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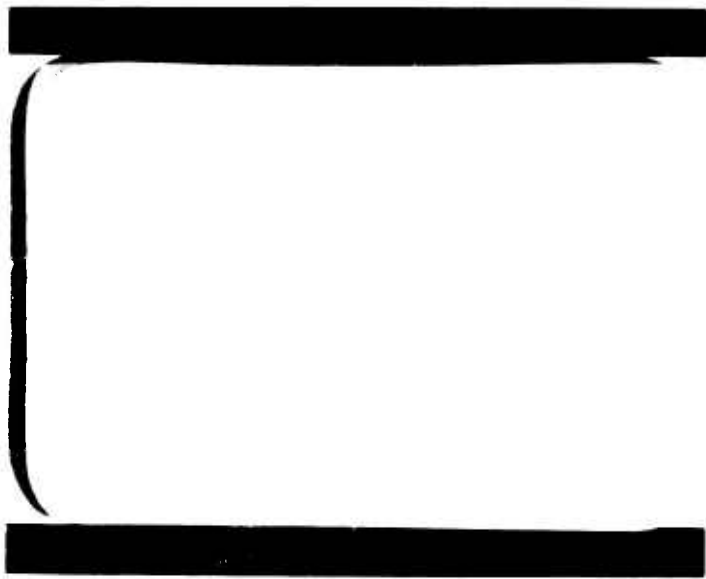
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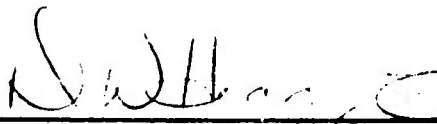
A2136-1 (REV 6-61)

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AD 844034

MERCURY
TEST SUMMARY
FOR
MAJOR CRITICAL COMPONENTS
AIRBORNE EQUIPMENT
AE61-0512-10
1 MARCH 1962

GENERAL DYNAMICS/ASTRONAUTICS
PREPARED BY SYSTEMS ENGINEERING



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DEC 3 1962

GENERAL DYNAMICS
ASTRONAUTICS

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P. E. Culbertson		510-40	W. G. Hardy	565-10
O. C. Priest		522-30	K. E. Newton (AMR)	571-1
			C. C. Campbell	146-50
Systems Engineering	(20)	531-30	J. B. Nelson	145-80
R. I. Kreisler/			W. B. Otto	146-10
J. Luster		535-30	A. H. Lakritz	146-50
W. R. Buevens		535-50		
R. H. Nicholson/AMR/	(2)	571-40	H. H. Mishler	342-10
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GD/A Aerospace
Field Office

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REFERENCES

- (a) AFMBO letter MCPTC:JMP:law, PRO 13, dated 29 January 1958, Subject: "Contract AF04(645)-4. Environmental Requirements and Test Procedures for WS 107A-1 Equipments. Convair Specification 7-00210 dated 15 October 1957"
- (b) Convair letter MR:OCP:emp, 531-3015, dated 22 November 1957. Subject: "Contract AF04(645)-4, Environmental Testing of Convair Furnished Equipment"
- (c) Convair Specification 7-00209B, dated 1 March 1958, Addendum I, dated 5 January 1961, "Environmental Design Conditions and Environmental Test Procedures for WS 107A-1 Equipments"
- (d) Convair Specification 7-00210B, dated 1 May 1958, "Environmental Requirements and Test Procedures for WS 107A-1 Equipments"
- (e) Contract AF04(647)-699, CCN 70; Sales Order 89-1-71.
- (f) Contract AF04(647)-635, CCN 85; Sales Order 92-1-79.
- (g) Contract AF04(647)-299, CCN 721; Sales Order 11-1-577.
- (h) AZR-27-001, Test Status Report.

1.0 OBJECTIVE

This report presents the qualification or approval status of major critical components on the Mercury portion of WS107A-1. All components are operating, non-standard, airborne CFE components.

This report is submitted in compliance with:

S.O. 11-1-577, CCN 721 of contract AF04(647)-299

S.O. 92-1-79, CCN 85 of contract AF04(647)-635

S.O. 89-1-71, CCN 70 of contract AF04(647)-699

2.0 SUMMARY

There are 146 major critical components included in this report. One hundred-thirty-seven (137) are subject to qualification testing. The test statuses of components subject to test are:

Qualified by:

PPT	42
FPT	7
BOS	57
Other	
SFCW	1
Evaluation tests (Modified commercial parts)	7
Similarity to qualified units, plus additional tests	15
Validation tests	5
Total	<u>134</u>

To be Qualified by:

PPT	1
FPT	0
BOS	1
Other	
Similarity to qualified units, plus additional tests	0
Total	<u>2</u>

Not to be used:

Rejected for missile use (Design not acceptable)	1 *
Additional testing required	<u>0</u>
Total	<u>1</u>
	Total 137

2.1 No additional types of components were added in this issue.

* Used only on 100D.

3.0 CODING

Column entries in the summary sheets reflect pertinent information as described in paragraph 3.1 through paragraph 3.8.

3.1 PART NUMBER Column

Part numbers, specification numbers, and vendors name are listed in the order indicated in the column heading. If a number is not applicable or a number has not been assigned, dashes will be entered to indicate such omission and maintain descending continuity.

3.2 EFFECTIVITY Column

The effectivity of the listed part is indicated by the manufacturing sequence numbers for Mercury boosters.

3.3 NOMENCLATURE Column

Nomenclature will be that appearing on the contractor's release records or drawings.

A QCDI entry in the lower part of the column indicates the item is listed in the current issue of Departmental Instruction 141-0-92, Quality Assurance Provisions Mercury Pilot Safety Program.

3.4 MAD APPR Columns

Current CCN's do not require these entries and the entries are deleted. Column headings are deleted from the revised form. When significant changes are made on a page, the revised form will be utilized.

3.5 CRIT COMP Column

This entry is replaced by a QCDI entry in the NOMENCLATURE column. (Refer to paragraph 3.3.) The column heading is deleted from the revised form. When significant changes are made on a page, the revised form will be used.

3.6 QUAL BY Column

Entries in the QUAL BY column indicate the method by which the item is qualified. A "PPT" entry indicates that the item was or will be qualified by preproduction tests in accordance with Convair Specification 7-00209B. A "BOS" entry indicates that the item was or will be qualified on the basis of similarity to a previously-qualified item. An "FPT" entry indicates that the item was or will be flight proof tested in accordance with Convair Specification 7-00210B. An "OTH" entry indicates that the item was or will be qualified by means other than those given above.

3.7 TEST SCHED Column

Column entries indicate requirements for test schedules; they do not indicate requirements for testing. "Date" entries in the column indicate time spans for the test schedules. "Completed" entries indicate the test schedules are complete. "Not required" entries indicate schedules are not required; the entries do not indicate tests are not required since qualification may be demonstrated by similarity to previously qualified items or by another manner of qualification.

3.8 REVISION/ADDITION CODING

A horizontal bar inside the lower margin of a page indicates the page is new or revised for the current issue of the report. See example at bottom of this page.

MERCURY

MAJOR CRITICAL COMPONENTS

HYDRAULICS

There are 30 major critical components included in this section. Seventeen units were preproduction tested, one unit is not for missile use, and ten units were approved based on similarity to preproduction tested units and nine of the ten received some additional testing. Two other units will also be approved based on similarity to preproduction tested units, but still require some additional testing.

The 27-08573-1 actuator cylinder manufactured by the Bohanan company will not be used on any missiles because of inherent structural weaknesses. The actuator was included in the basic issue of this report in compliance with references e, f, and g.

The 27-08573-3 and 27-08574-801 vernier servo cylinders, manufactured by Clemco, have successfully passed PET tests and are considered by the Design Group to be satisfactory for flight use.

Relief-valve 27-08569-1, manufactured to original material design requirements of 17-4 Ph poppet and 52100 chrome sleeve, successfully passed PET's. Prior to these tests, this unit was experiencing scoring and unstable operation, however, the problem has apparently been resolved. Similar scoring problems were experienced on the 27-08561-1 relief valve as above; however, it was determined thru tests that chrome plating the poppet will eliminate the scoring problem. This unit has also successfully passed recent PET's.

MERCURY TEST SUMMARY		HYDRAULICS		TEST SCHEDULE			
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N		EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL
27-08550-5 27-08550J 27-04202K Moog Valve M-7773		100D Only	Servo Cylinder - Booster Hydraulic	BOS	(12-61) Approved based on similarity to 27-08550-1, which was preproduction tested and reported in Moog Report No. MR-322. The 27-08550-5 was approved on VAF MC 29093 dated 6-26-59. NOTE 1. This unit reworked to a 27-87066-1 servo cylinder by service action which replaced the integral filter and servo valve orifice plate. 2. This unit is not to be used on Mercury vehicles.	Complete	June 1959

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PRG SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08550-7 27-08550K 27-04202K Hydraulic Research Mfg. 104700-1	77D 88D 93D 103D 107D 109D 113D 130D 144D 152D 167D	Servo Cylinder - Booster Hydraulic	Oth	(5-61) (10-61) Approved based on similarity to the 27-08550-1, which was preproduction tested, and by additional testing as required. Additional testing is reported in ETL reports, numbers 7A2311 and 7A576. The basic differences between the -7 and the -1 are minor bleed port changes and a rod-end locking device which was functionally evaluated and tested in the -7 cylinder. Specification was revised to K revision. Difference between K revision and the basic specification required additional calibration testing on the transducer which is a sub-component of the cylinder assembly. GD/A design group approved PPT on VAF MC 36974, dated 9-8-59.	Complete	Sept. 1959
		QC DI				

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS		START	COMPL
				27-08551-3 27-08551G 27-08503C BenBow-Pantex 8985	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Tank - Hydraulic Fluid, Booster, Type III	PPT

