

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 60000 HOURS

STRUCTURAL ELEMENT: FUS-STR-SID-1940

PREDICTED AVERAGE FATIGUE LIFE: 399600 HOURS

ACTUAL AVERAGE FATIGUE LIFE: 377569 HOURS

INITIAL INSPECTION INTERVALS

A-LEVEL 25 HOURS

C-LEVEL 200 HOURS

D-LEVEL 1000 HOURS

D-LEVEL 12000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 1250 HOURS

D-LEVEL INTERVAL NOW 12000 HOURS

A/C NO. 323 ENTERS SERVICE 27150 HOURS FROM START OF SIMULATION

1ST CRACK INITIATION PROJECTED AT 29298 FLIGHT HOURS

2ND CRACK INITIATION PROJECTED AT 327287 FLIGHT HOURS

3RD CRACK INITIATION PROJECTED AT 616550 FLIGHT HOURS

SLOW CRACK GROWTH RATE = .000112 INCHES/HOUR

FAST CRACK GROWTH RATE = .006797 INCHES/HOUR

INSPECTION INTERVAL INCREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 1563 HOURS

D-LEVEL INTERVAL NOW 12750 HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 323 AT 12000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 1953 HOURS

D-LEVEL INTERVAL NOW 23430 HOURS

A/C NO. 323 EXPERIENCES 1ST CRACK INITIATION AT 29298 HOURS

CRACK INITIATES INTERNALLY

ELEMENT FAILURE PROJECTED AT 56020 FLIGHT HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 323 AT 30750 HOURS

A/C NO. 323 HAS INTERNAL FIRST CRACK BECOME EXTERNAL AT 2.74 INCHES AND 63025 FLIGHT HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 323 AT 54188 HOURS

A/C NO. 323 REACHES FAIL-SAFE STRENGTH AT 55284 FLIGHT HOURS

A/C NO. 323 EXPERIENCES ELEMENT FAILURE AT 56020 FLIGHT HOURS

SUM OF CRACK LENGTHS AT FAILURE = 17.05 INCHES

RESIDUAL STRENGTH AT FAILURE = .36 ULTIMATE

INSPECTION INTERVAL DECREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 684 HOURS

D-LEVEL INTERVAL NOW 8203 HOURS

FLEET WIDE SPECIAL INSPECTION PERFORMED

TABLE 10. DEMONSTRATION RESULTS FOR FUSELAGE - STRINGER, TOP

	Defects Per Million Flight Hours <u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.00
Service	0.00	0.20
Phase	7.30	0.33
Overhaul	3.03	2.78
Special	2.53	3.38
Total	12.86	6.69
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	1.67	0.00
Overhaul	0.17	0.00
Special	0.17	0.00
Total	2.01	0.00
Fail-Safe Damage	0.67	0.00
Failures	0.00	----
Service Damage	0.63	0.06
Production Defects	0.33	0.33

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 400

AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT FAILURE

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	899	69	19	10
MIN (HRS)	1942	5058	3922	-----
MAX (HRS)	50995	57923	57792	-----
AVG (HRS)	33456	34842	34896	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	219	9	76
MIN (IN)	0.	0.	.30	.19	.21
MAX (IN)	0.	0.	52.83	33.43	4.70
AVG (IN)	0.	0.	3.20	1.38	1.43

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	50	5	5
MIN (SQ. IN)	0.	0.	.00	1.16	0.43
MAX (SQ. IN)	0.	0.	25.05	73.03	16.00
AVG (SQ. IN)	0.	0.	5.00	31.60	10.00

INSPECTION INTERVAL (HOURS)

INITIAL	25	200	1000	12000
SHORTEST	25	200	200	1256
LONGEST	25	200	3482	23038

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 03

NUMBER OF STRUCTURAL MODIFICATIONS: 2

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES			RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH		
AIRCRAFT NO.	FLY. HOURS	STA. NO.	AIRCRAFT NO.	FLY. HOURS	STA. NO.
28	51581	1080	400	42917	0200
406	54897	1300	196	51619	0460
			416	46459	0840
			2	58605	0920
			109	55251	1000
			24	43395	1080
			186	58552	1160
			439	55754	1160
			22	44857	1180
			40	56329	1220
			81	46529	1280
			406	52560	1300
			429	44806	1320
			129	33719	1360
			25	55495	1380
			4	43311	1520
			31	43866	1860
			323	55284	1900
			454	35741	2120
			464	48243	2360

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID AIRCRAFT SERVICE LIFE: 60000 HOURS
 NUMBER OF AIRCRAFT IN FLEET: 500
 STRUCTURAL ELEMENT: FUS-STR-TOP-1080
 PREDICTED AVERAGE FATIGUE LIFE: 203130 HOURS ACTUAL AVERAGE FATIGUE LIFE: 104201 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	6	0	0	0
MIN(MRS)	15809	0	0	-----
MAX(MRS)	59049	0	0	-----
AVG(MRS)	40898	0	0	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	2	0	0
MIN(IN)	0.	0.	.77	0.	0.
MAX(IN)	0.	0.	1.48	0.	0.
AVG(IN)	0.	0.	1.12	0.	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	0	0
MIN(SQ. IN)	0.	0.	0.	0.	0.
MAX(SQ. IN)	0.	0.	0.	0.	0.
AVG(SQ. IN)	0.	0.	0.	0.	0.

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID			
NUMBER OF AIRCRAFT IN FLEET:	500	AIRCRAFT SERVICE LIFE:	60000 HOURS
STRUCTURAL ELEMENT: FUS-STR-1080			
PREDICTED AVERAGE FATIGUE LIFE:	201130 HOURS	ACTUAL AVERAGE FATIGUE LIFE:	104201 HOURS
INSPECTION INTERVALS(MRS)			
INITIAL	25	1000	12000
2	200	1250	15000
3	25	1563	18750
4	200	1953	23438
5	25	664	8203
6	25	854	10254
7	25	1068	12817
8	25	1335	16022
9	25	1609	20027
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1			
NUMBER OF STRUCTURAL MODIFICATIONS: 1			
FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 402532 HOURS			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	FLT. HOURS
-----	-----	-----	-----
28	51581	28	43395

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID			
NUMBER OF AIRCRAFT IN FLEET: 500	AIRCRAFT SERVICE LIFE: 60000 HOURS		
STRUCTURAL ELEMENT: FUS-S1R-TOP-1160		ACTUAL AVERAGE FATIGUE LIFE: 136582 HOURS	
PREDICTED AVERAGE FATIGUE LIFE: 206860 HOURS			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
41	0	1	0
8611	0	16838	-----
59709	0	16838	-----
40063	0	16838	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	0	15	6
0.	0.	.37	.25
0.	0.	15.63	1.60
0.	0.	5.03	.70
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	0	0	0
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
OCCURRENCES			
MIN(IN)			
MAX(IN)			
AVG(IN)			
SPECIAL			
5			
1.01			
2.12			
1.06			
OCCURRENCES			
MIN(SQ. IN)			
MAX(SQ. IN)			
AVG(SQ. IN)			
SPECIAL			
6			
0.			
0.			
0.			

TABLE 10 - Continued

		AIRCRAFT TYPE: HYBRID		NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
		STRUCTURAL ELEMENT: FUS-STR-TOP-1160		PREDICTED AVERAGE FATIGUE LIFE: 206860 HOURS		ACTUAL AVERAGE FATIGUE LIFE: 136582 HOURS	
INSPECTION INTERVALS(HRS)							
INITIAL	25	200	1000	12000			
2	25	200	1250	15000			
3	25	200	1503	18750			
4	25	200	587	6563			
5	25	200	688	8203			
6	25	200	854	10254			
7	25	200	299	3589			
8	25	200	374	4486			
9	25	200	467	5608			
10	25	200	564	7010			
11	25	200	730	8762			
12	25	200	256	3067			
13	25	200	319	3833			
14	25	200	399	4792			
15	25	200	499	5990			
16	25	200	624	7487			
17	25	200	780	9359			
18	25	200	273	3276			
19	25	200	341	4098			
20	25	200	427	5116			

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 4
 NUMBER OF STRUCTURAL MODIFICATIONS: 0
 FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 136582 HOURS
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO.	AIRCRAFT NO.
-----	-----
186	186
439	439
	58552
	55754

	FLY. HOURS

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID		AIRCRAFT SERVICE LIFE: 60000 HOURS	
NUMBER OF AIRCRAFT IN FLEET: 500		STRUCTURAL ELEMENT: FUS-STR-TOP-1760	
PREDICTED AVERAGE FATIGUE LIFE: 175380 HOURS		ACTUAL AVERAGE FATIGUE LIFE: 104352 HOURS	
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
52	0	1	6
16166	0	28314	-----
59995	0	28314	-----
42213	0	28314	-----
OCCURRENCES			
MIN(HRS)			
MAX(HRS)			
AVG(HRS)			
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	0	13	4
0.	0.	.32	.89
0.	0.	5.35	2.18
0.	0.	1.24	1.32
OCCURRENCES			
MIN(IN)			
MAX(IN)			
AVG(IN)			
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL
0	0	0	0
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
OCCURRENCES			
MIN(SQ.IN)			
MAX(SQ.IN)			
AVG(SQ.IN)			
SPECIAL			
0	0	0	0
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID		AIRCRAFT SERVICE LIFE: 60000 HOURS	
NUMBER OF AIRCRAFT IN FLEET: 500		STRUCTURAL ELEMENT: FUS-STP-TOP-17A0	
PREDICTED AVERAGE FATIGUE LIFE: 17530 HOURS		ACTUAL AVERAGE FATIGUE LIFE: 104352 HOURS	
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
2	25	1250	15000
3	25	1563	18750
4	25	1953	23438
5	25	2400	29000
6	25	2900	35890
7	25	3474	43000
8	25	4174	50000
9	25	5000	58000
10	25	5968	68000
11	25	7010	80000
12	25	8250	93000
13	25	9690	108000
14	25	11340	124000
15	25	13200	143000
16	25	15300	164000
17	25	17800	188000
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 2			
NUMBER OF STRUCTURAL MODIFICATIONS: 1			
FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 129189 HOURS			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.		AIRCRAFT NO.	
.....			
FLY. HOURS		FLY. HOURS	
.....			

TABLE 10 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 300	AIRCRAFT SERVICE LIFE: 60000 HOURS
STRUCTURAL ELEMENT: FUS-BTN-TOP-1000	
PREDICTED AVERAGE FATIGUE LIFE: 203130 HOURS	ACTUAL AVERAGE FATIGUE LIFE: 104201 HOURS
INITIAL INSPECTION INTERVALS	
A-LEVEL 25 HOURS	
B-LEVEL 200 HOURS	
C-LEVEL 1000 HOURS	
D-LEVEL 12000 HOURS	
A/C NO. 26 ENTERS SERVICE 1500 HOURS FROM START OF SIMULATION	
1ST CRACK INITIATION PROJECTED AT 19000 FLIGHT HOURS	
2ND CRACK INITIATION PROJECTED AT 191414 FLIGHT HOURS	
3RD CRACK INITIATION PROJECTED AT 202930 FLIGHT HOURS	
SLOW CRACK GROWTH RATE = .00018 INCHES/HOUR	
FAST CRACK GROWTH RATE = .006403 INCHES/HOUR	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 1250 HOURS	
D-LEVEL INTERVAL NOW 14000 HOURS	
D-LEVEL INSPECTION PERFORMED ON A/C NO. 26 AT 12000 HOURS	
A/C NO. 24 EXPERIENCES 1ST CRACK INITIATION AT 19000 HOURS	
CRACK INITIATES INTERNALLY	
ELEMENT FAILURE PROJECTED AT 51481 FLIGHT HOURS	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 1500 HOURS	
D-LEVEL INTERVAL NOW 14750 HOURS	
D-LEVEL INSPECTION PERFORMED ON A/C NO. 24 AT 27000 HOURS	
A/C NO. 26 HAS INTERNAL FIRST CRACK BECOME EXTERNAL AT 2.76 INCHES AND 41952 FLIGHT HOURS	
A/C NO. 24 REACHES FAIL-SAFE STRENGTH AT 43393 FLIGHT HOURS	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 1950 HOURS	
D-LEVEL INTERVAL NOW 23430 HOURS	
D-LEVEL INSPECTION PERFORMED ON A/C NO. 24 AT 45750 HOURS	
A/C NO. 24 EXPERIENCES ELEMENT FAILURE AT 51501 FLIGHT HOURS	
SUM OF CRACK LENGTHS AT FAILURE = 64.42 INCHES	
RESIDUAL STRENGTH AT FAILURE = .28 ULTIMATE	
INSPECTION INTERVAL DECREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 600 HOURS	
D-LEVEL INTERVAL NOW 8200 HOURS	
FLEET WIDE SPECIAL INSPECTION PERFORMED	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 850 HOURS	
D-LEVEL INTERVAL NOW 10250 HOURS	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 1000 HOURS	
D-LEVEL INTERVAL NOW 12817 HOURS	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 1330 HOURS	
D-LEVEL INTERVAL NOW 16022 HOURS	
INSPECTION INTERVAL INCREASE IMPLEMENTED	
C-LEVEL INTERVAL NOW 1660 HOURS	
D-LEVEL INTERVAL NOW 20027 HOURS	

TABLE 10 - Concluded

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 30000 HOURS

STRUCTURAL ELEMENT: FUS-SIN-TOP-1400

PREDICTED AVERAGE FATIGUE LIFE: 20200 HOURS ACTUAL AVERAGE FATIGUE LIFE: 24793 HOURS

INITIAL INSPECTION INTERVALS

A-LEVEL	25 HOURS
B-LEVEL	200 HOURS
C-LEVEL	1000 HOURS
D-LEVEL	12000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 1250 HOURS

D-LEVEL INTERVAL NOW 19000 HOURS

INSPECTION INTERVAL INCREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 1900 HOURS

D-LEVEL INTERVAL NOW 18750 HOURS

A/C NO. 446 ENTERS SERVICE 43450 HOURS FROM START OF SIMULATION

1ST CRACK INITIATION PROJECTED AT 25911 FLIGHT HOURS

2ND CRACK INITIATION PROJECTED AT 14912 FLIGHT HOURS

3RD CRACK INITIATION PROJECTED AT 248100 FLIGHT HOURS

SLOW CRACK GROWTH RATE = .000109 INCHES/HOUR

FAST CRACK GROWTH RATE = .000029 INCHES/HOUR

INSPECTION INTERVAL INCREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 1450 HOURS

D-LEVEL INTERVAL NOW 23438 HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 446 AT 12000 HOURS

A/C NO. 446 EXPERIENCES 1ST CRACK INITIATION AT 25911 HOURS

CRACK INITIATES INTERNALLY

ELEMENT FAILURE PROJECTED AT 54897 FLIGHT HOURS

D-LEVEL INSPECTION PERFORMED ON A/C NO. 446 AT 35438 HOURS

A/C NO. 446 HAS INTERNAL FIRST CRACK BECOME EXTERNAL AT 2.176 INCHES AND 51440 FLIGHT HOURS

A/C NO. 446 REACHES FAIL-SAFE STRENGTH AT 52560 FLIGHT HOURS

A/C NO. 446 EXPERIENCES ELEMENT FAILURE AT 54897 FLIGHT HOURS

SUM OF CRACK LENGTHS AT FAILURE = 27.04 INCHES

RESIDUAL STRENGTH AT FAILURE = .54 ULTIMATE

INSPECTION INTERVAL DECREASE IMPLEMENTED

C-LEVEL INTERVAL NOW 600 HOURS

D-LEVEL INTERVAL NOW 4200 HOURS

FLEET WIDE SPECIAL INSPECTION PERFORMED

TABLE 11. DEMONSTRATION RESULTS FOR WING - ACCESS FRAME

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	3.03	0.04
Service	2.47	0.49
Phase	4.83	0.40
Overhaul	0.16	0.81
Special	0.30	0.77
Total	10.79	2.51
Corrosion Detected		
Preflight	2.63	0.00
Service	2.00	0.00
Phase	2.73	0.00
Overhaul	0.03	0.00
Special	0.03	0.00
Total	7.42	0.00
Fail-Safe Damage	0.00	0.18
Failures	0.00	----
Service Damage	0.00	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500
AIRCRAFT SERVICE LIFE: 6000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: MSG-ACC-FRM

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	473	236	0	0
MIN(MRS)	2362	869	0	---
MAX(MRS)	59972	59937	0	---
AVG(MRS)	43544	30172	0	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCURRENCES	91	74	145	5	9
MIN(IN)	.57	.44	.30	.29	.18
MAX(IN)	2.09	2.11	1.97	.62	1.53
AVG(IN)	.74	.64	.78	.44	.70

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
	-----	-----	-----	-----	-----
	79	60	82	1	1
OCCURRENCES				5.66	11.76
MIN(SQ.IN)	1.11	.86	.68	5.66	11.76
MAX(SQ.IN)	2.68	2.58	17.33	5.66	11.76
AVG(SQ.IN)	1.79	1.55	4.35		
INSPECTION INTERVALS(HRS)				12000	
INITIAL	25	200	1000	12000	
SHORTEST	25	200	684	29297	
LONGEST	25	200	2401		

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 7
NUMBER OF STRUCTURAL MODIFICATIONS: 5
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 6

NUMBER OF AIRCRAFT COMPLETED IN SERVICE.		STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLT. HOURS	FLT. HOURS	STA. NO.	AIRCRAFT NO.	FLT. HOURS
-----	-----	-----	-----	-----	-----

TABLE 12. DEMONSTRATION RESULTS FOR WING - SPAR, AFT

	Defects Per Million Flight Hours <u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.83	0.11
Service	2.30	1.62
Phase	0.83	0.72
Overhaul	0.03	1.89
Special	0.00	4.42
Total	3.99	8.76
Corrosion Detected		
Preflight	0.23	0.35
Service	0.90	0.00
Phase	0.17	0.00
Overhaul	0.00	0.00
Special	0.00	0.00
Total	1.30	0.35
Fail-Safe Damage	0.00	0.04
Failures	0.00	----
Service Damage	0.10	0.00
Production Defects	0.10	0.04

TABLE 12 - Concluded

AIRCRAFT TYPE: MYR10

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENTS: WING-SPR-AFT

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
165	39	3	3
1526	3479	30568	
59664	54868	50325	
43851	33491	42219	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	25	69	25	1	0
MIN(IN)	.57	.45	.33	.56	0.
MAX(IN)	1.05	1.24	1.14	.56	0.
AVG(IN)	.73	.74	.59	.56	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	7	27	5	0	0
MIN(SQ.IN)	1.14	.96	1.00	0.	0.
MAX(SQ.IN)	2.20	4.03	5.03	0.	0.
AVG(SQ.IN)	1.76	2.43	2.15	0.	0.

INSPECTION INTERVALS(HRS)

	INITIAL	SHORTTEST	LONGEST
25	200	1000	12000
25	200	1000	12000
25	200	1953	23014

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

AIRCRAFT NO. STA. NO.

FLY. HOURS

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO.

FLY. HOURS

STA. NO.

