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QUALIFICATION TEST REPORT CDRL NO. 29087

FUEL PUMP TEST STAND 3C3965605

CONTRACT NO. F33657-84-C-2011

OCTOBER, 1991

91-15921

91 1119 048

QUALIFICATION TEST REPORT

FUEL PUMP TEST STAND

3C3965G05

CONTRACT NO. F33657-84-C-2011

CDRL NO. 29087

DATE PREPARED - OCTOBER 1991

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GE Aircraft Engines/ESO

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Jerry Vondran, Product Engineer
GE Aircraft Engines/ESO

Procuring Activity: _____
USAF

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ASD/YZEP
WPAFB, OH 45433

NWW 11/22/91

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SECTION I

INTRODUCTION

I. INTRODUCTION

A. PURPOSE

The purpose of this report is to summarize the results of the Qualification Testing performed on the 3C3965G05 Fuel Pump Test Stand at Tinker Air Force Base.

B. GENERAL

The 3C3965G05 Fuel Pump Test Stand was designed for the USAF by General Electric Aircraft Engines, Cincinnati, Ohio. It was designed to test the F101-GE-102, F110-GE-100, F108-CF-100, F118-GE-100, and F110-GE-129 fuel pumps and subassemblies. The stand was modified from a G03 to a G05 configuration by the installation of retrofit kits 1412M66 (G04) and 1412M89 (G05). The 1412M66 kit enabled the stand to test the F118-GE-100 Main Fuel Pump while the 1412M89 kit provides F110-GE-129 Main Fuel Pump (and sub-assembly) testing capability. Qualification demonstration was conducted in September of 1991, and witnessed by Lieutenant Mike Christian from ASD.

C. TESTING

The objective of the testing program was to qualify the test stand for the F110-GE-129 main fuel pump. In so doing, the test stand was required to duplicate results obtained on the UUT manufacturer's test stand within tolerance limits established by ESO Design Engineering with concurrence from Evendale C&A Engineering. A copy of the correlation limits is contained in Appendix B. Two UUT's, main fuel pumps from Sundstrand and Argo Tech, were required for correlation. These UUT's were sent back to their manufacturer's for three separate test stand runs per UUT (by different operators if possible). These UUT's then became the standards (gold units) to correlate the stand against. The results obtained by the vendors were tabulated and the three runs averaged. The correlation limits were applied to these averages to determine a range of acceptance test limits against which the 3C3965G05 test data for the same UUT was compared.

After test stand modification and prior to qualification demonstration, the stand was subjected to an engineering evaluation by the GE stand test engineer.

The evaluation consisted of the following:

- o Gold Plate UUT's were run through T.O. test points and data recorded.
- o Results were evaluated against the correlation test limits.
- o Necessary technical and quality changes were made to obtain results which were within correlation.

D. QUALIFICATION TESTING

The qualification testing for the stand was conducted at Tinker Air Force Base, Oklahoma City, Oklahoma. Testing was witnessed by ASD. Only the two main fuel pumps for the F110-GE-129 engine were tested on the test stand because the fuel boost pump and augmenter pump for the F110-GE-129 program are the same as those used on the F110-GE-100. In addition, since the modification did not affect any of the fuel boost pump or augmenter fuel pump hydraulic circuitry, the need to correlate these pumps was waived. All of the QTP inspections were demonstrated or audited, and the CFE manual reviewed.

After the F110-GE-129 pumps and sub-assemblies were tested, an F118-GE-100 Main Fuel Pump was also tested, and correlated, to demonstrate that the stand indeed had F118-GE-100 capability.

In concluding the qualification testing, correlation and QTP data sheets were signed by authorized GE and USAF attendees.

SECTION II

DEFINITION OF TERMS

II. DEFINITION OF TERMS

The following definitions apply to terms as used herein.

AFP	Augmenter Fuel Pump
ASD	Aeronautical Systems Division (Wright Patterson AFB)
ATP	Acceptance Test Procedure
ATR	Acceptance Test Report
C&A	Controls and Accessories (Evendale)
CAR	Corrective Action Request
CFAE	Contractor Furnished Aerospace Equipment (manual)
CFE	Contractor Furnished Equipment (manual)
CID	Change in Design
DCID	Development Change in Design
FBP	Fuel Boost Pump
GE	General Electric Company (Crescentville)
MFP	Main Fuel Pump
N/A	Not Applicable
OC-ALC	Oklahoma City Air Logistics Center
PMEL	Precision Measurement Equipment Lab
QTP	Qualification Test Procedure
QTR	Qualification Test Report
SEAR	Support Equipment Action Request
SIN	Significant Item Number
T.O.	Technical Order
UUT	Unit Under Test

SECTION III

FACILITY REVIEW

III. FACILITY REVIEW

All testing was performed at Tinker AFB, Oklahoma City, OK., in the Hazardous Accessories Test Building 3108. Facility services such as shop air, chilled water and electrical power were available to the stand at the required quantities as a part of prior 3C3965G01, G02, and G03 installations.

The remote electrical cabinets were located in a non-hazardous section of the test building approximately 200 feet from the test stand.

No additional facility services, or additional wiring between stand and remote cabinets were required as a result of the G05 modification.

SECTION IV

APPLICABLE DOCUMENTS

IV. APPLICABLE DOCUMENTS

The following documents of issue in effect at the time of testing apply.

DOCUMENT	TITLE
M50TF35-S6	General Specification for Aircraft Engine Component Test Stands
MIL-T-83431	Military Specification Test Stand, Jet Engine Accessory Overhaul, General Specification for
M50TF3087-S13	Aircraft Engine Group Specification, Test Stand - Fuel Pump
QTP 3965G05 (Rev. B)	Qualification Test Procedure for Fuel pump Test Stand
T.O. 33D4-7-17-1	Operation and Maintenance Instructions with Illustrated Parts Breakdown (CFE)
CAR's	Corrective Action Request, written at Qualification Testing
6J10-3-95-4	Technical Manual Main Gear Pump Assembly (Argo Tech), F110-GE-129
6J10-3-96-4	Technical Manual Main Fuel Pump (Sundstrand), F110-GE-129
TS 4103	Acceptance Test Specification, Main Fuel Pump, Sundstrand
ATC 02-1823	Pump Assembly, Acceptance Test Procedure, Argo Tech

SECTION V

G05 STAND MODIFICATION

V. G05 STAND MODIFICATION

The following changes to the Fuel Pump Stand were planned as part of the modification to a G05 configuration:

- Menus were added to the Micro-flo 100 for the F118-GE-100 and F110-GE-100 fuel pumps and sub-assemblies.
- Replace an existing ANC-16 flowmeter (024AC), with an ANC-20 (025CA) flowmeter.
- Add test kit hardware as required to hookup F110-GE-129 Fuel Pumps or testing
- Test stand nameplates were replaced to reflect the 3C3965G05 configuration.

SECTION VI

UUT REVIEW

VI. UUT REVIEW

The following UUTs were tested during the Qualification demonstration.

NOMENCLATURE	PART NUMBER	ENGINE
MAIN FUEL PUMP	GE: 1373M87P07	F110-GE-129
MAIN FUEL PUMP	GE: 1457M13P03	F110-GE-129
MAIN FUEL PUMP	GE: 1265M91P07	F118-GE-100
MFP IMPENDING BYPASS INDICATOR	Sundstrand: 5907807	F110-GE-129
MFP ACTUAL BYPASS INDICATOR	Sundstrand: 5907808	F110-GE-129

The following UUT's and subassemblies were not tested during Qualification Demonstration. Testing of these was waived by OC-ALC/ASD Engineering representative on the basis of the previous stand qualification for these UUT's and subassemblies.

NOMENCLATURE	PART NUMBER	ENGINE
MAIN FUEL PUMP	SNECMA: 301-779-001-0 TRW: 708600-1	F108-CF-100
MAIN FUEL PUMP	SNECMA: 301-776-104-0 TRW: 704300-4	F108-CF-100
MAIN FILTER BYPASS VALVE	GE: None TRW: 215891-1	F108-CF-100
WASH FLOW FILTER BYPASS VALVE	GE: None TRW: 216272-1	F108-CF-100
FUEL BOOST PUMP	GE: 1296M72P01 Lear-Siegler: RR 54660D	F110-GE-100
MAIN FUEL PUMP	GE: 1265M11P14 1265M11P15 1265M11P16 1265M11P17 Sundstrand: 5007510F Sundstrand: 5007510G Sundstrand: 5007510H Sundstrand: 5008420A	F110-GE-100

NOMENCLATURE	PART NUMBER	ENGINE
AUGMENTER FUEL PUMP	GE: 9338MP05 9338MP06 9338MP07 Sundstrand: 5007351C Sundstrand: 5007351D Sundstrand: 5007351E	F110-GE-100
AUGMENTER FUEL PUMP BY-PASS CHECK VALVE	Sundstrand: 5903519	F110-GE-100
FUEL BOOST PUMP	GE: 9959M68P07 Sundstrand: 025519-110	F101-GE-102
AUGMENTER FUEL PUMP	GE: 9334M41P08 9334M41P09 9334M41P10 Sundstrand: 5007571E Sundstrand: 5007571F Sundstrand: 5007571G	F101-GE-102
AUGMENTER FUEL PUMP BY-PASS CHECK VALVE	Sundstrand: 5903519	F101-GE-102
MAIN FUEL PUMP	GE: 1270M24P03 Vickers: PF4-228-7E	F101-GE-102

SECTION VII

SPECIAL TEST EQUIPMENT

VII. SPECIAL TEST EQUIPMENT

No special test equipment was required to perform UUT testing.

SECTION VIII

CALIBRATION

VIII. CALIBRATION

All primary and secondary instrumentation was calibrated prior to the start of correlation testing. Calibration was accomplished by the PMEL group from Tinker AFB. Calibration certifications and data are available in the PMEL files.

SECTION IX

TEST DISCUSSION

IX. TEST DISCUSSION

The F110-GE-129 Main Fuel Pumps (Argo Tech and Sundstrand) were run and successfully correlated in one day. All of the sub-assembly tests were successfully completed on the following day. The third day of testing was used to run any non-correlateable tests such as break-in tests. All F110-GE-129 pump testing was completed in 3 days without any problems.

It was found that to correlate both pumps it was necessary to use a pressure measuring section on the inlet of each pump to read pump inlet pressure, PIN, as opposed to using the PIN port supplied on the pump housing. This affected the boost pressure rise significantly thus allowing us to correlate. Both pump manufacturers use similar pressure measuring sections during testing while plugging the PIN port on the pump housing.

NOTE: Lower boost pressure rises were experienced while using the pressure measuring sections than were seen when the PIN port was used. This means that a pump with an acceptable boost pressure rise when measured using the pump PIN port can conceivably be rejected for a low boost pressure rise if a pressure measuring section is used. Consequently, in order to prevent "good" pumps from being rejected as "bad" pumps it is better to use the actual PIN port on the pump housing as the adapter kit drawings show. The pressure measuring sections were only used to simulate the pump manufacturers' test set-ups and thus repeat their data.

Upon the completion of F110-GE-129 pump testing, discussion of the F118-GE-100 software, which was added per the G05 modification, revealed to Lieutenant Christian that the stand had been modified from a G03 to a G05 without any G04 (F118-GE-100) correlation testing taking place. Neither ILS (GE) nor ASD (Air Force) had notified Lt. Christian of GE's plans to modify the G03 stand instead of the G04 stand to the G05 configuration. Consequently, upon learning of the situation, we, GE, were asked to correlate a gold unit F118-GE-100 Main Fuel Pump which Tinker had in their possession. We received the pump on Thursday, 9/26, and successfully correlated on Monday, 9/29.

IX. TEST DISCUSSION cont'

The requirements for running the F118-GE-100 pump were only to correlate and to verify that any F118-GE-100 peculiar hardware was appropriately marked. The correlation data sheets for the F118-GE-100 pump are included in Appendix E. Since the only piece of F118-GE-100 (adapter kit) hardware added to the stand was a pump adapter for the gearbox, Lieutenant Christian verified the part marking while he was still in Oklahoma City. He then delegated Jeff Catron, OC-ALC, to witness the actual correlation of the F118-GE-100 Main Fuel Pump.