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08552-5 27-08552H 27-08504C BenBow-Pantex 8983E	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Tank - Hydraulic Fluid, Sustainer, Type II	PPT	(6-61) Two units were preproduction tested to 27-08504C Specification. Results were reported in Wyle Labs Test Report 8188 Addendum I. GD/A design group approved PPT on 27-08552-5 in VAF 45313, dated 3-7-60.	Complete	March 1960

QC DI

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL	
27-08553-3 27-08553G 27-08507D Peacock Engineering 51305-3	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Accumulator - Hydraulic, Sustainer	PPT	(5-61) Two units S/N 1X and S/N 2X were preproduction tested by the Wyle Labs. The PPT data and additional test requirements were included in Wyle Lab reports 5845, Addendums I, II, and III. GD/A design group approved PPT in VAFS 45857 and 27813, dated 2-23-60. <u>NOTE</u> Unit is being investigated for possible redesign action to prevent leakage past the piston.	Complete	March 1959	
		QC DI					

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08554-3 27-08554F 27-08506D Peacock Engineering 51310-3	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Accumulator - Hydraulic, Booster	PPT	(5-61) (10-61) Two units S/N X1 and S/N X2 were preproduction tested by the Wyle Labs. The PPT data is recorded in report 5844, Addendum II, dated 8-26-58, and report 5844, Addendum III, dated 3-18-59. GD/A design approved PPT in VAF MC 27885, dated 2-24-59.	Complete March 1959	
					<p><u>NOTE</u></p> <p>1. Unit has an in-service history of precharge gas pressure leakage past the piston and in- to the hydraulic system.</p> <p>2. Unit is being investigated for possible re- design action to prevent this leakage in future installations.</p>	

QC DI

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N		EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL
27-08555-1 27-08555D 27-08511A Peacock Engineering 51285-1		77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Staging, Hydraulic Return	PPT	(6-61) Two units S/N 1 and S/N 2 were preproduction tested to 27-08511 Specification. Results were reported in Wyle Test Lab Memo dated 10-15-58, Report 5961 dated 9-26-58 and TR-5841, Addendums I, II, and III. PPT was approved on VAF MC 21559, dated 10-23-58. Specification was revised to A revision. It differs from the basic specification in that the revised specification incorporates maximum weight of the valve and revised procedure for proof cycle test. These revisions were tested in later PET's of this unit. Unit is mounted on the booster section, and used for sustainer hydraulic system.	Complete	Oct. 1958
			QC DI				

MERCURY TEST SUMMARY					HYDRAULIC		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N		EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL	
27-08555-3 27-08555D 27-08511C Peacock Engineering 51285-3		77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Staging, Hydraulic Return	PPT	(6-61) (10-61) Two units were preproduction tested to 27-08511A specification. Results were reported in Wyle Test Report 5841, Addendums I, II, and III. GD/A design group approved PPT of 27-08555-3 in VAF MC 21560, dated 10-23-58. Specification was revised to B and C revisions. They differ from the A revision in that B and C revisions incorporate maximum weight of the valve and a revised procedure for proof cycle test. These revisions have been tested in later PET's of this unit. Unit is mounted on the sustainer section and is used for the sustainer hydraulic system.	Complete	Nov. 1958	
			QC DI					

HYDRAULICS

MERCURY TEST SUMMARY		HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START COMPL
27-08556-3 27-08556L 27-08511C Peacock Engineering 51290-3	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Staging, Hydraulic Pressure	PPT	(6-61) Two units S/N 1 and S/N 2 were preproduction tested to 27-08511A specification. Results were reported in Wyle Test Report 5842, Addendums I, II, and III. GD/A design group approved PPT on 27-08556-3 in VAF 21562, dated 10-23-58. Specification was revised to B and C revisions. They differ from the A revision in that B and C incorporate maximum weight of the valve and a revised procedure for proof cycle test. These revisions have been tested in later PET's of this unit. Unit is mounted on the sustainer section and is used for the sustainer hydraulic system.	Complete Oct. 1958
		QC DI			

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08556-5 27-08556D 27-08511C Peacock Engineering 51290-5	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Staging, Hydraulic Pressure	Oth	(6-61) (10-61) Approved based on similarity to the -1 and the -3, which were preproduction tested to specification 27-08511A, and by additional tests as required. Results were reported in Wyle lab report 5842. The -5 differs from the -1 in that a check valve was eliminated from the -5 valve to make it compatible with the system. This coupling replaces the 27-08566-1 coupling. GD/A design group approved the 27-08556-5 in VAF MC 43858, dated 3-4-60. Specification was revised to B and C revisions. They differ from the A revision in that B and C incorporate maximum weight of the valve and a revised procedure for proof cycle test. These revisions have been tested in later PET's of this unit. Unit is mounted on the booster section and is used for the sustainer hydraulic system.	Complete March 1960	

QC DI

HYDRAULICS

MERCURY TEST SUMMARY		EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	START					COMPL	
27-08557-1 27-08557 27-08510C Peacock Engineering 51295-1	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Rise-Off, Hydraulic Return	PPT	(6-61) (10-61) The unit was preproduction tested to revision A of the specification. Results were reported in TR 5872. GD/A design group approved the unit on VAF 21967, dated 11-1-58. Specification was revised to C revision. The C revision differs from the A revision in that the weight of the unit was increased to reflect the actual unit and several other (minor) changes not affecting design or test requirements. This unit passed search-for-critical-weakness tests on 4-9-59 and PET's on 5-3-60. Unit is mounted on the launcher and is used for the booster hydraulic system.	Complete Nov. 1958		
		QC DI					

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL	
27-08557-3 27-08557 27-08510C Peacock Engineering 51295-3	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Rise-Off, Hydraulic Return	PPT	(6-61) (10-61) The coupling was preproduction tested to specification 27-08510A and the results were reported in TR 194 on test specimens S/N 002 and S/N 003. GD/A design group approved the testing on VAF MC 35157, dated 7-22-59. Specification was revised to C revision. The C revision differs from the A revision in that the weight of the unit was increased to reflect the actual unit and several other (minor) changes not affecting design or test requirements. Unit is mounted on the booster and is used for the booster hydraulic section. This unit passed search-for-critical-weakness test on 4-9-59 and PET on 4-13-60.	Complete Aug. 1959		
		QC DI					

HYDRAULICS

MERCURY TEST SUMMARY				TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START COMPL
27-08558-1 27-08558 27-08510C Peacock Engineering 51300-1	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Rise-Off, Hydraulic Pressure	PPT	(6-61) (10-61) The unit was preproduction tested to specification 27-08510A and results were reported in test report 5873, Addendum III. GD/A design group approved the unit on VAF's 23795 and 23796, dated 12-10-58. Specification was revised to C revision. The C revision differs from the A revision in that the weight of the unit was increased to reflect the actual unit and several other (minor) changes not affecting design or test requirements. This unit passed search-for-critical-weakness test on 3-9-61 and PET on 5-3-60. Unit is mounted on the launcher and is used for the booster hydraulic system.	Complete Dec. 1958
		QC DI			

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	
27-08558-3 27-08558 27-08510C Peacock Engineering 51300-3	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Coupling Assembly - Rise-Off, Hydraulic Pressure	PPT	(6-61) The unit was preproduction tested to specification 27-08510A. The data is presented in test report 5873, Addendum III. GD/A design group approved the unit on VAF's 23795 and 23796, dated 12-10-58. Specification was revised to C revision. The C revision differs from the A revision in that the weight of the unit was increased to reflect the actual unit and several other (minor) changes not affecting design or test requirements. This unit passed search-for-critical-weakness tests on 4-9-59 and PET on 10-19-60. Unit is mounted on the booster section and is used for the sustainer hydraulic system.	Complete	Dec. 1958
		QC DI				

MERCURY TEST SUMMARY			HYDRAULICS			
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08561-1 27-08561D 27-08501B Vinson A-80282	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Valve - Safety, Hydraulic Relief, Booster	PPT	(10-61) This item was preproduction tested and results were reported in Vinson test report QTR 80282, Addendum I, and Garwood Lab Report 1588. GD/A design group approved the 27-08561-1 valve in VAF 39330, dated 10-21-59. <u>NOTE</u> This unit has recently passed PET's using a chrome plated poppet.	Complete Oct. 1959	
		QC DI				

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/M	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL	
27-08563-3 27-08563F 27-08516D Interstate Engineering and Clemco 2425-103	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Cylinder - Hydraulic, Sustainer, Yaw	Other	(6-61) (10-61) The cylinder was approved based on similarity to 7-08286, which was preproduction tested, and by additional tests reported in TR 4547. The 27-08563-3 cylinder differs from the 7-08286 in that the 27-08563-3 cylinder uses hi-temperature O-rings and the diameter of the piston orifice is larger. The 27-08563-3 passed search-for-critical-weakness tests on 12-9-59. PET tests were completed in February 1960 and included temperature, vibration, life, and burst tests to specification 27-08516D requirements. GD/A design group approved the 27-08563-3 specification 27-08516 on VAF MC 23585 dated 12-6-58. The additional tests are the same as those shown under 27-08563-5, except that PET's on the -3 were completed in February 1960.	Complete March 1959		
		QC DI					

MERCURY TEST SUMMARY		HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START COMPL
27-08563-5 27-08563F 27-08516D Interstate Engineering and Clemco 2725-1	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Cylinder - Hydraulic, Sustainer Pitch	Oth	(10-61) The cylinder was approved based on similarity to 7-08286, which was preproduction tested. The test results were reported in Wyle Lab report 4547, Addendum A. Cylinder 27-08563-5 differs from the 7-08286 in that the 27-08563-5 has a larger diameter piston orifice and uses hi-temperature O-rings. The 27-08563-5 passed search-for-critical-weakness tests on 9 December 1959. PET tests were completed in April 1961 and included temperature, vibration, life, and burst tests to specification 27-08516D requirements. GD/A design group approved the 27-08563-5 on VAF 23585 on 12-12-59.	Complete Dec. 1959
		QC DI			