TABLE 13. DEMONSTRATION RESULTS FOR WING - SPAR, CENTER

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.67	0.00
Service	0.90	0.00
Phase	1.20	0.00
Overhaul	0.00	0.20
Special	0.00	0.00
Total	2.77	0.20
Corrosion Detected		
Preflight	0.20	0.00
Service	0.10	0.00
Phase	0.93	0.00
Overhaul	0.06	0.00
Special	0.00	0.00
Total	1.29	0.00
Fail-Safe Damage	0.00	0.02
Failures	0.00	----
Service Damage	0.00	0.00
Production Defects	0.03	0.00

TABLE 13 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
AIRCRAFT TYPE: MYBRIQ			
SUMMARY OF STRUCTURAL ELEMENT: WING-SPR-CEN			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
-----	-----	-----	-----
116	40	0	1
1236	5782	0	-----
59733	59986	0	-----
24351	24464	0	-----
OCCURRENCES			
MIN(HRS)			
MAX(HRS)			
AVG(HRS)			
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
-----	-----	-----	-----
20	27	36	0
.59	.51	.30	0.
1.95	2.61	1.65	0.
1.02	.93	.83	0.
OCCURRENCES			
MIN(SQ. IN)			
MAX(SQ. IN)			
AVG(SQ. IN)			
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
-----	-----	-----	-----
6	3	28	2
1.04	.91	.93	4.54
2.54	2.67	13.52	8.15
2.22	1.62	4.79	6.35
OCCURRENCES			
MIN(SQ. IN)			
MAX(SQ. IN)			
AVG(SQ. IN)			
INSPECTION INTERVALS(HRS)			
INITIAL	200	1060	12000
SHORTEST	200	644	12000
LONGEST	200	1953	23434
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLY. HOURS	AIRCRAFT NO.	FLY. HOURS
-----	-----	-----	-----
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TABLE 14. DEMONSTRATION RESULTS FOR WING - SPAR, FORWARD

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.73	0.04
Service	1.67	0.49
Phase	0.90	0.40
Overhaul	0.00	0.81
Special	0.00	0.77
Total	3.30	2.51
Corrosion Detected		
Preflight	0.10	0.00
Service	0.90	0.00
Phase	0.10	0.00
Overhaul	0.00	0.00
Special	0.00	0.00
Total	1.10	0.00
Fail-Safe Damage	0.00	0.18
Failures	0.00	----
Service Damage	0.03	0.00
Production Defects	0.00	0.00

TABLE 14 - Concluded

AIRCRAFT TYPE: HYBRID

AIRCRAFT SERVICE LIFE: 60000 HOURS

NUMBER OF AIRCRAFT IN FLT: 500

SUMMARY OF STRUCTURAL ELEMENT: WING-SPR-FWD

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS	
				-----	-----
MIN(MRS)	154	34	1	-----	0
MAX(MRS)	13317	3627	30000	-----	-----
AVG(MRS)	59946	50007	30000	-----	-----
	45000	31975	30000	-----	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
	-----	-----	-----	-----	-----
MIN(IN)	27	50	27	0	0
MAX(IN)	54	92	97	0	0
AVG(IN)	97	117	97	0	0
	94	74	64		

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
	-----	-----	-----	-----	-----
MIN(SQ. IN)	3	27	3	0	0
MAX(SQ. IN)	1.04	94	1.85	0	0
AVG(SQ. IN)	1.04	4.44	2.26	0	0
	1.77	2.19	2.04		

INSPECTION INTERVALS(MRS)

INITIAL	25	1000	12000
SHORTEST	25	1000	12000
LONGEST	25	1955	23934

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES
AIRCRAFT NO. STA. NO. STA. NO.

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. STA. NO.

TABLE 15. DEMONSTRATION RESULTS FOR WING - STRINGER, AFT

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	4.30	0.20
Service	7.77	0.77
Phase	7.17	0.20
Overhaul	0.83	0.85
Special	1.50	1.37
Total	21.57	3.39
Corrosion Detected		
Preflight	0.43	0.02
Service	0.77	0.02
Phase	0.13	0.02
Overhaul	0.10	0.02
Special	0.53	0.02
Total	1.96	0.10
Fail-Safe Damage	0.00	0.04
Failures	0.00	----
Service Damage	0.23	0.00
Production Defects	0.10	0.04

TABLE 15 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENTS: RING-SIR-LSA

NUMBER AND TIME TO INITIATION OF AIRCRAFT EFFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	911	34	2	0
MIN(MRS)	2394	203	2394	-----
MAX(MRS)	54040	54034	49529	-----
AVG(MRS)	44045	54216	25961	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	129	167	177	21	37
MIN(IN)	.45	.43	.29	.30	.18
MAX(IN)	2.24	1.75	1.89	1.22	1.48
AVG(IN)	.90	.65	.55	.64	.67

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	13	4	0	0	12
MIN(SQ.IN)	1.45	1.44	0.	0.	.39
MAX(SQ.IN)	2.95	2.52	0.	0.	29.38
AVG(SQ.IN)	1.40	2.11	0.	0.	12.42

INSPECTION INTERVALS(MRS)

INITIAL	25	1000	12000
SHORTEST	25	204	1963
LONGEST	25	2745	23434

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 94

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

FLT. HOURS

STA. NO.

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

FLT. HOURS

STA. NO.

TABLE 15 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
AIRCRAFT TYPE: W40010			
SUMMARY OF STRUCTURAL ELEMENT: WING-STR-USA			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	COMPOSITION	SERVICE DAMAGE	PRODUCTION DEFECTS
135	39	5	3
1720	2502	10100	-----
59971	55104	43019	-----
43102	53248	22596	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	60	38	4
0	.50	.36	.87
0	5.56	5.02	5.55
0	2.86	1.54	2.92
SPECIAL			
8			
.28			
3.99			
1.89			

NUMBER AND LENGTH OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	19	4	3
0	.75	1.00	4.04
0	5.28	2.87	20.01
0	1.54	1.76	9.65
SPECIAL			
4			
1.52			
29.77			
17.39			

INSPECTION INTERVALS (HRS)			
25	200	1000	12000
25	200	200	1250
25	200	3000	23030
NUMBER OF SPECIAL INSPECTIONS PERFORMED: 78			
NUMBER OF STRUCTURAL NOTIFICATIONS: 1			
NUMBER OF AIRCRAFT REPAIRED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLY. HOURS	AIRCRAFT NO.	FLY. HOURS
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TABLE 16. DEMONSTRATION RESULTS FOR WING - STRINGER, CENTER

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	5.30	0.15
Service	10.30	0.22
Phase	11.27	0.64
Overhaul	2.53	1.05
Special	2.33	1.49
Total	31.73	3.55
Corrosion Detected		
Preflight	0.40	0.00
Service	0.73	0.15
Phase	0.30	0.00
Overhaul	0.30	0.04
Special	0.50	0.33
Total	2.23	0.53
Fail-Safe Damage	0.00	0.28
Failures	0.00	----
Service Damage	0.17	0.00
Production Defects	0.13	0.00

TABLE 16 - Continued

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: WING-STR-LSC			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
117A	39	5	3
95	2542	10160	-----
500A1	55144	43619	-----
43751	33248	22396	-----
OCCURRENCES			
MIN(MRS)			
MAX(MRS)			
AVG(MRS)			
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL
159	180	243	55
.56	.41	.28	.18
2.43	2.33	1.60	1.57
.49	.66	.53	.66
SPECIAL			
			52
			.13
			1.65
			.65
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL
12	6	2	5
1.31	1.01	1.00	1.17
2.58	1.47	1.13	14.93
1.44	1.26	1.06	7.33
SPECIAL			
			10
			1.10
			33.99
			10.20
INSPECTION INTERVALS(MRS)			
INITIAL	25	1000	12000
SHORTEST	25	204	1342
LONGEST	25	2785	23436
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 167			
NUMBER OF STRUCTURAL MODIFICATIONS: 4			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 473			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	FLT. HOURS
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TABLE 16 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-STR-05C

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
293	39	0	1
204	4223	0	-----
59737	57791	0	-----
43918	26729	0	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	123	95	21	18
MIN(IN)	0.	.50	.29	.38	.60
MAX(IN)	0.	7.12	4.58	5.63	3.59
AVG(IN)	0.	1.64	1.25	1.98	1.84

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	16	7	4	5
MIN(SQ.IN)	0.	.87	1.33	2.50	5.25
MAX(SQ.IN)	0.	3.63	3.51	40.07	45.69
AVG(SQ.IN)	0.	2.26	2.04	13.88	21.66

INSPECTION INTERVALS(HRS)	INITIAL	SHORTTEST	LONGEST
	25	25	25
	200	200	200
	1000	204	3482
	12000	1256	23438

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 102

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

AIRCRAFT NO.	STRUCTURAL FAILURES	STA. NO.	RESIDUAL STRENGTH	EQUALS	FAIL-SAFE	STRENGTH	STA. NO.
	FLT. HOURS		AIRCRAFT NO.	FLT. HOURS			
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TABLE 16 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 60000 HOURS

STRUCTURAL ELEMENT: WNG-STN-LSC-0294

PREDICTED AVERAGE FATIGUE LIFE: 240120 HOURS

ACTUAL AVERAGE FATIGUE LIFE: 215924 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK -----	CORROSION -----	SERVICE DAMAGE -----	PRODUCTION DEFECTS -----
OCCURRENCES	8	0	0	0
MIN(HRS)	50735	0	0	-----
MAX(HRS)	52649	0	0	-----
AVG(HRS)	35877	0	0	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL -----	B-LEVEL -----	C-LEVEL -----	D-LEVEL -----	SPECIAL -----
OCCURRENCES	0	4	1	0	1
MIN(IN)	0.	.47	.53	0.	.98
MAX(IN)	0.	.55	.53	0.	.98
AVG(IN)	0.	.52	.53	0.	.98

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL -----	B-LEVEL -----	C-LEVEL -----	D-LEVEL -----	SPECIAL -----
OCCURRENCES	0	0	0	0	0
MIN(SQ. IN)	0.	0.	0.	0.	0.
MAX(SQ. IN)	0.	0.	0.	0.	0.
AVG(SQ. IN)	0.	0.	0.	0.	0.

INSPECTION INTERVALS(HRS)

	25	200	1000	12000
INITIAL	25	200	1250	15000
2	25	200	1563	18750
3	25	200	1953	23438
4	25	200	684	8203
5	25	200	854	10254
6	25	200	1000	12000
7	25	200	1250	15000
8	25	200	1563	18750

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1

NUMBER OF STRUCTURAL MODIFICATIONS: 1

FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 159442 HOURS

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 473

STRUCTURAL FAILURES
AIRCRAFT NO. FLT. HOURS

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. FLT. HOURS

TABLE 16 - Concluded

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 60000 HOURS

STRUCTURAL ELEMENT: WING-STR-LSC-0669

PREDICTED AVERAGE FATIGUE LIFE: 165600 HOURS

ACTUAL AVERAGE FATIGUE LIFE: 110269 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	84	1	0	0
MIN(HRS)	13319	13451	0	-----
MAX(HRS)	59969	13451	0	-----
AVG(HRS)	44281	13451	0	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	5	7	17	2	7
MIN(IN)	.57	.49	.34	.41	.13
MAX(IN)	.70	.65	.69	.49	1.00
AVG(IN)	.63	.56	.51	.45	.57

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	1	0	0	0
MIN(SQ. IN)	0.	1.12	0.	0.	0.
MAX(SQ. IN)	0.	1.12	0.	0.	0.
AVG(SQ. IN)	0.	1.12	0.	0.	0.

INSPECTION INTERVALS(HRS)

	25	200	1000	12000
INITIAL	25	200	1250	15000
2	25	200	1563	18750
3	25	200	1953	23438
4	25	200	684	8203
5	25	200	854	10254
6	25	200	1068	12817
7	25	200	374	3486
8	25	200	467	5606
9	25	200	584	7010
10	25	200		

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 2

NUMBER OF STRUCTURAL MODIFICATIONS: 1

FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 106827 HOURS

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES
AIRCRAFT NO. FLT. HOURS

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. FLT. HOURS

TABLE 17. DEMONSTRATION RESULTS FOR WING - STRINGER, FORWARD

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	4.50	0.21
Service	8.37	0.71
Phase	7.40	1.04
Overhaul	0.93	1.69
Special	1.43	1.04
Total	22.63	4.69
Corrosion Detected		
Preflight	0.33	0.00
Service	0.57	0.31
Phase	0.27	0.00
Overhaul	0.23	0.10
Special	0.67	0.00
Total	2.07	0.41
Fail-Safe Damage	0.00	0.07
Failures	0.00	-----
Service Damage	0.07	0.00
Production Defects	0.03	0.02

TABLE 17 - Continued

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: WING-STR-1SE			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORRUSION	SERVICE DAMAGE	PRODUCTION DEFECTS
-----	-----	-----	-----
NOA	39	0	1
523	4223	0	-----
50001	57791	0	-----
44232	26724	0	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	M-LEVEL	L-LEVEL	D-LEVEL
-----	-----	-----	-----
135	157	173	21
.57	.42	.30	.20
2.52	2.00	1.89	2.51
.94	.62	.55	.68
NUMBER AND AREA OF CORRUSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	M-LEVEL	L-LEVEL	D-LEVEL
-----	-----	-----	-----
11	7	1	5
1.20	1.03	1.37	3.51
2.19	2.02	1.57	37.57
1.67	1.34	1.57	15.69
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTEST	25	200	1963
LONGEST	25	2745	23438
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 03			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES			
AIRCRAFT NO.	FLY. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
-----	-----	-----	AIRCRAFT NO. FLY. HOURS STA. NO.

TABLE 17 - Concluded

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-STR-USE

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
192	36	2	0
2394	203	2394	-----
59900	59434	69529	-----
45520	34054	25961	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
0	94	49	7	13
0.	.47	.35	.50	.22
0.	4.63	6.68	3.87	3.62
0.	1.54	1.60	1.90	1.69

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
0	10	7	2	10
0.	1.10	1.14	13.34	4.37
0.	3.72	4.40	19.88	61.68
0.	2.32	2.24	16.61	29.86

INSPECTION INTERVALS(HRS)

INITIAL	25
SHORTEST	25
LONGEST	25

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 92

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

AIRCRAFT NO.	FLY. HOURS	STA. NO.
-----	-----	-----

AIRCRAFT NO.	FLY. HOURS	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH STA. NO.
-----	-----	-----

TABLE 18. DEMONSTRATION RESULTS FOR WING CENTER SECTION -
STRINGER, AFT

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.00
Service	0.09	0.00
Phase	0.37	0.00
Overhaul	0.07	0.06
Special	0.00	0.06
Total	0.53	0.12
Corrosion Detected		
Preflight	0.00	0.00
Service	0.57	0.03
Phase	2.10	0.03
Overhaul	0.03	0.00
Special	0.00	0.08
Total	2.70	0.14
Fail-Safe Damage	0.00	0.00
Failures	0.00	----
Service Damage	0.00	0.00
Production Defects	0.00	0.00

TABLE 18 - Continued

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: MSC-STR-LSA

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
23	39	0	0
15364	5562	0	-----
59744	59460	0	-----
42142	30816	0	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	5	5	2	0
MIN(IN)	0.	.62	.70	.74	0.
MAX(IN)	0.	.74	1.00	.89	0.
AVG(IN)	0.	.68	.62	.81	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	8	24	1	0
MIN(SQ.IN)	0.	1.34	1.40	5.35	0.
MAX(SQ.IN)	0.	3.48	26.96	5.35	0.
AVG(SQ.IN)	0.	2.32	6.91	5.35	0.

INSPECTION INTERVALS(MRS)

INITIAL	25	1000	12000
SHORTEST	25	1000	12000
LONGEST	25	2441	29297

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

FLY. HOURS

STA. NO.

PESIOAL STRENGTH- EQUALS FAIL-SAFE STRENGTH

FLY. HOURS

STA. NO.

TABLE 18 - Concluded

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: MSC-STR-USA

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
10	47	0	0
28002	4678	0	-----
53311	58849	0	-----
39054	31993	0	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	4	6	0	0
MIN(IN)	0.	.82	1.11	0.	0.
MAX(IN)	0.	2.09	2.68	0.	0.
AVG(IN)	0.	1.40	1.88	0.	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	9	35	0	0
MIN(SQ.IN)	0.	1.92	1.02	0.	0.
MAX(SQ.IN)	0.	5.80	24.74	0.	0.
AVG(SQ.IN)	0.	3.45	5.92	0.	0.

INSPECTION INTERVALS(HRS)

INITIAL	25
SHORTEST	25
LONGEST	25

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

FLT. HOURS

STA. NO.

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO.

FLT. HOURS

STA. NO.

TABLE 19. DEMONSTRATION RESULTS FOR WING CENTER SECTION -
STRINGER, CENTER

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.04
Service	0.43	0.04
Phase	0.83	0.04
Overhaul	0.07	0.40
Special	0.00	0.18
Total	1.33	0.70
Corrosion Detected		
Preflight	0.00	0.08
Service	0.70	0.30
Phase	1.57	0.00
Overhaul	0.07	0.93
Special	0.00	0.46
Total	2.34	1.77
Fail-Safe Damage	0.00	0.17
Failures	0.00	----
Service Damage	0.00	0.00
Production Defects	0.00	0.04

TABLE 10 - Continued

REPORT TYPE: HYBRID

AIRCRAFT SERVICE LIFE: 60000 HOURS

NUMBER OF AIRCRAFT: 1 FLT. NO. 500

SUMMARY OF STRUCTURAL ELEMENT: MSC-SIR-LSC

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
66	41	0	0
13338	3762	0	---
59879	56024	0	---
45337	30611	0	---
AVG(MRS)			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	11	22	2	0
MIN(IN)	0.	.52	.30	.63	0.
MAX(IN)	0.	.90	1.11	1.34	0.
AVG(IN)	0.	.69	.66	.99	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	14	25	1	0
MIN(SQ.IN)	0.	1.25	1.06	1.04	0.
MAX(SQ.IN)	0.	4.34	19.41	1.04	0.
AVG(SQ.IN)	0.	2.39	4.25	1.04	0.

INSPECTION INTERVALS(MRS)

INITIAL	25	1000	12000
SHORTEST	25	1000	12000
LONGEST	25	1953	23438

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0
 NUMBER OF STRUCTURAL MODIFICATIONS: 1
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

STRUCTURAL FAILURES

AIRCRAFT NO. _____ STA. NO. _____
 FLT. HOURS _____

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
 AIRCRAFT NO. _____ STA. NO. _____
 FLT. HOURS _____

TABLE 19 - Concluded

AIRCRAFT TYPE: HYBRID		AIRCRAFT SERVICE LIFE: 60000 HOURS	
NUMBER OF AIRCRAFT IN FLEET: 500		SUMMARY OF STRUCTURAL ELEMENT: MSC-STR-USC	
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK		SERVICE DAMAGE	
CORROSION		PRODUCTION DEFECTS	
OCCURRENCES			
MIN(MRS)		0	
MAX(MRS)		0	
AVG(MRS)		0	
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL		C-LEVEL	
B-LEVEL		D-LEVEL	
SPECIAL		SPECIAL	
OCCURRENCES		0	
MIN(IN)		0.	
MAX(IN)		0.	
AVG(IN)		0.	
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL		C-LEVEL	
B-LEVEL		D-LEVEL	
SPECIAL		SPECIAL	
OCCURRENCES		0	
MIN(SQ.IN)		1	
MAX(SQ.IN)		2.97	
AVG(SQ.IN)		2.97	
INSPECTION INTERVALS(MRS)			
INITIAL		12000	
SHORTEST		12000	
LONGEST		23035	
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.		AIRCRAFT NO.	
FLY. HOURS		FLY. HOURS	
		STA. NO.	

TABLE 20. DEMONSTRATION RESULTS FOR WING CENTER SECTION -
STRINGER, FORWARD

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.00
Service	0.17	0.25
Phase	0.37	0.45
Overhaul	0.00	0.14
Special	0.00	2.76
Total	0.54	3.60
Corrosion Detected		
Preflight	0.00	0.00
Service	0.50	0.03
Phase	1.53	0.00
Overhaul	0.00	0.05
Special	0.00	0.03
Total	2.03	0.11
Fail-Safe Damage	0.00	0.11
Failures	0.00	----
Service Damage	0.00	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET:	500
AIRCRAFT SERVICE LIFE:	6000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: MSC-STRO-13F

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
MIN(MRS)	19	36	0	0
MAX(MRS)	6281	3466	0	---
Avg(MRS)	59091	55140	0	---
MIN(MRS)	48599	30610	0	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	8	6	0	0
MIN(IN)	0.	.55	.33	0.	0.
MAX(IN)	0.	1.24	1.27	0.	0.
AVG(IN)	0.	.83	.78	0.	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	8	28	0	0
MIN(SO.IN)	0.	.86	1.07	0.	0.
MAX(SO.IN)	0.	2.52	23.26	0.	0.
AVC(SO.IN)	0.	1.91	5.93	0.	0.

SECRETARY NO. 13368NI

PROTECTION INTERVAL (years)	25	200	1000	12000
INITIAL	25	200	1000	12000
SWORTEST	25	200	1000	12000
LONGEST	25	200	1953	23438

NUMBER OF SPECIAL INSPECTIONS CONDUCTED:

NUMBER OF STRUCTURAL MODIFICATIONS: 0

0 1331A7S NI 0311GOM 147038IV 40 238600N

STRUCTURAL FAILURES

STATION 174

STB. ME.

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. FLY. HOURS STA. NO.