The only area of concern that arose during the F118-GE-100 pump testing was the low torque values experienced at the two lower speed test conditions. The torque tare chart, which is created by PMEL, indicated that the torque values seen were one inch-pound low. However, the chart only gave tare values at rpm speeds in multiples of 100. The tare values at the exact test condition speeds were checked and it was found the tare chart was slightly off. All torque values were indeed within limits. It was also noticed that that the torque values experienced were very close to the same torque values seen when pump stand #1 was correlated. This only increases the credibility of the test stand torque readings.

SECTION X

STAND QTP INSPECTION ITEMS

X. STAND QTP INSPECTION ITEMS

The following are the applicable QTP inspection items. Refer to APPENDIX D for data sheets.

DATA SHEET	ITEM
4.2.1	WORKMANSHIP INSPECTIONS
4.2.3	MARKING INSPECTIONS
4.2.4	NEATNESS INSPECTIONS
4,2.5	CLEANLINESS INSPECTIONS
4.2.6	NEW QUALITY COMPONENTS
6.2.7	ELECTROMAGNETIC INTERFERENCE TESTS
6.2.27	RIGID AND FLEXIBLE LINES TEST
6.2.28	CALIBRATION
6.2.40	MICRO-FLO 100 INSTRUMENTATION INSPECTIONS

SECTION XI

CORRECTIVE ACTION REQUESTS

XI. CORRECTIVE ACTION REQUESTS (CAR's)

There were no Corrective Action Requests written during the qualification testing.

SECTION XII

CONCLUSIONS

XII. CONCLUSIONS

The test stand readily performed all required F110-GE-129 Main Fuel Pump UUT tests within established correlation limits.

All test stand functional inspections affected by the G05 modification were checked and found to be acceptable.

APPENDIX A

VENDOR CORRELATION TEST DATA SHEETS

TRW Corporation
[illegible], OH 44117
[illegible]

ACCEPTANCE TEST DATA SHEET 6

Reference
ATP Para. 7.11 & 7.12

PUMP CALIBRATION

Pump Speed rpm		Shaft Torque in-lb		Inlet Temp. °F		Pump Inlet Pressure ± 2 psig	Boost Disch. Press. psig	Filter Disch. Press. psig	Boost Stage Pressure Rise psid		Filter Diff. Pressure psid		Pump Thru Flow gpm		Pump Bypass Flow gpm	Pump Total Flow gpm		Pump Discharge Pressure psig	
Req'd +/-10	Actual	Req'd Max.	Actual	Req'd +/-15	Actual				Req'd	Actual	Req'd	Actual	Req'd	Actual		Req'd	Actual	Req'd +/-5	Actual
6307	6309	691	668.6	85	86.9	35 34.9	88.0	71.4	40 Min.	53.1	22.0 Max.	16.6	50.2 +/-.5	50.2	14.2	62 Min.	64.4	1360	1358
4128	4128	180	165.1	85	86.7	25 25.8	43.9	29.9		18.1	—	—	—	—	—	42 Min.	43.4	275	276
886	885	185	109.0	85	86.3	10 10.4	11.3	11.3	--	.9	--	--	--	--	--	7.5 Min.	8.4	255	255

Seal Leak	0 cc/min 0.1 max.	Test Stand No. 3364	Temp. S/N
Other Leaks	0 None Permitted	Tester A.V.	Perm. S/N 00025
Fuel: MIL-T-5624 Type JP-4	.750 SP GR	80 °F	Date 5/24/91

QA F. T

Argo-Tech Spec. No. 02-1823
Sheet 36 Rev F

ANSI Y14.100C Rev 3 Format

F110 PUMP SERIAL #: 00025

TEST: Cal:6,
DATE: 05/24/91 ENGINEER: OPERATOR: M. Vyse TEST STD: 33B-4
BAROMETER: 29.40 IN-HG. FUEL TYPE: JP4 ✓ SPECIFIC GRAVITY: .788 @ 80 DEG.F

N = SPEED	RPM	P1=TANK	PSIA	T1=TANK
TQ = TORQUE	IN-LB	P2=INLET	PSIG	T2=INLET
Q1 = HI-DISCH.	GPM	P3=FIL IN	PSIG	T3=BOOST DISCH.
Q1A= LO-DISCH.	GPM	P4=FIL OUT	PSIG	T4=IGV INLET
Q2 = BYPASS	GPM	P5=DISCH.	PSIG	T5=DISCH.
Q3 = IGV IN	GPM	P6=FIL BPV	PSID	T6=CELL AMB.
Q4 = SERVO RET.	GPM			

TIME:	N	TQ	Q1	Q1A	Q2	Q3	Q4
DATE:	P1	P2	P3	P4	P5	P6	
	T1	T2	T3	T4	T5	T6	
06:42:18 ✓	6309	668.6	50.2	3.77	14.2		
5/24/91	14.44	34.9	88.0	71.4	1358	17.2	
	84.9	86.9	77.9	86.7	97.5	78.2	
06:44:29 ✓	4128	165.1	43.4	3.26	0.0		
5/24/91	14.44	25.8	43.9	29.9	276	14.3	
	84.9	86.7	77.9	86.7	89.2	78.2	
6:46:41 ✓	885	109.0	8.4	0.53	0.0		
5/24/91	14.44	10.4	11.3	11.3	255	0.3	
	84.3	86.3	77.9	86.3	87.8	78.2	

Teledyne Continental Motors
Muskegon, MI 49443
P.O. Box 5005

ACCEPTANCE TEST DATA SHEET 6

Reference
MIP Para. 7.11 & 7.12

PUMP CALIBRATION

Pump Speed rpm		Shaft Torque in-lb		Inlet Temp. °F		Pump Inlet Pressure ± 2 psig	Boost Disch. Press. psig	Filter Disch. Press. psig	Boost Stage Pressure Rise psid		Filter Diff. Pressure psid		Pump Thru Flow gpm		Pump Bypass Flow gpm	Pump Total Flow gpm		Pump Discharge Pressure psig	
Req'd +/-10	Actual	Req'd Max.	Actual	Req'd +/-15	Actual				Req'd	Actual	Req'd	Actual	Req'd	Actual		Req'd	Actual	Req'd +/-5	Actual
6307	6308	691	669.8	85	87.6	35 / 36.0	89.6	73.0	40 Min.	53.6	22.0 Max.	16.6	50.2 +/-.5	50.3	14.2	62 Min.	64.5	1360	1355
4128	4127	160	162.6	85	87.2	25 / 25.8	43.7	29.8	/	17.9	/	—	—	—	—	42 Min.	43.5	275	273
886	885	185	107.5	85	86.5	10 / 10.1	10.9	10.9	— /	.8	—	—	—	—	—	7.5 Min.	8.4	255	252

Seal Leak	0 cc/min 0.1 max.	Test Stand No. ~~2304~~	Temp. S/N
Other Leaks	0 None Permitted	Tester H.V.	Perm. S/N 01025
Fuel: MIL-T-5624 Type JP-4 ✓	.750 SP GR	86 °F	Date 5/24/91

F. T. 7

(2)

F110 PUMP SERIAL #: 00026

TEST: Cal.6.
DATE: 05/24/91 ENGINEER: OPERATOR: M. Myers TEST STD: 33B-4
BAROMETER: 29.40 IN-HG. FUEL TYPE: JP4 ✓ SPECIFIC GRAVITY: .758 @ 80 DEG.F

N = SPEED	RPM	P1=TANK	PSIA	T1=TANK	
TQ = TORQUE	IN-LB	P2=INLET	PSIG	T2=INLET	
Q1 = HI-DISCH.	GPM	P3=FIL IN	PSIG	T3=BOOST DISCH.	
Q1A= LO-DISCH.	GPM	P4=FIL OUT	PSIG	T4=IGV INLET	
Q2 = BYPASS	GPM	P5=DISCH.	PSIG	T5=DISCH.	
Q3 = IGV IN	GPM	P6=FIL BPV	PSID	T6=CELL AMB.	
Q4 = SERVO RET.	GPM				

TIME:	N	TQ	Q1	Q1A	Q2	Q3	Q4
DATE:	P1	P2	P3	P4	P5	P6	
	T1	T2	T3	T4	T5	T6	
06:52:54	6308	669.8	50.3	3.82	14.2		
05/24/91	14.44	36.0	89.6	73.0	1355	17.1	
	84.7	87.6	78.0	87.6	98.4	78.4	
06:54:56	4127	162.6	43.5	3.34	0.0		
05/24/91	14.44	25.8	43.7	29.8	273	14.5	
	85.4	87.2	78.0	87.2	89.7	78.4	
06:57:20	885	107.5	8.4	0.54	0.0		
05/24/91	14.44	10.1	10.9	10.9	252	0.4	
	84.5	86.5	78.2	86.5	87.8	78.8	

ACCEPTANCE TEST DATA SHEET 6

Reference
ATP Para. 7.11 & 7.12

PUMP CALIBRATION

Pump Speed rpm		Shaft Torque in-lb		Inlet Temp. °F		Pump Inlet Pressure	Boost Disch. Press. psig	Filter Disch. Press. psig	Boost Stage Pressure Rise psid		Filter Diff. Pressure psid		Pump Thru Flow gpm		Pump Bypass Flow gpm	Pump Total Flow gpm		Pump Discharge Pressure psig	
Req'd +/-10	Actual	Req'd Max.	Actual	Req'd +/-15	Actual	± 2 psig			Req'd	Actual	Req'd	Actual	Req'd	Actual		Req'd Min.	Actual	Req'd +/-5	Actual
5307	6308	691	670.5	85	86.7	35 / 34.3	87.9	71.0	40 Min.	53.6	22.0 Max.	16.9	50.2 +/-.5	50.3	14.1	62 Min.	64.4	1360	1360
4128	4127	180	162.9	85	86.5	25 / 25.5	43.6	29.7	/	18.1	/	/	/	/	/	42 Min.	43.5	275	279
886	886	185	107.2	85	86.0	10 / 10.3	11.8	11.8	/	1.0	/	/	/	/	/	7.5 Min.	5.4	255	259

Seal Leak	0 cc/min 0.1 max.	Test Stand No. 2004	Temp. S/N
Other Leaks	0 None Permitted	Tester M.K	Perm. S/N 00026
Fuel: MIL-T-5624 Type JP-4	.757 SP GR	80 °F	Date 5/24/91

QA F. T 7

Angle Tech Spec. No. 02-1823 Sheet 36 Rev F

AS 2138/2 Rev 3 Page 45

F110 PUMP SERIAL #: 00026

ST: Cal.b.

TE: 05/24/91 ENGINEER: OPERATOR: M. Vyse TEST STD: 33B-4

BAROMETER: 29.43 IN-HG. FUEL TYPE: JP4 ✓ SPECIFIC GRAVITY: .7520 @ 80 DEG.F

= SPEED	RPM	P1=TANK	PSIA	T1=TANK
Q = TORQUE	IN-LB	P2=INLET	PSIG	T2=INLET
Q1 = HI-DISCH.	GPM	P3=FIL IN	PSIG	T3=BOOST DISCH.
QA= LO-DISCH.	GPM	P4=FIL OUT	PSIG	T4=IGV INLET
= BYPASS	GPM	P5=DISCH.	PSIG	T5=DISCH.
Q3 = IGV IN	GPM	P6=FIL BPV	PSID	T6=CELL AMB.
Q4 = SERVO RET.	GPM			

IME:	N	TQ	Q1	Q1A	Q2	Q3	Q4
ATE:	P1	P2	P3	P4	P5	P6	
	T1	T2	T3	T4	T5	T6	
07:02:28 ✓	6308	670.5	50.3	3.82	14.1		
05/24/91	14.45	34.3	87.9	71.0	1360	17.2	
	84.9	86.7	78.2	86.7	97.5	78.8	
07:05:35 ✓	4127	162.9	43.5	3.24	0.0		
05/24/91	14.45	25.5	43.6	29.7	273	14.3	
	84.9	86.5	78.6	86.5	89.2	78.8	
07:07:14 ✓	985	107.2	8.4	0.55	0.0		
5/24/91	14.45	10.8	11.8	11.8	252	0.4	
	84.3	86.0	78.6	85.8	87.4	78.8	

Sundstrand
Aviation Operations
Advanced Technology Group
Sundstrand Corporation
ROCKFORD, ILLINOIS 61125

PAGE NO: 16	SHEET 1 OF 4
TEST SPEC: TS 4103	REV. H

TEST PROCEDURE TITLE: ACCEPTANCE TEST SPECIFICATION FOR MAIN FUEL PUMP MODEL NUMBER 025819 & 025819B

SUNDSTRAND PART NUMBERS (SEE REMARKS)

Test Location 807

PART NO:	SERIAL NO:	OPERATOR:	INSPECTOR:	DATE
5009075A	SUS C C 153	1090	C161	3-22-91

REMARKS:

SUNDSTRAND ASSY NO.	SUNDSTRAND OUTLINE P/N	G.E. P/N
5008623	5008622	1265M11P11
5008623A	5008622A	1265M11P12
5009076	5009075	1457M13P01
M5009075	M5009075	1457M13P02
5009076A	5009075A	1457M13P03

O/R

QUALITY ASSURANCE APPROVAL

A ( ) under actual reading column requires a check if satisfactory.