MERCURY TEST SUMMARY		HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START COMPL
27-08564-5 27-08564 27-08512D 64987 Purolator Products	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Filter - Fluid, Pressure, Hydraulic	PPT	(6-61) (10-61) The filter was preproduction tested and the test data presented in test report 2417A. GD/A design group approved the filter tests on VAF MC 52493 and MC 55425, dated 9-12-60. Filter is used as in-line pressure filter for vernier servo cylinders. <u>NOTE</u> The 27-08564-5 filter was tested to C revision of specification; an additional test, bubble point coefficient is being conducted to satisfy the D revision.	Complete Sept. 1960
		QCPI			

MERCURY TEST SUMMARY			HYDRAULICS			
PART NUMBER SPEC CONTROL PROC SPEC VFNDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08564-803 27-08564A 27-08512D Purolator Products 64988-1	103D 107D 109D 113D 130D 144D 152D 167D	Filter - Fluid, Hydraulic System, Missileborne	Other	(6-61) (10-61) The filter was approved based on similarity to 27-08564-5 and -801, which were preproduction tested, and by additional tests presented in report 2417. The 27-08564-803 filter differs from the -5 and -801 filters in that the -803 uses a weldable aluminum case to mount the filter instead of the 2024T4 used in the -5 and -801. GD/A design group approved the 27-08564-803, specification 27-08512C, on VAF 27-08564-803 LA 001, dated 5-9-61. Additional tests, bubble point coefficient, are being conducted to satisfy D revision of the specification. Filter is mounted on the sustainer servo cylinder pressure inlet. RAR 92-10-617, dated 7-6-60, references ECP 529 which recommends the replacement of the 27-08564-801 with 27-08564-803 filter, which is made of 6061 aluminum alloy. Effectivity was for all hardware still in existence; therefore it picked up 77D, 88D, 93D, and 100D effectivity for the -803 filter.	Complete May 1961	
		QC DI				

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/ N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08566-1 27-08566B 27-08505B Vickers, Inc. AA-60694-R2A	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Pump - Hydraulic, Booster	BOS	(5-61) (10-61) Approved based on similarity to 7-08207 which was preproduction tested to specification 7-08207D, per Vickers test order 13302, dated 2-8-57 and 13302-1, dated 6-4-57. Similarity was approved in VAF 5435, MC 20198 on 9-20-58, LA-001, 5-25-61. Difference between 7-08207 and 27-08566-1 is an O-ring change for high temperature, and inlet and outlet port changes to agree to D system requirements. Difference between the 7-08207D specification and 27-08505B specification calls for improved quality testing with special emphasis on degree of cleanliness for GD/A requirements.	Complete	May 1961
		QC DI				

MERCURY TEST SUMMARY			HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS		START
27-08569-1 27-08569C 27-08501B Vinson Manufacturing A-61071	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Valve-Safety, Relief, Hydraulic	PPT	(6-61) (10-61) Two relief valves were preproduction tested. The results were reported Wyle lab report 6608, dated 1-30-59, Vinson report QTR 61071, dated 9-15-60 and Garwood labs 1855, dated 8-8-60. The tests were conducted as required by the unit procurement specification 27-08501. GD/A design group approved the 27-08569-1 valve on VAF LA-001 and LA-002 on 8-30-61/Vinson Manufacturing report QTR 61071, Addendums I, II, and III.	Complete May 1961	
<p><u>NOTE</u></p> <p>1. PET tests of this unit, manufactured to original material requirements, 17-4 Ph poppet and 52100 chrome sleeve, have been successfully accomplished.</p>						
		QC DI				

MERCURY TEST SUMMARY				HYDRAULICS	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	TEST SCHEDULE	
				START	COMPL
27-08573-1 27-08573B 27-08519C Interstate 2792-1	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Cylinder-Actuator, Hydraulic, Inboard Vernier Pitch-roll	Oth	Complete	Oct. 1958
<p>(5-61) (10-61)</p> <p>The actuator cylinder was qualified based on similarity to the 7-08243 actuator cylinder, which was preproduction tested, and by additional tests paragraph 4.4.1, 4.4.2, and 4.4.3 of the procurement specification 27-08519C. Additional tests are reported in test letter No. 9224 and TR No. 348.</p> <p>The 27-08573-1 unit is similar to the 7-08243-1 except that the 27-08573-1 units use high temperature O-rings.</p> <p>GD/A design group approved the 27-08573-1 on VAF MC 21809, dated 10-29-58.</p> <p style="text-align: center;"><u>NOTE</u></p> <p>This unit is alternate and interchangeable with the Clemco 27-08573-801.</p>					

MERCURY TEST SUMMARY				HYDRAULICS	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	TEST SCHEDULE	
				START	COMPL
27-08573-1 27-08573B 27-08519C Bohanan Company 50006-001	Not to be used	Cylinder - Actuator, Hydraulic, Inboard			
				REMARKS (5-61) The Bohanan actuator 27-08573-1 is not to be used on any missile. The unit design has been rejected. Clemco (Interstate) is the only acceptable actuator. Refer to Clemco (Interstate) 27-08573-1 and Clemco (Interstate) 27-08573-3 in this section.	

HYDRAULICS

MERCURY TEST SUMMARY		HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START COMPL
27-08573-3 27-08573 27-08519C Clemco	77D 93D 103D 107D 109D 113D 130D 144D 152D 167D	Cylinder - Actuating, Vernier Hydraulic, Pitch-Roll	BOS	(10-61) Approved based on similarity to the 27-08573-1 and 7-08243 units, which were preproduction tested, except that the 27-08573-3 design requirements specify nickel plated 4130 steel for the cylinder body and chrome plated 17-4 Ph stainless steel for the piston. <u>NOTE</u> This unit has successfully passed PET tests. It is considered, by the design group, to be satisfactory for flight use. At the present time no additional qualification testing is planned, since this design is similar to 7-08243 and 27-08573-1, except that high temperature O-rings are used and material change as indicated.	See Remarks
		QC DI			

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL	
27-08574-1 27-08574D 27-08519C Interstate 2778-1	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Cylinder - Actuator, Hydraulic, Outboard Vernier Yaw	Oth	(5-61) (10-61) The vernier actuator cylinder was qualified based on similarity to the 7-08283-3 actuator cylinder, which was preproduction tested, and by additional tests, paragraph 4.4.1, 4.4.3 of the procurement specification 27-08519C. Additional tests were reported in test letter report No. 9224-1. The 27-08574-1 unit is similar to the 7-08283-3 unit except that the 27-08574-1 units use high temperature O-rings. GD/A design group approved the 27-08574-1 on VAF MC 21808, dated 10-29-58. <u>NOTE</u> This unit is alternate and interchangeable with the Clemco 27-08574-801.	Complete	Oct. 1958	

QC DI

MERCURY TEST SUMMARY				HYDRAULICS		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N		EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL
27-08574-801 27-08574 27-08519C Clemco		77D 93D 103D 107D 109D 113D 130D 144D 152D 167D	Cylinder - Actuating, Vernier Hydraulic, Yaw	BOS	(10-61) Approved based on similarity to 27-08574-1 and 7-08283-3, except that the 27-08574-801 design requirements specify nickel plated 4130 steel for the cylinder body, and chrome plated 17-4 Ph stainless steel for the piston. <u>NOTE</u> 1. This unit has recently successfully passed PET tests. Complete re-qualification of this unit is not planned because this design is similar to 7-08283-3, except for high-temperature O-rings and material change, as indicated. 2. This unit is an alternate interchangeable unit with the 27-08574-1 if the -1 is manufactured by Interstate Engineering.	See Remarks	

QC DI

MERCURY TEST SUMMARY				HYDRAULICS	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	TEST SCHEDULE	
				START	COMPL
27-08590-1 27-08590A 27-08529C Vickers Inc. AA60401-L-2	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Pump - Axial Piston, Hydraulic, Sustainer	PPT	Complete	Nov. 1959
<p>REMARKS</p> <p>(5-61) (10-61) Preproduction tests were performed on three pumps S/N MX 15984, S/N MX 15983, and S/N MX 15985 by the GD/A ETL labs to the basic specification.</p> <p>The PPT data are recorded in report number 7A2063, dated 7-29-59.</p> <p>GD/A design group approved PPT on VAF 40786, dated 11-23-59.</p> <p>Investigation of recent test failures of the unit have shown that casting flaws in the pump housing are resulting in pump mounting base failures. Units are being X-Rayed or Xyflo inspected to determine which pumps are acceptable for flight.</p> <p>This item is alternate and interchangeable with the dash three (-3) unit.</p>					
				QC DI	

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-08590-3 27-08590A 27-08529D Vickers Inc. AA60401-L-2	77D 103D 107D 109D 113D 130D 144D 152D 167D	Pump - Axial Piston Hydraulic, Sustainer	See Remarks	(12-61) The 27-08590-3 pump is similar to the 27-08590-1; however, the unit may be retested to satisfy revision D of the specification. Basic difference between the -1 and -3 is the -3 has a modification to the shaft to prevent possible mounting pad interference. Investigation of recent test failure of the unit has shown that casting flaws in the pump housing are resulting in pump mounting base failures. Units are being X-Rayed or Xyflo inspected to determine which pumps are acceptable for flight. This unit is alternate and interchangeable with the dash one (-1) unit. The vendor is presently conducting X-Ray inspection of all pump housing castings prior to assembly and delivery of pumps.	See Remarks	