TABLE 20 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENTS: MSC-SIR-USF			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
6	28	0	0
17854	5641	0	----
54830	59110	0	----
42009	33027	0	----
AVG(HRS)			----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0.	1	5	0
0.	1.72	1.11	0.
0.	1.72	2.15	0.
0.	1.72	1.67	0.
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	7	18	0
0.	1.03	1.03	0.
0.	4.21	16.47	0.
0.	2.18	6.02	0.
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTEST	25	1000	12000
LONGEST	25	1953	23436
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		STIA. NO.	
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	FLT. HOURS
-----	-----	-----	-----
RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH			
		STIA. NO.	

TABLE 21. DEMONSTRATION RESULTS FOR WING CENTER SECTION -
SPANWISE BEAM, AFT

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.04
Service	0.20	0.12
Phase	0.10	0.04
Overhaul	0.00	0.28
Special	0.03	0.12
Total	0.33	0.60
Corrosion Detected		
Preflight	0.00	0.00
Service	0.03	0.04
Phase	0.00	0.00
Overhaul	0.13	0.04
Special	0.07	0.09
Total	0.23	0.17
Fail-Safe Damage	0.00	0.00
Failures	0.00	----
Service Damage	0.13	0.00
Production Defects	0.00	0.00

TABLE 21 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: MSC-SMR-AFT			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
17	9	4	0
12738	8814	22075	-----
59868	51350	38968	-----
44185	35198	29714	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	F-LEVEL	C-LEVEL	D-LEVEL
0	6	3	0
0.	.55	.30	0.
0.	2.40	2.93	0.
0.	1.30	1.23	0.
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	F-LEVEL	C-LEVEL	D-LEVEL
0	1	0	4
0.	1.56	0.	1.99
0.	1.56	0.	17.32
0.	1.56	0.	9.97
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTEST	25	299	1570
LONGEST	25	2228	23038
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 4			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	FLT. HOURS
-----	-----	-----	-----

TABLE 22. DEMONSTRATION RESULTS FOR WING CENTER SECTION -
SPANWISE BEAM, CENTER

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Cracks Detected		
Preflight	0.00	0.00
Service	0.10	0.02
Phase	0.03	0.02
Overhaul	0.00	0.19
Special	0.00	0.00
Total	0.13	0.23
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	0.03	0.09
Overhaul	0.13	0.00
Special	0.10	0.00
Total	0.26	0.09
Fail-Safe Damage	0.00	0.00
Failures	0.00	----
Service Damage	0.03	0.00
Production Defects	0.00	0.00

TABLE 22 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
SUMMARY OF STRUCTURAL ELEMENT: MSC-SWH-CEN			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
6	12	1	0
30430	9477	30430	-----
59536	59462	30430	-----
44255	36369	30430	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	3	1	0
0.	.58	.64	0.
0.	4.05	.64	0.
0.	1.96	.64	0.
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL
0	0	1	4
0.	0.	2.79	4.37
0.	0.	2.79	43.41
0.	0.	2.79	16.07
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTEST	25	374	4486
LONGEST	25	1953	23436
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 4			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLY. HOURS	AIRCRAFT NO.	FLY. HOURS
-----	-----	-----	-----

TABLE 23. DEMONSTRATION RESULTS FOR WING CENTER SECTION -
SPANWISE BEAM, FORWARD

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Crack. Detected		
Preflight	0.00	0.00
Service	0.10	0.14
Phase	0.03	0.29
Overhaul	0.03	0.07
Special	0.07	1.24
Total	0.23	1.74
Corrosion Detected		
Preflight	0.00	0.00
Service	0.10	0.13
Phase	0.07	0.00
Overhaul	0.07	0.00
Special	0.03	0.00
Total	0.27	0.13
Fail-Safe Damage	0.00	0.09
Failures	0.00	----
Service Damage	0.03	0.09
Production Defects	0.00	0.00

TABLE 23 - Concluded

NUMBER OF AIRCRAFT IN FLEET: 500		AIRCRAFT SERVICE LIFE: 60000 HOURS	
AIRCRAFT TYPE: HYBRID			
SUMMARY OF STRUCTURAL ELEMENT: MSC-SWB-FAD			
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS			
FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
11	11	1	0
21509	16308	21613	-----
59964	53993	21613	-----
43115	34839	21613	-----
NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL
0	3	1	1
0.	1.60	.69	.82
0.	2.71	.69	.82
0.	2.20	.69	.82
NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION			
A-LEVEL	H-LEVEL	C-LEVEL	D-LEVEL
0	3	2	2
0.	1.52	3.81	21.88
0.	2.54	4.85	50.44
0.	2.08	4.33	36.16
INSPECTION INTERVALS(HRS)			
INITIAL	25	1000	12000
SHORTTEST	25	239	1256
LONGEST	25	2785	23438
NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 5			
NUMBER OF STRUCTURAL MODIFICATIONS: 0			
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0			
STRUCTURAL FAILURES		RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	FLT. HOURS
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TABLE 24. COMPARISON OF RESULTS IN DEMONSTRATION STAGES FOR
DOOR FRAME

<u>Defects per Million Flight Hours - SAIFE</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>Final</u>
Cracks Detected				
Preflight	1.97	0.46	0.40	0.53
Service	2.23	0.53	0.47	0.60
Phase	21.30	3.20	3.40	2.63
Overhaul	2.80	0.17	0.03	0.13
Special	1.80	0.03	0.03	0.00
Total	30.10	4.39	4.33	3.89
Corrosion Detected				
Proflight	0.43	0.57	0.40	0.47
Service	0.03	0.33	0.57	0.30
Phase	1.46	0.70	0.70	1.00
Overhaul	0.90	0.10	0.00	0.00
Special	0.13	0.00	0.00	0.00
Total	2.95	1.70	1.67	1.77
Fail-Safe Damage	0.00	0.00	0.00	0.00
Failures	0.00	0.00	0.00	0.00
Service Damage	0.43	0.27	0.43	0.27
Production Defects	0.00	0.00	0.00	0.00

TABLE 25. COMPARISON OF RESULTS IN DEMONSTRATION STAGES FOR
WING CENTER SECTION - SPANWISE BEAM, AFT

Defects per Million Flight Hours - SAIPE				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>Final</u>
Cracks Detected				
Preflight	0.00	0.00		0.00
Service	0.73	0.13		0.20
Phase	0.90	0.00		0.10
Overhaul	1.27	0.00		0.00
Special	0.93	0.00		0.03
Total	3.83	0.13		0.33
Corrosion Detected				
Preflight	0.00	0.00		0.00
Service	0.00	0.13		0.03
Phase	0.03	0.07		0.00
Overhaul	0.27	0.00		0.13
Special	0.13	0.03		0.07
Total	0.43	0.23		0.23
Fail-Safe Damage	0.07	0.00		0.00
Failures	0.00	0.00		0.00
Service Damage	0.20	0.03		0.13
Production Defects	0.03	0.00		0.00

Data Not Available

TABLE 26. COMPARISON OF RESULTS IN DEMONSTRATION STAGES FOR
WING CENTER SECTION - SPANWISE BEAM, CENTER

Defects per Million Flight Hours - SAIFE				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>Final</u>
Cracks Detected				
Preflight	0.00	0.00		0.00
Service	0.67	0.03		0.10
Phase	1.03	0.03		0.03
Overhaul	1.63	0.07		0.00
Special	1.10	0.00		0.00
Total	4.43	0.13		0.13
Corrosion Detected				
Preflight	0.00	0.00		0.00
Service	0.03	0.10		0.00
Phase	0.07	0.00		0.03
Overhaul	0.27	0.13		0.13
Special	0.23	0.10		0.10
Total	0.50	0.33		0.26
Fail-Safe Damage	0.03	0.00		0.00
Failures	0.03	0.00		0.00
Service Damage	0.10	0.07		0.03
Production Defects	0.00	0.00		0.00

Data Not Available

TABLE 27. COMPARISON OF RESULTS IN DEMONSTRATION STAGES FOR
WING CENTER SECTION - SPANWISE BEAM, FORWARD

Defects per Million Flight Hours - SAIFE				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>Final</u>
Cracks Detected				
Preflight	0.00	0.00		0.00
Service	1.00	0.03		0.10
Phase	1.53	0.00		0.03
Overhaul	1.40	0.03		0.03
Special	2.40	0.03		0.07
Total	6.33	0.09		0.23
Corrosion Detected.				
Preflight	0.00	0.00		0.00
Service	0.03	0.07		0.10
Phase	0.03	0.03		0.07
Overhaul	0.13	0.07		0.07
Special	0.33	0.00		0.03
Total	0.52	0.17		0.27
Fail-Safe Damage	0.23	0.03		0.00
Failures	0.10	0.03		0.00
Service Damage	0.23	0.03		0.03
Production Defects	0.00	0.00		0.00

Data Not Available

APPENDIX A

AFS-510 DEMONSTRATION

APPENDIX A

The results of AFS-510 demonstration with the revised model are presented in this Appendix A to Volume V. The tables roughly correspond with the tables of Volume V. A sample of the demonstration case, using approximately 10% of the elements on the complete airplane, was also run using the sampling technique developed, and these results are also presented in Tables 1, 2A and 2B.

The ratio of total number of cracks detected in the simulation to the number of cracks reported in MRR's (Column (a) of table 1) did not change greatly (2.30 and 3.02 for demo and sample vs. 3.17 for original demo) from the original Tech. Inc. demonstration and for the reasons given in Volume V, is considered realistic.

The ratio of the total number of cracks occurring in the simulation, to cracks detected (column (b) table 1) has increased (2.74 and 2.51 for demo and sample vs. 1.88 for original demo) from the original Tech Inc. demonstration. This is attributed to the lower inspection reliability used in the revised demonstration. This lower inspection reliability is considered more realistic as it based on a rational analysis of actual MRR reports. The higher ratio is also somewhat supported by an USAF study in which it was determined by a complete structural teardown and NDI inspection on two KC-135 full scale wing fatigue tests, that only one-fifth of the cracks present were found in the normal test inspection program.

Columns (c) and (d) of table 1 list the larger cracks experienced in the full demonstration and the sample. The sample results are based on the extrapolation method of predicting largest cracks in the complete fleet based on the distribution of the frequency and length of cracks in the sample. The agreement between the full demonstration and the sample is good, indicating that 70 to 90% of fail safe crack length would be equalled or exceeded 5 times in the life of the fleet and that cracks as large as 161% (full demo, 31 inches in side stringer) and 135% of fail-safe length (sample, 26 inches also in side stringer) would occur. These large cracks did not cause any failures in these particular simulation runs. The capability to predict the percent of fail-safe length equalled or exceeded by the 5 largest cracks was added to the sample.

Columns (e) and (f) of table 1 give the estimated failure rates based on two different estimation methods for both the full demonstration and sample. The method of column (e) merely divides the failure rates of the sample by the decimal percent of the sample. This method ignores the possibility that the larger exposure in a simulation of the complete airplane would result in longer cracks with a much higher risk of failure. The method of column (f) is based on extrapolation of the sample crack frequency, length and probability of failure to cover the complete airplane. This method is considered more realistic. The sample and full demonstration failure rate estimates are in reasonable agreement although, the sample failure rate estimates are generally lower. Great credence should not be placed on the absolute value of the estimated failure rates because the input and relationships in the simulation are only approximate and because of the statistical nature of the simulation, the results may vary considerably from run to run. However, it is of interest to note that the simulation, which is evaluating a typical wide-body design operating under typical inspection programs and practices, predicts failure rates (5.83×10^{-10} for full demo, 2.84×10^{-10} for sample) which meet the widely accepted criteria of less than one failure in 10^9 airplane hours. As would be expected

for these failure rates, no failure occurred in a simulation covering 5×10^7 airplane flight hours. "Failure" is defined as the complete structure being no longer capable of supporting the flight or pressure loads, as applicable. Sample estimates of failure rates and the percent of fail-safe crack length equaled or exceeded by the 5 largest cracks will be used in the forthcoming parametric trend studies to gauge the effect on safety by varying design parameters, inspection programs and operating practices. Crack length was added as an indicator because failure rate estimates are quite volatile.

Table 2A simulation results show good agreement with MRR data in the percent of cracks detected at each inspection level. Approximately 67% of the cracks were detected in the simulation in the close or detailed inspection (overhaul and special) compared to 78% reported in the MRR's. Only 20 to 30% of the cracks were detected in area or cursory type inspections. Here again, there is good agreement between the full demonstration and sample, and the revised simulation is much closer to MRR experience than the initial simulation reported in Volume V.

Table 2B shows good correlation between the average length crack detected in the sample (1.718 inches) the full demonstration (1.515 inches) and the MRR's (1.567 inches) and improved correlation over the initial demonstration (.95 inches with unrealistic fuselage side frame results removed). This improved correlation supports the lower inspection reliability curves, based on MRR studies, and used in the revised program demonstration.

The summary of full demonstration results are given in tables 3 through 24 for each element type. Table 8 in Volume V was omitted because fuselage bottom stringers were not included in the full demonstration as progressive circumferential failures were not considered probable because of the low stress and the primary compressive loading of this structure.

The fuselage side stringers and wing lower surface center stringers dominate the failure rate prediction for flight structure and the fuselage window frames dominate the failure rate for pressure structure in the particular simulation run made for the full demonstration. The complete three page short list computer printout is included in table 9 for the risk dominating fuselage side stringer element (station 1100). The first page lists the random number seeds needed to duplicate the run; aircraft number for aircraft which experience corrosion, production or service damage; the simulation time at which first crack is discovered; inspection, modification and repair costs and simulation time for each modification evaluation; and cracks found in internal inspection. The second page is the standard short list and the third page gives aircraft number of each element which cracks; aircraft flight hours when the crack was terminated by repair, modification, retirement or failure; crack length at termination; and probability of failure associated the crack in each element. From the short list and input for station 1100 it can be deduced that the dominating crack was initiated by service damage at 21447 flight hours on aircraft number 408, was external and grew without detection to 19.44 inches at 58255 flight hours and to 31.19 inches at retirement at 60,000 flight hours without experiencing a load in excess of residual strength. A and B level inspections were not considered effective in this area and non exploratory C and D inspections were being made at 3520 to 4399 and 23,730 to 29663 hour intervals during this period with the knowledge that one crack had been found in this area. The problem illustrated by this case does not lend itself to easy solution. The actual fatigue life was adequate and the frequency of costly

detailed inspections would have to be significantly increased to assure detection of fatigue cracks initiated by random service damage.

The short list computer printout is also included in Table 16 for the risk dominating wing lower surface center stringer elements (stations 0543 & 0807). Station 0543 element had a marginal fatigue life (i.e., 66752 hours vs. 120,000 hours) but as indicated by a fatigue test life of 9,999,999 hours, did not have a valid fatigue test and service repair and inspection costs did not justify a service modification; the D inspection interval was reduced as a result of service cracks but the dominate fatigue crack of 2.91 inches was never detected prior to retirement. This type of problem could be alleviated by a more complete or realistic fatigue test. Similar to fuselage stringer 1100, the dominate crack (4.23 inches) in station 0807 element was also initiated early by service damage and not detected prior to retirement under the long inspection intervals late in the program. However in this case the actual fatigue life was marginal but was not detected in a valid fatigue test and service cracks did not generate a service modification or an inspection interval reduction.

A short list computer printout is also included in table 4 for the risk dominating fuselage window frame element (station 0930). The short list and input data indicate that the initial element actual fatigue life was marginal. This was detected in the fatigue test thus generating a production modification but no retrofit on early service aircraft. Due to an error in the program, the production modification was not fatigue tested and had a higher but still marginal fatigue life. Service cracks detected on early unmodified elements generated a double reduction in the external D inspection interval to 2481 hours but no increase in sampling as no cracks were ever found in the internal sampling inspections. Apparently two internal cracks initiated simultaneously on opposite corners on aircraft 489 and grew at twice the rate of a single crack to a total length of 6.8 inches before becoming external. These cracks were subsequently missed in several external non-exploratory D and C inspections (A and B inspections were not considered effective for this area) and grew to a total length 8.08 inches when terminated by retirement. This type of problem could be alleviated by fatigue testing of modifications, more thorough evaluation and investigation of cracks detected in service and more frequent internal sampling.

Conclusions

A comparison between the results of the full demonstration, sample simulations and past service experience indicates that the revised program and input are reasonably realistic and that the sampling technique is adequate for use in trend studies of model parameters. These studies could be used as an aid in evaluation design and inspection criteria and practices. Responsible interested parties may obtain computer card decks for the program, demonstration and sample inputs on loan for duplication from AFS-510, Aeronautical Center, Federal Aviation Administration, Oklahoma City, Oklahoma.

TABLE 1. SUMMARY OF SAFE DEMONSTRATION RESULTS

Element Type	(a) SAFE Cracks Detected/ MRR-SDR Cracks		(b) First Cracks Occurring/ Cracks Detected		(c) % of Fail-Safe Length Equaled or Exceeded by 5 Longest Cracks		(d) Fail-Safe Crack Occurrences	
	Full	Sample	Full	Sample	Full	Sample	Full	Sample
Door Frame	3.02	14.90	1.49	1.36	26.60	—	0	—
Window Frame	8.67	19.36	2.75	2.28	38.95	—	0	—
Fuselage								
- Main Frame, Bottom	5.78	11.05	1.76	1.53	15.45	—	0	—
- Main Frame, Side	3.62	6.22	2.17	1.93	15.28	—	0	—
- Main Frame, Top	1.74	8.18	3.77	2.13	14.64	—	0	—
- Stringer, Bottom	1.74	1.60	3.10	2.73	41.00	—	2	3
- Stringer, Side	1.39	2.12	3.07	3.00	23.30	—	0	—
- Stringer, Top								
Wing								
- Access Frame	1.73	1.20	2.89	4.67	31.83	—	0	—
- Spar, Aft	0.33	0.96	1.56	2.36	13.59	—	0	—
- Spar, Center	83.80	19.33	2.13	8.06	22.45	—	0	—
- Spar, Forward	0.00	0.00	—	0.00	2.19	—	0	—
- Stringer, Aft	5.78	2.31	2.53	3.26	46.15	—	0	—
- Stringer, Center	3.37	3.91	3.05	3.38	53.31	—	0	—
- Stringer, Forward	0.30	0.45	9.07	8.44	26.00	—	0	—
Wing Center Section								
- Stringer, Aft	4.00	0.00	5.56	—	18.15	—	0	—
- Stringer, Center	0.00	0.00	—	—	7.15	—	0	—
- Stringer, Forward	0.00	0.00	—	—	1.15	—	0	—
- Spanwise Beam, Aft	0.00	1.94	3.18	1.86	21.56	—	0	—
- Spanwise Beam, Center	0.00	0.00	—	—	1.15	—	0	—
- Spanwise Beam, Forward	1.88	0.00	—	—	1.25	—	0	—
Pressure Loaded Total	4.57	4.12	1.92	1.81	49.70	41.40	0	3
Flight Loaded Total	1.72	2.07	3.29	3.13	67.25	86.25	2	—
Total	2.30	3.02	2.74	2.51			2	3

TABLE 1. (Continued)

Element	(e) Estimated Failure Rate Using Average		(f) Estimated Failure Rate		(g) Actual Failure Rate	
	Full	Sample	Full	Sample	Full	Sample
Door Frame	2.54E-15	3.58E-15	6.70E-15	2.01E-13		
Window Frame	5.02E-14	1.78E-14	1.16E-11	3.90E-14		
Fuselage						
- Main Frame, Bottom	4.54E-18	6.47E-18	4.54E-18	1.08E-15		
- Main Frame, Side	9.82E-18	9.49E-14	1.18E-16	1.84E-14		
- Main Frame, Top	6.70E-18	2.17E-17	6.70E-18	2.85E-16		
- Stringer, Bottom						
- Stringer, Side	1.61E-11	2.55E-13	3.63E-10	2.43E-10		
- Stringer, Top	2.45E-16	1.61E-17	2.45E-16	8.60E-17		
Wing						
- Access Frame	3.98E-12	2.90E-12	4.34E-12	3.82E-12		
- Spar, Aft	8.55E-13	1.30E-12	1.09E-12	1.44E-12		
- Spar, Center	1.85E-11	6.97E-12	6.19E-11	1.12E-11		
- Spar, Forward	1.95E-14	0.00E-00	1.61E-14	0.00E-00		
- Stringer, Aft	3.14E-12	2.80E-12	8.35E-12	3.99E-12		
- Stringer, Center	4.64E-12	1.22E-11	1.11E-10	1.64E-11		
- Stringer, Forward	4.63E-13	3.08E-12	2.04E-12	3.44E-12		
Wing Center Section						
- Stringer, Aft	7.81E-13	3.08E-14	7.57E-13	0.00E-00		
- Stringer, Center	2.90E-14	1.49E-15	2.60E-14	0.00E-00		
- Stringer, Forward	5.07E-15	0.00E-00	4.37E-15	0.00E-00		
- Spanwise Beam, Aft	1.18E-12	3.49E-13	5.86E-12	9.88E-13		
- Spanwise Beam, Center	1.54E-13	1.94E-13	1.38E-13	0.00E-00		
- Spanwise Beam, Forward	7.39E-14	4.69E-15	5.83E-14	0.00E-00		
Pressure Loaded Total	4.80E-14	1.03E-14	6.26E-13	4.23E-14		
Flight Loaded Total	6.71E-11	3.02E-11	7.51E-10	2.84E-10		
Total	5.00E-11	3.02E-11	5.83E-10	2.84E-10		

* Note: No actual failures occurred in demonstration run.