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS MINIMUM	ACTUAL	MAXIMUM	UNITS
5.0	(✓) If Run-In Completed	—	(NA)	—	—
5.1.2.2 (a)	Total Flow with Relief Valve Plug				
	Flow at 1350 PSID gear stage pressure differential	—	66.4	—	GPM
5.1.2.3	Performance with Relief Valve Cracking Pressure-Gear Stage Differential Pressure With 2.0 to 5.0 GPM thru Valve	1400	1430	1500	PSID
5.1.2.4 (b)	Flow at 1350 PSID Gear Stage Pressure Differential	—	66.4	—	GPM
	Difference Between (a) and (b) above (a-b)	—	0.0	0.5	GPM
5.2.1	Indicator and Filter Bypass Valve Testing Impending Indicator Actuation Pressure				
	Run #1	20	27	30	PSID
	Run #2	20	27	30	PSID
	Run #3	20	27	30	PSID

.... NOTE ....
TS, MODEL NUMBER AND SERIAL NUMBER MUST APPEAR ON EVERY PAGE
RETAIN ONE COPY OF THIS DATA SHEET FOR QA FILE

Form G7478(1)A/11

PART NO. 500907S4 SERIAL NO. SUS Q C 151 DATE 3-22-91 DATA SHEET 2 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.2.1 (Cont'd)	Filter Bypass Valve Actuation Pressure				
	Run #1	40	44	55	PSID
	Run #2	40	43	55	PSID
	Run #3	40	42	55	PSID
	(✓) If Actual Bypass Indicator Actuates				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.2	Indicator Resetting				
	Impending Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
	Actual Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.4	Service Shutoff Valve Leakage	---	0	2.0	CC/MIN.
5.3	Oil Seal Leakage	---	0	0.1	CC/MIN.
5.4	Fuel Shaft Seal Leakage Static Test				
	Inlet Pressure, "0" PSIG & "0" RPM	---	0	0.1	CC/MIN.
5.5	Flow Performance (Ref. Sheet 4 of 4)	---	---	---	---

--- NOTE ---
TS, MODEL NUMBER AND SERIAL NUMBER MUST APPEAR ON EVERY PAGE
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PART NO. 370976-2 SERIAL NO. C 153 DATE 3-12-91 DATA SHEET 3 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.6	Proof Pressure Stamp (✓) If Acceptable	—	(✓)	—	—
5.7	Cleanliness (✓) If Acceptable	—	(✓)	—	—
5.8	Preservation (✓) If Performed	—	(✓)	—	—
5.9	Pump Dry Weight Record Weight from Route Card	—	NA	27.8	LBS

.... NOTE ....
T9 MODEL NUMBER AND SERIAL NUMBER MUST APPEAR ON EVERY PAGE
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Form G7478(2)A/1188

5.5 FLOW PERFORMANCE

REV. B

SUNDSTRAND ACCEPTANCE TEST SPECIFICATION NO. TS 4103

SERIAL NO. SUS D C 153 TEST STAND NO. 802 DATE 3-20-91
TEST FLUID 7024
BAROMETRIC PRESS 24.16

CONDITION	UNIT	A		B		C	
PUMP SPEED	RPM	6307 ± 10		4128 ±10		886 ±10	
INLET TEMPERATURE	°F	70-100		70-100		70-100	
INLET PRESSURE	PSIG	35 ± 2		25 ± 2		10 ± 2	
DISCHARGE PRESSURE	PSIG	1360 ± 10		275 ± 5		255 ± 5	
INLET (ENGINE) FLOW	GPM	50.2 ± 0.5		*		*	
		REQ'D	RECORD	REQ'D	RECORD	REQ'D	RECORD
TOTAL FLOW	GPM	63.3 MIN.	66.3	43.3 MIN.	44.3	6.4 MIN.	8.4
BOOST PRESSURE RISE	PSID	40 MIN.	43	--	--	--	--
INPUT TORQUE	IN-LB	691 MAX.	676	193 MAX.	162	185 MAX.	118
FILTER PRESS. DROP	PSID	22.0 MAX.	14	--	--	--	2
FUEL SHAFT SEAL LEAKAGE	CC/MIN	0.1 MAX.	0	0.1 MAX.	0	0.1 MAX.	0
HOUSING/SPLIT LINE LEAKAGE	CC/MIN	0.0	0				

*NOTE: CLOSE THE BYPASS VALVE AT THIS CONDITION, SUCH THAT ENGINE FLOW EQUALS TOTAL FLOW (WITHIN THE ACCURACY OF THE FLOWMETERS).

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Advanced Technology Group
Sundstrand Corporation
ROCKFORD, ILLINOIS 61125

PAGE NO: 16	SHEET 1 OF 4
TEST SPEC: TS 4103	REV. H

TEST PROCEDURE TITLE: ACCEPTANCE TEST SPECIFICATION FOR MAIN FUEL PUMP
MODEL NUMBER 025819 & 025819B

SUNDSTRAND PART NUMBERS (SEE REMARKS)

902
Test Location

PART NO:	SERIAL NO:	OPERATOR:	INSPECTOR:	DATE
5009075A	SUS QC 153	1090	6161	3-22-91

REMARKS:

SUNDSTRAND ASSY NO.	SUNDSTRAND OUTLINE P/N	G.E. P/N
5008623	5008622	1265M11P11
5008623A	5008622A	1265M11P12
5009076	5009075	1457M13P01
M5009075	M5009075	1457M13P02
5009076A	5009075A	1457M13P03

QUALITY ASSURANCE APPROVAL

A ( ) under actual reading column requires a check if satisfactory. O/R

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS MINIMUM	REQUIREMENTS ACTUAL	REQUIREMENTS MAXIMUM	UNITS
3.0	(✓) If Run-In Completed	---	(NA)	---	---
5.1.2.2 (a)	Total Flow with Relief Valve Plug				
	Flow at 1350 PSID gear stage pressure differential	---	66.3	---	GPM
5.1.2.3	Performance with Relief Valve				
	Cracking Pressure-Gear Stage Differential Pressure With 2.0 to 5.0 GPM thru Valve	1400	1425	1500	PSID
5.1.2.4 (b)	Flow at 1350 PSID Gear Stage Pressure Differential	---	66.3	---	GPM
	Difference Between (a) and (b) above (a-b)	---	0.0	0.5	GPM
5.2.1	Indicator and Filter Bypass Valve Testing				
	Impending Indicator Actuation Pressure				
	Run #1	20	23	30	PSID
	Run #2	20	23	30	PSID
	Run #3	20	23	30	PSID

--- NOTE ---
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PART NO. _____ SERIAL NO. SUS___ C___ ___ ___ DATE _____ DATA SHEET 2 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS MINIMUM	ACTUAL	MAXIMUM	UNITS
5.2.1 (Cont'd)	Filter Bypass Valve Actuation Pressure				
	Run #1	40	46	55	PSID
	Run #2	40	44	55	PSID
	Run #3	40	44	55	PSID
	(✓) If Actual Bypass Indicator Actuates				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.2	Indicator Resetting				
	Impending Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
	Actual Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.4	Service Shutoff Valve Leakage	---	0	2.0	CC/MIN.
5.3	Oil Seal Leakage	---	0	0.1	CC/MIN.
5.4	Fuel Shaft Seal Leakage Static Test				
	Inlet Pressure, "0" PSIG & "0" RPM	---	0	0.1	CC/MIN.
5.5	Flow Performance (Ref. Sheet 4 of 4)	---	---	---	---

.... NOTE ....
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PART NO. _____ SERIAL NO. C ___ ___ ___ DATE _____ DATA SHEET 3 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.6	Proof Pressure Stamp (✓) If Acceptable	---	(✓)	---	---
5.7	Cleanliness (✓) If Acceptable	---	(✓)	---	---
5.8	Preservation (✓) If Performed	---	(✓)	---	---
5.9	Pump Dry Weight Record Weight from Route Card	---	27.8	27.8	LBS

.... NOTE ....
TS, MODEL NUMBER AND SERIAL NUMBER MUST APPEAR ON EVERY PAGE
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Form G7478(Z)A/1188

5.5 FLOW PERFORMANCE

REV. H

SUNDSTRAND ACCEPTANCE TEST SPECIFICATION NO. TS 4103

SERIAL NO. SUS 0C 153 TEST STAND NO. 202 DATE 3-20-91
TEST FLUID 7021
BAROMETRIC PRESS 14.26

CONDITION	UNIT	A		B		C	
PUMP SPEED	RPM	6307 ± 10		4128 ±10		886 ±10	
INLET TEMPERATURE	°F	70-100		70-100		70-100	
INLET PRESSURE	PSIG	35 ± 2		25 ± 2		10 ± 2	
DISCHARGE PRESSURE	PSIG	1360 ± 10		275 ± 5		255 ± 5	
INLET (ENGINE) FLOW	GPM	50.2 ± 0.5		*		*	
		REQ'D	RECORD	REQ'D	RECORD	REQ'D	RECORD
TOTAL FLOW	GPM	65.3 MIN.	66.5	43.3 MIN.	44.6	6.4 MIN.	8.4
BOOST PRESSURE RISE	PSID	40 MIN.	43	--	--	--	--
INPUT TORQUE	IN-LB	691 MAX.	686	193 MAX.	160	185 MAX.	112
FILTER PRESS. DROP	PSID	22.0 MAX.	14	--	--	--	--
FUEL SHAFT SEAL LEAKAGE	CC/MIN	0.1 MAX.	0	0.1 MAX.	0	0.1 MAX.	0
HOUSING/SPLIT LINE LEAKAGE	CC/MIN	0.0	0				

*NOTE: CLOSE THE BYPASS VALVE AT THIS CONDITION, SUCH THAT ENGINE FLOW EQUALS TOTAL FLOW (WITHIN THE ACCURACY OF THE FLOWMETERS).

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Advanced Technology Group
Sundstrand Corporation
ROCKFORD, ILLINOIS 61125

PAGE NO: 16	SHEET 1 OF 4
TEST SPEC: TS 4103	REV. H

TEST PROCEDURE TITLE: ACCEPTANCE TEST SPECIFICATION FOR MAIN FUEL PUMP
MODEL NUMBER 025819 & 025819B

SUNDSTRAND PART NUMBERS (SEE REMARKS)

802 Test Location

PART NO:	SERIAL NO:	OPERATOR:	INSPECTOR:	DATE
5009075A	SUS Q C 153	[illegible]	[illegible]	3-22-91

REMARKS:

SUNDSTRAND ASSY NO.	SUNDSTRAND OUTLINE P/N	G.E. P/N
5008623	5008622	1265M11P11
5008623A	5008622A	1265M11P12
5009076	5009075	1457M13P01
M5009075	M5009075	1457M13P02
5009076A	5009075A	1457M13P03

0/2

QUALITY ASSURANCE APPROVAL

A (✓) under actual reading column requires a check if satisfactory.