MERCURY TEST SUMMARY

HYDRAULICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE START COMPL
27-85314-817	77D	Sustainer Servo	Oth	(10-61)	Complete
-	88D	Cylinder Assembly,		The 27-85314-817 sustainer servo cylinder	May
-	93D	Yaw		assembly consists of a 27-08563-3 servo cylinder,	1961
-	100D			27-04208-1 servo valve, 27-08564-803 filter, and	
GD/A	103D			27-85389-7 adaptor.	
-	107D			The -817 replaced the 27-85314-811 assembly	
-	109D			which utilized the 27-08564-801 filter which was	
-	113D			subject to body cracks during vibration tests.	
-	130D			RAR 92-10-617, dated 7-6-60, ECP 529 removed the	
-	144D			-801 filters from all D and E series missiles	
-	152D			still in existence.	
-	167D				
<p><u>NOTE</u></p> <p>1. For qualification of individual components listed above, see the components listed in Hydraulic and Autopilot Sections.</p> <p>2. Release records show a -811 assembly as being effective for 77D, 88D, 93D, and 100D, although 88D, 93D, and 100D were flown with 27-08564-803 filters, which were replaced by AMR/RAR mentioned above. Missile 77D will also be modified to use the -803 filter, but again the installation dash number as in 88D, 93D, and 100D, will not be re-identified for just a paperwork change.</p>					

QC DI

MERCURY

MAJOR CRITICAL COMPONENTS

PNEUMATICS

All pneumatic major critical components have been approved. Two components, 27-08020-3 and 27-08116-11, were approved on the basis of similarity to other components which had been preproduction tested. The other components were preproduction tested.

MERCURY TEST SUMMARY				PNEUMATICS		TEST SCHED	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	CRIT COMP	QUAL BY	START COMPL
							REMARKS
27-08020-3 7-08020A 7-08204 N Peacock Engine- ering R-50502-105	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Valve Assembly, LO2 Tank, Relief and Shutoff				BOS	Completed March 1961
							<p>(5-61) The 27-08020-3 valve was approved on the basis of similarity to 27-08020-1 per VAF 27-08020-3-LA-002, dated 3-17-61. The GD/A Design Group approved flight proof testing of 27-08020-1 per Wyle Lab. Report number 9305 in VAF 27-08020-1-LA-002, dated 12-12-60.</p> <p>Flight proof testing consisted of:</p> <ol style="list-style-type: none"> 1. Temperature 2. Vibration to 6G 3. Life 4. Proof Pressure 5. Acceleration <p>One sample of the 27-08020-1 was tested. The valves differ only in mounting flange configuration.</p> <p>(11-6f) Item was approved per revision M of the specification. Present specification is revision N. The N revision added vendor and vendor part numbers.</p>
							QC DI

MERCURY TEST SUMMARY

PNEUMATICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	INSTL	CRIT COMP	QUAL BY	TEST SCHED	
								START	COMPL
27-08104-3 - - - 27-08104D B. K. Hadley Co. 10526-5	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Valve - Pressure Relief, Fuel Tank					PPT	Completed Oct. 1959	
		(5/61) The 27-08104-3 valve was preproduction tested. Results were reported in Test Report number 1079. GD/A design group approved the 27-08104-3 / Specification 27-08104C in VAF MC 38448, dated 10-2-59. Three samples were tested. (11-61) Item was tested to C revision of the specification. Present specification is revision D. The D revision added vendor and vendor part number.							
		QC DI							

MERCURY TEST SUMMARY		PNEUMATICS					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPE ENGR INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
							START COMPL
27-08245-13 27-08245J 27-08101M (27-08101-25) B. H. Hadley Co. 10704-7	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Regulator Assembly - Pressur., Oxidizer Tank			BOS	(5/61) The 27-08245-13 (27-08101-25) regulator is specially tested but otherwise identical to the 27-08245-3 regulator. The 27-08245-13 regulators are selected for best transient response and maximum reliability for specific use on the Mercury program. Similarity of the 27-08245-3 regulator to the 27-08101-1 is established by VAF 41967. Two 27-08101-1 regulators were preproduction tested per Test Report numbers 1080 and 1081, and the results approved by VAF's 41254 and 41255, dated 12-7-59. (11-61) The item was approved per revision K of the specification. Revision M added vendor and vendor part number.	Completed Jan. 1960
		QC DI					

27-08245

MERCURY TEST SUMMARY

PNEUMATICS

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFICIENCY	NOMENCLATURE	MAD APPR		CRIT COMP	QUAL BY	TEST SCHED	
			ENGR	INSTL			START	COMPL
27-08246-11 27-08246K 27-08102K (27-08102-17) B. H. Hadley Co. 10705-7	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Regulator Assembly - Pressure, Fuel Tank				BOS	Completed (5/61)	Completed Jan. 1960
<p>REMARKS</p> <p>The 27-08246-11 regulator is specially tested but otherwise identical to the 27-08246-5 regulator. The 27-08246-11 regulators are selected for best transient response, and maximum reliability for specific use on the Mercury program.</p> <p>Similarity of the 27-08246-5 regulator to 27-08102-1 is established by VAF 41966.</p> <p>PPF of 27-08102-1 was approved by VAF 41256 per Test Reports 1082 and 1083, dated 10-12-59.</p> <p>Two units were tested. (11-61)</p> <p>Item was approved per H revision of the specification. Present specification is K revision. K change revised some temperature requirements and pressures, but all changes made requirements less severe than previously.</p>								
							QC DI	

MERCURY TEST SUMMARY		PNEUMATICS								
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	IDR	INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
										START COMPL
27-08575-1 27-08575A 27-08520B Walter Kiddie Co. 891314	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Sphere - Pneumatic Pressure						PPT	(6-61) The 27-08575-1 Sphere was preproduction tested. Results were reported in TR 1045 Addendum and R 1333. GD/A design group approved the 27-08575-1 Sphere /Spec 27-08520 on VAF MC 25575 dated 1-17-59 and VAF MC 40798 dated 11-23-59.	Completed Nov. 1959
27-08575										

MERCURY

MAJOR CRITICAL COMPONENTS

PROPULSION

All components listed in this section have been preproduction tested or qualified on the basis of similarity to previously qualified units.

MERCURY TEST SUMMARY

PROPULSION

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPB		CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
			ENGB	INSTR					
7-02315-3 - - - 7-02315H Airesearch Mfg. Co. 121020-1	77D 88D 93D 100D 103D	Valve - Fill and Drain, Fuel				BOS	(5/61) Approved on basis of similarity to the 121020 Airesearch valve. The -3 has a strengthened butterfly and shaft and a lubricated seal. Proof of similarity submitted by vendor. Approved on VAF 24200, dated 9-20-60 by and VAF 46317, dated 9-20-60 by CV/A design group.	Completed July 1960	

7-02315

QC D1

PROPULSION

MERCURY TEST SUMMARY

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFICIENCY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
27-23238-5	77D	Sustainer LOX Line Assembly			PPT	(5/61)	Completed Feb. 1961	
- - - - -	88D					Qualified by preproduction tests conducted on 2 specimens by GD/A test laboratory.		
- - - - -	93D					The combined preproduction and evaluation test was recorded in Report 27A472, dated 2-13-61.		
GD/A	100D							
27-23238-5	103D							
	107D							
	109D							
	113D							
	130D							
	144D							
	152D							
	167D							

27-23238

QC DI

MERCURY TEST SUMMARY		PROPULSION					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR IDE INSTL	CRIT COMP	QUAL BY	TEST SCHED	START COMPL
						Completed Dec. 1960	
27-02102-829 (Continued)		QC DI				(Continued) Tests Added: 6. Burst Pressure Test 7. Low Temperature with LN ₂ test. 8. Storage Test. 9. Deflection Load Test.	

27-02102

MERCURY

MAJOR CRITICAL COMPONENTS

PROPELLANT UTILIZATION AND LOADING

None of the items in the propellant utilization system require further approval action prior to flight.

The liquid oxygen transducer assemblies are part of the propellant loading system and replace assemblies used on early D series missiles. No further approval action prior to flight is necessary for the liquid oxygen transducer assemblies.

MERCURY TEST SUMMARY		PROPELLANT UTILIZATION AND LOADING					
PART NUMBER SPEC CONTROL PROC SPTC VENDOR NAME VENDOR P/N	ACTIVITY	NOMENCLATURE	MAD APPE	ENGR IDR INSTL	CRIT COMP	QUAL BY	TEST SCHED
							START/COMPL
7-43011-817	77D	Manometer Assembly, Fuel				BOS	Completed Dec 1959
27-04001 -	88D						
GD/A	93D						
- - - - -	100D						
	103D						
	107D						
	109D						
	113D						
	130D						
	144D						
	152D						
	167D						
<p>(10-61)</p> <p>The 7-43011-504 was preproduction tested to 7-00209B requirements in accordance with test report 7B 2313-2, dated 12-2-59 and flight proof tested to 7-00210H requirements in accordance with test report 7B 2217-2, dated 8-11-59. The 7-43011-504 unit used a new housing assembly and was a reworked 7-43011-803 unit or essentially a -815 unit.</p> <p>Changes resulting in the -817 unit consisted of a mandrel connection to a "banana" plug and the use of PT201 acrylic resin coating inside the manometer housing.</p> <p>The 7-43011-817 unit has a successful flight history.</p>							
							QC DI