TABLE 2A

COMPARISON OF CRACKS DETECTED AT EACH INSPECTION
LEVEL PER MILLION FLIGHT HOURS

	FULL		SAMPLE		MRR-SDR	
	<u>Cracks Detected</u>	<u>% of Total</u>	<u>Cracks Detected</u>	<u>% of Total</u>	<u>Cracks Detected</u>	<u>% of Total</u>
Preflight	24.87	9.56	25.34	7.82	2.87	4.3
Service	20.89	8.03	20.81	6.42	7.93	11.8
Phase	28.49	10.95	29.86	9.22	10.94	16.3
Overhaul	147.24	56.59	200.45	61.87	24.21	36.1
Special	<u>38.69</u>	<u>14.87</u>	<u>47.51</u>	<u>14.66</u>	<u>21.14</u>	<u>31.5</u>
Total	260.18	100.00	323.98	100.00	67.09	100.0

TABLE 2B COMPARISON OF SIZE OF CRACKS DETECTED

	FULL Average Length (inches)	SAMPLE Average Length (inches)	MRR-SDR Average Length Where reported (inches)
Preflight	1.573	1.943	---
Service	1.719	1.812	---
Phase	1.688	2.505	---
Overhaul	1.375	1.467	---
Special	1.771	2.014	---
Fuselage Total	1.741	1.815	1.99
Wing Total	1.118	1.470	2.16
Total	1.515	1.718	2.089 (1.567)*

* All reports, assuming 5/8" length when not reported.

TABLE 3. DEMONSTRATION RESULTS FOR DOOR FRAME
(FUS-DOR-FRM & FUS DOR-FRF)

	Defects Per Million		Flight Hours
	<u>SAIFE (*)</u>		<u>MRR/SDR</u>
Crack Detected			
Preflight	0.00	(0.00)	0.16
Service	0.47	(0.00)	0.08
Phase	1.73	(0.20)	0.93
Overhaul	5.54	(0.07)	0.55
Special	3.13	(0.33)	0.08
Total	10.87	(0.60)	1.80
Corrosion Detected			
Preflight	0.00	(0.00)	0.00
Service	0.74	(0.07)	0.06
Phase	0.20	(0.00)	0.12
Overhaul	14.93	(13.33)	0.12
Special	0.33	(0.00)	0.00
Total	16.28	(13.40)	0.30
Fail-Safe Damage	0.00	(0.00)	0.02
Failures	0.00	(0.00)	----
Service Damage	0.23	(0.00)	0.15
Production Defects	0.00	(0.00)	0.00

(*) FUS-DOR-FRF only

AIRCRAFT SERVICE LIFE: 6000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: FUS-DOR-FRM

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	
OCCURRENCES	228
MIN (HRS)	3309
MAX (HRS)	59790
AVG (HRS)	45571

PRODUCTION DEFECTS

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	
OCURRENCES	0
MIN (IN)	0.
MAX (IN)	0.
Avg (IN)	0.

D-LEVEL	82	SPECIAL	42
	.31		.29
	8.86		8.89
	1.67		2.90

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES		A-LEVEL
MIN(SQ.IN)	0.	0
MAX(SQ.IN)	0.	
AVG(SQ.IN)	0.	

9-LEVEL	24	SPECIAL
	.79	5
21.48		2.50
15.93		75.06
		27.22

INSPECTION INTERVALS (HRS)

INITIAL	SHORTEST	LONGEST
50	50	50

1000	1600
1000	1600
2815	16004

NUMBER OF SPECIAL INSPECTIONS CONDUCTED:	5
NUMBER OF STRUCTURAL MODIFICATIONS:	2
NUMBER OF AIRCRAFT MODIFIED IN SERVICE:	75
ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG:	
ESTIMATED ELEMENT TYPE FAILURE RATE:	7.87E-15
SAMPLE CRG. LGT. MEAN(IN)	2.11

SAMPLE	CRK.	LGT.	MEAN(IN)	2.11	SAMPLE	STD.	DEV.
CRK.	LGT.	VS	PROBABILITY	CURVE	FIT	CONST:	A = -10.774805334145

B = .320231539200

STRUCTURAL FAILURES

AIRCRAFT NO.	FLT. HOURS	STA. NO.
1	100	100
2	100	100
3	100	100
4	100	100
5	100	100
6	100	100
7	100	100
8	100	100
9	100	100
10	100	100
11	100	100
12	100	100
13	100	100
14	100	100
15	100	100
16	100	100
17	100	100
18	100	100
19	100	100
20	100	100
21	100	100
22	100	100
23	100	100
24	100	100
25	100	100
26	100	100
27	100	100
28	100	100
29	100	100
30	100	100
31	100	100
32	100	100
33	100	100
34	100	100
35	100	100
36	100	100
37	100	100
38	100	100
39	100	100
40	100	100
41	100	100
42	100	100
43	100	100
44	100	100
45	100	100
46	100	100
47	100	100
48	100	100
49	100	100
50	100	100
51	100	100
52	100	100
53	100	100
54	100	100
55	100	100
56	100	100
57	100	100
58	100	100
59	100	100
60	100	100
61	100	100
62	100	100
63	100	100
64	100	100
65	100	100
66	100	100
67	100	100
68	100	100
69	100	100
70	100	100
71	100	100
72	100	100
73	100	100
74	100	100
75	100	100
76	100	100
77	100	100
78	100	100
79	100	100
80	100	100
81	100	100
82	100	100
83	100	100
84	100	100
85	100	100
86	100	100
87	100	100
88	100	100
89	100	100
90	100	100
91	100	100
92	100	100
93	100	100
94	100	100
95	100	100
96	100	100
97	100	100
98	100	100
99	100	100
100	100	100

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. FLT. HOURS SYA-120

	0.	0.	0.	0.
AVERAGE FLIGHT CRACKS	0.	0.	0.	0.
AVERAGE PRESSURE CRACKS	.413	.413	.294	.294

AIRCRAFT TYPE: HYBRID
 AIRCRAFT SERVICE LIFE: 60000 HOURS

NUMBER OF AIRCRAFT IN FLEET: 500

SUMMARY OF STRUCTURAL ELEMENT: FVS-000-FM

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
OCCURRENCES	16	5		0		6	
MIN(MS)	18217	2545		0			
MAX(MS)	59481	54228		0			
AVG(MS)	42426	23773		0			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES	0	0		3		1		5	
MIN(IN)	0.	0.		3.72		1.92		1.24	
MAX(IN)	0.	0.		7.38		1.92		5.25	
AVG(IN)	0.	0.		5.36		1.92		3.97	

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES	0	1		0		2		0	
MIN(SG.IN)	0.	15.28		0.		7.32		0.	
MAX(SG.IN)	0.	15.28		0.		28.76		0.	
AVG(SG.IN)	0.	15.28		0.		15.84		0.	
INSPECTION INTERVALS(MS)	50	375		1000		1600			
INITIAL	50	375		1000		1600			
SHOOT-TEST	50	375		3520		23730			
LOWEST									

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED-IN SERVICE: 0

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 5.01E-16/HR

ESTIMATED ELEMENT TYPE FAILURE RATE: 5.53E-15/HR

SAMPLE CMC, LOT, MEAN(IN) 3.49 SAMPLE STD. DEV. 2.988

CMC, LOT, VS PROBABILITY CURVE FIT CONST: A = -18.793726434892 B = .315654428939

STRUCTURAL FAILURES

FLY. HOURS

AIRCRAFT NO.

STA. NO.

AVERAGE FLIGHT CRACKS .245 .245 .244 .244 .174

AVERAGE PRESSURE CRACKS .213 .213 .294 .294 .293

RESIDUAL STRENGTH EQUALS FAIL-SAFE SYSTEM
 AIRCRAFT NO. STA. NO.

TABLE 4. DEMONSTRATION RESULTS FOR WINDOW FRAME
(FUS-WIN-FRM & FUS-WIN-FRF)

	Defects Per Million Flight Hours	
	<u>SAIFE (*)</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00 (0.00)	0.06
Service	0.00 (0.00)	0.06
Phase	2.74 (0.67)	0.12
Overhaul	13.40 (0.80)	0.67
Special	2.86 (0.33)	0.18
Total	<u>19.00 (1.80)</u>	<u>1.09</u>
Corrosion Detected		
Preflight	0.00 (0.00)	0.02
Service	0.00 (0.00)	0.00
Phase	0.00 (0.00)	0.02
Overhaul	0.27 (0.07)	0.02
Special	0.00 (0.00)	0.02
Total	<u>0.27 (0.07)</u>	<u>0.08</u>
Fail-Safe Damage	0.00 (0.00)	0.02
Failures	0.00 (0.23)	---
Service Damage	0.43 (0.07)	0.18
Production Defects	0.23 (0.23)	0.00

(*) FUS-WIN-FRF only

PROBABLE TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 5000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: FUS-MIN-FRM

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	COMPOSITION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	759	5	28	1
MIN(MPS)	625	4116	425	---
MAX(MPS)	59977	55696	59112	---
AVG(MPS)	45947	36718	51916	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	31	189	5
MIN(IN)	0	0	.01	.21	.02
MAX(IN)	0	0	2.99	5.61	6.05
AVG(IN)	0	0	1.01	1.22	1.22

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	3	---
MIN(SQ.IN)	0	0	0	2.26	---
MAX(SQ.IN)	0	0	0	24.17	---
AVG(SQ.IN)	0	0	0	12.67	---

INSPECTION INTERVALS(HRS)

INITIAL	50
SHORTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 13

NUMBER OF STRUCTURAL MODIFICATIONS: 13
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 268
 ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 4.34E-14/yr
 ESTIMATED ELEMENT TYPE FAILURE RATE: 5.12E-13/yr

SAMPLE CRK. LST. MEAN(IN) 1.15 SAMPLE STD. DEV. 1.074
 CRK. LST. VS PROBABILITY CURVE FIT CONST: A = -16.757431124332

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
 AIRCRAFT NO. 630644575572

STRUCTURAL FAILURES

AIRCRAFT NO. STA. NO.

AVERAGE FLIGHT CRACKS 1.605 1.605 .018 .018 .048
 AVERAGE PRESSURE CRACKS .561 .561 .071 .071 .048

AIRCRAFT TYPE: HYBRID

AIRCRAFT SERVICE LIFE: 60000 HOURS

NUMBER OF AIRCRAFT IN FLEET: 500

SUMMARY OF STRUCTURAL ELEMENT: FUS-MAIN-FR

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		COMPOSITION		SERVICE DAMAGE		PRODUCTION DEFECTS	
OCCURRENCES		1		3		7	
MIN (HRS)		3216		2337			
MAX (HRS)		3216		22936			
AVG (HRS)		3216		15293			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES		0		18		12		5	
MIN (SQ. IN)		0.		.72		.44		2.44	
MAX (SQ. IN)		0.		2.06		0.15		3.44	
AVG (SQ. IN)		0.		2.37		2.48		2.95	

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES		0		0		1		0	
MIN (SQ. IN)		0.		0.		3.17		0.	
MAX (SQ. IN)		0.		0.		3.17		0.	
AVG (SQ. IN)		0.		0.		3.17		0.	

INSPECTION INTERVALS (HRS)

INITIAL	50
SHORTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 3

NUMBER OF STRUCTURAL MODIFICATIONS: 2

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 138

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 6.77E - 15/2E

ESTIMATED ELEMENT TYPE FAILURE RATE: 1.10E - 11/2E

SAMPLE CRK. LGT. MEAN (IN) 1.93

SAMPLE STD. DEV. 1.341

CRK. LGT. 95 PROBABILITY CURVE FIT CONST: A = -10.835435090637 B = .601585140806

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO. _____

FLY. HOURS _____

STA. NO. _____

STRUCTURAL FAILURES

AIRCRAFT NO. _____

FLY. HOURS _____

AVERAGE FLIGHT CRACKS 1.595 1.605 .818 .818 .649

AVERAGE PRESSURE CRACKS .561 .561 .471 .471 .446

RANDOM NUMBER SEEDS
 SEED(1) = 5442151111225
 SEED(2) = 4107917837438
 SEED(3) = 2633325415684
 SEED(4) = 18463836437279
 SEED(5) = 275634274687416
 SEED(6) = 240291917969545
 SEED(7) = 13437324463682
 SEED(8) = 19863442838954
 SEED(9) = 158588139651853
 SEED(10) = 198321784538934

NON-EXPLORATORY DETECTION LEVEL AT 52399 MODIFICATION 1

ICM =	0.	ICM =	.951	ICM =	.812	TIME =	52399
ICM =	1.	ICM =	.963	ICM =	.893	TIME =	57288
ICM =		ICM =	.878	ICM =	.817	TIME =	59315
ICM =		ICM =	.875	ICM =	.886	TIME =	66757
ICM =		ICM =	.891	ICM =	.886	TIME =	69238
ICM =		ICM =	.832	ICM =	.884	TIME =	81641

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

STRUCTURAL ELEMENT: FUS-MIN-FRM-0930

PREDICTED AVERAGE FATIGUE LIFE: 22910 HOURS ACTUAL AVERAGE FATIGUE LIFE: 78114 HOURS

FATIGUE TEST LIFE: 69033 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
OCCURRENCES							
MIN (HRS)	34	0	0	0	0	0	0
MAX (HRS)	13237	0	0	0	0	0	0
AVG (HRS)	59951	0	0	0	0	0	0
	45699	0	0	0	0	0	0

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES									
MIN (IN)	0	0	0	3	4	9			
MAX (IN)	0.	0.	1.45	2.01	2.06	1.34			
AVG (IN)	0.	0.	2.00	2.00	1.21	6.45			
						7.87			

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES									
MIN (SQ. IN)	0	0	0	0	0	0			
MAX (SQ. IN)	0.	0.	0.	0.	0.	0.			
AVG (SQ. IN)	0.	0.	0.	0.	0.	0.			

INSPECTION INTERVALS (HRS)

INITIAL	50	375	1000	3200	0	15	3000
2	50	375	1125	4800	1	11	4600
3	50	375	1266	7200	1	8	15000
4	50	375	1424	10000	1	6	26500
5	50	375	1502	16200	1	5	42000
6	50	375	2020	20250	1	6	59315
7	50	375	2002	7000	1	17	59315
8	50	375	2002	2461	1	49	59315

CRACK LENGTHS AND CORRESPONDING CUMULATIVE PROBABILITY OF FAILURE

CRACK LET.

PROB. OF FAILURE

AIRCRAFT NO.

141	43249	2.41	1.9E-10
28	54061	1.73	1.9E-10

TABLE 5. DEMONSTRATION RESULTS FOR FUSELAGE -
MAIN FRAME, BOTTOM

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	5.83	0.57
Service	2.80	0.67
Phase	1.30	0.47
Overhaul	9.80	1.53
Special	1.27	0.38
Total	<u>21.00</u>	<u>3.62</u>
Corrosion Detected		
Preflight	0.43	0.34
Service	0.13	1.10
Phase	0.07	0.41
Overhaul	1.83	1.99
Special	0.63	0.55
Total	<u>3.09</u>	<u>4.39</u>
Fail-Safe Damage	0.00	0.22
Failures	0.00	----
Service Damage	0.73	0.44
Production Defects	0.17	0.06

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 40000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: FUS-MFR-BOT

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
	FIRST CRACK					
OCCURRENCES	1111	278	28		5	
MIN(MRS)	322	112	945			
MAX(MRS)	59979	59657	57826			
AVG(MRS)	44982	38535	32413			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL
	A-LEVEL						
OCCURRENCES	175	84	39		744		34
MIN(IN)	.65	.66	.67		.21		.33
MAX(IN)	7.66	5.41	5.34		6.89		7.81
AVG(IN)	2.20	2.22	2.89		1.71		2.84

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL
	A-LEVEL						
OCCURRENCES	13	4	2		55		18
MIN(SQ-IN)	1.74	4.39	2.48		1.34		2.42
MAX(SQ-IN)	38.11	16.29	6.52		176.13		134.28
AVG(SQ-IN)	12.42	8.23	4.66		41.64		67.43
INSPECTION INTERVALS(MRS)	58	375	1800		1600		
INITIAL	58	375	1800		1600		
SHORTEST	58	375	1800		1600		
LONGEST	58	375	5000		32000		

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 37

NUMBER OF STRUCTURAL MODIFICATIONS: 17

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 1373

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 4.54E-18/MH

ESTIMATED ELEMENT TYPE FAILURE RATE: 4.54E-18/MH

SAMPLE CRK. LBT. MEAN(IN) 1.69 SAMPLE STD. DEV. 1.301

CRK. LBT. VS PROBABILITY CURVE FIT CONST: A = -13.987645224737 B = .484705690765

AIRCRAFT NO.	STRUCTURAL FAILURES FLT. HOURS	STA. NO.
--------------	-----------------------------------	----------

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. FLT. HOURS

AVERAGE FLIGHT CRACKS 1.685 1.605 .018 .814 .649
AVERAGE PRESSURE CRACKS .561 .561 .671 .671 .668

TABLE 6. DEMONSTRATION RESULTS FOR FUSELAGE - MAIN FRAME,
SIDE (FUS-MFR-SID & FUS-MFF-SID)

	Defects Per Million Flight Hours	
	<u>SAIFE (*)</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00 (0.00)	0.34
Service	0.00 (0.00)	0.69
Phase	4.80 (1.40)	0.76
Overhaul	29.07 (8.67)	3.57
Special	10.06 (5.33)	0.69
Total	<u>43.93(15.40)</u>	<u>6.05</u>
Corrosion Detected		
Preflight	0.00 (0.00)	0.00
Service	0.00 (0.00)	0.07
Phase	0.20 (0.13)	0.07
Overhaul	2.00 (1.33)	0.54
Special	0.20 (0.07)	0.07
Total	<u>2.40 (1.53)</u>	<u>0.75</u>
Fail-Safe Damage	0.00 (0.00)	0.04
Failures	0.00 (0.00)	---
Service Damage	0.50 (0.03)	0.33
Production Defects	0.07 (0.00)	0.15

(*) FUS-MFF-SID only

AIRCRAFT TYPE: MYRDI

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 6000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: FUS-MFR-SID

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	871	45	22	
MIN(MRS)	1553	101	3439	
MAX(MRS)	59937	59365	57862	
AVG(MRS)	43.31	36653	27932	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	51	308	71
MIN(IN)	0.	0.	.47	.19	.29
MAX(IN)	0.	0.	4.16	6.74	7.14
AVG(IN)	0.	0.	1.68	1.52	2.23

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	1	16	2
MIN(SQ.IN)	0.	0.	10.31	2.35	4.44
MAX(SQ.IN)	0.	0.	10.31	76.78	57.74
AVG(SQ.IN)	0.	0.	10.31	18.54	20.62
INSPECTION INTERVALS(MRS)	50	375	1000	1600	
INITIAL	50	375	1000	1600	
SHORTEST	50	375	4399	31641	
LONGEST	50	375	4399	31641	

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 17

NUMBER OF STRUCTURAL MODIFICATIONS: 14

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 1301

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 4.80E-18/Hr

ESTIMATED ELEMENT TYPE FAILURE RATE: 2.88E-17/Hr

SAMPLE CRK. LGT. MEAN(IN) 1.51 SAMPLE STD. DEV. 1.23

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -13.580978335637 B = .586088444336

AIRCRAFT NO.	STRUCTURAL FAILURES FLT. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH AIRCRAFT NO.	FLT. HOURS	STA. NO.
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AVERAGE FLIGHT CRACKS 1.605 1.605 .016 .016 .069