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS MINIMUM	ACTUAL	MAXIMUM	UNITS
5.0	(✓) If Run-In Completed	—	(N/A)	—	—
5.1.2.2 (a)	Total Flow with Relief Valve Plug				
	Flow at 1350 PSID gear stage pressure differential	—	66.4	—	GPM
5.1.2.3	Performance with Relief Valve Cracking Pressure-Gear Stage Differential Pressure With 2.0 to 5.0 GPM thru Valve	1400	1425	1500	PSID
5.1.2.4 (b)	Flow at 1350 PSID Gear Stage Pressure Differential	—	66.4	—	GPM
	Difference Between (a) and (b) above (a-b)	—	0.0	0.5	GPM
5.2.1	Indicator and Filter Bypass Valve Testing				
	Impending Indicator Actuation Pressure				
	Run #1	20	24	30	PSID
	Run #2	20	24	30	PSID
	Run #3	20	23	30	PSID

.... NOTE ....
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Form G7478(1)A/11

PART NO. 500907SA SERIAL NO. SDS 0 C 153 DATE 3-20-91 DATA SHEET 2 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS MINIMUM	ACTUAL	MAXIMUM	UNITS
5.2.1 (Cont'd)	Filter Bypass Valve Actuation Pressure				
	Run #1	40	45	55	PSID
	Run #2	40	43	55	PSID
	Run #3	40	43	55	PSID
	(✓) If Actual Bypass Indicator Actuates				
	Run #1	—	(✓)	—	—
	Run #2	—	(✓)	—	—
	Run #3	—	(✓)	—	—
5.2.2	Indicator Resetting				
	Impending Indicator (✓) If Acceptable				
	Run #1	—	(✓)	—	—
	Run #2	—	(✓)	—	—
	Run #3	—	(✓)	—	—
	Actual Indicator (✓) If Acceptable				
	Run #1	—	(✓)	—	—
	Run #2	—	(✓)	—	—
	Run #3	—	(✓)	—	—
5.2.4	Service Shutoff Valve Leakage	—	0	2.0	CC/MIN.
5.3	Oil Seal Leakage	—	0	0.1	CC/MIN.
5.4	Fuel Shaft Seal Leakage Static Test				
	Inlet Pressure, "0" PSIG & "0" RPM	—	0	0.1	CC/MIN.
5.5	Flow Performance (Ref. Sheet 4 of 4)	—	—	—	—

— NOTE —
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PART NO. 500907S4 SERIAL NO. 0 C 153 DATE 3-20-91 DATA SHEET 3 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.6	Proof Pressure Stamp (✓) If Acceptable	—	(✓)	—	—
5.7	Cleanliness (✓) If Acceptable	—	(✓)	—	—
5.8	Preservation (✓) If Performed	—	(✓)	—	—
5.9	Pump Dry Weight Record Weight from Route Card	—	NA	27.8	LBS

.... NOTE ....
TS, MODEL NUMBER AND SERIAL NUMBER MUST APPEAR ON EVERY PAGE
RETAIN ONE COPY OF THIS DATA SHEET FOR QA FILE

5.5 FLOW PERFORMANCE

REV. H

SUNDSTRAND ACCEPTANCE TEST SPECIFICATION NO. TS 4103

SERIAL NO. SUS 0 C 153 TEST STAND NO. 802 DATE 3-20-91
TEST FLUID 7024
BAROMETRIC PRESS 14.136

CONDITION	UNIT	A		B		C	
PUMP SPEED	RPM	6307 ± 10		4128 ±10		886 ±10	
INLET TEMPERATURE	°F	70-100		70-100		70-100	
INLET PRESSURE	PSIG	35 ± 2		25 ± 2		10 ± 2	
DISCHARGE PRESSURE	PSIG	1360 ± 10		275 ± 5		255 ± 5	
INLET (ENGINE) FLOW	GPM	50.2 ± 0.5		*		*	
		REQ'D	RECORD	REQ'D	RECORD	REQ'D	RECORD
TOTAL FLOW	GPM	65.3 MIN.	66.6	43.3 MIN.	44.5	6.4 MIN.	8.3
BOOST PRESSURE RISE	PSID	40 MIN.	43	--	--	--	--
INPUT TORQUE	IN-LB	691 MAX.	682	193 MAX.	163	185 MAX.	112
FILTER PRESS. DROP	PSID	22.0 MAX.	14	--	--	--	--
FUEL SHAFT SEAL LEAKAGE	CC/MIN	0.1 MAX.	0	0.1 MAX.	0	0.1 MAX.	0
HOUSING/SPLIT LINE LEAKAGE	CC/MIN	0.0	0				

*NOTE: CLOSE THE BYPASS VALVE AT THIS CONDITION, SUCH THAT ENGINE FLOW EQUALS TOTAL FLOW (WITHIN THE ACCURACY OF THE FLOWMETERS).

APPENDIX B

DEFINITION OF UUT CORRELATION LIMITS

THE CORRELATION TOLERANCES AND LIMITS FOR THE F110-GE-129 FUEL PUMPS ARE TO BE THE SAME VALUES AS UTILIZED FOR THE F110-GE-100 CORRELATION TESTING WITH THE EXCEPTION OF THE TORQUE LIMITS. THESE VALUES ARE LISTED IN THE CORRELATION LIMIT COLUMN OF THE ATTACHED PAGES. THESE LIMITS ARE APPLICABLE TO THE F110-GE-129 FUEL PUMPS ON THE BASIS OF SIMILARITY OF DESIGN REQUIREMENTS, FUNCTIONAL TESTING REQUIREMENTS, AND TYPE/RANGE OF PARAMETERS BEING MEASURED/CONTROLLED DURING TESTING. THE VENDOR CORRELATION DATA EXHIBITED SLIGHTLY MORE VARIATION FOR THE INPUT TORQUE VALUES WHICH IS WHY THE TOLERANCES WERE INCREASED. SEE LETTER TO SAM PRESTON DATED MAY 17, 1991 AT THE END OF THIS SECTION.

CORRELATION LIMITS FOR

THE F110-GE-129

MAIN FUEL PUMPS

P/N 1457M13P03
P/N 1373M87P07

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION A

F110-GE-129 MAIN FUEL PUMP

1373M87P07
AND
1457M13P03

FUEL PUMP TEST STAND

CORRELATION LIMITS

GE SPECIFICATION EC45N0121 CLASS A

SECTION 2

PARAGRAPH	DESCRIPTION	LIMIT
4.2.1.2	PERFORMANCES	SEE TABLE I
4.2.1.3	PRESSURE REL VALVE	+/-50 PSIG
4.2.1.6.1	FUEL LEAKAGE	+/-.1 CC/MIN

TABLE I PERFORMANCE

CONDITION	TOTAL FLOW	TORQUE	BOOST PRESS RISE
A	+/-.5 GPM	+/-10 IN-LBS	+/- 2 PSIG
B	+/-.5 GPM	+/-6 IN-LBS	—
C	+/-.5 GPM	+/-6 IN-LBS	—

GE AIRCRAFT ENGINES

Crescentville Road
Mail Drop: IB3
Dial Comm: 8-623-4559
Copies: K. Karamchandani

Date: May 17, 1991
To: Sam Preston, Application Engineer
From: Eric Moss, SE Design

Subject: 3C3965G05 Fuel Pump Test Stand Correlation Limits

Sam:

The Fuel Pump Test Stand QTP still needs the correlation tolerances added before it can be sent to the Air Force for approval. Initially we were planning on using the same correlation tolerances that were used for the F110-GE-100 qualification testing for the F110-GE-129 qualification testing. However, the vendor correlation data received from Sundstrand for the -129 pump exhibits more data variance than the prior -100 pumps. As a result, I propose the following correlation tolerances:

Table I Performance

Condition	Total Flow	Torque	Boost Pressure Rise
A	± .5 GPM	± 10 in-lb	± 2 psig
B	± .5 GPM	± 6 in-lb	- -
C	± .5 GPM	± 6 in-lb	- -

Note: The torque tolerance is the only tolerance that is different from prior -100 testing. The other parameters were very repeatable and as a result shall remain the same. Also note that much greater tolerances have been used for other Main Fuel Pumps in the past. See Attachment.

Signed
J. Eric Moss
Design Engineer

Concurred
Bob Siebert
Controls & Accessories

APPENDIX C

CORRELATION DATA SHEETS

CORRELATION DATA SHEET "C1" PAGE 1 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-4	OIL SEAL CHECK				
7-4b(5)	LEAKAGE AT 55 ± 5 PSIG	LEAKAGE MAXIMUM 0.1 CCM	0	✓	
7-6	PRIMARY GREEN RUN				
7-6b(2)	3 MINUTE RUN AT 3000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (200 ± 20 PSIG)	201	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	30.48	✓	
		BOOST STAGE DISCH PRESS (PSIG)	10.52	✓	
		FILTER OUTLET PRESSURE (PSIG)	3251	✓	
		PUMP DISCHARGE FLOW (GPM)	31.9		12,100 pph @ 71°
		SHAFT TORQUE (IN-LB)	111	✓	

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

CORRELATION DATA SHEET "C1" PAGE 2 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 3000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG)	N/A		PRESSURE AND PUMP SPEEDS WERE PREVIOUSLY DEMONSTRATED DURING CORRELATION TESTING. POINTS WERE DELETED AS BEING REDUNDANT.
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	N/A		
		BOOST STAGE DISCH PRESS (PSIG)	N/A		
		FILTER OUTLET PRESSURE (PSIG)	N/A		
		PUMP DISCHARGE FLOW (GPM)	N/A		
		SHAFT TORQUE (IN-LB)	N/A		
	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG)	N/A		11
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	N/A		
		BOOST STAGE DISCH PRESS (PSIG)	N/A		
		FILTER OUTLET PRESSURE (PSIG)	N/A		
		PUMP DISCHARGE FLOW (GPM)	N/A		
		SHAFT TORQUE (IN-LB)	N/A		

William J. Tullett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Mon — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (400 ± 20 PSIG)	403	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	30.24	✓	
		BOOST STAGE DISCH PRESS (PSIG)	26.74	✓	
		FILTER OUTLET PRESSURE (PSIG)	37.10	✓	
		PUMP DISCHARGE FLOW (GPM)	53.2	✓	20138 pph @ 75°
		SHAFT TORQUE (IN-LB)	243	✓	
	1 MINUTE RUN AT 6000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (400 ± 20 PSIG)	N/A		PRESSURE AND PUMP SPEEDS WERE PREVIOUSLY DEMONSTRATED DURING CORRELATION TESTING. POINTS WERE DELETED AS BEING REDUNDANT.
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	N/A		
		BOOST STAGE DISCH PRESS (PSIG)	N/A		
		FILTER OUTLET PRESSURE (PSIG)	N/A		
		PUMP DISCHARGE FLOW (GPM)	N/A		
		SHAFT TORQUE (IN-LB)	N/A		

Williams J. Hallett — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Mon — TEST STAND ENGINEER — 10/10/91 DATE

CONTRACTOR QUALITY — DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

CORRELATION DATA SHEET "C1" PAGE 4 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 6000 RPM/ RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (500 ± 20 PSIG)	500	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	30.87	✓	
		BOOST STAGE DISCH PRESS (PSIG)	38.70	✓	
		FILTER OUTLET PRESSURE (PSIG)	40.72	✓	
		PUMP DISCHARGE FLOW (GPM)	63.8	✓	24113 pph @ 79°
		SHAFT TORQUE (IN-LB)	311	✓	
	2 MINUTE RUN AT 1000 RPM/ RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (200 ± 20 PSIG)	205	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	28.77	✓	
		BOOST STAGE DISCH PRESS (PSIG)	1.64	✓	
		FILTER OUTLET PRESSURE (PSIG)	29.46	✓	
		PUMP DISCHARGE FLOW (GPM)	10.0	✓	3790 pph @ 79°
		SHAFT TORQUE (IN-LB)	80	✓	

William J. Hallett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Mayo — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

CORRELATION DATA SHEET "C1" PAGE 5 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	2 MINUTE RUN AT 1000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (600 ± 20 PSIG)	601	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.88	✓	
		BOOST STAGE DISCH PRESS (PSIG)	1.98	✓	
		FILTER OUTLET PRESSURE (PSIG)	29.98	✓	
		PUMP DISCHARGE FLOW (GPM)	9.1	✓	3437 pph @ 83°
		SHAFT TORQUE (IN-LB)	246	✓	
	1 MINUTE RUN AT 4000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG)	302	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	28.48	✓	
		BOOST STAGE DISCH PRESS (PSIG)	18.00	✓	
		FILTER OUTLET PRESSURE (PSIG)	33.3	✓	
		PUMP DISCHARGE FLOW (GPM)	42.4	✓	15994 pph @ 83°
		SHAFT TORQUE (IN-LB)	174	✓	