MERCURY TEST SUMMARY		PROPELLANT UTILIZATION AND LOADING					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	INITIALS	NOMENCLATURE	MAD APPR	ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED
							START/COMPL
7-43040-819		Computer Comparator				BOS	Complete
- - - - -	77D						
- - - - -	88D						
27-04001	93D						
GD/A	100D						
- - - - -	103D						
- - - - -	107D						
- - - - -	109D						
- - - - -	113D						
- - - - -	130D						
- - - - -	144D						
- - - - -	152D						
- - - - -	167D						
<p>(10-61)</p> <p>The 7-43040-801 was flight proof tested to 7-00210B requirements in accordance with test report 7B1699, dated 5-19-58. The -801 unit was tested to -4°F low temperature rather than -65°F (deviation referenced in test report 7B1699).</p> <p>Changes in the -801 assembly resulting in the -819 assembly consisted of a new potting compound to permit unit storage at -65°F instead of -4°F. Other changes consisted mainly of resistor changes to stabilize gains and adjust operating ranges, changes to accommodate APChE, and change of vendors on some components to effect greater reliability.</p> <p>The 7-43040-819 unit has a successful flight history.</p>							
							QC DI

PROPELLANT UTILIZATION AND LOADING

MERCURY TEST SUMMARY		PROPELLANT UTILIZATION AND LOADING					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFICIENCY	NOMENCLATURE	MAD APPR ENGR IDE INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
							START COMPL
27-04240-809	77D	Transducer Assembly -			Oth	(11-61)	Complete
27-04240E	88D	Liquid Oxygen				This unit is similar (structurally modified) to the -801 assembly, which was preproduction tested but failed shock and vibration tests, test report 27A126. The -809 unit was qualified by similarity to the -801 unit plus proof cycle, shock, and vibration tests, test report (27A1136). The life test was based on similarity to the -811 unit which is covered in this section.	
27-04239C	93D						
GD/A	103D						
113-809100-1	107D						
	109D						
	113D						
	130D						
	144D						
	152D						
	167D						
						The 7-43021-813 unit was used on the 100D flight.	

QC DI

MERCURY
MAJOR CRITICAL COMPONENTS
ELECTRICAL

The electrical system is composed of batteries, inverters, power changeover switch, distribution harnesses, and miscellaneous switches, relays, and connectors.

All items have been preproduction, flight proof tested, and/or approved on the basis of similarities, with exception of the harnesses and abort sensing relay.

The harnesses are fabricated to MIL-W-8160 specification requirements.

Flight proof testing on the abort sensing relay 27-61147-805 is complete and report is being prepared.

In some instances, where items have not conformed to MIL-I-6181B and MIL-I-26600 test requirements, deviation requests have been processed and submitted for AFBSD approval.

The noise generated by action of the thermostatic heater switches used in the missileborne batteries exceeds the limits (conducted interference, and radiated interference) of MIL-I-6181B and MIL-I-26600 test requirements. The battery heaters and the thermostatic heater switches are nonoperative during flight. During countdown operation the heaters cycle on and off at intervals of about 10 to 15 minutes; the excessive noise exists for less than one second, when switches open and close.

MERCURY TEST SUMMARY		ELECTRICAL				TEST SCHED					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	ID	INSTL	CRIT COMP	QUAL BY	REMARKS	START	COMPL
										TEST SCHED	START
7-06345-5 7-06345 - - - Amphenol Corp. 200X-30-5004	77D 88D 93D 100D 107D 109D 113D 130D 144D 152D 167D 103D	Staging Receptacle, Propulsion						BOS	(5/61) The staging receptacle was approved based on similarity to 7-06345-3 (200X-30-4) receptacle which was preproduction tested. Design group approved the unit on VAF MC 7-06345-5-LA-001 dated 1-19-61.	Completed Jan. 1961	
		QC DI									

7-06345

ELECTRICAL

MERCURY TEST SUMMARY		ELECTRICAL				TEST SCHED					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	PRIORITY	NOMENCLATURE	MAD APPR	ENGR	IDR	INSTL	CRIT COMP	QUAL BY	REMARKS	START	COMPL
										TEST SCHED	START
27-06106-801	77D	Switch Assy, Power Changeover						0th BOS & FPT	(5/61) Design group approved item based on simi- larity to vendor P/N 963-1B (GD/A P/N 27-06177-1) which has been preproduction tested by vendor, ER 1640, dated 5-3-60. Flight proof tested by GD/A, Test Report 27A-801R, dated 10-21-60.	Completed	Oct. 1960
- - -	88D										
27-06113-3	93D										
United Control	100D										
1277-1A	103D										
	107D										
	109D										
	113D										
	130D										
	144D										
	152D										
	167D										
									(12-61) NOTE See note under Kinetic switch 27- 06106-801.		

MERCURY TEST SUMMARY		ELECTRICAL				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED
						START COMPL
27-06106-801	77D	Switch Assembly, Power Changeover			PPT	Completed March 1959
- - - -	88D					
27-06113-3	93D					
Kinetic	100D					
M-160-4	103D					
	107D					
	109D					
	113D					
	130D					
	144D					
	152D					
	167D					
<p>(5-61) Two specimens preproduction tested at GD/A (Test Report 7A1871R, dated 3-19-59). First specimen has been subjected to temperature, altitude, humidity, vibra- tion, acceleration and life tests. Second specimen has been subjected to RF, fungus resistance, sand and dust and salt atmosphere tests. (12-61)</p> <p style="text-align: center;"><u>NOTE</u></p> <p>In accordance with design group request only Kinetic switch is to be used on Mercury missiles.</p>						
						QC DI

27-06106

MERCURY TEST SUMMARY

ELECTRICAL

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	27-06358-1 - - - - 27-06358 Eagle Picher Co. GAP-4067	EFFECTIVITY 88D Battery, TLM	Nomenclature Battery, TLM	MAD APPR ENGR INSTL CRIT COMP	QUAL BY FPT	REMARKS (5-61) Electrical Design Group states that the specimen has been flight proof tested and test report has been reviewed and approved. NOTE: A deviation request ECP-CAC-107A-354-R0R2 has been submitted to waive some of the test requirements of MIL-I-6181.	TEST SCHED START COMPL See Remarks
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27-06358

MERCURY TEST SUMMARY

ELECTRICAL

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-61147- 803 - - - - GD/A 27-61147	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Relay Installation - Abort Sensing	FPT	(12-61) Consists of the following commercial parts: Relay 97-37002-006 Diode 87-19000-006 Receptacle 81-55900-818 Report FP-9-4-335.1 was reviewed and approved. <u>NOTE</u> Unit failed to conform to MIL-I-26600 test requirements. Deviation request, ECP-CAC-107A-334-129 has been submitted to waive some of the test requirements of MIL-I-26600.	Complete (See Remarks)	
		QC DI				

MERCURY
MAJOR CRITICAL COMPONENTS
TELEMETRY

There are six items in this section. Five were approved based on similarity to previously qualified items. One item, the lightweight TLM package for 100D, was flight proof tested and approved.

A deviation, ECP CAC-107A-334-98, has been approved for all 27-12290 assemblies.

MERCURY TEST SUMMARY		TELEMETRY									
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	PRIORITY	NOMENCLATURE	MAD APPR	ENGR	IDF	INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
									27-11541-866 - - - - 7-01658 Bendix - - - -	88D	TLM Package

MERCURY TEST SUMMARY

TELEMETRY

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY 88D TLM, Accessory Package 27-11616-829 - - - - - 27-01216 GD/A 27-11616-829	NOMENCLATURE	MAD APPR ENGR IDE INSTL	CRIT COMP	QUAL BY	REMARKS (5-61) Approved based on similarity to 7-11310 which has been flight proof tested except for deviation from -65°F storage temperature. Partially meets MIL-I-6181 test requirements. Similarity approved by Design Group.	TEST SCHED
							START COMPL
27-11616							

MERCURY TEST SUMMARY		TELEMETRY				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED
						START COMPL
27-12210-809 - - - - - 27-01214 Bendix - - - - -	100D	TLM Package, RF #2			BOS	Completed
						(5-61) Approved based on similarity (change in the oscillator and lowered RF power output) to 27-11541 which has been flight proof tested. Partially meets MIL-I-6181 test requirements. Similarity approved by Design Group.

TELEMETRY

MERCURY TEST SUMMARY

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	ENGR IDE INSTL	MAD APPR	CRIT COMP	QUAL BY	TEST SCHED	
							START	COMPL
27-12290-3 - - - - - 27-01214 GD/A 27-12290-3	100D	TLM Package, Light Weight				FPT		Complete
<p>(10-61) Consists of a transmitter built by Texas Instruments and a signal conditioner built by GD/A. Both have been separately flight proof tested to 7-00210B except for a low temperature test requirement of -30°F, and a non-operating test at 0°F.</p> <p>(10-61) The signal conditioner exceeded the limits of conducted interference and audio frequency conducted susceptibility per MIL-I-26600. A deviation request, ECP CAC-107A-334-98 (CCN 1302 for -4 contract; CCN 663 for -299 contract; CCN 74 for -635 contract; CCN 58 for -699 contract), has been approved for all 27-12290 assemblies.</p> <p>Testing has been completed and the report has been reviewed and approved.</p>								

MERCURY TEST SUMMARY		TELEMETRY								
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	FUNCTIONALITY	NOMENCLATURE	MAD APPR	ENGR	IDR	INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
										START COMPL
27-12290-803 - - - - 27-01214 GD/A 27-12290-803	93D	TLM Package, Light Weight						BOS	(10-61) Approved based on similarity to 27-12290-3, which was flight proof tested. (Refer to -3 remarks). Similar to 27-12290-3 except for rework of transmitter and RF filter to change frequency.	Complete

TELEMETRY

MERCURY TEST SUMMARY

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
27-12290-809 - - - - 27-01214 GD/A 27-12290-809	77D 103D 107D 130D 144D 152D 167D 109D 113D	TLM Package - Light weight	BOS	(10-61) (12-61) Approved based on similarity to 27-12290-3, which was flight proof tested. (Refer to -3 remarks) Similar to 27-12290-3 except for rework of transmitter and RF filter to change frequency. The shockmounts were also changed from the spring-type to hard rubber.	Complete	

MERCURY
MAJOR CRITICAL COMPONENTS
RANGE SAFETY

This section covers a command set, arming device, destructor, three-second destruct delay unit and power and signal control unit.