AVERAGE PRESSURE CRACKS .561 .561 .471 .471 .445

TABLE 7. DEMONSTRATION RESULTS FOR FUSELAGE - MAIN FRAME, TOP

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	2.23	2.86
Overhaul	6.07	1.57
Special	1.37	1.14
Total	<u>9.67</u>	<u>5.57</u>
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	0.07	0.00
Overhaul	0.33	0.00
Special	0.07	0.00
Total	<u>0.47</u>	<u>0.00</u>
Fail-Safe Damage	0.00	0.00
Failures	0.00	---
Service Damage	0.33	0.02
Production Defects	0.10	0.15

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: FUS-WF-B-TOP

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	47	28	
MIN(HRS)	813	3807	
MAX(HRS)	586	58863	
AVG(HRS)	31215	32395	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	47	182	41
MIN(IN)	0.	0.	.54	.28	.35
MAX(IN)	0.	0.	4.57	5.92	6.33
AVG(IN)	0.	0.	1.80	1.76	2.00

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	2	16	2
MIN(SQ.IN)	0.	0.	13.58	1.95	40.63
MAX(SQ.IN)	0.	0.	17.50	47.22	51.14
AVG(SQ.IN)	0.	0.	15.50	21.95	45.81

INSPECTION INTERVALS(HRS)
INITIAL 50
SHORTEST 50
LONGEST 50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 14

NUMBER OF STRUCTURAL MODIFICATIONS: 23

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 1204

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 6.70E-18/HR

ESTIMATED ELEMENT TYPE FAILURE RATE: 5.79E-18/HR

SAMPLE CRK. LST. WEAR(IN) 1.42 SAMPLE STD. DEV. 1.242

CRK. LST. VS PROBABILITY CURVE FIT CONST: A = -13.675825818191 = .1548120472

STRUCTURAL FAILURES
AIRCRAFT NO. _____ STA. NO. _____
FLT. HOURS _____
RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. _____ STA. NO. _____
FLT. HOURS _____

AVERAGE FLIGHT CRACKS 1.405 1.465 .618 .418 .649
AVERAGE PRESSURE CRACKS .561 .561 .471 .471 .446

TABLE 8. FUSELAGE - STRINGER, BOTTOM (NOT INCLUDED IN REVISED DEMONSTRATION)

TABLE 9. DEMONSTRATION RESULTS FOR FUSELAGE - STRINGER, SIDE

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.34
Service	0.00	0.69
Phase	1.80	0.76
Overhaul	14.40	3.57
Special	4.87	0.69
Total	<u>21.07</u>	<u>6.05</u>
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.07
Phase	0.73	0.07
Overhaul	1.40	0.54
Special	0.07	0.07
Total	<u>2.20</u>	<u>0.75</u>
Fail-Safe Damage	0.03	0.04
Failures	0.00	---
Service Damage	0.20	0.33
Production Defects	0.17	0.15

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 68000 HOURS

SUMMARY OF STRUCTURAL ELEMENTS: FUS-STR-SID NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES			
MIN(MRS)	51	24	5
MAX(MRS)	2876	4814	
Avg(MRS)	59991	55672	
	44668	31952	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES					
MIN(IN)	0	0	27	216	73
MAX(IN)	0	0	59	18	27
Avg(IN)	0	0	15.91	4.68	3.24
			2.87	1.31	1.47

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES					
MIN(SQ.IN)	0	0	11	21	1
MAX(SQ.IN)	0	0	1.17	3.31	46.7
Avg(SQ.IN)	0	0	35.64	29.42	46.9
			12.54	13.14	46.9
INSPECTION INTERVALS (HRS)					
INITIAL	50	375	1000	1600	
SHORTEST	50	375	1000	814	
LONGEST	50	375	5000	32000	

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 21
NUMBER OF STRUCTURAL MODIFICATIONS: 21
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 1692
ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 1.61E-11/MR
ESTIMATED ELEMENT TYPE FAILURE RATE: 3.53E-10/MR
SAMPLE CRK. LST. MEAN(IN) 1.17 SAMPLE STD. DEV. 1.582
CRK. LST. VS PROBABILITY CURVE FIT CONST: A = -16.568342933991 B = -383489422776

AIRCRAFT NO.	STRUCTURAL FAILURES	STA. NO.	FLY. HOURS	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	FLY. HOURS	STA. NO.
					52255	1100

AVERAGE FLIGHT CRACKS 1.605 1.645 .818 .543

RANDOM NUMBER SEEDS
 SEED(1) = 11064690024000
 SEED(2) = 170194057769241
 SEED(3) = 39223220592327
 SEED(4) = 213492109276008
 SEED(5) = 80664054951820
 SEED(6) = 74565644705561
 SEED(7) = 264918200053471
 SEED(8) = 1107530570775
 SEED(9) = 117060017000761
 SEED(10) = 109160972049787

SERVICE DAMAGE AIRCRAFT NO. 408
 NON-EXPLORATORY DETECTION LEVEL AT 65072 MODIFICATION 6
 ICPM = 0. MCPM = .074 RCPM = .001 TIME = 65072
 COMBOSION AIRCRAFT NO. 426

AIRCRAFT TYPE: HYBRID

AIRCRAFT SERVICE LIFE: 60000 HOURS

NUMBER OF AIRCRAFT IN FLEET: 500

STRUCTURAL ELEMENT: FUS-STR-SID-1100

ACTUAL AVERAGE FATIGUE LIFE: 232552 HOURS

PREDICTED AVERAGE FATIGUE LIFE: 204240 HOURS

FATIGUE TEST LIFE: 109578 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
OCCURRENCES		1		1		0	
MIN(MRS)		44797		21447			
MAX(MRS)		44797		21447			
AVG(MRS)		44797		21447			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL & SECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES		0		0		1		0	
MIN(IN)		0.		0.		1.69		0.	
MAX(IN)		0.		0.		1.69		0.	
AVG(IN)		0.		0.		1.69		0.	

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES		0		0		0		0	
MIN(SQ.IN)		0.		0.		0.		0.	
MAX(SQ.IN)		0.		0.		0.		0.	
AVG(SQ.IN)		0.		0.		0.		0.	

INSPECTION INTERVALS(MRS)

INITIAL		375		1800		1600		MOD NO		SAMPLING		TIME	
2		50		375		1800		0		30		2288	
3		50		375		1125		0		21		4888	
4		50		375		1266		0		15		8288	
5		50		375		1424		0		11		13688	
6		50		375		1602		0		8		21780	
7		50		375		1882		0		6		33850	
8		50		375		2253		0		7		49038	
9		50		375		2816		0		8		71819	
10		50		375		3520		0		9		86865	
		50		375		4399		0		10			

CRACK LENGTHS AND CORRESPONDING CUMULATIVE PROBABILITY OF FAILURE
FLT. HOURS CPK.LGT.

AIRCRAFT NO.

PROB. OF FAILURE

237
 488
 NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 8
 NUMBER OF STRUCTURAL MODIFICATIONS: 8
 FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 23252 HOURS
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 8
 ESTIMATED ELEMENT FAILURE RATE: 7.98E-12/HR.

1.69
 31.19

1.9E-10
 2.4E-04

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
 AIRCRAFT NO. 488
 58255

STRUCTURAL FAILURES
 AIRCRAFT NO. 488
 FLT. HOURS 58255

TABLE 10. DEMONSTRATION RESULTS FOR FUSELAGE - STRINGER, TOP

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.00
Service	0.00	0.20
Phase	1.53	0.33
Overhaul	5.70	2.78
Special	2.07	3.38
Total	<u>9.30</u>	<u>6.69</u>
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	0.53	0.00
Overhaul	0.83	0.00
Special	0.03	0.00
Total	<u>1.39</u>	<u>0.00</u>
Fail-Safe Damage	0.00	0.00
Failures	0.00	----
Service Damage	0.20	0.06
Production Defects	0.07	0.33

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: FUS-STR-TOP

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	857	56	20	5
MIN (HRS)	76	3186	76	
MAX (HRS)	59988	59929	54449	
AVG (HRS)	45546	30460	31511	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	46	171	62
MIN (IN)	0.	0.	.32	.28	.18
MAX (IN)	0.	0.	4.53	4.73	5.75
AVG (IN)	0.	0.	1.36	1.28	1.65

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	16	25	1
MIN (SQ. IN)	0.	0.	2.45	1.23	40.25
MAX (SQ. IN)	0.	0.	28.83	46.13	40.25
AVG (SQ. IN)	0.	0.	13.17	12.89	40.25

INSPECTION INTERVALS (HRS)
INITIAL 50
SHORTTEST 50
LONGEST 50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 16
NUMBER OF STRUCTURAL MODIFICATIONS: 15
NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 638
ESTIMATED ELEMENT TYPE FAILURE RATE: 2.45E-16/HR
ESTIMATED ELEMENT TYPE FAILURE RATE: 2.45E-16/HR
SAMPLE CRK. LGT. MEAN (IN) 1.06
SAMPLE STD. DEV. 1.034
CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -13.613661502544 B = .628636633375

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
AIRCRAFT NO. FLT. HOURS

STRUCTURAL FAILURES
AIRCRAFT NO. FLT. HOURS

AVERAGE FLIGHT CRACKS 1.605 1.605 .818 .818 .649
AVERAGE PRESSURE CRACKS .413 .413 .294 .294 .293

TABLE 11. DEMONSTRATION RESULTS FOR WING - ACCESS FRAME

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	2.33	0.04
Service	1.93	0.49
Phase	0.53	0.40
Overhaul	2.87	0.81
Special	1.00	0.77
Total	<u>8.66</u>	<u>2.51</u>
Corrosion Detected		
Preflight	3.13	0.00
Service	2.27	0.00
Phase	0.73	0.00
Overhaul	2.53	0.00
Special	0.53	0.00
Total	<u>9.19</u>	<u>0.00</u>
Fail-Safe Damage	0.00	0.18
Failures	0.00	----
Service Damage	0.07	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: MYHMD

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: #MS-ACC-FW

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	376	205	4	0
MIN(HRS)	5949	267	11286	
MAX(HRS)	59941	59921	55016	
AVG(HRS)	43677	30858	26984	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	M-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	35	29	8	43	15
MIN(IN)	.64	.51	.61	.25	.31
MAX(IN)	5.04	2.94	1.84	2.10	2.91
AVG(IN)	1.49	1.21	1.05	.97	1.57

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	M-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	47	34	11	38	8
MIN(SQ.IN)	1.13	1.09	1.25	.60	8.25
MAX(SQ.IN)	21.47	22.63	16.24	56.31	63.15
AVG(SQ.IN)	6.30	5.79	5.70	13.45	24.57

INSPECTION INTERVALS(HRS)

INITIAL	50
SHORTEST	50
LONGEST	375

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 5

NUMBER OF STRUCTURAL MODIFICATIONS: 8

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 457

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 3.44E-12/YR

ESTIMATED ELEMENT TYPE FAILURE RATE: 4.34E-12/YR

SAMPLE CRK. LGT. MEAN(IN) .94

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -7.45 * 10²¹ 18422

M = .715125308287

AIRCRAFT NO.	STRUCTURAL FAILURES	FLY. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	FLY. HOURS	STA. NO.
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AVERAGE FLIGHT CRACKS 1.405 1.505 814 .549

AVERAGE PRESSURE CRACKS .561 .561 .471 .446

TABLE 12. DEMONSTRATION RESULTS FOR WING - SPAR, AFT
(WNG-SPR-AFT & WNG-SPS-AFT)

	Defects Per Million Flight Hours	
	<u>SAIFE (*)</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.40 (0.00)	0.11
Service	0.47 (0.00)	1.62
Phase	1.13 (0.20)	0.72
Overhaul	3.34 (1.27)	1.89
Special	0.40 (0.20)	4.42
Total	5.74 (1.67)	8.76
Corrosion Detected		
Preflight	0.20 (0.00)	0.35
Service	0.07 (0.00)	0.00
Phase	0.07 (0.00)	0.00
Overhaul	0.20 (0.00)	0.00
Special	0.07 (0.00)	0.00
Total	0.61 (0.00)	0.35
Fail-Safe Damage	0.00 (0.00)	0.04
Failures	0.00 (0.00)	---
Service Damage	0.00 (0.00)	0.00
Production Defects	0.03 (0.00)	0.04

(*) WNG-SPS-AFT only

INSPECTION TIME: 174000

NUMBER OF AIRCRAFT IN FLEET: 1 AIRCRAFT SERVICE LIFE: 4555 HOURS

REMARKS: 2 STRUCTURAL ELEMENTS: 005-500-AFT

MODE AND TIME TO INITIATION OF AIRCRAFT DEFECTS

DEFECTS	CRACKS	SERVICE DAMAGE	PRODUCTION DEFECTS
174	32	1	1
175	250	1	---
176	250	1	---
177	250	1	---
178	250	1	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

DEFECTS	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
174	1	1	10	31	3
175	1	1	20	27	1.02
176	1	1	2.24	2.82	2.78
177	1	1	1.64	2.4	2.22

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

DEFECTS	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
174	1	1	1	3	1
175	1	1	7.69	1.02	0.54
176	1	1	7.69	4.21	0.54
177	1	1	7.69	2.61	0.54

INSPECTION INTERVALS (HOURS)

INITIAL	56
SHORTEST	56
LONGEST	64

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 7

NUMBER OF STRUCTURAL MODIFICATIONS: 7

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 7

ESTIMATED ELEMENT TYPE FAILURE RATE USING AGE: 1.55E-13/yr

ESTIMATED ELEMENT TYPE FAILURE RATE: 1.09E-12/yr

SAMPLE CRK. LET. MEAN (IN): 0.23 SAMPLE STD. DEV. 0.11

CRK. LET. 95 PROBABILITY CRVE FIT CRVET: 1 = 70.607315445343 2 = 0.057046193

STRUCTURAL FAILURES
AIRCRAFT NO. 174 HOURS 5700
RESIDUAL STRENGTH SMALLS FAIL-SAFE STRENGTH
FLYING HOURS 31000

AVERAGE FLIGHT CRACKS 1.495 1.00E 0.01 0.01 0.01 0.01
AVERAGE PRESSURE CRACKS 0.54 0.06 0.01 0.01 0.01 0.01

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-SPS-AFT
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	39	0	0	0
MIN(MRS)	15567	0	0	---
MAX(MRS)	59302	0	0	---
AVG(MRS)	44514	0	0	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	3	19	3
MIN(IN)	0.	0.	1.65	.54	.61
MAX(IN)	0.	0.	4.84	2.93	2.52
AVG(IN)	0.	0.	3.01	1.46	1.32

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	0	0
MIN(SQ-IN)	0.	0.	0.	0.	0.
MAX(SQ-IN)	0.	0.	0.	0.	0.
AVG(SQ-IN)	0.	0.	0.	0.	0.
INSPECTION INTERVALS(MRS)	50	375	1000	1600	
INITIAL	50	375	1000	1600	
SHORTEST	50	375	3520	23730	
LONGEST					

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 2

NUMBER OF STRUCTURAL MODIFICATIONS: 1

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 5.45E-13/HR

ESTIMATED ELEMENT TYPE FAILURE RATE: 5.45E-13/HR

SAMPLE CRK. LOT. MEAN(IN) 1.58 SAMPLE STD. DEV. .957

CRK. LOT. VS PROBABILITY CURVE FIT CONST: A = -7.537710713338 Y = .468448202394

AIRCRAFT NO.	STRUCTURAL FAILURES FLT. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH AIRCRAFT NO.	STA. NO.
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AVERAGE FLIGHT CRACKS 1.405 1.665 .514 .514 .514
AVERAGE PRESSURE CRACKS .561 .561 .571 .571 .571

TABLE 13. DEMONSTRATION RESULTS FOR WING - SPAR, CENTER

	Defects Per Million <u>SAIFE</u>	Flight Hours <u>MRR/SDR</u>
Crack Detected		
Preflight	4.47	0.00
Service	3.60	0.00
Phase	2.40	0.00
Overhaul	16.60	0.20
Special	6.47	0.00
Total	<u>33.54</u>	<u>0.20</u>
Corrosion Detected		
Preflight	0.33	0.00
Service	0.00	0.00
Phase	0.07	0.00
Overhaul	0.27	0.00
Special	0.20	0.00
Total	<u>0.87</u>	<u>0.00</u>
Fail-Safe Damage	0.0	0.02
Failures	0.00	---
Service Damage	0.00	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: MYRAID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-SPR-CEN

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
OCCURRENCES	2703	28		1		1	
MIN(MRS)	3661	2375		45985			
MAX(MRS)	59043	56392		45985			
AVG(MRS)	44356	27750		45985			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES	67	54		36		249		97	
MIN(IN)	.58	.48		.46		.16		.21	
MAX(IN)	2.05	2.15		1.82		2.43		2.72	
AVG(IN)	1.06	.92		.91		.81		.97	

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES	5	0		1		4		2	
MIN(SQ.IN)	1.00	0		2.81		7.34		5.07	
MAX(SQ.IN)	6.92	0		2.41		44.16		31.21	
AVG(SQ.IN)	3.74	0		2.61		17.90		16.23	

INSPECTION INTERVALS(MRS)

INITIAL	50	375	1000	3200
SHORTEST	50	375	1000	1600
LONGEST	50	375	6567	32000

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 13

NUMBER OF STRUCTURAL MODIFICATIONS: 16
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 1156
 ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 1.00E-11/HK
 ESTIMATED ELEMENT TYPE FAILURE RATE: 8.10E-11/HK
 SAMPLE CRK. LGT. MEAN(IN) .73 SAMPLE STD. DEV. .448
 CRK. LGT. VS PROBABILITY CURVE FIT CONST: 4 = -7.605411246000 = .772555984015

STRUCTURAL FAILURES		RESIDUAL STRENGTH	
AIRCRAFT NO.	FLT. HOURS	AIRCRAFT NO.	STA. NO.