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Mon — TEST STAND ENGINEER — 10/10/91 DATE

M. Mabe 10/9/91 — PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 4000 RPM RECORD PRESSURE, FLOW, TORQUE (CONT'D)	PUMP DISCHARGE PRESSURE (PSIG) (700 ± 20 PSIG)	708	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	28.53	✓	
		BOOST STAGE DISCH PRESS (PSIG)	46.58	✓	
		FILTER OUTLET PRESSURE (PSIG)	33.49	✓	
		PUMP DISCHARGE FLOW (GPM)	41.6	✓	15693 pph @ 83°
		SHAFT TORQUE (IN-LB)	343	✓	
	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG)	304	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	28.87	✓	
		BOOST STAGE DISCH PRESS (PSIG)	55.85	✓	
		FILTER OUTLET PRESSURE (PSIG)	36.62	✓	
		PUMP DISCHARGE FLOW (GPM)	53.3	✓	20101 pph @ 84°
		SHAFT TORQUE (IN-LB)	200	✓	

William J. Tillett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Jim Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE (CONT'D)	PUMP DISCHARGE PRESSURE (PSIG) (800 ± 20 PSIG)	803	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.21	✓	
		BOOST STAGE DISCH PRESS (PSIG)	55.95	✓	
		FILTER OUTLET PRESSURE (PSIG)	37.50	✓	
		PUMP DISCHARGE FLOW (GPM)	52.3	✓	19696 pph @ 87°
		SHAFT TORQUE (IN-LB)	405	✓	
	1 MINUTE RUN AT 6307 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (400 ± 20 PSIG)	401	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.21	✓	
		BOOST STAGE DISCH PRESS (PSIG)	70.80	✓	
		FILTER OUTLET PRESSURE (PSIG)	40.52	✓	
		PUMP DISCHARGE FLOW (GPM)	67.2	✓	25372 pph @ 83°
		SHAFT TORQUE (IN-LB)	285	✓	

William J. Tullatt — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	2 MINUTE RUN AT 6307 RPM; RECORD PRESSURE, FLOW, TORQUE (CONT'D)	PUMP DISCHARGE PRESSURE (PSIG) (1100 ± 20 PSIG)	1103	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.85	✓	
		BOOST STAGE DISCH PRESS (PSIG)	72.26	✓	
		FILTER OUTLET PRESSURE (PSIG)	43.77	✓	
		PUMP DISCHARGE FLOW (GPM)	65.6	✓	24748 pph @ 86°
		SHAFT TORQUE (IN-LB)	574	✓	
	15 SECOND MAX AT 6307 RPM; RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (1400 ± 20 PSIG)	1401	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.84	✓	
		BOOST STAGE DISCH PRESS (PSIG)	44	✓	
		FILTER OUTLET PRESSURE (PSIG)	73.14	✓	
		PUMP DISCHARGE FLOW (GPM)	64.7	✓	24351 pph @ 89°
		SHAFT TORQUE (IN-LB)	695	✓	

William J Hilbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J Eric Mann — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	2 MINUTE RUN AT 590 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (275 ± 20 PSIG)	N/A		PRESSURE AND PUMP SPEEDS WERE PREVIOUSLY DEMONSTRATED DUAING CORRELATION TESTING. POINTS WERE DELETED AS BEING REDUNDANT.
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	N/A		
		BOOST STAGE DISCH PRESS (PSIG)	N/A		
		FILTER OUTLET PRESSURE (PSIG)	N/A		
		PUMP DISCHARGE FLOW (GPM)	N/A		
		SHAFT TORQUE (IN-LB)	N/A		

William J. Hulbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Erickson — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373MB7P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-7	PRESSURE RELIEF VALVE SETTING				
7-7b	RELIEF PLUG INSTALLED	GEAR INLET PRESSURE (PFO)	N/A		THESE TEST POINTS (PRESSURES AND SPEEDS) WERE PREVIOUSLY DEMONSTRATED ON THE SUNDSTRAND PUMP.
		GEAR DISCHARGE PRESSURE (PS)	N/A		
		GEAR PRESSURE RISE (1350 ± 15 PSID)	N/A		
7-7b(4)		PUMP DISCHARGE FLOW (GPM)	N/A		

William J. Gillett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-7 CONT'D	PRESSURE RELIEF VALVE SETTING (CONT'D)				
7-7c	RELIEF VALVE INSTALLED (VALVE CRACKED)	GEAR INLET PRESSURE (PFO)	N/A		THESE TEST POINTS (PRESSURES AND SPEEDS) WERE PREVIOUSLY DEMONSTRATED ON THE SUNDSTRAND PUMP.
		GEAR DISCHARGE PRESSURE (PS)	N/A		
		GEAR PRESSURE RISE (1350 ± 15 PSID)	N/A		
7-7c(3)		PUMP DISCHARGE FLOW (GPM) (WITHIN 0.2 GPM OF FLOW AT 7-7b(4))	N/A		

William J Talbott — CONTRACTOR ENGINEERING — 10/2/91 — DATE

CONTRACTOR QUALITY — DATE

J Eric Moss — TEST STAND ENGINEER — 10/10/91 — DATE

PROCURING ACTIVITY — 10 Oct 91 — DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084

PART NO. 1373MB7P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-7 CONT'D	PRESSURE RELIEF VALVE SETTING (CONT'D)				
7-7c	VALVE RESEAT	GEAR INLET PRESSURE (PFO)	N/A		THESE TEST POINTS (PRESSURES AND SPEEDS) WERE PREVIOUSLY DEMONSTRATED ON THE SUNDSTRAND PUMP.
		GEAR DISCHARGE PRESSURE (PS)	N/A		
		GEAR PRESSURE RISE (1350 ± 15 PSID)	N/A		
7-7c(4)		PUMP DISCHARGE FLOW (GPM) (WITHIN 0.2 GPM OF FLOW AT 7-7b(4))	N/A		

William J. Hulett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Mon — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
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3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-8	FILTER BYPASS VALVE CHECK				
7-8b(1)	IMPENDING BYPASS INDICATOR (TEST 1)	FILTER DELTA PRESSURE AT ACTUATION (20-25 PSID)	24.6	✓	
		FILTER BY-PASS FLOW (GPM) (4 GPM MAX)	1.9	✓	724 pph @ 74°
		RESETS PROPERLY	(YES)/NO	✓	
	IMPENDING BYPASS INDICATOR (TEST 2)	FILTER DELTA PRESSURE AT ACTUATION (20-25 PSID MIN)		N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		FILTER BY-PASS FLOW (GPM) (4 GPM MAX)		N/A	
		RESETS PROPERLY	YES/NO	N/A	
	IMPENDING BYPASS INDICATOR (TEST 3)	FILTER DELTA PRESSURE AT ACTUATION (20-25 PSID MIN)		N/A	
		FILTER BY-PASS FLOW (GPM) (4 GPM MAX)		N/A	
		RESETS PROPERLY	YES/NO	N/A	

William J Hulbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Mann — TEST STAND ENGINEER — 10/16/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
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3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	FILTER BYPASS VALVE CHECK CONTINUED DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-8b(2)(b)	ACTUAL INDICATOR & BYPASS VALVE CHECK BEFORE CRACKING INDICATOR (TEST 1)	FILTER DELTA PRESSURE (45 PSID MIN)	45.5	✓	
		FILTER BY-PASS FLOW (GPM)	2.0	✓	767pph @ 74°
		RESETS PROPERLY	(YES)/NO	✓	
	ACTUAL INDICATOR & BYPASS VALVE CHECK BEFORE CRACKING INDICATOR (TEST 2)	FILTER DELTA PRESSURE (45 PSID MIN)		N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		FILTER BY-PASS FLOW (GPM)		N/A	
		RESETS PROPERLY	YES/NO	N/A	
	ACTUAL INDICATOR & BYPASS VALVE CHECK BEFORE CRACKING INDICATOR (TEST 3)	FILTER DELTA PRESSURE (45 PSID MIN)		N/A	
		FILTER BY-PASS FLOW (GPM)		N/A	
		RESETS PROPERLY	YES/NO	N/A	

William J. Hulbert — CONTRACTOR ENGINEERING — 10/2/91 — DATE

J. Eric Myers — TEST STAND ENGINEER — 10/10/91 — DATE

CONTRACTOR QUALITY — DATE

PROCURING ACTIVITY — DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	FILTER BYPASS VALVE CHECK CONTINUED DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-8b(2)(c)	ACTUAL INDICATOR & BYPASS VALVE CHECK AFTER CRACKING INDICATOR (TEST 1)	FILTER DELTA PRESSURE (35 PSID MIN)	44	✓	
		FILTER BY-PASS FLOW (GPM) (6 GPM MIN)	6.5	✓	2450pph @ 76°
		RESETS PROPERLY	(YES)/NO	✓	
	ACTUAL INDICATOR & BYPASS VALVE CHECK AFTER CRACKING INDICATOR (TEST 2)	FILTER DELTA PRESSURE (35 PSID MIN)		N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		FILTER BY-PASS FLOW (GPM) (6 GPM MIN)		N/A	
		RESETS PROPERLY	YES/NO	N/A	
	ACTUAL INDICATOR & BYPASS VALVE CHECK AFTER CRACKING INDICATOR (TEST 3)	FILTER DELTA PRESSURE (35 PSID MIN)		N/A	
		FILTER BY-PASS FLOW (GPM) (6 GPM MIN)		N/A	
		RESETS PROPERLY	YES/NO	N/A	

William J. Tibbett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moon — TEST STAND ENGINEER — 10/1/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-10	SECONDARY GREEN RUN THE SECONDARY GREEN RUN WILL NOT BE PERFORMED FOR THE QUALIFICATION TEST BECAUSE IT REQUIRES THAT PUMP BE DISASSEMBLED, INSPECTED AND REASSEMBLED. THIS WOULD INVALIDATE THE VENDOR DATA THAT WE NOW HAVE FOR QUALIFICATION. THE DATA POINTS TO BE RUN ARE BASICALLY A SAMPLING OF THE SAME DATA POINTS RUN DURING THE PRIMARY GREEN.				

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

J Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

CONTRACTOR QUALITY — DATE

M M Clark for — PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-11	ANTI-DRAIN VALVE CHECK				TEST STAND CAPABILITY WAS DEMONSTRATED ON THE SUNDSTRAND PUMP.
7-11b(6)	LEAKAGE AT 2.5 PSIG (CCM)	2 CCM MAX	N/A		
7-12	PUMP CALIBRATION				
	OPERATION AT 6307 RPM	BOOST PRESSURE RISE (PSID) (40 PSID MIN)	54.44	✓	
		FILTER DIFF. PRESS. (PSID) (22 PSID MAX) ~~(23324 PPH @ 90°F)~~	N/A		
		PUMP TOTAL FLOW (GPM) (62 GPM MIN) (23324 PPH @ 90°F)	24400 pph	✓	
		PUMP TORQUE (IN-LB) (691 IN-LB MAX)	669	✓	
		FUEL SEAL LEAKAGE (CCM) (0.1 CCM MAX)	Ø	✓	

William J. Hallett	10/2/91	Jeff Moss	10/10/91
CONTRACTOR ENGINEERING	DATE	TEST STAND ENGINEER	DATE
		Michael Wagner	10 Oct 91
CONTRACTOR QUALITY	DATE	PROCURING ACTIVITY	DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
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CDRL NO. 29084 REVISION B

PART NO. 1373M87P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-12 CONT'D	PUMP CALIBRATION (CONT'D)				
	OPERATION AT 4128 RPM	PUMP TOTAL FLOW (GPM) (42 GPM MIN) (1583A PPH @ 85°)	16538 PPH	✓	
		PUMP TORQUE (IN-LB) (180 IN-LB MAX)	165	✓	
		FUEL SEAL LEAKAGE (CCM) (0.1 CCM MAX)	Ø	✓	
	OPERATION AT 886 RPM	PUMP TOTAL FLOW (GPM) (7.5 GPM MIN) (2828 PPH @ 85°)	3269	✓	
		PUMP TORQUE (IN-LB) (185 IN-LB MAX)	104	✓	
		FUEL SEAL LEAKAGE (CCM) (0.1 CCM MAX)	Ø	✓	