All items have been preproduction tested, flight proof tested and/or approved on the basis of similarity to units that have been tested.

MERCURY TEST SUMMARY

RANGE SAFETY

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	INITIALS PERFORMER	NOMENCLATURE	MAD APPR ENGR IDE INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
							START COMPL
27-36014-1 - - - - (7-03241) GD/A 27-36014-1	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Command Set, Range Safety			FPT	(5-61) Limited flight proof tested. Modified module in audio section of GFE P/N 319600, MARK I has only been vibration tested. Modification decreases gain by a factor of three (3) and increases linearity. Testing approved by Design Groups.	Completed
		QC DI					

27-36014

MERCURY

MAJOR CRITICAL COMPONENTS

AZUSA

All transponders have been delivered to AFMTC by General Dynamics/Astronautics. The transponders are now GFE items and GD/A has no control of the various configurations.

Two specimens of the basic unit, 26-10002-1, were flight proof tested. One unit was subjected to temperature, altitude, humidity, vibration, acceleration, and shock tests. The other unit was subjected to life and RF tests. Phase-lock and klystron failures were encountered but were corrected, and the test requirements were met. The various dash number configurations consist of modifications of the crystal filter characteristics, and the units are approved based on similarity to the basic unit.

MERCURY TEST SUMMARY		AZUSA		TEST SCHED					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFICIENCY	NOMENCLATURE	MAD APPR	ENGR	CRIT COMP	QUAL BY	REMARKS	START	COMPL
								DATE	INSTR
26-10002-1 thru -815 AZD 26-001 (Component Spec.) GD/A 26-10002-1 thru -815	*	Transponder, B-Coherent				BOS	(5-61) * GD/A has delivered all transponders to AFMTC thus they became GFE items. GD/A has no control of dash numbers assigned for specific Mercury missiles. All dash numbers through -815 are approved on the basis of similarity to -1 which has been flight proof tested. (See Test Report 7A1766R, dated 12-17-58 and AZN-26-050, dated 9-10-58) The major change among various dash numbers is the use of a crystal filter. Two specimens have been tested. S/N 189 has been subjected to temperature, altitude, humidity, vibration, acceleration, and shock tests. S/N 174 has been subjected to RF and life tests. <u>NOTE</u> Specimens failed to meet phase lock parameter requirements during temperature (+120°F), vibration, acceleration, and life tests. The klystron failed during the acceleration test. Specimens were readjusted or repaired and testing was repeated until it passed the test requirements.		Completed

MERCURY
MAJOR CRITICAL COMPONENTS
ABORT SENSING AND IMPLEMENTATION

None of the abort sensing and implementation system components require further action or approval.

MERCURY TEST SUMMARY		ABORT SENSING AND IMPLEMENTATION					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR IDR INSTL	CRIT COMP	QUAL BY	TEST SCHED
							START COMPL
27-111111-825 - - - - 27-00210B GD/A 27-111111-825	100D	Abort Sensing and Control Unit				FPT	Completed April 1961
							<p>(10-61)</p> <p>This unit was flight proof tested to the requirements of 7-00210B by the GD/A test labs per test request number 27A1271. The following tests were performed:</p> <ol style="list-style-type: none"> Temperature-Altitude-Humidity <ol style="list-style-type: none"> Temperature extremes; -65°F, +160°F. Altitude extreme; 1 mm Hg Humidity; 95% Vibration <ol style="list-style-type: none"> 8g maximum Acceleration <ol style="list-style-type: none"> +10g, -2g; longitudinal axis +3g, mutually perpendicular axes.

MERCURY TEST SUMMARY				ABORT SENSING AND IMPLEMENTATION			
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR		CRIT COMP	QUAL BY	TEST SCHED START COMPL
			ENGR	INSTL			
27-11111-831 - - - - GD/A	88D	Abort Sensing and Control Unit				BOS	Completed April 1961
REMARKS (5/61) Approved based on similarity to the -825 unit. The changes on the -825 unit resulting in a -831 unit consist of the addition of suppression diodes across the relay coils, harness routing controls, and mounting change eliminating a mechanical interference. Two specimens of this unit were subjected to reliability tests.							

27-11111

MERCURY TEST SUMMARY		ABORT SENSING AND IMPLEMENTATION				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	ACTIVITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED
						START COMPL
27-11111-835	77D	Abort Sensing and Control Unit			BOS	Completed April 1961
- - - - -	93D					
7-00210B	103D					
GD/A	107D					
27-11111-835	109D					
	113D					
	130D					
	144D					
	152D					
	167D					
<p>(10-61)</p> <p>Approved based on similarity to the -825 unit. The changes on the -831 unit resulting in the -833 unit consist only in the use of "blue dot" transformers and decreasing the length of the magnetic amplifier mounting studs.</p> <p>The changes to -833 for the -835 consist of using fiber washers for motor mountings, replacing two diodes with resistors, and changing two resistance values in the magnetic amplifier null voltage suppression circuit. The circuit changes prohibit high null voltage output which would prevent drop-out of the capsule fail detection relays in case of an abort.</p> <p>The unit did not meet MIL-I-26600 requirements. A deviation request, ECP CAC-107A-344-102 (CCN 1336 for -4 contract; CCN 722 for -299 contract; CCN 86 for -635 contract; CCN 71 for -699 contract), was approved for all 27-11111 assemblies.</p>						
		QC DI				

MERCURY TEST SUMMARY				ABORT SENSING AND IMPLEMENTATION				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR		CRIT COMP	QUAL BY	REMARKS	TEST SCHED
			ENGR	INSTL				START COMPL
87-44900-372 - - - - - - - - Bourns Labora- tories 50934-0-21.5-000	88D 100D	Switch, Pressure, I0 ₂ Tank Ullage (21.5 psid)				0th	(10-61) This item is a modified commercial part. Six units were evaluation tested at GD/A per 27A419, dated 9-1-60. The following tests were performed: Temperature (-65°F, 2 hrs) (+165°F, 2 hrs) Vibration (.25 in., 10 to 18 cps) (8G's, 18 to 2000 cps) Acceleration (10G's, all axes) <u>NOTE</u> Two of the six units failed in test. One unit had a contact failure at -65°F. After repair, the unit de- veloped heavy wiper lift-off around the switching point during X axis vibration. The other unit developed heavy wiper lift-off during Z axis vibration. The unit was repaired and retested and no malfunctions occurred. This unit replaced by 87-44900-356.	Completed Sept. 1960

87-44900-372

QC DI

MERCURY TEST SUMMARY		ABORT SENSING AND IMPLEMENTATION						
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR		CRIT COMP	QUAL BY	REMARKS	TEST SCHED
			ENGR	INSTR				START COMPL
87-44900-356 - - - - Servonic Instru- ments, Inc. P-20-3	93D	Switch, Pressure, LO2 Tank Ullage (21.5 psid)				0th	(10-61) This item is a modified commercial part. Six units were evaluation tested at GD/A per 27A419, dated 9-1-60. The following tests were performed: Temperature (-65°F, 2 hrs) (+165°F, 2 hrs) Vibration (.25in., 10 to 18 cps) (8g, 18 to 2000 cps) Acceleration(10g, all axes) <u>NOTE</u> Two of the six units failed in test. One unit exhibited intermittent high resist- ance and broke contact between 5 to 15 psi. The unit was repaired and retested but did not operate properly. The second unit shifted to 28 psid at -65°F and remained at this point when back at ambient. The unit was repaired and then successfully tested. Search for critical weakness tests have been completed. 1,000 hour life test was completed 9-29-61. Component was successfully open-loop tested on 88D. This part replaces 87-44900-372, due to increased reliability level.	Complete Sept. 1961
		QC DI						

MERCURY TEST SUMMARY		ABORT SENSING AND IMPLEMENTATION		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START COMPL
87-44900-584 - - - - - - - - - - Servonic Instruments, Inc.	77D 103D 107D 109D 113D 130D 144D 152D 167D	Switch, Pressure, LO ₂ Tank Ullage (19.5 psid)	BOS	(12-61) Approved based on similarity to 87-44900-356. This switch is the same as, and replaces, the -356. The -854 is calibrated at 19.5 psid. The change was made when results of 93D were analyzed. It was found that LO ₂ tank ullage pressure was approximately 22.5 psid a few seconds after launch. A one pound tolerance for an abort condition is not sufficient.	Complete Dec. 1961

MERCURY
MAJOR CRITICAL COMPONENTS
AUTOPILOT

None of the items in the Autopilot section require further approval action prior to flight. FPT tests on the gyro rate and displacement group and the remote rate group have been completed and the preproduction test is in progress. These assemblies contain gyros with spin motor rotation detectors. Preproduction testing on the new displacement gyros is complete. Flight proof tests and preproduction tests are complete on the new rate gyro.

The alternate vendor for 27-04204-1, 27-04205-1, 27-04208-1, 27-04209-1 and 27-04211-1 have been eliminated as sources for these items; therefore, these items have been removed from this report.