AVERAGE FLIGHT CRACKS 1.605 1.605 .016 .018 .049
 AVERAGE PRESSURE CRACKS .561 .561 .0471 .0471 .0448

TABLE 14. DEMONSTRATION RESULTS FOR WING - SPAR, FORWARD

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.04
Service	0.00	0.49
Phase	0.00	0.40
Overhaul	0.00	0.81
Special	0.00	0.77
Total	<u>0.00</u>	<u>2.51</u>
Corrosion Detected		
Preflight	0.20	0.00
Service	0.07	0.00
Phase	0.13	0.00
Overhaul	0.73	0.00
Special	0.00	0.00
Total	<u>1.13</u>	<u>0.00</u>
Fail-Safe Damage	0.00	0.18
Failures	0.00	-----
Service Damage	0.00	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: MYRMD

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: ENG-SPO-4-0

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	COMPOSITION	SE-VICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	30	0	0
MIN(MRS)	31272	0	0
MAX(MRS)	52704	0	0
AVG(MRS)	43254	0	0

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	0
MIN(IN)	0	0	0	0
MAX(IN)	0	0	0	0
AVG(IN)	0	0	0	0

NUMBER AND LIFE OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	3	2	11	0
MIN(SO.IN)	4.52	2.14	0.72	0
MAX(SO.IN)	14.65	2.97	47.23	0
AVG(SO.IN)	9.55	4.02	25.85	0
INSPECTION INTERVALS(MRS)	56	1000	1400	0
INITIAL	56	1000	1400	0
SHORTTEST	56	1000	1400	0
LONGEST	56	1000	1400	0

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0

ESTIMATED ELEMENT TYPE FAILURE RATE (MRS) AVG: 1.40E-14/MRS

ESTIMATED ELEMENT TYPE FAILURE RATE: 1.40E-14/MRS

SAMPLE CRK. LGT. MEAN(IN) .561 SAMPLE STL. DEV. .237

CRK. LGT. VS PROBABILITY CURVE FIT CONST: a = -1.32511545254 q = 1.403512274526

AIRCRAFT NO.	STRUCTURAL FAILURES	SIDE NO.	REPAIR STRENGTH	FLY. HOURS	FLY. NO.
1	0	0	0	0	0

AVERAGE FLIGHT CRACKS 1.40E-14 1.40E-14 .561 .237 .549
AVERAGE PRESSURE CRACKS .561 .561 .237 .549

TABLE 15. DEMONSTRATION RESULTS FOR WING - STRINGER, AFT
(WNG-STR-AFT & WNG-STS-AFT)

	Defects Per Million Flight Hours	
	<u>SAIFE (*)</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	5.27 (1.27)	0.20
Service	6.20 (0.60)	0.77
Phase	2.87 (0.07)	0.20
Overhaul	22.20 (2.27)	0.85
Special	2.80 (0.33)	1.37
Total	<u>29.34 (4.54)</u>	<u>3.39</u>
Corrosion Detected		
Preflight	0.47 (0.00)	0.02
Service	0.94 (0.07)	0.02
Phase	0.73 (0.00)	0.02
Overhaul	0.87 (0.07)	0.02
Special	0.20 (0.00)	0.02
Total	<u>3.07 (0.14)</u>	<u>0.10</u>
Fail-Safe Damage	0.00 (0.00)	0.04
Failures	0.00 (0.00)	---
Service Damage	0.20 (0.00)	0.00
Production Defects	0.00 (0.00)	0.04

(*) WNG-STS-AFT only

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT TYPE: MYHRID AIRCRAFT SERVICE LIFE: 6000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-STR-LSA
NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	COMPOSITION	SERVICE DAMAGE	PRODUCTION DEFECTS
1987	29	3	3
3683	45	3483	---
59996	49545	31541	---
45722	32515	14154	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
6P	44	27	211	20
54	44	24	15	16
2.04	1.64	1.44	2.43	1.76
1.05	.65	.74	.77	.74

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
7	5	2	3	7
7.45	2.42	9.62	22.71	29.24
18.46	6.13	7.53	6.16	59.22
7.38	6.25	7.87		41.26

INSPECTION INTERVALS(MSI)

INITIAL	50
SHORTTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 14

NUMBER OF STRUCTURAL MODIFICATIONS: 17

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 371

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 1.10E-11/yr

ESTIMATED ELEMENT TYPE FAILURE RATE: 3.13E-11/yr

SAMPLE CRK. LGT. MEAN(IN) .67 SAMPLE STD. DEV. .455

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -7.6552011157 - = .-47-19827682

STRUCTURAL FAILURES
AIRCRAFT NO. _____ FLT. HOURS _____
PERMANENT STRENGTH FAILURES FALL-SAFE STRENGTH
AIRCRAFT NO. _____ FLT. HOURS _____

AVERAGE FLIGHT CRACKS 1.405 1.402 .036 .012 .004
AVERAGE PRESSURE CRACKS .561 .561 .071 .071 .004

AIRCRAFT TYPE: MYAKID

NUMBER OF AIRCRAFT IN FLEET: 500

AIRCRAFT SERVICE LIFE: 5000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-STIS-LSA

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		COMPOSITION		SERVICE DAMAGE		PRODUCTION DEFECTS	
OCCURRENCES	156	✓		1		0	
	4628		1675		34088		
	59659		18332		34088		
	44827		17403		38888		

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES	10	✓		1		34		5	
	61		47		61		22		24
	1.87		1.25		63		1.67		1.23
	.07		.43		63		.62		.67

NUMBER AND AREA OF COMPOSITION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
OCCURRENCES	7	✓		0		1		6	
	0.		1.57		0.		7.55		0.
	0.		1.59		0.		7.55		0.
	0.		1.59		0.		7.55		0.

INSPECTION INTERVALS (HRS)

INITIAL	50
SHORTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1

NUMBER OF STRUCTURAL MODIFICATIONS: 1
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 300
 ESTIMATED ELEMENT TYPE FAILURE RATE (KINS AVG: 1.50E-12/H)
 ESTIMATED ELEMENT TYPE FAILURE RATE (KINS AVG: 1.50E-12/H)
 SAMPLE CRK. LGT. MEAN (IN) 107
 CRK. LGT. VS PROBABILITY CLAVE FIT TEST: A = 7.2E-4164450550

STRUCTURAL FAILURES

AIRCRAFT NO.	FLY. HOURS	FLY. NO.
--------------	------------	----------

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO.

FLY. HOURS

FLY. NO.

AVERAGE FLIGHT CRACKS 1.605 1.605 1.614 1.614 1.614
 AVERAGE PRESSURE CRACKS .561 .561 .561 .561 .561

AIRCRAFT TYPE: MYRAD

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 48888 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-STR-USA

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
	MIN(MS)	MAX(MS)	MIN(MS)	MAX(MS)	MIN(MS)	MAX(MS)	MIN(MS)	MAX(MS)
249	13287	59963	39	51060	2	49005	0	---
AVG(MS)	45366	26794			35342			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL		H-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
	MIN(IN)	MAX(IN)	MIN(IN)	MAX(IN)	MIN(IN)	MAX(IN)	MIN(IN)	MAX(IN)	MIN(IN)	MAX(IN)
0	0	0	35	43	15	84	84	17	17	17
1	0	0	6.25	7.27	1.85	6.14	6.14	5.74	5.74	5.74
2	0	0	1.75	3.23	7.27	1.75	1.75	3.23	3.23	3.23

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL		H-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
	MIN(SQ.IN)	MAX(SQ.IN)	MIN(SQ.IN)	MAX(SQ.IN)	MIN(SQ.IN)	MAX(SQ.IN)	MIN(SQ.IN)	MAX(SQ.IN)	MIN(SQ.IN)	MAX(SQ.IN)
0	0	0	2.23	20.99	5	772	772	21.64	21.64	21.64
1	0	0	4.59	10.53	1000	1000	1000	1000	1000	1000
2	0	0	375	375	375	375	375	375	375	375

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 2

NUMBER OF STRUCTURAL MODIFICATIONS: 7

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 0.60E+00/MY

ESTIMATED ELEMENT TYPE FAILURE RATE: 0.00E+00/MY

SAMPLE CRK. LET. MEAN(IN) 2.00 SAMPLE ST. DEV. 1.470

CRK. LET. VS PROBABILITY CURVE FIT CONST: A = -13.675925818191 R = .415481200472

AIRCRAFT NO.	STRUCTURAL FAILURES		STA. NO.		RESIDUAL STRENGTH EQUATION FAIL-SAFE STRENGTH	
	FLT. HOURS	FLT. HOURS	FLT. HOURS	FLT. HOURS	FLT. HOURS	FLT. HOURS

AVERAGE FLIGHT CRACKS 1.685 1.005 .018 .014 .004
AVERAGE PRESSURE CRACKS .061 .061 .071 .071 .008

TABLE 16. DEMONSTRATION RESULTS FOR WING - STRINGER, CENTER

Crack Detected	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Preflight	3.67	0.15
Service	4.20	0.22
Phase	2.33	0.64
Overhaul	11.80	1.05
Special	2.07	1.40
Total	<u>24.07</u>	<u>3.55</u>
Corrosion Detected		
Preflight	0.60	0.00
Service	2.07	0.15
Phase	0.40	0.04
Overhaul	0.93	0.00
Special	0.27	0.33
Total	<u>4.27</u>	<u>0.52</u>
Fail-Safe Damage	0.00	0.28
Failures	0.00	---
Service Damage	0.13	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: MY4M10
 AIRCRAFT SERVICE LIFE: 6080 HOURS

NUMBER OF AIRCRAFT IN FLEET: 500

SUMMARY OF STRUCTURAL ELEMENT: 0MG-SIG-LSC

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
905	33	3	3
481	4478	481	---
59007	59745	18226	---
46792	27835	12263	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	55	37	26	116	16
MIN(SQ. IN)	.57	.44	.75	.14	.21
MAX(SQ. IN)	2.26	1.70	1.70	2.14	1.54
AVG(SQ. IN)	1.09	.91	.87	.77	.81

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	9	5	3	7	1
MIN(SQ. IN)	1.71	2.47	1.03	1.27	0
MAX(SQ. IN)	11.78	6.12	6.78	41.26	0
AVG(SQ. IN)	5.43	4.71	3.71	17.81	0

INSPECTION INTERVALS(HRS)

INITIAL	50
SHORTTEST	50
LOWEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: -

NUMBER OF STRUCTURAL MODIFICATIONS: 14

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 10

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 2.21E-17/HR

ESTIMATED ELEMENT TYPE FAILURE RATE: 2.21E-17/HR

SAMPLE CRG. LGT. MEAN(IN) .67

CRG. LGT. VS PROBABILITY CURVE FIT CONSTS: A = -7.43171717365

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RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

FLY. HOURS

AIRCRAFT NO.

AVERAGE FLIGHT CRACKS 1.695 1.695 1.695 1.695 1.695

CYCLIC PRESSURE CRACKS .561 .561 .561 .561 .561

RANDOM NUMBER SEEDS
 SEED(1) = 4576595174243
 SEED(2) = 110279940959396
 SEED(3) = 190941148356720
 SEED(4) = 276002775007697
 SEED(5) = 199358155946290
 SEED(6) = 273378095177687
 SEED(7) = 194472541440882
 SEED(8) = 232942419092626
 SEED(9) = 195925210203920
 SEED(10) = 7088186488309

NON-EXPLORATORY DETECTION LEVEL AT 44319 MODIFICATION 0

ICPH = 0.	MCPH = .039	RCPH = .004	TIME = 44319
ICPH = 0.	MCPH = .039	RCPH = .008	TIME = 44319
ICPH = 0.	MCPH = .043	RCPH = .009	TIME = 48046
ICPH = 0.	MCPH = .044	RCPH = .010	TIME = 48750
ICPH = 0.	MCPH = .045	RCPH = .013	TIME = 48939
ICPH = 0.	MCPH = .047	RCPH = .014	TIME = 50422
ICPH = 0.	MCPH = .054	RCPH = .013	TIME = 53553
ICPH = 0.	MCPH = .055	RCPH = .011	TIME = 54296
ICPH = 0.	MCPH = .056	RCPH = .016	TIME = 54998
ICPH = 0.	MCPH = .057	RCPH = .017	TIME = 55249
ICPH = 0.	MCPH = .062	RCPH = .017	TIME = 57159
ICPH = 0.	MCPH = .067	RCPH = .017	TIME = 58700
ICPH = 0.	MCPH = .068	RCPH = .013	TIME = 59692
CRACK FOUND ON A/C NO. 294 AT 36000 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .069	RCPH = .028	TIME = 59450
ICPH = .001	MCPH = .070	RCPH = .028	TIME = 60207
ICPH = .001	MCPH = .070	RCPH = .029	TIME = 60488
CRACK FOUND ON A/C NO. 109 AT 59400 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .023	TIME = 65750
CRACK FOUND ON A/C NO. 134 AT 57300 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .023	TIME = 65750
CRACK FOUND ON A/C NO. 135 AT 57200 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .024	TIME = 65750
CRACK FOUND ON A/C NO. 145 AT 56200 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .025	TIME = 65750
CRACK FOUND ON A/C NO. 163 AT 54400 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .026	TIME = 65750
CRACK FOUND ON A/C NO. 165 AT 54200 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .026	TIME = 65750
CRACK FOUND ON A/C NO. 184 AT 52300 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .027	TIME = 65750
CRACK FOUND ON A/C NO. 200 AT 50700 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .028	TIME = 65750
CRACK FOUND ON A/C NO. 205 AT 50200 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .028	TIME = 65750
CRACK FOUND ON A/C NO. 214 AT 49300 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .029	TIME = 65750
CRACK FOUND ON A/C NO. 304 AT 40300 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .073	RCPH = .030	TIME = 65750
CRACK FOUND ON A/C NO. 190 AT 58000 HOURS DURING INTERNAL D INSPECTION			
ICPH = .005	MCPH = .068	RCPH = .023	TIME = 72950

CRACK FOUND ON A/C NO. 191 AT 57900 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .088 MCPH = .024 TIME = 72050
 CRACK FOUND ON A/C NO. 385 AT 38500 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .088 MCPH = .024 TIME = 72050
 ICPH = .081 MCPH = .088 MCPH = .025 TIME = 72280
 ICPH = .081 MCPH = .089 MCPH = .025 TIME = 72425
 ICPH = .081 MCPH = .093 MCPH = .025 TIME = 73632
 ICPH = .081 MCPH = .093 MCPH = .025 TIME = 73632
 ICPH = .081 MCPH = .106 MCPH = .023 TIME = 77171
 ICPH = .081 MCPH = .108 MCPH = .023 TIME = 77546
 CRACK FOUND ON A/C NO. 244 AT 58980 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .023 TIME = 78350
 CRACK FOUND ON A/C NO. 244 AT 58980 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .023 TIME = 78350
 CRACK FOUND ON A/C NO. 349 AT 48400 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .024 TIME = 78350
 CRACK FOUND ON A/C NO. 369 AT 48400 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .024 TIME = 78350
 CRACK FOUND ON A/C NO. 441 AT 39200 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .025 TIME = 78350
 CRACK FOUND ON A/C NO. 461 AT 37200 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .025 TIME = 78350
 CRACK FOUND ON A/C NO. 484 AT 34900 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .111 MCPH = .025 TIME = 78350
 CRACK FOUND ON A/C NO. 309 AT 58700 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .152 MCPH = .021 TIME = 84650
 CRACK FOUND ON A/C NO. 315 AT 58100 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .152 MCPH = .021 TIME = 84650
 CRACK FOUND ON A/C NO. 365 AT 53101 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .152 MCPH = .022 TIME = 84650
 CRACK FOUND ON A/C NO. 393 AT 50400 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .152 MCPH = .022 TIME = 84650
 CRACK FOUND ON A/C NO. 467 AT 42900 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .152 MCPH = .022 TIME = 84650
 ICPH = .081 MCPH = .162 MCPH = .022 TIME = 85775
 ICPH = .081 MCPH = .167 MCPH = .022 TIME = 85775
 ICPH = .081 MCPH = .171 MCPH = .022 TIME = 86541
 ICPH = .081 MCPH = .186 MCPH = .022 TIME = 87411
 ICPH = .081 MCPH = .189 MCPH = .022 TIME = 87514
 ICPH = .081 MCPH = .209 MCPH = .022 TIME = 89317
 CRACK FOUND ON A/C NO. 378 AT 58900 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .230 MCPH = .021 TIME = 90950
 CRACK FOUND ON A/C NO. 393 AT 56800 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .239 MCPH = .022 TIME = 90950
 CRACK FOUND ON A/C NO. 418 AT 54100 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .239 MCPH = .022 TIME = 90950
 CRACK FOUND ON A/C NO. 437 AT 52200 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .239 MCPH = .022 TIME = 90950
 ICPH = .081 MCPH = .278 MCPH = .022 TIME = 92525
 ICPH = .081 MCPH = .278 MCPH = .022 TIME = 92525
 CRACK FOUND ON A/C NO. 477 AT 54500 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .553 MCPH = .020 TIME = 97250
 CRACK FOUND ON A/C NO. 482 AT 54800 HOURS DURING INTERNAL D INSPECTION
 ICPH = .085 MCPH = .553 MCPH = .020 TIME = 97250

AIRCRAFT TYPE: HYBRID
 AIRCRAFT SERVICE LIFE: 60000 HOURS
 STRUCTURAL ELEMENT: WAG-STR-LSC-0543
 PREDICTED AVERAGE FATIGUE LIFE: 193200 HOURS
 ACTUAL AVERAGE FATIGUE LIFE: 66752 HOURS
 FATIGUE TEST LIFE: 9999999 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
190	0	0	0
16636	0	0	---
59716	0	0	---
45316	0	0	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
7	18	10	35	7
.76	.55	.56	.24	.39
1.11	1.59	1.33	1.62	1.54
.94	1.85	.84	.65	.85

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
6	6	0	0	0
0.	0.	0.	0.	0.
0.	0.	0.	0.	0.
0.	0.	0.	0.	0.

INSPECTION INTERVALS (HRS)

INITIAL	NO. NO	SAMPLING	TIME
50	1000	6	2
50	1125	6	4
50	1264	6	2
50	1582	6	4
50	1582	6	1
50	1582	6	1

CRACK LENGTHS AND CORRESPONDING CUMULATIVE PROBABILITY OF FAILURE CENT. LGT.

AIRCRAFT NO.	FLT. HRS	PROB. OF FAILURE
113	37669	.56
74	40603	.97
24	46746	1.17
5	49408	.27
64	45639	1.06

40	48328	.83	1.9C-07
86	49453	1.24	2.8F-07
6	53396	1.13	2.5E-07
256	34148	.85	1.3E-07
16	54349	.87	7.2E-07
261	36000	.51	8.8E-08
269	36750	.55	9.4E-08
115	52542	1.33	2.5E-07
284	34000	.26	6.6E-08
31	57800	1.01	2.6E-07
53	56700	.62	6.0E-08
91	54800	.76	1.5E-07
96	54550	.64	1.5E-07
154	49000	1.54	4.2E-07
181	46300	1.02	2.2E-07
211	43300	.55	1.9E-07
128	52357	.91	2.1E-07
3	60600	1.02	2.2E-07
4	60600	.59	1.1E-07
7	60800	1.47	3.8E-07
68	56988	1.54	4.7E-07
6	60000	.24	5.3E-08
12	60000	1.07	2.1E-07
13	60000	.01	2.2E-09
15	60000	.27	4.7E-08
14	60000	.36	5.4E-08
26	60000	1.99	2.9E-07
30	60000	.51	9.2E-08
36	60000	.78	1.3E-07
41	60000	.65	9.2E-09
42	60000	.43	1.0E-07
48	60000	.96	2.8E-07
49	60000	.50	1.0E-07
55	60000	.51	1.1E-07
57	60000	.55	1.8E-07
58	60000	.45	7.2E-08
61	60000	.16	2.5E-08
62	60000	.44	5.8E-08
67	61000	2.25	5.3E-07
79	60000	1.54	5.4E-07
87	60000	.34	6.6E-08
92	60000	.20	4.1E-08
93	60000	.87	1.9E-07
94	60000	1.04	2.9E-07
99	40000	.65	1.2E-08
109	59800	.72	1.4E-07
134	57300	.75	1.4E-07
135	57200	.78	1.7E-07
145	56200	.72	2.3E-07
163	54480	.72	1.6E-07
165	54200	.34	7.4E-08
184	52300	1.00	2.7E-07
200	50700	.72	1.2E-07
205	50200	1.34	2.9E-07
214	49300	.42	6.8E-08

304	40300	.77	1.4E-07
100	60000	.69	6.9E-08
117	60000	.67	1.0E-07
122	60000	.33	4.0E-08
124	60000	.16	1.0E-08
131	60000	.10	1.4E-08
132	60000	1.30	2.6E-07
133	60000	.04	4.6E-09
141	60000	.07	0.3E-09
149	60000	.96	2.2E-07
152	60000	.41	5.0E-08
156	60000	.06	1.2E-08
162	60000	.10	1.3E-08
167	60000	.28	3.5E-08
190	50000	.54	1.1E-07
191	50000	.43	6.0E-08
305	38500	.76	1.7E-07
259	51250	1.18	2.7E-07
271	50275	.78	2.2E-07
174	60000	.02	3.1E-09
175	60000	.13	2.1E-08
176	60000	2.71	1.1E-06
178	60000	.35	5.5E-08
201	58482	.85	2.0E-07
373	41282	.77	1.9E-07
187	60000	.16	2.7E-08
202	60000	.73	1.2E-07
209	60000	.64	7.7E-08
210	60000	.27	5.0E-08
213	60000	.57	1.0E-07
219	60000	.11	1.3E-08
220	60000	.35	6.1E-08
266	56121	.87	1.6E-07
224	50000	.73	7.0E-08
372	45256	1.22	3.0E-07
225	60000	.51	1.0E-07
227	60000	1.05	2.4E-07
228	60000	.15	3.0E-08
244	58900	.55	1.1E-07
264	55900	.92	2.7E-07
349	48400	1.06	1.5E-07
369	46400	.56	1.2E-07
441	39200	.26	4.4E-08
461	37200	.71	1.7E-07
484	34900	.91	2.3E-07
237	60000	.7	1.4E-07
247	60000	.04	7.1E-09
248	60000	.01	2.0E-09
249	60000	.05	6.2E-09
251	60000	.10	1.5E-08
253	60000	.20	2.3E-08
267	60000	.29	4.9E-08
268	60000	.02	3.2E-09
272	60000	1.76	3.0E-07
275	60000	.41	1.3E-07

429	45000	4.9E-08
438	60000	2.1E-08
442	50000	4.6E-09
450	60000	9.2E-08
452	60000	6.4E-09
463	60000	1.4E-07
470	60000	3.8E-06
478	60000	1.3E-07
491	60000	1.4E-07
496	60000	6.5E-08

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 1
 NUMBER OF STRUCTURAL MODIFICATIONS: 0
 FINAL ACTUAL AVERAGE MODIFIED FATIGUE LIFE: 65752 HOURS
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0
 ESTIMATED ELEMENT FAILURE RATE: 8.13E-13/HP.
 STRUCTURAL FAILURES
 AIRCRAFT NO. _____ FLT. HOURS _____

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
 AIRCRAFT NO. _____ FLT. HOURS _____

RANDOM NUMBER SEEDS
 SEED(1) = 48218933359974
 SEED(2) = 96128553544880
 SEED(3) = 220154459773821
 SEED(4) = 60615141786989
 SEED(5) = 151625472131476
 SEED(6) = 116973481986037
 SEED(7) = 122048974580180
 SEED(8) = 17106951869904
 SEED(9) = 201462486748509
 SEED(10) = 202169824342847

SERVICE DAMAGE AIRCRAFT NO. 415
 COMPOSITION AIRCRAFT NO. 139

NON-EXPLOSIVE DETECTION LEVEL AT 5656 MODIFICATION 6

ICPM = 0.	PCPM = .660	RCPM = .002	TIME = 55656
ICPM = 0.	PCPM = .670	RCPM = .003	TIME = 59026
ICPM = 0.	PCPM = .673	RCPM = .003	TIME = 63082
ICPM = 0.	PCPM = .674	RCPM = .004	TIME = 64733
ICPM = 0.	PCPM = .679	RCPM = .004	TIME = 67672
ICPM = 0.	PCPM = .682	RCPM = .005	TIME = 68572
ICPM = 0.	PCPM = .684	RCPM = .005	TIME = 72035
ICPM = 0.	PCPM = .694	RCPM = .064	TIME = 72188
ICPM = 0.	PCPM = .186	RCPM = .066	TIME = 75394
ICPM = 0.	PCPM = .121	RCPM = .006	TIME = 78454
COMPOSITION AIRCRAFT NO. 397			
ICPM = 0.	PCPM = .132	RCPM = .006	TIME = 80243
ICPM = 0.	PCPM = .133	RCPM = .036	TIME = 86481
ICPM = 0.	PCPM = .141	RCPM = .007	TIME = 81502
ICPM = 0.	PCPM = .214	RCPM = .008	TIME = 87184

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS
 STRUCTURAL ELEMENT: #NG-STR-LSC-0807
 PREDICTED AVERAGE FATIGUE LIFE: 161460 HOURS ACTUAL AVERAGE FATIGUE LIFE: 84488 HOURS
 FATIGUE TEST LIFE: 123898 HOURS

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	46	2	1	0
MIN(MRS)	481	4262	441	-----
MAX(MRS)	59822	45344	481	-----
AVG(MRS)	46616	43803	481	-----

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	17	1	2	1	0
MIN(IN)	.77	1.00	.56	2.14	0.
MAX(IN)	1.34	1.00	1.25	2.14	0.
AVG(IN)	1.02	1.00	.91	2.14	1.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	1	9	0	0
MIN(SQ.IN)	0.	2.87	0.	0.	0.
MAX(SQ.IN)	0.	2.87	0.	0.	0.
AVG(SQ.IN)	0.	2.87	0.	0.	0.