William J. Hewitt — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1457M13P03 S/N SUS 0C153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-2c	PRESSURE RELIEF VALVE TESTS				
7-2c(2)	TOTAL FLOW WITH RELIEF PLUG	N/A	25,435 pph	✓	
7-2c(5)c	RELIEF VALVE INSTALLED	1400 - 1500 PSID	1423	✓	
7-2c(5)d	VALVE RESEAT	N/A	25,510	✓	
7-2c(5)e	DIFF. BETWEEN 7-2c(2) AND 7-2c(5)d	193 PPH (0.5 GPM) MAX	75	✓	
7-2d	INDICATOR AND ACTUAL BYPASS VALVE SEQUENCING (IN PUMP)				
7-2d(5)	IMPENDING BYPASS INDICATOR DELTA P	RUN #1 20 - 30 PSID	25	✓	
		RUN #2 20 - 30 PSID	N/A	✓	
		RUN #3 20 - 30 PSID	N/A	✓	

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moon — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1457M13P03 S/N SUS 0C153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
	INDICATOR AND ACTUAL BYPASS VALVE SEQUENCING (CONT'D)				
7-2d(6)	ACTUAL BYPASS INDICATOR DELTA P	RUN #1 40 - 55 PSID	47	✓	
		RUN #2 40 - 55 PSID	N/A		
		RUN #3 40 - 55 PSID	N/A		
7-2d(7)	ACTUAL BYPASS INDICATOR ACTUATION ACCEPTABLE	RUN #1	(YES)/NO	✓	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		RUN #2	YES/NO	N/A	
		RUN #3	YES/NO	N/A	
7-2e	INDICATOR RESETTING				
7-2e(2)b	ACTUAL BYPASS INDICATOR RESET ACCEPTABLE	RUN #1	(YES)/NO	✓	
		RUN #2	YES/NO	N/A	
		RUN #3	YES/NO	N/A	

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moore — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

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CDRL NO. 29084 REVISION B

PART NO. 1457M13P03 S/N SUS 0C153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
	INDICATOR RESETTING CONT'D				TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TEST WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
7-2e(3)b	IMPENDING BYPASS IND. RESET ACCEPTABLE	RUN #1	(YES)/NO	✓	
		RUN #2	YES/NO	N/A	
		RUN #3	YES/NO	N/A	
7-2f(2)	SERVICE SHUT-OFF VALVE LEAKAGE	2 CCM MAX	0	✓	
7-2h(1)	FUEL SHAFT SEAL STATIC LEAKAGE @ 0 PSIG INLET	0.1 CCM MAX	0	✓	
7-2g(1)	OIL SEAL LEAKAGE @ 50 PSIG	0.1 CCM MAX	0	✓	

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moore — TEST STAND ENGINEER — 10/16/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
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3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1457M13P03 S/N SUS 0C153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-21	PERFORMANCE CALIBRATION				
	CONDITION A AT 6307 RPM				
	PUMP TOTAL FLOW (PPH)	24914 PPH MIN (65.3 GPM)	24881	✓	
	BOOST PRESSURE RISE (PSID)	40 PSID MIN	43.64	✓	
	PUMP INPUT TORQUE (IN-LB)	691 IN-LB MAX	686	✓	
	FUEL SHAFT SEAL LEAKAGE	0.1 CCM MAX	Ø	✓	
	FILTER PRESSURE DROP (PSID)	22.0 PSID MAX	N/A	.	

William J. Hewlett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

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F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
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3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

PART NO. 1457M13P03 S/N SUS OC153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
(CONT'D)	PERFORMANCE CALIBRATION				
7-2i cont'	CONDITION B AT 4128 RPM				
	PUMP TOTAL FLOW (GPM)	16520 PPH MIN (43.3 GPM)	16837	✓	
	FUEL SHAFT SEAL LEAKAGE	0.1 CCM MAX	ϕ	✓	
	PUMP INPUT TORQUE (IN-LB)	193 IN-LB MAX	160	✓	
	CONIDITON C AT 886 RPM				
	PUMP TOTAL FLOW (GPM)	2442 PPH MIN (6.4 GPM)	3118	✓	
	FUEL SHAFT SEAL LEAKAGE	0.1 CCM MAX	ϕ.	✓	
	PUMP INPUT TORQUE (IN-LB)	185 IN LB MAX	111	✓	

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Mon — TEST STAND ENGINEER — 10/16/91 DATE

CONTRACTOR QUALITY — DATE

PROCURING ACTIVITY — 16 Oct 91 DATE

SUBASSEMBLY DATA SHEET "C4" PAGE 1 OF 1

F110-GE-129 MAIN FUEL PUMP
IMPENDING BYPASS INDICATOR

PART NO. 5907807 S/N SUS OC 153

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
	IMPENDING BYPASS INDICATOR TEST (IN FIXTURE)	TEST 1 ACTUATION (20-25 PSI MAX)	24	✓	
		RESET	YES	✓	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		TEST 2 ACTUATION (20-25 PSI MAX)	N/A		
		RESET	N/A		
		TEST 3 ACTUATION (20-25 PSI MAX)	N/A		
		RESET	N/A		

William J. Hulett — CONTRACTOR ENGINEERING — 10/2/91 — DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 — DATE

PROCURING ACTIVITY — 10 Oct 91 — DATE

SUBASSEMBLY DATA SHEET "C5" PAGE 1 OF 1

F110-GE-129 MAIN FUEL PUMP
ACTUAL BY-PASS INDICATOR

PART NO. 5907808 S/N SUS OC 153

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
	ACTUAL BYPASS INDICATOR TEST (IN FIXTURE)	TEST 1 ACTUATION (20-25 PSI MAX)	24	✓	
		RESET	YES	✓	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		TEST 2 ACTUATION (20-25 PSI MAX)	N/A		
		RESET	N/A		
		TEST 3 ACTUATION (20-25 PSI MAX)	N/A		
		RESET	N/A		

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William J. Hulbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Moore — TEST STAND ENGINEER — 10/10/91 DATE

CONTRACTOR QUALITY — DATE

[illegible] — PROCURING ACTIVITY — 10 Oct 91 DATE

APPENDIX "D"

CORRELATION DATA ANALYSIS

AND

ACCEPTANCE FOR

F110-GE-129

"D1" MAIN FUEL PUMP P/N 1373M87P07
"D2" MAIN FUEL PUMP P/N 1457M13P03

DATA ANALYSIS AND ACCEPTANCE SHEEI "D1" PAGE 1 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-4	OIL SEAL CHECK									
7-4b(5)	OIL LEAKAGE @ 55±5 PSIG (CCM)	____	____	____	____	N/A	N/A	Ø	____	____
7-6	PRIMARY GREEN RUN									
7-6b(2)	3 MINUTE RUN AT 3000 RPM									
	DISCH. PRESS. (200 ± 20 PSIG)	____	____	____	____	N/A	N/A	201	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	30.48	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	10.52	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	32.51	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	31.9	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	111	____	____

William J. Talbott 10/2/91
CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J. Eric Moss 10/16/91
TEST STAND ENGINEER DATE

PROCURING ACTIVITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 2 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91

TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2)	1 MINUTE RUN AT 3000 RPM									
	DISCH. PRESS. (300 ± 20 PSIG)					N/A	N/A	N/A		
	INLET PRESS. (30 ± 5 PSIG)					N/A	N/A	N/A		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	N/A	N/A		
	FLTR. OUT PRESS. (PSIG)					N/A	N/A	N/A		
	DISCH. FLOW (GPM)					N/A	N/A	N/A		
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	N/A		
	1 MINUTE RUN AT 5000 RPM									
	DISCH. PRESS. (300 ± 20 PSIG)					N/A	N/A	N/A		
	INLET PRESS. (30 ± 5 PSIG)					N/A	N/A	N/A		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	N/A	N/A		

William J. Talbot
CONTRACTOR ENGINEERING

10/2/91
DATE

CONTRACTOR QUALITY

DATE

J. Eric Moss
TEST STAND ENGINEER

10/10/91
DATE

PROCURING ACTIVITY

10 Oct 91
DATE

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DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 3 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	N/A	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	N/A	____	____
	1 MINUTE RUN AT 5000 RPM									
	DISCH. PRESS. (400 ± 20 PSIG)	____	____	____	____	N/A	N/A	403	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	30.24	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	26.74	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	37.10	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	53.2	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	243	____	____

William A Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

CONTRACTOR QUALITY — DATE

[illegible] — PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 4 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	1 MINUTE RUN AT 6000 RPM									
	DISCH. PRESS. (400 ± 20 PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	N/A	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	N/A	____	____
	1 MINUTE RUN AT 6000 RPM									
	DISCH. PRESS. (500 ± 20 PSID)	____	____	____	____	N/A	N/A	500	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	30.87	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	38.70	____	____

William J. Hulbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

____ — CONTRACTOR QUALITY — ____ DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

____ — PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 5 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-6b(2) CONT'D	PRIMARY GREEN RUN (CONT'D)									
	FLTR. OUT. PRESS. (PSIG)	____	____	____	____	N/A	N/A	40.72	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	63.8	____	____
	SHAFT TORQUE (FT.-LB.)	____	____	____	____	N/A	N/A	311	____	____
	2 MINUTE RUN AT 1000 RPM									
	DISCH. PRESS. (200 ± 20 PSIG)	____	____	____	____	N/A	N/A	205	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	28.77	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	1.64	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	29.96	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	10.0	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	80	____	____

William J. Hallett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 6 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	2 MINUTE RUN AT 1000 RPM									
	DISCH. PRESS. (600 ± 20 PSIG)	____	____	____	____	N/A	N/A	601	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	29.88	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	1.98	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	29.98	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	9.1	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	246	____	____
	1 MINUTE RUN AT 4000 RPM									
	DISCH. PRESS. (300 ± 20 PSIG)	____	____	____	____	N/A	N/A	302	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	28.48	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	18.00	____	____

William L. Talbert 10/2/91
CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J. Eric Moss 10/10/91
TEST STAND ENGINEER DATE

PROCURING ACTIVITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 7 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	FLTR. OUT PRESS. (PSIG)					N/A	N/A	33.3		
	DISCH. FLOW (GPM)					N/A	N/A	42.4		
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	174		
	1 MINUTE RUN AT 4000 RPM									
	DISCH. PRESS. (700 ± 20 PSIG)					N/A	N/A	708		
	INLET PRESS. (30 ± 5 PSIG)					N/A	N/A	28.53		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	N/A	46.58		
	FLTR. OUT PRESS. (PSIG)					N/A	N/A	33.49		
	DISCH. FLOW (GPM)					N/A	N/A	41.6		
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	343		

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William J. Hillett 10/2/91
CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J. Eric Moss 10/6/91
TEST STAND ENGINEER DATE

[illegible] 10 Oct 91
PROCURING ACTIVITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 8 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	1 MINUTE RUN AT 5000 RPM									
	DISCH. PRESS. (300 ± 20 PSIG)	____	____	____	____	N/A	N/A	304	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	28.87	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	55.85	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	36.62	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	53.3	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	200	____	____
	1 MINUTE RUN AT 5000 RPM									
	DISCH. PRESS. (800 ± 20 PSIG)	____	____	____	____	N/A	N/A	803	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	29.21	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	55.95	____	____

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

CONTRACTOR QUALITY — DATE

PROCURING ACTIVITY — 14 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 9 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	FLTR. OUT PRESS. (PSIG)					N/A	N/A	37.50		
	DISCH. FLOW (GPM)					N/A	N/A	52.3		
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	405		
	1 MINUTE RUN AT 6307 RPM									
	DISCH. PRESS. (400 ± 20 PSIG)					N/A	N/A	401		
	INLET PRESS. (30 ± 5 PSIG)					N/A	N/A	29.21		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	N/A	70.80		
	FLTR. OUT PRESS. (PSIG)					N/A	N/A	40.52		
	DISCH. FLOW (GPM)					N/A	N/A	67.2		
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	285		