MERCURY TEST SUMMARY		AUTOPILOT							
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	INSITL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
									START COMPL
7-04250-1 7-04250G - - - - Kearfott Corp. T2506-1A	100D	Gyroscope - Displacement					PPT	(5-61) This unit was tested to 7-00209B requirements per GD/A report number 27A150 dated 3-12-60.	Completed May 1960
		QC DI							

27-04250

MERCURY TEST SUMMARY		AUTOPILOT				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE	
					START	COMPL
7-04250-5 7-04250G 7-04265G Kearfott Corp T2506-2A	88D	Gyroscope - Displacement	BOS	(10-61) (12-61) Approved based on similarity to 27-04250-1 which was preproduction tested. The 27-04250-1 was tested to 7-00209B requirements per GD/A test report Number 27A150.	Complete	May 1960

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	INITIALS	NOMENCLATURE	MAD APPR	ENGR	INSTL	CRIT COMP	QUAL BY	TEST SCHED	
								START	COMPL
27-04206-1 27-04206C 27-04218D Sterer 13000	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Valve-Flow, Limiter, Hydraulic					PPT	Completed Dec. 1958	
									<p>(5-61) One 27-04206-1 unit was tested to specification 27-04218A by Sterer Corp. and reported in test report 13000.</p> <p>Autopilot design group approved the 27-04206-1 on VAF MC 22873, dated 12-1-58.</p> <p>(11-61)</p> <p>Specification was revised to D revision.</p> <p>The specification revisions require more severe fluid temperature and proof cycle tests.</p> <p>Ten specimens were subjected to search-for-critical-weakness tests and no failures were experienced. However, slight out-of-tolerance conditions were noted in all specimens.</p> <p>The fluid temperatures experienced during the third level of the search-for-critical-weakness tests are in excess of the revised (Revision D) requirements for the 27-04206-1 valve.</p>

QC DI

MERCURY TEST SUMMARY				AUTOPILOT		TEST SCHEDULE	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	START	COMPL	
27-04208-1 27-04208D 27-04215G Cadillac Gage Co. FC26-398A	77D 88D 93D 106D 103D 107D 109D 113D 130D 144D 152D 167D	Valve - Servo, Electro-Hydraulic Sustainer	BOS	(5-61) The 27-04208-1 unit was approved based on similarity to GD/A 7-08369-1 as reported in Burst and Qualification Test Report CG 6-20. Autopilot design group approved the 27-04208-1, based on similarity to 7-08369-1 on VAF MC 37276, dated 9-3-59. (11-61) Specification was revised to G revision which incorporates higher temperature requirements. The 27-04208-1 servo valve has performed satisfactorily at temperatures in excess of the revised temperature requirements during search-for-critical-weakness tests.	Complete	Sept. 1959	
		QC DI					

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR IDR ENGR INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
							START COMPL
27-04301-1 27-04301D 27-04313E Minneapolis- Honeywell JRT 114	88D 100D	Rate Gyro, Autopilot			PPT	(6-61) This unit replaces 27-41709. Testing by GD/A on Test number 27A906 is complete. The report was reviewed and approved, but has since been disapproved. This unit has been replaced by 27-04574-1 and no additional testing is planned.	See Remarks

27-04301

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	IDR	INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED	
										START	COMPL
27-41000-841 - - - - - - - - GD/A - - - -	109D	Servo Amplifier - Filter						BOS	(12-61) Approved based on similarity to the 27-41000-807 unit, which was flight proof tested on GD/A test number 7A2247, and the 27-41000-813 unit which was preproduction tested on GD/A test number 27A766, dated 9-28-60. Some deviations to MIL-I-26600 requirements were approved. Reference ECP No. CAC-107A-334-59 and CCN No. 532 and 206.) Differences between the units tested and the 27-41000-841 consist of gain and filter changes and incorporation of components with increased reliability.	Complete	Sept. 1960

AUTOPILOT

MERCURY TEST SUMMARY		AUTOPILOT			TEST SCHED			
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	CRIT COMP	QUAL BY	REMARKS	START COMPL
								Complete
27-41000-843	77D	Servo Amplifier -				BOS	(12-61)	Complete
- - - - -	103D	Filter						Sept.
27-04976	107D						Approved based on simi-	1960
GD/A	113D						larity to the 27-41000-807 unit, which was	
- - - - -	130D						flight proof tested on GD/A test number	
	144D						7A2247, and the 27-41000-813 unit, which was	
	152D						preproduction tested on GD/A test number	
	167D						27A766, dated 9-28-60. Some deviations to	
							MIL-I-26600 requirements were approved.	
							(reference ECP No. CAC-107A-334-59 and	
							CCN No. 532 and 206.) Differences between	
							the units tested and the 27-41000-843	
							unit consist of gain and filter changes	
							and incorporation of components with in-	
							creased reliability.	

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPE			CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
			ENGR	IDE	INSTL				Completed	Sept 1959
27-41001-935 - - - - - - - - - - GD/A - - - - -	88D	Programmer - Electronic, Autopilot				BOS	(6-61) Approved based on similarity to the 27-41001-837 unit which was preproduction tested to 7-00209B requirements on 7A2248 dated 9-17-59. Some deviations to MIL-I-26600 requirements were approved (Reference ECP No: CAC-107A-334-47 and CCN-532.) Approximately 90% of the changes from the -837 unit to the -935 unit consist of programming changes. The remaining changes consist of incorporation of different components such as transistors, and the addition of transient suppression diodes.	Completed	Sept 1959	
		QC DI								

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR	CRIT COMP	QUAL BY	TEST SCHED	
						START	COMPL
27-41001-967	107D 109D 113D	Programmer - Electronic, Autopilot			BOS	Complete	Sept. 1959
<p>(12-61)</p> <p>Approved based on similarity to the 27-41001-837 unit, which was preproduction tested to 7-00209B requirements on 7A2248 dated 9-17-59. Some deviations to MIL-I-26600 requirements were approved. (Reference ECP No. CAC-107A-334-47 and CCN 532.</p> <p>Approximately 90% of the changes from the -837 unit to the -967 unit consist of programming changes. The remaining changes consist of incorporation of different components such as transistors and the addition of transient suppression diodes.</p>							

MERCURY TEST SUMMARY		AUTOPILOT					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
							START COMPL
27-41001-969	77D 103D 130D 144D 152 D 167D	Programmer-Electronic- Autopilot			BOS	(12-61) Approved based on similarity to the 27-41091-837 unit, which was preproduction tested to 7-00209B requirements on 7A2248 dated 9-17-59. Some deviations to MIL-I-26600 requirements were approved. (Reference ECP No. CAC-107A-334-77 and CCN 532.) Approximately 90% of the changes from the -837 unit to the -969 unit consist of programming changes. The remaining changes consist of incorporation of different components such as transistors and the addition of transient suppression diodes.	Complete Sept. 1959

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	FUNCTIONALITY	NOMENCLATURE	MAD APPR	ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED	
							START	COMPL
27-41002-859 - - - - - GD/A - - - - -	93D 109D	Gyroscope Group, Rate and Displacement				BOS	(10-61)	In Feb. 1962
							<p>To be approved based on similarity to 27-45202-801, which will be preproduction tested for E series missiles. The assembly contains Gyros with spin motor rotation detectors.</p> <p>Testing on the 27-45202-801 is in process. Flight proof testing is complete, and preproduction testing is scheduled for February 1962 completion.</p> <p>(1-62)</p> <p>Differences between the 27-45202-801 and 27-41002-859 are due to different payload and trajectory characteristics.</p>	
							QC DI	

AUTOPILOT

MERCURY TEST SUMMARY		MAD APPR		NOMENCLATURE	QUAL BY	TEST SCHED
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	INITIALS	ENGR	INSTR			
27-41002-397	77D 103D 107D 113D 130D 144D 152D 167D			Gyroscope Group - Rate and Displacement	BOS	In Feb. Prog. 1962
						REMARKS (12-61) Approval to be based on similarity to 27-45202-801, which will be preproduction tested for E series missiles. The assembly contains gyros with spin motor rotation detectors. Testing on the 27-45202-801 is in progress. Flight proof testing is complete, and pre-production testing is scheduled for February 1962 completion. (1-62) Differences between the 27-45202-801 and 27-41002-859 are due to different payload and trajectory characteristics. The -881 replaced the -859 because of confidence changes. Ref. ECP 933. (2-62) The -897 replaced the -881 because of confidence changes. Ref. ECP 933.

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	INITIALS ACTIVITY	NOMENCLATURE	MAD APPR	ENGR	INSTL	CRIT COMP	QUAL BY	TEST SCHED	
								S: A B T	C O M P L
27-41330-805	77D	Power Group - Gyroscope, Autopilot					OTH	Required	Not
- - - - -	86D								
- - - - -	93D								
GD/A	100D								
- - - - -	103D								
	107D								
	109D								
	113D								
	130D								
	144D								
	152D								
	167D								
								(5-51)	
								This assembly is not tested at this level, it is a part of the gyroscope groups 27-45302-1, 27-45302-803, and 27-45302-859.	
								Special developed vendor items in this assembly are subject to test.	
								QC DI	

27-41330

MERCURY TEST SUMMARY		AUTOPILOT			
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUAL BY	REMARKS	TEST SCHED
					START COMPL
27-41332-5 - - - - - GD/A - - - - -	88D i00D	Gyroscope Group - Rate, Autopilot	OTH	(5-61) This assembly is not tested at this level, it is a part of the gyroscope groups 27-45302-1 and -803. Special developed vendor components in this assembly, such as the gyros, are subject to test.	Not Required

27-41332

MERCURY TEST SUMMARY		AUTOPILOT				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	PRIORITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED
						START COMPL
27-41333-5 - - - - - GD/A - - - - -	100D	Power Supply Component - Amplifier, +30V., Gyro Group			OTH	Not Required
						(5-61) This assembly is not tested at this level, it is a part of the Gyroscope Group 27-45302 -1. Special developed vendors items in this assembly are subject to test.
		QC DI				

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	INSTL	CRIT COMP	QUAL BY	TEST SCHED	
								START	COMPL
27-41333-801 - - - - - - - - - - GD/A - - - - -	88D	Power Supply Component Amplifier, +30v, Gyro Group					0th	Not	Required
								(10-61) This assembly is not tested at this level, it is a part of the gyroscope group 27-45302-803. Special developed vendor items in this assembly are subject to test.	