INSPECTION INTERVALS(MRS)

INITIAL	MOD NO	SAMPLING	TIME
2	0	1600	2200
3	0	2400	4500
4	0	3600	12000
5	0	5400	13600
6	0	8100	21700
7	0	12150	33500
8	0	15180	40030
9	0	18994	71810
10	0	23730	84488
	0	29663	95965

CRACK LENGTH AND CORRESPONDING CUMULATIVE PROBABILITY OF FAILURE
 FLT. HOURS

AIRCRAFT NO.

41	53506	1.21	3.35-07
136	50376	.77	2.05-07
1	60000	.61	1.15-07
3	60000	.42	6.55-04
5	60000	2.16	9.15-07
9	60000	.73	1.45-07
10	60000	.37	6.65-04
15	60000	1.45	3.05-07
19	60000	2.77	1.25-04
21	60000	.18	2.05-05
35	60000	1.55	2.05-07
36	60000	2.11	3.95-07
40	60000	.21	3.45-04
46	60000	.33	6.25-04
58	50000	.39	6.05-04
155	52532	1.39	2.15-07
61	60000	1.04	2.25-07
68	60000	.26	4.25-04
69	60000	.47	8.45-04
81	60000	.52	6.85-04
89	60000	.13	1.45-04
91	60000	1.17	2.25-07
158	53853	1.34	3.35-07
94	60000	.27	4.85-04
96	60000	.45	7.75-04
120	60000	.20	3.35-04
121	60000	.66	1.45-07
124	60000	.14	2.15-04
125	60000	.10	1.65-04
182	54422	2.27	7.45-07
129	60000	.74	1.15-07
134	60000	.27	6.75-05
264	47222	.84	1.65-07
143	60000	.14	2.05-04
144	60000	.53	1.15-07
146	60000	.66	1.25-07
194	57585	1.25	3.55-07
173	59838	.97	1.95-07
174	60000	1.54	3.95-07
175	60000	.33	4.95-04
181	60000	.84	7.05-09
184	60000	.25	1.75-04
396	40744	1.12	2.65-07
204	60000	.29	4.85-04
213	60000	.74	1.75-07
217	60000	.31	5.55-04
218	60000	.34	5.15-04
228	60000	.17	1.55-04
227	60000	1.50	4.25-07
319	51504	1.22	2.75-07
236	60000	.57	1.65-07
240	60000	.23	4.05-04
243	60000	1.01	2.85-07
254	59633	.54	1.15-07
253	50600	1.96	6.75-07

AIRCRAFT TYPE: MYGARD

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 6000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: DRG-STR-USC

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)
MIN(MRS)	197	7344	49	2723	4	7344	2	
MAX(MRS)	59603	47703	5939F	27753	54353			
AVG(MRS)					37998			

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)
MIN(MRS)	0	0	26	1.12	9	.79	61	.31	17	.87
MAX(MRS)	0	0	9.18	2.77	4.62	6.38	6.38	6.38	5.60	5.60
AVG(MRS)	0	0			2.01	2.39	2.39	2.39	2.44	2.44

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)	MIN(MRS)	MAX(MRS)
MIN(MRS)	0	0	15	2.55	3	.21	7	1.21	4	11.56
MAX(MRS)	0	0	26.43	9.47	5.01	27.18	27.18	27.18	27.95	27.95
AVG(MRS)	0	0			5.91	11.87	11.87	11.87	16.04	16.04

INSPECTION INTERVALS (MRS)

INITIAL	50
SHORTEST	50
LONGEST	500

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 21

NUMBER OF STRUCTURAL MODIFICATIONS: 10

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 4

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 0.00E+00/MRS

ESTIMATED ELEMENT TYPE FAILURE RATE: 0.00E+00/MRS

SAMPLE CRK. LGT. MEAN(MRS) 2.32 SAMPLE STD. DEV. 1.035

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -13.6758258181

AIRCRAFT NO.	FLY. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH	AIRCRAFT NO.	FLY. HOURS
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AVERAGE FLIGHT CRACKS 1.405 1.405 -12 .418 .549
AVERAGE PRESSURE CRACKS .561 .561 .471 .471 .448

TABLE 17. DEMONSTRATION RESULTS FOR WING - STRINGER, FORWARD

Crack Detected	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Preflight	0.13	0.21
Service	1.00	0.71
Phase	0.80	1.04
Overhaul	0.87	1.69
Special	0.00	1.04
Total	<u>2.80</u>	<u>4.69</u>
Corrosion Detected		
Preflight	0.53	0.00
Service	1.00	0.31
Phase	0.40	0.00
Overhaul	0.87	0.10
Special	0.00	0.00
Total	<u>2.80</u>	<u>0.41</u>
Fail-Safe Damage	0.00	0.07
Failures	0.00	-----
Service Damage	0.03	0.00
Production Defects	0.00	0.02

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: DNG-ST4-LSF

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	36	3	0
MIN(HRS)	4586	4585	
MAX(HRS)	58938	59378	
AVG(HRS)	31003	26520	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	2	9	5	1	0
MIN(IN)	.81	.44	.56	.65	n.
MAX(IN)	1.08	.91	.71	.65	n.
AVG(IN)	.95	.68	.62	.65	n.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	4	5	5	1	0
MIN(SQ. IN)	2.04	2.20	3.23	6.53	n.
MAX(SQ. IN)	18.94	11.73	14.25	6.53	n.
AVG(SQ. IN)	5.32	5.47	7.56	6.53	n.

INSPECTION INTERVALS(HRS)

INITIAL	50	375	1000	6400
SHORTEST	50	375	1000	1600
LONGEST	50	375	6667	32000

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 4

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 7.24E-13/-P

ESTIMATED ELEMENT TYPE FAILURE RATE: 4.87E-12/HRS.

SAMPLE CRK. LGT. MEAN(IN) .39

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -7.690173103476 S = 1.49-1214314

AIRCRAFT NO.	STRUCTURAL FAILURES	STA. NO.	FLY. HOURS	RESIDUAL STRENGTH	EQUALS FAIL-SAFE STRENGTH	STA. NO.
				AIRCRAFT NO.	FLY. HOURS	

AVERAGE FLIGHT CRACKS 1.605 .618 .814 .649

AVERAGE PRESSURE CRACKS .561 .561 .671 .448

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 300 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WING-STR-USE

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
103	37	7	0
MIN(HRS)	1601	9450	---
MAX(HRS)	59102	43039	---
AVG(HRS)	29022	26244	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	6	7	12	0
MIN(IN)	0.	.70	.75	.80	n.
MAX(IN)	0.	3.05	3.47	1.89	n.
AVG(IN)	0.	1.44	1.44	1.19	n.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	10	1	12	1
MIN(SQ.IN)	0.	1.79	5.44	3.78	n.
MAX(SQ.IN)	0.	14.22	5.44	57.12	n.
AVG(SQ.IN)	0.	7.49	5.44	18.54	n.
INSPECTION INTERVALS(HRS)	50	375	1000	6400	
INITIAL	50	375	1000	1600	
SHORTEST	50	375	1000	1600	
LONGEST	50	375	6667	32000	

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 2

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 663

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 9.00E+00/MM

ESTIMATED ELEMENT TYPE FAILURE RATE: 0.00E+00/MM

SAMPLE CRK. LGT. MEAN(IN) .95

SAMPLE STD. DEV. .429

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -13.87582581813

W = .415481209472

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT MO.

STA. NO.

STRUCTURAL FAILURES

FLT. HOURS

AVERAGE FLIGHT CRACKS 1.605 1.605 .818 .818 .869

AVERAGE PRESSURE CRACKS .561 .561 .471 .471 .448

TABLE 18. DEMONSTRATION RESULTS FOR WING - CENTER SECTION
STRINGER, AFT (WSC-STR-AFT & WSC-STS-AFT)

	Defects Per Million Flight Hours	
	<u>SAIFE (*)</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00 (0.00)	0.00
Service	0.00 (0.00)	0.00
Phase	0.53 (0.53)	0.00
Overhaul	0.27 (0.27)	0.06
Special	0.27 (0.27)	0.06
Total	<u>1.07 (1.07)</u>	<u>0.12</u>
Corrosion Detected		
Preflight	0.00 (0.00)	0.00
Service	0.00 (0.00)	0.03
Phase	0.27 (0.07)	0.03
Overhaul	0.26 (0.13)	0.00
Special	0.13 (0.13)	0.08
Total	<u>0.66 (0.33)</u>	<u>0.14</u>
Fail-Safe Damage	0.00 (0.00)	0.00
Failures	0.00 (0.00)	----
Service Damage	0.00 (0.00)	0.00
Production Defects	0.00 (0.00)	0.00

(*) WSC-STS-AFT only

AIRCRAFT TYPE: HYBRID

AIRCRAFT SERVICE LIFE: 6000 HOURS

NUMBER OF AIRCRAFT IN FLEET: 500

SUMMARY OF STRUCTURAL ELEMENT: MSC-STR-LSA

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	5	15	0	0
MIN(HRS)	32675	4736	0	---
MAX(HRS)	51397	55272	0	---
AVG(HRS)	41725	33307	0	---

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	0	0
MIN(IN)	0.	0.	0.	0.	0.
MAX(IN)	0.	0.	0.	0.	0.
AVG(IN)	0.	0.	0.	0.	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	3	2	0
MIN(SQ.IN)	0.	0.	7.39	5.68	0.
MAX(SQ.IN)	0.	0.	24.41	22.14	0.
AVG(SQ.IN)	0.	0.	14.33	13.91	0.
INSPECTION INTERVALS(HRS)	50	375	1000	6400	
INITIAL	50	375	1000	6400	
SHORTEST	50	375	1000	6400	
LONGEST	50	375	5000	32000	

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 1

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 3.23E-14/HR

ESTIMATED ELEMENT TYPE FAILURE RATE: 3.31E-14/HR

SAMPLE CRK. LGT. MEAN(IN) .56

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -7.472775657984

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO.

STA. NO.

FLY. HOURS

FLY. HOURS

AVERAGE FLIGHT CRACKS 1.605 1.605 .518 .818 .649

AVERAGE PRESSURE CRACKS .561 .561 .471 .471 .448

60800 HOURS

NUMBER OF AIRCRAFT IN FLEET:

55

AIRCRAFT SERVICE LIFE:

60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WSC-ST5-L5A

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CLASS	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS	
			1	
84	15	0		
856	4572	0		
MIN (MRS)	54132	0		
59805	24576	0		
MAX (MRS)				
45563				

DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	NUMBER AND LENGTH OF CLEVELS				SPECIAL
	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0	0	0	0
26	0	0	0	0	0
27	0	0	0	0	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	0	0
33	0	0	0	0	0
34	0	0	0	0	0
35	0	0	0	0	0
36	0	0	0	0	0
37	0	0	0	0	0
38	0	0	0	0	0
39	0	0	0	0	0
40	0	0	0	0	0
41	0	0	0	0	0
42	0	0	0	0	0
43	0	0	0	0	0
44	0	0	0	0	0
45	0	0	0	0	0
46	0	0	0	0	0
47	0	0	0	0	0
48	0	0	0	0	0
49	0	0	0	0	0
50	0	0	0	0	0
51	0	0	0	0	0
52	0	0	0	0	0
53	0	0	0	0	0
54	0	0	0	0	0
55	0	0	0	0	0
56	0	0	0	0	0
57	0	0	0	0	0
58	0	0	0	0	0
59	0	0	0	0	0
60	0	0	0	0	0
61	0	0	0	0	0
62	0	0	0	0	0
63	0	0	0	0	0
64	0	0	0	0	0
65	0	0	0	0	0
66	0	0	0	0	0
67	0	0	0	0	0
68	0	0	0	0	0
69	0	0	0	0	0
70	0	0	0	0	0
71	0	0	0	0	0
72	0	0	0	0	0
73	0	0	0	0	0
74	0	0	0	0	0
75	0	0	0	0	0
76	0	0	0	0	0
77	0	0	0	0	0
78	0	0	0	0	0
79	0	0	0	0	0
80	0	0	0	0	0
81	0	0	0	0	0
82	0	0	0	0	0
83	0	0	0	0	0
84	0	0	0	0	0
85	0	0	0	0	0
86	0	0	0	0	0
87	0	0	0	0	0
88	0	0	0	0	0
89	0	0	0	0	0
90	0	0	0	0	0
91	0	0	0	0	0
92	0	0	0	0	0
93	0	0	0	0	0
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95	0	0	0	0	0
96	0	0	0	0	0
97	0	0	0	0	0
98	0	0	0	0	0
99	0	0	0	0	0
100	0	0	0	0	0
101	0	0	0	0	0
102	0	0	0	0	0
103	0	0	0	0	0
104	0	0	0	0	0
105	0	0	0	0	0
106	0	0	0	0	0
107	0	0	0	0	0
108	0	0	0	0	0
109	0	0	0	0	0
110	0	0	0	0	0
111	0	0	0	0	0
112	0	0	0	0	0
113	0	0	0	0	0
114	0	0	0	0	0
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132	0	0	0	0	0
133	0	0	0	0	0
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136	0	0	0	0	0
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142	0	0	0	0	0
143	0	0	0	0	0
144	0	0	0	0	0
145	0	0	0	0	0
146	0	0	0	0	0
147	0	0	0	0	0
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149	0	0	0	0	0
150	0	0	0	0	0
151	0	0	0	0	0
152	0	0	0	0	0
153	0	0	0	0	0
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157	0	0	0	0	0
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265	0	0	0	0	0
266	0	0	0	0	0
267	0	0	0	0	0
268	0	0	0	0	0
269	0	0	0	0	0
270	0	0	0	0	0
271	0	0	0	0	0
272	0	0	0	0	0
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274	0	0	0	0	0
275	0	0	0	0	0
276	0	0	0	0	0
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281	0	0	0	0	0
282	0	0	0	0	0
283	0	0	0	0	0
284	0	0	0	0	0
285	0	0	0	0	0
286	0	0	0	0	0
287	0	0	0	0	0
288	0	0	0	0	0
289	0	0	0	0	0
290	0	0	0	0	0
291	0	0	0	0	0
292	0	0	0	0	0
293	0	0	0	0	0
294	0	0	0	0	0
295	0	0	0		

MEASURED AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	1	2	
MIN(SQ-IN)	0	0	3.05	15.20	31.33
MAX(SQ-IN)	0	0	3.65	2.12	34.08
AVE(SQ-IN)	0	0	3.65	1-16	34.69

SYNOPSIS

35 10111MI
4601E7FAM31MT 001133Z5MI

WILLIAMS-SWARTZ

SHORTS

NUMBER OF SPECIAL INSPECTIONS CONDUCTED:

RESEARCH OF THE UNIVERSITY OF CALIFORNIA

SE
:31AGS MI GELIBOM DZBOD: 20
:31AGS MI GELIBOM DZBOD: 20

10-35-12/H-1

ESTIMATED ELEMENT TYPE	FAILURE RATE
ESTIMATED ELEMENT TYPE	FAILURE RATE: 1.42E-12/yr.