William J. Hulbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/1/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 10 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	2 MINUTE RUN AT 6307 RPM									
	DISCH. PRESS. (1100 ± 20 PSIG)					N/A	N/A	1103		
	INLET PRESS. (30 ± 5 PSIG)					N/A	N/A	29.85		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	N/A	72.26		
	FLTR. OUT PRESS. (PSIG)					N/A	N/A	43.77		
	DISCH. FLOW (GPM)					N/A	N/A	65.6		
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	574		
	15 SEC. MAX. RUN AT 6307 RPM									
	DISCH. PRESS. (1400 ± 20 PSIG)					N/A	N/A	1401		
	INLET PRESS. (30 ± 5 PSIG)					N/A	N/A	29.84		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	N/A	44		

William J. Talbott — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/6/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 11 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRIMARY GREEN RUN (CONT'D)									
7-6b(2) CONT'D	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	73.14	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	69.7	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	695	____	____
	2 MINUTE RUN AT 590 RPM									
	DISCH. PRESS. (275 ± 20 PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	INLET PRESS. (30 ± 5 PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	BOOST STAGE DISCH. PRESS. (PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	FLTR. OUT PRESS. (PSIG)	____	____	____	____	N/A	N/A	N/A	____	____
	DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	N/A	____	____
	SHAFT TORQUE (IN.-LB.)	____	____	____	____	N/A	N/A	N/A	____	____

William J. Hoatt 10/2/91
CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J. Eric Moss 10/4/91
TEST STAND ENGINEER DATE

PROCURING ACTIVITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 12 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/24/91 TEST OPERATOR E. moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-7	PRESS. RELIEF VALVE SETTING									
7-7b	RELIEF PLUG INSTALLED:									
	GEAR INLET PRESS. (PFO) PSIG					N/A	N/A	N/A		
	GEAR DISCH. PRESS. (PS) PSIG					N/A	N/A	N/A		
	GEAR PRESS. RISE (PS-PFO) PSID					N/A	N/A	N/A		
7-7b(4)	PUMP DISCH. FLOW (GPM)					N/A	N/A	N/A		
7-7c	VALVE CRACKED:									
	GEAR INLET PRESS. (PFO) PSIG					N/A	N/A	N/A		
	GEAR OUTLET PRESS. (PS) PSIG					N/A	N/A	N/A		
	GEAR PRESS. RISE (PS-PFO) PSID					N/A	N/A	N/A		
7-7c(3)	PUMP DISCH. FLOW (GPM)					N/A	N/A	N/A		

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William J. Hulbert 10/2/91
CONTRACTOR ENGINEERING DATE

J. Eric Moss 10/16/91
TEST STAND ENGINEER DATE

CONTRACTOR QUALITY DATE

PROCURING ACTIVITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 13 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373M87P07 S/N ATC 00025 DATE 9/24/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRESS. RELIEF VALVE SETTING (CONT'D)									
	VALVE RESEATED:									
	GEAR INLET PRESS. (PFO) PSIG	____	____	____	____	N/A	N/A	N/A	____	____
	GEAR DISCH. PRESS. (PS) PSIG	____	____	____	____	N/A	N/A	N/A	____	____
	PUMP DISCH. FLOW (GPM)	____	____	____	____	N/A	N/A	N/A	____	____
7-7c(4)	FLOW (GPM) (7-7b(4) TO 7-7c(4) (0.5 GPM MAX)	____	____	____	____	N/A	N/A	N/A	____	____

William J. Talbott 10/2/91
CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J. Eric Moss 10/10/91
TEST STAND ENGINEER DATE

PROCURING ACTIVITY 10 Oct 91
DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 14 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/24/91 TEST OPERATOR E. moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-8	FILTER BYPASS VALVE CHECK									
7-8b(1)	IMPENDING BYPASS INDICATOR									
	ACTUATION DELTA P (PFI-PFO)	____	____	____	____	N/A	N/A	24.6	____	____
	FILTER BYPASS FLOW (GPM)	____	____	____	____	N/A	N/A	1.9	____	____
	RESETS PROPERLY	____	____	____	____	N/A	N/A	(YES)/NO	____	____
7-8b(2)	ACTUAL BYPASS INDICATOR (BEFORE CRACKING)									
	ACTUATION DELTA P (PFI-PFO)	____	____	____	____	N/A	N/A	45.5	____	____
	FILTER BYPASS FLOW (GPM)	____	____	____	____	N/A	N/A	2.0	____	____
	RESETS PROPERLY	____	____	____	____	N/A	N/A	(YES)/NO	____	____
	ACTUAL BYPASS INDICATOR (AFTER CRACKING)									
	ACTUATION DELTA P (PFI-PFO)	____	____	____	____	N/A	N/A	44.0	____	____
	FILTER BYPASS FLOW (GPM)	____	____	____	____	N/A	N/A	6.5	____	____
	RESETS PROPERLY	____	____	____	____	N/A	N/A	YES/NO	____	____

William J Tullett 10/2/91
CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J Eric Moss 10/10/91
TEST STAND ENGINEER DATE

[illegible] 10 Oct 91
PROCURING ACTIVITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 15 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373M87P07 S/N ATC 00025 DATE 9/23/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-11	ANTI-DRAIN VALVE CHECK									
7-11b(6)	VALVE LEAKAGE @ 2.5 PSIG (CCM)					N/A	N/A	N/A		
7-12	PUMP CALIBRATION									
	6307RPM									
	BOOST PRESSURE RISE (PSID)	53.1	53.6	53.6	53.4	±2.0	51.4-55.4	54.44	✓	
	FILTER DIFF. PRESS. (PSID)	16.6	16.6	16.9	16.7	22 MAX	N/A	N/A		
	PUMP TOTAL FLOW (GPM)	24221	24258	24221	24233	±188	24045-24421	24400	✓	
	PUMP TORQUE (IN-LB)	668.6	669.8	670.5	669.6	±10	659.6-679.6	669	✓	
	FUEL SEAL LEAKAGE (CCM)	0	0	0	0	0.1 MAX	N/A	0	✓	

William J. Hulett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10 Sep 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 16 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/23/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-12 CONT'D	PUMP CALIBRATION (CONT'D)									
	4128RPM									
	PUMP TOTAL FLOW (GPM)	16392	16430	16430	16417	±189	16228-16606	16538	✓	
	PUMP TORQUE (IN-LB)	165.1	162.6	162.9	163.5	±6.0	157.5-169.5	165	✓	
	FUEL SEAL LEAKAGE (CCM)	0	0	0	0	0.1 MAX	N/A	0	✓	
	886RPM									
	PUMP TOTAL FLOW (GPM)	3174	3174	3174	3174	±189	2985-3363	3269	✓	
	PUMP TORQUE (IN-LB)	109.0	107.5	107.2	107.9	±6.0	101.9-113.9	~~104~~ 106	✓	
	FUEL SEAL LEAKAGE (CCM)	0	0	0	0	0.1 MAX	N/A	0	✓	

William J. Hulbert — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/6/91 DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D2" PAGE 1 OF 3

F110-GE-129 MAIN FUEL PUMP

P/N 1457M13P03 S/N 5US OC 153 DATE 9/24/91

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B
TEST OPERATOR E. moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PRESSURE RELIEF VALVE TEST									
7-2c(2)	TOTAL FLOW WITH RELIEF PLUG	24980	24942	24980	24967	N/A	N/A	25,435		
7-2c(5)c	(Ps-Pfo) AP AT 2.0 TO 5.0 GPM	1430	1425	1425	1427	N/A	N/A	1423		
7-2c(5)d	TOTAL FLOW AT 1350 PSID (Ps-Pfo)	24980	24942	24980	24967	N/A	N/A	25,510		
	INDICATOR AND BYPASS VALVE SEQUENCING.									
7-2d(5)	IMPENDING INDICATOR ACTUATION DELTA PRESSURE (PFI-PFO)	23	23	24	23	N/A	N/A	25		
7-2d(6)	ACTUAL INDICATOR ACTUATION DELTA PRESSURE (PFI-PFO)	44	46	45	45	N/A	N/A	47		
7-2d(7)	ACTUAL BYPASS INDICATOR ACTUATION	✓	✓	✓		N/A	N/A	(YES)/NO		
7-2e(2)b	ACTUAL BYPASS INDICATOR EXTERNAL RESET	✓	✓	✓		N/A	N/A	(YES)/NO		
7-2e(3)b	IMPENDING BYPASS INDICATOR EXTERNAL RESET	✓	✓	✓		N/A	N/A	(YES)/NO		

William J. Hallett — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Moss — TEST STAND ENGINEER — 10/6/91 DATE

CONTRACTOR QUALITY — DATE

[illegible] — PROCURING ACTIVITY — 10-07-91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D2" PAGE 2 OF 3

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1457M13P03 S/N SUS OC 153 DATE 9/23/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-2f(2)	SHUT-OFF VALVE LEAKAGE (2 CCM MAX)					N/A	N/A	0		
	FUEL AND OIL SHAFT SEAL LEAKAGE TESTS									
7-2g(2)	OIL SEAL LEAKAGE @ 50 PSIG (0.1 CCM MAX)					N/A	N/A	0		
7-2h(1)	FUEL SHAFT SEAL STATIC LEAKAGE AT 0 PSIG (0.1 CCM MAX)					N/A	N/A	0		
	PERFORMANCE CALIBRATION									
7-2i	CONDITION A									
	PUMP TOTAL FLOW - GPM	24992	25017	25054	25004	±188	24816-25192	24881	✓	
	BOOST PRESSURE RISE - PSID	43	43	43	43	±2.0	41-45	43.64	✓	
	PUMP INPUT TORQUE - IN. LBS.	676	686	682	681	±10	671-691	686	✓	
	FUEL SHAFT SEAL LEAKAGE (CCM)	0	0	0	0	N/A	N/A	0	✓	
	FILTER PRESSURE DROP - PSID	14	14	14	14	N/A	N/A	N/A		

William J. Shelton — CONTRACTOR ENGINEERING — 10/2/91 DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

CONTRACTOR QUALITY — DATE

PROCURING ACTIVITY — 10 Oct 91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D2" PAGE 3 OF 3

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084 REVISION B

P/N 1457M13P03 S/N SUS 0C153 DATE 9/23/91 TEST OPERATOR E. Moss

T.O. PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	PERFORMANCE CALIBRATION (CONT'D)									
7-2i cont'	CONDITION B									
	PUMP TOTAL FLOW - GPM	16732	16845	16808	16795	±189	16606-16984	16837	✓	
	FUEL SHAFT SEAL LEAKAGE (CCM)	0	0	0	0	N/A	N/A	0	✓	
	PUMP INPUT TORQUE - IN. LBS.	162	160	162	161	±6.0	155-167	160	✓	
	CONDITION C									
	PUMP TOTAL FLOW - GPM	3174	3174	3136	3161	±189	2972-3350	3118	✓	
	FUEL SHAFT SEAL LEAKAGE (CCM)	0	0	0	0	N/A	N/A	0	✓	
	PUMP INPUT TORQUE - IN. LBS.	118	112	112	114	±6.0	108-120	113 ~~114~~ RPM	✓	

William J. Tullett — CONTRACTOR ENGINEERING — 10/2/91 DATE

CONTRACTOR QUALITY — DATE

J. Eric Moss — TEST STAND ENGINEER — 10/10/91 DATE

PROCURING ACTIVITY — 10/10/91 DATE

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APPENDIX D

INSPECTION DATA SHEETS

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084

DATA SHEET 4.2.1
WORKMANSHIP INSPECTIONS

	ACCEPT	REJECT	DATE
/ ASSEMBLY MATCHES DOCUMENTATION	[signature]	_____	10/10/91
NO UNAUTHORIZED REPAIRS PERFORMED OR SUBSTITUTED PARTS	[signature]	_____	26 Sep 91
GENERAL GOOD WORKMANSHIP	[signature]	_____	26 Sep 91

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	[signature] TEST STAND ENGINEERING	9/26/91 DATE
_____ CONTRACTOR QUALITY	_____ DATE	[signature] ILT, USAF PROCURING ACTIVITY	26 Sep 91 DATE