AUTOPILOT

MERCURY TEST SUMMARY

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	IDENTIFI- CITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED	
						START	COMPL
27-41333-805	77D	Power Supply Compo- nent - Amplifier, + 30V., Gyro Group			OTH	Not	Required
- - - - -	93D						
- - - - -	103D						
GD/A	107D						
- - - - -	109D						
- - - - -	113D						
- - - - -	130D						
- - - - -	144D						
- - - - -	152D						
- - - - -	167D						
						(11-61)	
						This assembly is not tested at this level, it is part of the gyroscope group, which was qualified by preproduction testing.	
						Special developed vendors items in this assembly are subject to test.	
						QC DI	

MERCURY TEST SUMMARY		AUTOPILOT				
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR IDE INSTL	CRIT COMP	QUAL BY	TEST SCHED
						START COMPL
27-41703-5 - - - - - - - - - - CD/A - - - - -	88D 100D	Control Group - Autopilot, Rate Gyro			BOS	Completed May 1960
						(5-61) Approved based on similarity to -3 assembly, which was preproduction tested on GD/A test number 7A2334, dated 5-21-60.

27-41703-5

MERCURY TEST SUMMARY			AUTOPILOT		
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	QUALIFIED BY	REMARKS	TEST SCHEDULE
				START	COMPL
27-41703-809	77D	Control Group - Autopilot, Rate Gyro	PPT	(6-61) This assembly contains gyros with spin motor rotation detectors. Testing is to be performed by GD/A on test number 27-A1255. Testing is complete and the report is being prepared.	See Remarks
- - - - -	93D				
- - - - -	103D				
- - - - -	107D				
GD/A	109D				
- - - - -	113D				
- - - - -	130D				
- - - - -	144D				
- - - - -	152D				
- - - - -	167D				
					QC DI

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
									START COMPL
27-45300-3 - - - - - - - - GD/A - - - -	100D	Servo Amplifier- Filter					BOS	(6-61) Approved based on simi- larity to the 27-41000-807 unit which was flight proof tested on GD/A test number 7A2247, and the 27-41000-813 unit which was preproduction tested on test number 27A766 dated 9-28-60. Some deviations to MIL-I-26600 requirements were approved. (Reference ECP No. CAC-107A-334-59 and CCN-532.) The 27-45300-3 unit differs from the tested units only in gain and filter changes.	Completed Sept 1960

27-45300-3

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR		CRIT COMP	QUAL BY	REMARKS	TEST SCHED
			ENGR	INSTL				START COMPL
27-45301-3 - - - - - GD/A - - - - -	100D	Programmer - Electronic, Autopilot				BOS	(6-61) Approved based on similarity to the 27-41001-837 unit, which was preproduction tested to 7-00209B requirements on GD/A test number 7A2248, dated 9-17-59. Some deviations to MIL-I-26600 requirements were approved. (Reference ECP No. CAC-107A-334-47.) Approximately 90% of the changes from the 27-41000-837 to the 27-45301-3 consist of programming changes. The remaining changes consist of incorporation of different components such as transistors and the addition of transient suppression diodes.	Completed Sept 1959

27-45301-3

MERCURY TEST SUMMARY		AUTOPILOT			
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR IDE INSTL CRIT COMP	QUAL BY	TEST SCHED
					START COMPL
27-45302-1 - - - - - GD/A - - - - -	100D	Gyroscope Group - Autopilot		BOS	Completed June 1960
<p>(6-61)</p> <p>Approved based on similarity to the 27-41002-805 assembly which was pre-production tested to 7-00209B per test report 7A2246 dated 6-7-60.</p> <p>Approved deviations consist of storage at -4°F instead of -65°F, and operating acceleration test with 1/2 pin motors disconnected.</p> <p>Changes from the 27-41002-805 to the 27-45302-1 unit consist only of wiring and gain changes. The rate gyros are not used for control, but are used only for ASIS instrumentation. A remote rate gyro group was added for control.</p>					

27-45302-1

MERCURY TEST SUMMARY

AUTOPILOT

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	IDE	INSTL	CRIT COMP	QUAL BY	REMARKS		TEST SCHED	START COMPI
27-45302-803 - - - - - - - - - - GD/A - - - - -	88D	Gyroscope Group- Rate and Displacement						BOS	(10-61)	Approved based on similarity to the 27-41002-805 assembly, which was preproduction tested to 7-00209B per test report TA2246, dated 6-7-60. Approved deviations consist of storage at -40F instead of -65°F, and operating acceleration test with spin motors disconnected. Changes from the 27-41002-805 to the 27-45302-803 unit consist only of wiring and gain changes. The rate gyros are not used for control, but are used only for ASIS instrumentation. A remote rate gyro group has been added for control.	Complete	

MERCURY

MAJOR CRITICAL COMPONENTS

SEPARATION

None of the items in the Separation System require further approval action prior to flight.

MERCURY TEST SUMMARY				SEPARATION		
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	ACTIVITY	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED
						START COMPL
27-04304-3 27-04304A 27-04309A Conax Corpor- ation 2790A	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Valve Assembly, Explosive			BOS	Completed Nov. 1959
						<p>(6-61)</p> <p>This item is similar to the -1 units which were tested to 7-00209B requirements by GD/A on 7-2245, dated 9-30-59. All 20 units tested met the requirements.</p> <p>The change revising the -1 assembly to a -3 assembly consisted of the addition of an "O" ring retainer.</p>
						QC DI

MERCURY TEST SUMMARY		SEPARATION					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N 27-08575-1	EFFECTIVITY	NOMENCLATURE Flask, Separation	ENGR IDE INSTL	CRIT COMP	QUAL BY	REMARKS (5-61) Refer to Pneumatics Section,	TEST SCHED
							START COMPL

27-08575

MERCURY

MAJOR CRITICAL COMPONENTS

ANTENNA

This section covers TLM/RSC, AZUSA, MOD III guidance antenna assemblies, TLM/RSC ring couplers and MOD III guidance wave guides.

Antennas and ring couplers have been tested and/or approved on the basis of similarity to qualified items.

AZUSA antenna is qualified on the basis of similarity to an antenna which was flight proof tested.

Standard VSWR measurement tests were performed on waveguide assemblies.

MERCURY TEST SUMMARY										ANTENNA	
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	ENGR	IDR	INSTL	MAD APPR	CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
										7-11500-3 - - - - (7-01203) GD/A 7-11500-3	100D

MERCURY TEST SUMMARY		ANTENNA							
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	ENGR DATE INSTL	MAD APPR	CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
7-36044-5 - - - - 7-01203 GD/A 7-36044-5	109D 113D 136D 144D 152D 167D	Ring Coupler, RSC				PPT	(10-61) Approved on basis of similarity to 7-36044-1 which has been preproduction tested (test report 7A561). The -5 is the same as the -1, except for different covers and the addition of a shim between the base plate and cover.	Completed	

MERCURY TEST SUMMARY		ANTENNA					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	INITIALS DATE TIME ENGR	NOMENCLATURE	MAD APPR ENGR INSTL	CRIT COMP	QUAL BY	TEST SCHED	
						START	COMPL
27-12507-3 - - - - (27-01202) GD/A 27-12507-3	77D 88D 93D 100D 103D 107D 109D 113D 130D 144D 152D 167D	Antenna Assembly, TLM/RSC, (B-2 Pod)			BOS	(5-61) Approved on the basis of similarity to the -1 unit which has been preproduction tested. Dash one and dash three are identical electrically as well as mechanically. Dash one is used on Pod-1 and dash three is used on Pod-2.	Completed

27-12507

MERCURY TEST SUMMARY		ANTENNA					
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR ENGR INSTL IDR	CRIT COMP	QUAL BY	REMARKS	TEST SCHED
							START COMPL
27-37000-1	77D	Antenna Assembly, Mod III Guidance			BOS	(5-61) Approved on the basis of similarity to 27-36010-1 and 27-36006-1 which have been flight proof tested (Test Report numbers 27A2444, dated 10-11-60 and 7A2131, dated 9-6-60). Assembles into the 27-37005-1 assembly.	Completed Sept. 1960
- - - - -	88D						
- - - - -	93D						
GD/A	100D						
27-37000-1							

27-37000

QC DI

MERCURY TEST SUMMARY		ANTENNA									
PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR	ENGR	IDR	INSTL	CRIT COMP	QUAL BY	REMARKS	TEST SCEED	START COMPL
										Completed	
27-61382-1 - - - - - - - - GD/A 27-61382-1	100D	Waveguide, Mod III Guidance (pulse beacon to antenna)						0th	(5-61) Validation testing has been conducted at GD/A Radiation Lab. No environmental testing is required.	Completed	

27-61382

MERCURY TEST SUMMARY

ANTENNA

PART NUMBER SPEC CONTROL PROC SPEC VENDOR NAME VENDOR P/N	EFFECTIVITY	NOMENCLATURE	MAD APPR			CRIT COMP	QUAL BY	REMARKS	TEST SCHED	START COMPL
			ENGR	IDE	INSTL					
27-61383-1 - - - - - - - - GD/A 27-61383-1	100D	Waveguide, Mod III Guidance (Transition)					(5-61) Validation testing has been conducted at GD/A Radiation Lab. No environmental testing is required.		Completed	

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