ESTIMATED ELEMENT TYPE FAILURE MODE	SAFETY CT. γ_{SF}	γ_{SF}
CONCRETE CRACK	1.0	1.0
STEEL YIELDING	1.0	1.0
STEEL BULGING	1.0	1.0
STEEL FRAGMENTATION	1.0	1.0
STEEL CORROSION	1.0	1.0
STEEL FATIGUE	1.0	1.0
STEEL TENSILE RUP.	1.0	1.0
STEEL COMPRESSIVE RUP.	1.0	1.0
STEEL BUCKLING	1.0	1.0
STEEL LOCAL BUCKLING	1.0	1.0
STEEL WELD FAILURE	1.0	1.0
STEEL JOINT FAILURE	1.0	1.0
STEEL BRACKET FAILURE	1.0	1.0
STEEL PLATE FAILURE	1.0	1.0
STEEL RIVET FAILURE	1.0	1.0
STEEL BOLT FAILURE	1.0	1.0
STEEL NUT FAILURE	1.0	1.0
STEEL WELD BEAD FAILURE	1.0	1.0
STEEL WELD ROOT FAILURE	1.0	1.0
STEEL WELD CRACK	1.0	1.0
STEEL WELD SPALL	1.0	1.0
STEEL WELD DISINTEGRATION	1.0	1.0
STEEL WELD CORROSION	1.0	1.0
STEEL WELD FATIGUE	1.0	1.0
STEEL WELD TENSILE RUP.	1.0	1.0
STEEL WELD COMPRESSIVE RUP.	1.0	1.0
STEEL WELD BUCKLING	1.0	1.0
STEEL WELD LOCAL BUCKLING	1.0	1.0
STEEL WELD BRACKET FAILURE	1.0	1.0
STEEL WELD PLATE FAILURE	1.0	1.0
STEEL WELD RIVET FAILURE	1.0	1.0
STEEL WELD BOLT FAILURE	1.0	1.0
STEEL WELD NUT FAILURE	1.0	1.0
STEEL WELD BEAD FAILURE	1.0	1.0
STEEL WELD ROOT FAILURE	1.0	1.0
STEEL WELD CRACK	1.0	1.0
STEEL WELD SPALL	1.0	1.0
STEEL WELD DISINTEGRATION	1.0	1.0
STEEL WELD CORROSION	1.0	1.0
STEEL WELD FATIGUE	1.0	1.0
STEEL WELD TENSILE RUP.	1.0	1.0
STEEL WELD COMPRESSIVE RUP.	1.0	1.0
STEEL WELD BUCKLING	1.0	1.0
STEEL WELD LOCAL BUCKLING	1.0	1.0
STEEL WELD BRACKET FAILURE	1.0	1.0
STEEL WELD PLATE FAILURE	1.0	1.0
STEEL WELD RIVET FAILURE	1.0	1.0
STEEL WELD BOLT FAILURE	1.0	1.0
STEEL WELD NUT FAILURE	1.0	1.0
STEEL WELD BEAD FAILURE	1.0	1.0
STEEL WELD ROOT FAILURE	1.0	1.0
STEEL WELD CRACK	1.0	1.0
STEEL WELD SPALL	1.0	1.0
STEEL WELD DISINTEGRATION	1.0	1.0
STEEL WELD CORROSION	1.0	1.0
STEEL WELD FATIGUE	1.0	1.0
STEEL WELD TENSILE RUP.	1.0	1.0
STEEL WELD COMPRESSIVE RUP.	1.0	1.0
STEEL WELD BUCKLING	1.0	1.0
STEEL WELD LOCAL BUCKLING	1.0	1.0
STEEL WELD BRACKET FAILURE	1.0	1.0
STEEL WELD PLATE FAILURE	1.0	1.0
STEEL WELD RIVET FAILURE	1.0	1.0
STEEL WELD BOLT FAILURE	1.0	1.0
STEEL WELD NUT FAILURE	1.0	1.0
STEEL WELD BEAD FAILURE	1.0	1.0
STEEL WELD ROOT FAILURE	1.0	1.0
STEEL WELD CRACK	1.0	1.0
STEEL WELD SPALL	1.0	1.0
STEEL WELD DISINTEGRATION	1.0	1.0
STEEL WELD CORROSION	1.0	1.0
STEEL WELD FATIGUE	1.0	1.0
STEEL WELD TENSILE RUP.	1.0	1.0
STEEL WELD COMPRESSIVE RUP.	1.0	1.0
STEEL WELD BUCKLING	1.0	1.0
STEEL WELD LOCAL BUCKLING	1.0	1.0
STEEL WELD BRACKET FAILURE	1.0	1.0
STEEL WELD PLATE FAILURE	1.0	1.0
STEEL WELD RIVET FAILURE	1.0	1.0
STEEL WELD BOLT FAILURE	1.0	1.0
STEEL WELD NUT FAILURE	1.0	1.0
STEEL WELD BEAD FAILURE	1.0	1.0
STEEL WELD ROOT FAILURE	1.0	1.0
STEEL WELD CRACK	1.0	1.0
STEEL WELD SPALL	1.0	1.0
STEEL WELD DISINTEGRATION	1.0	1.0
STEEL WELD CORROSION	1.0	1.0
STEEL WELD FATIGUE	1.0	1.0
STEEL WELD TENSILE RUP.	1.0	1.0
STEEL WELD COMPRESSIVE RUP.	1.0	1.0
STEEL WELD BUCKLING	1.0	1.0
STEEL WELD LOCAL BUCKLING	1.0	1.0
STEEL WELD BRACKET FAILURE	1.0	1.0
STEEL WELD PLATE FAILURE	1.0	1.0
STEEL WELD RIVET FAILURE	1.0	1.0
STEEL WELD BOLT FAILURE	1.0	1.0
STEEL WELD NUT FAILURE	1.0	1.0
STEEL WELD BEAD FAILURE	1.0	1.0
STEEL WELD ROOT FAILURE	1.0	1.0
STEEL WELD CRACK	1.0	1.0
STEEL WELD SPALL	1.0	1.0
STEEL WELD DISINTEGRATION	1.0	1.0
STEEL WELD CORROSION	1.0	1.0
STEEL WELD FATIGUE	1.0	1.0
STEEL WELD TENSILE RUP.	1.0	1.0
STEEL WELD COMPRESSIVE RUP.	1.0	1.0
STE		

SAMPLE CRK. LGT. MEAN(M) = -7.54145523739
CRK. LGT. VS DEGRABILITY CURVE FIT COV.S: A = .6534456669

CAR. LG. VS PROBABILITY OF FAILURE

STRUCTURAL FAILURES

PROJECT NO.	FLY. ACJS	STA. NO.	AIRCRAFT NO.	FLY. NO.
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11	11	11	11
12	12	12	12	12
13	13	13	13	13
14	14	14	14	14
15	15	15	15	15
16	16	16	16	16
17	17	17	17	17
18	18	18	18	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	21
22	22	22	22	22
23	23	23	23	23
24	24	24	24	24
25	25	25	25	25
26	26	26	26	26
27	27	27	27	27
28	28	28	28	28
29	29	29	29	29
30	30	30	30	30
31	31	31	31	31
32	32	32	32	32
33	33	33	33	33
34	34	34	34	34
35	35	35	35	35
36	36	36	36	36
37	37	37	37	37
38	38	38	38	38
39	39	39	39	39
40	40	40	40	40
41	41	41	41	41
42	42	42	42	42
43	43	43	43	43
44	44	44	44	44
45	45	45	45	45
46	46	46	46	46
47	47	47	47	47
48	48	48	48	48
49	49	49	49	49
50	50	50	50	50
51	51	51	51	51
52	52	52	52	52
53	53	53	53	53
54	54	54	54	54
55	55	55	55	55
56	56	56	56	56
57	57	57	57	57
58	58	58	58	58
59	59	59	59	59
60	60	60	60	60
61	61	61	61	61
62	62	62	62	62
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64	64	64	64	64
65	65	65	65	65
66	66	66	66	66
67	67	67	67	67
68	68	68	68	68
69	69	69	69	69
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71	71	71	71	71
72	72	72	72	72
73	73	73	73	73
74	74	74	74	74
75	75	75	75	75
76	76	76	76	76
77	77	77	77	77
78	78	78	78	78
79	79	79	79	79
80	80	80	80	80
81	81	81	81	81
82	82	82	82	82
83	83	83	83	83
84	84	84	84	84
85	85	85	85	85
86	86	86	86	86
87	87	87		

AIRCRAFT NO.: _____

FLIGHT NO.: _____

=====

— 100 —

TEST	SCORE	DATE	TIME
1	50	10/10	10:00
2	50	10/10	10:00
3	50	10/10	10:00
4	50	10/10	10:00
5	50	10/10	10:00
6	50	10/10	10:00
7	50	10/10	10:00
8	50	10/10	10:00
9	50	10/10	10:00
10	50	10/10	10:00
11	50	10/10	10:00
12	50	10/10	10:00
13	50	10/10	10:00
14	50	10/10	10:00
15	50	10/10	10:00
16	50	10/10	10:00
17	50	10/10	10:00
18	50	10/10	10:00
19	50	10/10	10:00
20	50	10/10	10:00
21	50	10/10	10:00
22	50	10/10	10:00
23	50	10/10	10:00
24	50	10/10	10:00
25	50	10/10	10:00
26	50	10/10	10:00
27	50	10/10	10:00
28	50	10/10	10:00
29	50	10/10	10:00
30	50	10/10	10:00
31	50	10/10	10:00
32	50	10/10	10:00
33	50	10/10	10:00
34	50	10/10	10:00
35	50	10/10	10:00
36	50	10/10	10:00
37	50	10/10	10:00
38	50	10/10	10:00
39	50	10/10	10:00
40	50	10/10	10:00
41	50	10/10	10:00
42	50	10/10	10:00
43	50	10/10	10:00
44	50	10/10	10:00
45	50	10/10	10:00
46	50	10/10	10:00
47	50	10/10	10:00
48	50	10/10	10:00
49	50	10/10	10:00
50	50	10/10	10:00

[illegible]

EXPANDED

1

100

100

1. *Journal of the American Medical Association*, 1997; 277: 1000-1005.

TABLE 19. DEMONSTRATION RESULTS FOR WING - CENTER SECTION
STRINGER, CENTER

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.04
Service	0.00	0.04
Phase	0.00	0.04
Overhaul	0.00	0.40
Special	0.00	0.18
Total	<u>0.00</u>	<u>0.70</u>
Corrosion Detected		
Preflight	0.00	0.08
Service	0.00	0.30
Phase	0.00	0.00
Overhaul	0.67	0.93
Special	0.00	0.46
Total	<u>0.67</u>	<u>1.77</u>
Fail-Safe Damage	0.00	0.17
Failures	0.00	-----
Service Damage	0.00	0.00
Production Defects	0.00	0.04

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 68800 HOURS

SUMMARY OF STRUCTURAL ELEMENT: NSC-SIR-LSC

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK	COMPOSITION	SERVICE DAMAGE	PRODUCTION DEFECTS
MIN(MPS)	12	33	0	0
MAX(MPS)	11016	5670	0	0
AVG(MPS)	55093	58742	0	0
	41561	12778	0	0

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
MIN(IN)	0	0	0	0	0
MAX(IN)	0	0	0	0	0
AVG(IN)	0	0	0	0	0

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
MIN(SQ.IN)	0	0	0	10	0
MAX(SQ.IN)	0	0	0	5.37	0
AVG(SQ.IN)	0	0	0	21.14	0

INSPECTION INTERVALS (HRS)

INITIAL	50	375	1000	4800
SHORTEST	50	375	1000	4800
LONGEST	50	375	6667	32000

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0
 ESTIMATED ELEMENT TYPE FAILURE RATE USING AFR: 2.98E-14/YR
 ESTIMATED ELEMENT TYPE FAILURE RATE: 2.62E-14/MY
 SAMPLE CRK. LFT. MEAN(M) .74 SAMPLE STD. DEV. .54
 CRK. LFT. VS PROBABILITY CURVE FIT COAST: A = -6.391595A19214 B = .8921498E222E

AIRCRAFT NO.	STRUCTURAL FAILURES	FLY. HOURS	STA. NO.	RESIDUAL STRENGTH	EQUALS FAIL-SAFE STRENGTH	FLY. HOUR	ST. NO.
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AVERAGE FLIGHT CRACKS 1.605 1.605 .14 .671 .649
 AVERAGE PRESSURE CRACKS .501 .501 .471 .471 .448

TABLE 20. DEMONSTRATION RESULTS FOR WING - CENTER SECTION
STRINGER, FORWARD

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.00
Service	0.00	0.25
Phase	0.00	0.45
Overhaul	0.00	0.14
Special	0.00	2.76
Total	<u>0.00</u>	<u>3.60</u>
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.03
Phase	0.33	0.00
Overhaul	0.73	0.05
Special	0.00	0.03
Total	<u>1.06</u>	<u>0.11</u>
Fail-Safe Damage	0.00	0.11
Failures	0.00	-----
Service Damage	0.00	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: MY441D

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: MSC-STR-LSF

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
MIN(HRS)	7	32	0	0
MAX(HRS)	27471	1220	0	
AVG(HRS)	57673	57378	0	
	45333	76702	0	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
MIN(IN)	0	0	0	0	0
MAX(IN)	0.	0.	0.	0.	0.
AVG(IN)	0.	0.	0.	0.	0.

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
MIN(SQ.IN)	0	0	0	11	0
MAX(SQ.IN)	0.	0.	4.16	2.53	0.
AVG(SQ.IN)	0.	0.	13.21	39.94	0.
			8.94	17.65	0.

INSPECTION INTERVALS(HRS)

INITIAL	50
SHORTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 2

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 38

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 5.07E-15/HK

ESTIMATED ELEMENT TYPE FAILURE RATE: 4.37E-15/HK

SAMPLE CRK. LGT. MEAN(IN) .35 SAMPLE STD. DEV. .244

CRK. LGT. VS PROBABILITY CURVE FIT CONST: A = -6.723512335132 S = 1.713/66323536

AIRCRAFT NO.	STRUCTURAL FAILURES FLT. HOURS	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH AIRCRAFT NO.	STA. NO.
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AVERAGE FLIGHT CRACKS 1.605 1.605 .14 .14 .0-9
AVERAGE PRESSURE CRACKS .561 .561 .67 .67 .448

TABLE 21. DEMONSTRATION RESULTS FOR WING - CENTER SECTION
SPANWISE BEAM, AFT (WSC-SWB-AFT & WSC-SWS-AFT)

	Defects Per Million Flight Hours	
	<u>SAIFE (*)</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00 (0.00)	0.04
Service	0.00 (0.00)	0.12
Phase	0.20 (0.20)	0.04
Overhaul	1.93 (1.93)	0.28
Special	0.13 (0.13)	0.12
Total	<u>2.26 (2.26)</u>	<u>0.60</u>
Corrosion Detected		
Preflight	0.00 (0.00)	0.00
Service	0.00 (0.00)	0.04
Phase	0.20 (0.00)	0.00
Overhaul	0.13 (0.13)	0.04
Special	0.00 (0.00)	0.09
Total	<u>0.33 (0.13)</u>	<u>0.17</u>
Fail-Safe Damage	0.00 (0.00)	0.00
Failures	0.00 (0.00)	-----
Service Damage	0.07 (0.07)	0.00
Production Defects	0.00 (0.00)	0.00

(*) WSC-SWS-AFT only

AIRCRAFT TYPE: MY-91D

NUMBER OF AIRCRAFT IN FLEET: 500 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WSC-SUB-AFT

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

OCCURRENCES	FIRST CRACK		COMPOSITION		SERVICE DAMAGE		PRODUCTION DEFECTS	
	7	27515	7580	46126	27515	32580	0	
MIN(MPS)								
MAX(MPS)								
AVG(MPS)								

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
	0	0	0	0	0	0	0	0	0	0
MIN(IN)										
MAX(IN)										
AVG(IN)										

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

OCCURRENCES	A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
	0	0	0	0	0	0	0	0	0	0
MIN(ISO.IN)										
MAX(ISO.IN)										
AVG(ISO.IN)										

INSPECTION INTERVALS(MHS)

INITIAL	50
SHORTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0

NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0

ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 1.05E-14/YR

ESTIMATED ELEMENT TYPE FAILURE RATE: 1.020E-14/YR

SAMPLE CRK. LGT. MEAN(IN) .05

SAMPLE STD. DEV. .013

CRK. LGT. VS PROBABILITY CURVE FIT COEFF: A = -2.324376960762 B = 1.79117298266

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH

AIRCRAFT NO. FLT. HOURS

AVERAGE FLIGHT CRACKS 1.605 1.605 1.605 1.605 1.605 1.605 1.605 1.605 1.605 1.605 1.605

AVERAGE PRESSURE CRACKS .561 .561 .561 .561 .561 .561 .561 .561 .561 .561 .561

TABLE 22. DEMONSTRATION RESULTS FOR WING - CENTER SECTION
SPANWISE BEAM, CENTER

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.00
Service	0.00	0.02
Phase	0.00	0.02
Overhaul	0.00	0.19
Special	0.00	0.00
Total	<u>0.00</u>	<u>0.23</u>
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.00
Phase	0.00	0.09
Overhaul	0.13	0.00
Special	0.00	0.00
Total	<u>0.13</u>	<u>0.09</u>
Fail-Safe Damage	0.00	0.00
Failures	0.00	----
Service Damage	0.00	0.00
Production Defects	0.00	0.00

AIRCRAFT TYPE: HYBRID

NUMBER OF AIRCRAFT IN FLEET: 1 AIRCRAFT SERVICE LIFE: 60000 HOURS

SUMMARY OF STRUCTURAL ELEMENT: WSC-SWB-CEN

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

	FIRST CRACK	CORROSION	SERVICE DAMAGE	PRODUCTION DEFECTS
OCCURRENCES	10	9	4	0
MIN(HRS)	4095	16200	4095	
MAX(HRS)	58750	57310	18429	
AVE(HRS)	33115	26449	10414	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	0	0
MIN(IN)	0	0	0	0	0
MAX(IN)	0	0	0	0	0
AVE(IN)	0	0	0	0	0

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

	A-LEVEL	B-LEVEL	C-LEVEL	D-LEVEL	SPECIAL
OCCURRENCES	0	0	0	2	0
MIN(SQ. IN)	0	0	0	2.94	0
MAX(SQ. IN)	0	0	0	3.43	0
AVE(SQ. IN)	0	0	0	3.14	0

INSPECTION INTERVALS (HRS)

INITIAL	50	375	1000	4800
SHORTEST	50	375	1000	4800
LONGEST	50	375	6667	32000

NUMBER OF SPECIAL INSPECTIONS CONDUCTED:

NUMBER OF STRUCTURAL MODIFICATIONS: 0
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0
 ESTIMATED ELEMENT TYPE FAILURE RATE USING AVG: 1.54E-13/yr
 ESTIMATED ELEMENT TYPE FAILURE RATE: 1.34E-13/yr
 SAMPLE CRK. LGT. MEAN (IN) 0.30 SAMPLE STD. DEV. 0.30
 CRK. LGT. 95 PROBABILITY CURVE FIT CONST: A = -7.185060249817 1 = 1.165770846146

AIRCRAFT NO.	STRUCTURAL FAILURES	STA. NO.	RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
	FLT. HOURS		FLY. HOURS

AVERAGE FLIGHT CRACKS 1.605 1.605 .018 .018
 AVERAGE PRESSURE CRACKS .581 .561 .071 .071

TABLE 23. DEMONSTRATION RESULTS FOR WING - CENTER SECTION -
SPANWISE BEAM, FORWARD

	Defects Per Million Flight Hours	
	<u>SAIFE</u>	<u>MRR/SDR</u>
Crack Detected		
Preflight	0.00	0.00
Service	0.00	0.24
Phase	0.00	2.29
Overhaul	0.00	0.07
Special	0.00	1.24
Total	<u>0.00</u>	<u>1.74</u>
Corrosion Detected		
Preflight	0.00	0.00
Service	0.00	0.13
Phase	0.07	0.00
Overhaul	0.00	0.00
Special	0.00	0.00
Total	<u>0.07</u>	<u>0.13</u>
Fail-Safe Damage	0.00	0.09
Failures	0.00	-----
Service Damage	0.00	0.09
Production Defects	0.00	0.00

AIRCRAFT TYPE: HYBRID

AIRCRAFT SERVICE LIFE: 60000 HOURS

NUMBER OF AIRCRAFT IN FLEET: 1

SUMMARY OF STRUCTURAL ELEMENT: MSG-SMB-FWD

NUMBER AND TIME TO INITIATION OF AIRCRAFT DEFECTS

FIRST CRACK		CORROSION		SERVICE DAMAGE		PRODUCTION DEFECTS	
A		B		C		D	
OCCURRENCES		OCCURRENCES		OCCURRENCES		OCCURRENCES	
MIN (HRS)		24975		17970		---	
MAX (HRS)		59110		56723		---	
AVG (HRS)		43033		41121		---	

NUMBER AND LENGTH OF CRACKS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
O		0		0		0		0	
OCCURRENCES		OCCURRENCES		OCCURRENCES		OCCURRENCES		OCCURRENCES	
MIN (IN)		0.		0.		0.		0.	
MAX (IN)		0.		0.		0.		0.	
AVG (IN)		0.		0.		0.		0.	

NUMBER AND AREA OF CORROSION DEFECTS DETECTED AT EACH LEVEL OF INSPECTION

A-LEVEL		B-LEVEL		C-LEVEL		D-LEVEL		SPECIAL	
1		1		1		1		1	
OCCURRENCES		OCCURRENCES		OCCURRENCES		OCCURRENCES		OCCURRENCES	
MIN (SQ. IN)		0.		0.		0.		0.	
MAX (SQ. IN)		0.		0.		0.		0.	
AVG (SQ. IN)		0.		0.		0.		0.	

INSPECTION INTERVALS (HRS)

INITIAL	50
SHORTEST	50
LONGEST	50

NUMBER OF SPECIAL INSPECTIONS CONDUCTED: 0

NUMBER OF STRUCTURAL MODIFICATIONS: 0
 NUMBER OF AIRCRAFT MODIFIED IN SERVICE: 0
 ESTIMATED ELEMENT TYPE FAILURE RATE: 7.54E-14/Hr
 ESTIMATED ELEMENT TYPE FAILURE RATE: 5.43E-14/Hr
 SAMPLE CRK. LST. MEAN (IN) 4.0
 CRK. 1.6T. VS PROBABILITY CURVE 1.0
 CRK. 1.6T. VS PROBABILITY CURVE 1.0

RESIDUAL STRENGTH EQUALS FAIL-SAFE STRENGTH
 AIRCRAFT NO. 10245111555455

STRUCTURAL FAILURE
 FLT. HOURS

AVERAGE FLIGHT CRACKS 1.405
 AVERAGE PRESSURE CRACKS .561