DATA SHEET 4.2.3
MARKING INSPECTIONS

	ACCEPT	REJECT	DATE
TEST STAND NAMEPLATE PROPERLY EXECUTED	[signature]	_____	26 Sep 91
RETROFIT NAMEPLATES INSTALLED IN PROPER LOCATION & VERIFIED	[signature]	_____	26 Sep 91
REMOVED NAMEPLATES DISCARDED	[signature]	_____	26 Sep 91
LOOSE ITEMS PROPERLY IDENTIFIED AT SHIPMENT	[signature]	_____	26 Sep 91
NAMEPLATES CONFORM TO PURCHASER'S DRAWING IN LOCATION AND CONTENT	[signature]	_____	26 Sep 91
NEW RETRO-FIT PARTS PROPERLY IDENTIFIED	[signature]	_____	26 Sep 91

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	[signature] TEST STAND ENGINEERING	9/26/91 DATE
_____ CONTRACTOR QUALITY	_____ DATE	[signature] PROCURING ACTIVITY	26 Sep 91 DATE

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084

- DATA SHEET 4.2.4
NEATNESS INSPECTIONS

	ACCEPT	REJECT	DATE
PANELS REPLACED AND SECURED	[signature]	_____	26 Sep 91
INSTRUMENTATION RETURNED CONNECTED & SECURED IN PLACE	[signature]	_____	26 Sep 91
SCREWS, NUTS AND BOLTS PROPERLY INSTALLED AND TIGHTENED	[signature]	_____	26 Sep 91

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	[signature] TEST STAND ENGINEERING	9/26/91 DATE
_____ CONTRACTOR QUALITY	_____ DATE	[signature] 1Lt, USAF PROCURING ACTIVITY	26 Sep 91 DATE

DATA SHEET 4.2.5
CLEANLINESS INSPECTIONS

	ACCEPT	REJECT	DATE
KIT HOSES THOROUGHLY FLUSHED	[signature]	_____	26 Sep 91
ALL HOSES FREE FROM BURRS AND LOOSE MATERIAL INSIDE HOSE	[signature]	_____	26 Sep 91
FITTINGS AND KIT HARDWARE CLEAN AND CORROSION FREE	[signature]	_____	26 Sep 91
UUT TOOLING ON LOAN AND GE EQUIPMENT MAINTAINED CLEAN AND PROPERLY PRESERVED	[signature]	_____	26 Sep 91

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	[signature] TEST STAND ENGINEERING	9/26/91 DATE
_____ CONTRACTOR QUALITY	_____ DATE	[signature] PROCURING ACTIVITY	26 Sep 91 DATE

DATA SHEET 4.2.6
NEW QUALITY COMPONENTS

	ACCEPT	REJECT	DATE
ALL PARTS ARE OF NEW, OF HIGH QUALITY, AND CURRENT MANUFACTURE	[signature]	_____	26 Sep 91
ALL PARTS ARE FREE FROM SHIPPING DAMAGE	[signature]	_____	26 Sep 91

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	[signature] TEST STAND ENGINEERING	9/26/91 DATE
_____ CONTRACTOR QUALITY	_____ DATE	[signature] PROCURING ACTIVITY	26 Sep 91 DATE

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-84-C-2011
3C3965G05 FUEL PUMP TEST STAND
CDRL NO. 29084

DATA SHEET 6.2.7
ELECTROMAGNETIC INTERFERENCE TESTS

	ACCEPT	REJECT	DATE
THE UUT COMPONENT TESTING EXHIBITED NO EVIDENCE OF ELECTRO-MAGNETIC INTERFERENCE	[signature]	_____	26 Sep 91

SUCCESSFUL COMPLETION OF THE CORRELATION TESTING SHALL DEMONSTRATE COMPLIANCE TO THIS REQUIREMENT.

COMMENTS

_____	_____	[signature]	9/26/91
CONTRACTOR ENGINEERING	DATE	TEST STAND ENGINEERING	DATE
_____	_____	[signature] 11 Sep 91	26 Sep 91
CONTRACTOR QUALITY	DATE	PROCURING ACTIVITY	DATE

DATA SHEET 6.2.27
RIGID AND FLEXIBLE LINES TEST

	ACCEPT	REJECT	DATE
RIGID AND FLEXIBLE LINES HAVE BEEN PROOF TESTED AND SUCCESSFUL ITEMS IDENTIFIED WITH A DISTINGUISHING IDENTIFICATION MEANS	[signature]	_____	10 Oct 91

100% TESTING ON A REPRESENTATIVE SAMPLE OF THE TEST HOSES ASSEMBLED FOR USE IN THE TEST STAND HAS BEEN PERFORMED. THE VENDOR QUALITY CONTROL FUNCTION WILL PERFORM PERIODIC AUDITS, THEREAFTER, TO ASSURE COMPLIANCE TO THIS REQUIREMENT.

ALL HOSE ASSEMBLIES MANUFACTURED FOR USE ON THE TEST STAND TEST KIT HAVE BEEN TESTED FOR 100% COMPLIANCE TO THIS REQUIREMENT.

ALL RIGID LINES MANUFACTURED FOR USE IN THE TEST STAND HAVE BEEN TESTED ON ACCORDANCE WITH THE MANUFACTURING DRAWING REQUIREMENTS.

BASED ON THE REPRESENTATIVE SAMPLE AND FOLLOW-ON AUDIT, A CERTIFICATE OF COMPLIANCE FOR THE HOSES MANUFACTURED HAS BEEN PROVIDED AND IS ATTACHED.

COMMENTS

Hoses were identified with a tag that they met the above requirements. Pressure requirements were further demonstrated by successfully completing Correlation efforts.

_____	_____	[signature]	10/10/91
CONTRACTOR ENGINEERING	DATE	TEST STAND ENGINEERING	DATE
_____	_____	[signature] 1Lt, USAF	10 Oct 91
CONTRACTOR QUALITY	DATE	PROCURING ACTIVITY	DATE

QUALIFICATION TEST PROCEDURE

CONTRACT NO. F33657-84-C-2011

3C3965G05 FUEL PUMP TEST STAND

CDRL NO. 29084

DATA SHEET 6.2.28
CALIBRATION

	ACCEPT	REJECT	DATE
PRIMARY INSTRUMENTATION: USED TO MEASURE UUT TEST PARAMETERS. DOCUMENTATION ON FILE IN CALIBRATION SECTION OF RECORDS PACKAGE (VOL. I, SECTION C)	[signature]	_____	26 Sep 91

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	[signature] TEST STAND ENGINEERING	9/26/91 DATE
_____ CONTRACTOR QUALITY	_____ DATE	[signature] PROCURING ACTIVITY	26 Sep 91 DATE

DATA SHEET 6.2.40
MICRO-FLO 100 INSTRUMENTATION INSPECTIONS

	ACCEPT	REJECT	DATE
DISPLAYED ALL G01 TEST MENUS	[signature]	_____	26 Sep 91
DISPLAYED ALL G02 TEST MENUS	[signature]	_____	26 Sep 91
DISPLAYED ALL G03 TEST MENUS	[signature]	_____	26 Sep 91
DISPLAYED ALL G04 TEST MENUS	[signature]	_____	26 Sep 91
DISPLAYED ALL G05 TEST MENUS	[signature]	_____	26 Sep 91
DISPLAYED COMPLETE LIST OF PRIMARY INPUT TRANSDUCERS	[signature]	_____	26 Sep 91
DISPLAYED EXTRA TRANSDUCER CALLOUT PER TEST MENU	[signature]	_____	26 Sep 91
DISPLAYED MAINTENANCE FUNCTIONAL CHECKOUT DATA	[signature]	_____	26 Sep 91
DISPLAYED CHANGE OF FUNCTIONAL CHECKOUT DATA	[signature]	_____	26 Sep 91
AFTER APPLICABLE UUT CORRELATION TESTING, MICRO-FLO 100 DEMONSTRATED 100% DESIGN CAPABILITY	[signature]	_____	26 Sep 91

COMMENTS

_____	_____	[signature]	9/25/91
CONTRACTOR ENGINEERING	DATE	TEST STAND ENGINEERING	DATE
_____	_____	[signature]	26 Sep 91
CONTRACTOR QUALITY	DATE	PROCURING ACTIVITY	DATE

APPENDIX E

CORRELATION DATA SHEETS (F118)

APPENDIX "D" PAGE 1

CORRELATION DATA ANAYLSIS AND ACCEPTANCE (REV. 1 7-18-89)

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-86-C-2040
3C3965C04 FUEL PUMP TEST STAND
CDRL NO. 1016

F118 MAIN FUEL PUMP
P/N 1265M91P07 S/N MX469041 DATE OCT. 1, 1991 TEST OPERATOR ERIC MOSS

PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-2.d	PROOF PRESSURE TEST									
7-2.j	RELIEF VALVE CHECK									
7-2.j (7)	6690 RPM & 1460 PSIG	48.78	48.73	48.49	48.66	N/A	N/A	N/A		
7-2.j (8)	6690 RPM LESS 3.06 GPM	45.78	46.73	45.49	46.67	N/A	N/A	N/A		
	PERFORMANCE									
7-2.k	NORMAL RATED CONDITIONS (6)									
	PUMP DISCHARGE FLOW (GPM)	52.25	52.15	52.25	52.22	±0.8	51.41 - 53.01	52.11	✓	
	INTERSTAGE PRESSURE RISE (PSID)	67	65	66	66	± 3.0	63 - 69	68.6	✓	
	TORQUE (LB-IN)	463.6	469.0	459.4	464.0	± 10	454 - 474	461 (497)*	✓	
7-2.l	LOW PRESSURE CONDITIONS									
	PUMP DISCHARGE FLOW (GPM)	54.64	54.59	54.64	54.62	± 0.8	53.82 - 55.42	54.31	✓	
	INTERSTAGE PRESSURE RISE (PSID)	78	78	78	78.33	± 3.0	75.33 - 81.33	77.83	✓	
	TORQUE (LB-IN)	166.9	170.0	168.7	168.5	± 10	158.5 - 178.5	171 (207)*	✓	

*( ) denotes actual torque readings displayed on instrumentation.

CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

TEST STAND ENGINEER 10/01/91 DATE

ENGINEERING ACTIVITY 1 Oct 91 DATE

APPENDIX "D" PAGE 2

CORRELATION DATA ANALYSIS AND ACCEPTANCE (REV. 1 7-18-89)

QUALIFICATION TEST PROCEDURE
CONTRACT NO. F33657-86-C-2040
3C1965G04 FUEL PUMP TEST STAND
CDRL NO. 1016

F118 MAIN FUEL PUMP
P/N 1265M91P07 S/N MX469041 DATE OCT. 1, 1991 TEST OPERATOR ERIC MOSS

PARAGRAPH		RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-2.m	PERFORMANCE IDLE									
	PUMP DISCHARGE FLOW (GPM)	34.73	34.68	34.73	34.71	±0.6	34.11-35.31	34.5	✓	
	INTERSTAGE PRESSURE RISE (GPM)	32.5	34	32	32.8	±1.0	31.8-33.8	32.0	✓	
	TORQUE (LB-IN)	126	126	125.6	125.9	±6	119.9-131.9	122 (152)*	✓	
7-2.n	INTERMEDIATE CRANKING									
	PUMP DISCHARGE FLOW (GPM)	8.47	8.42	8.47	8.45	±0.2	8.25-8.65	8.39	✓	
	TORQUE (LB-IN)	92.5	92.5	90.2	91.7	±6	85.7-97.7	87 (105)*	✓	
7-2.o	PERFORMANCE CRACKING									
	PUMP DISCHARGE FLOW (GPM)	4.36	4.31	4.27	4.31	±0.1	4.21-4.41	4.34	✓	
	TORQUE (LB-IN)	92.0	93.4	92.9	92.8	±6	86.8-98.8	87 (101)*	✓	
7-2.p	EXTERNAL LEAKAGE									
7-2.p	SHAFT SEAL LEAKAGE						N/A	N/A	0	
7-2.q	COUPLING SHAFT LEAKAGE						N/A	N/A	0	

*( ) denotes actual torque readings displayed on instrumentation.

CONTRACTOR ENGINEERING DATE

CONTRACTOR QUALITY DATE

J. Eric Moss TEST STAND ENGINEER 10/01/91 DATE

TESTING ACTIVITY 10 Oct 91 DATE

JUL 30 '95 13:35 GE30