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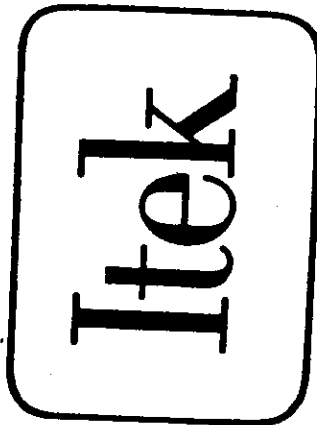
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SYSTEM HISTORY REPORT

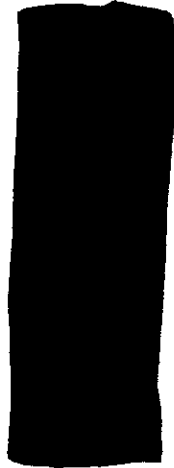


CORPORATION
PALO ALTO DIVISION

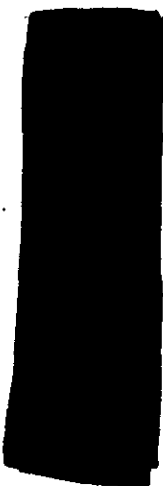
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DATE March 1, 1963
PREPARED BY.
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CONTENTS

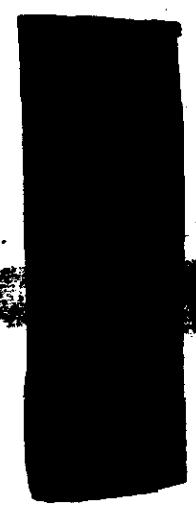
INTRODUCTION

PALO ALTO SPECIAL PROJECTS FLOW OF ROLES AND FUNCTIONS

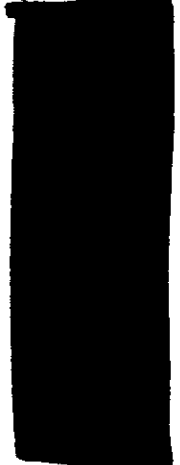
- Field Engineering - A/P Facility
- Field Engineering - VAFB
- System Engineering
- Support Engineering

SYSTEMS TESTS AND OBJECTIVES

SPECIFIC SYSTEMS RECORDS AND MILESTONES (M-1 through M-22)

- Pre-Flight Tests and Analyses
 - Modifications
 - Instrumentation
 - Post-Flight Analyses and Summary
- 

CONFIDENTIAL




This document represents the complete history of the Corona/M Program, series M-1 through M-22. It shows chronologically and graphically the development, operation, and analyses of the system from the time it is received at the A/P facility to the completion of the operation.

Data contained herein is extracted from daily operation books maintained by Field Engineering, Support and System Engineering, and the records of the Associate Contractor.

This record will become a permanent, historical document for the archives of the sponsor and the Contractor. It will serve as an aid in evaluating tests and operations to satisfy immediate contractual requirements and objectives and will provide a study in advancing the state-of-the-art for future program planning.

Distribution will be limited to the sponsor, Palo Alto Division Special Projects and the Special Projects Division of the Itek Corporate Offices.

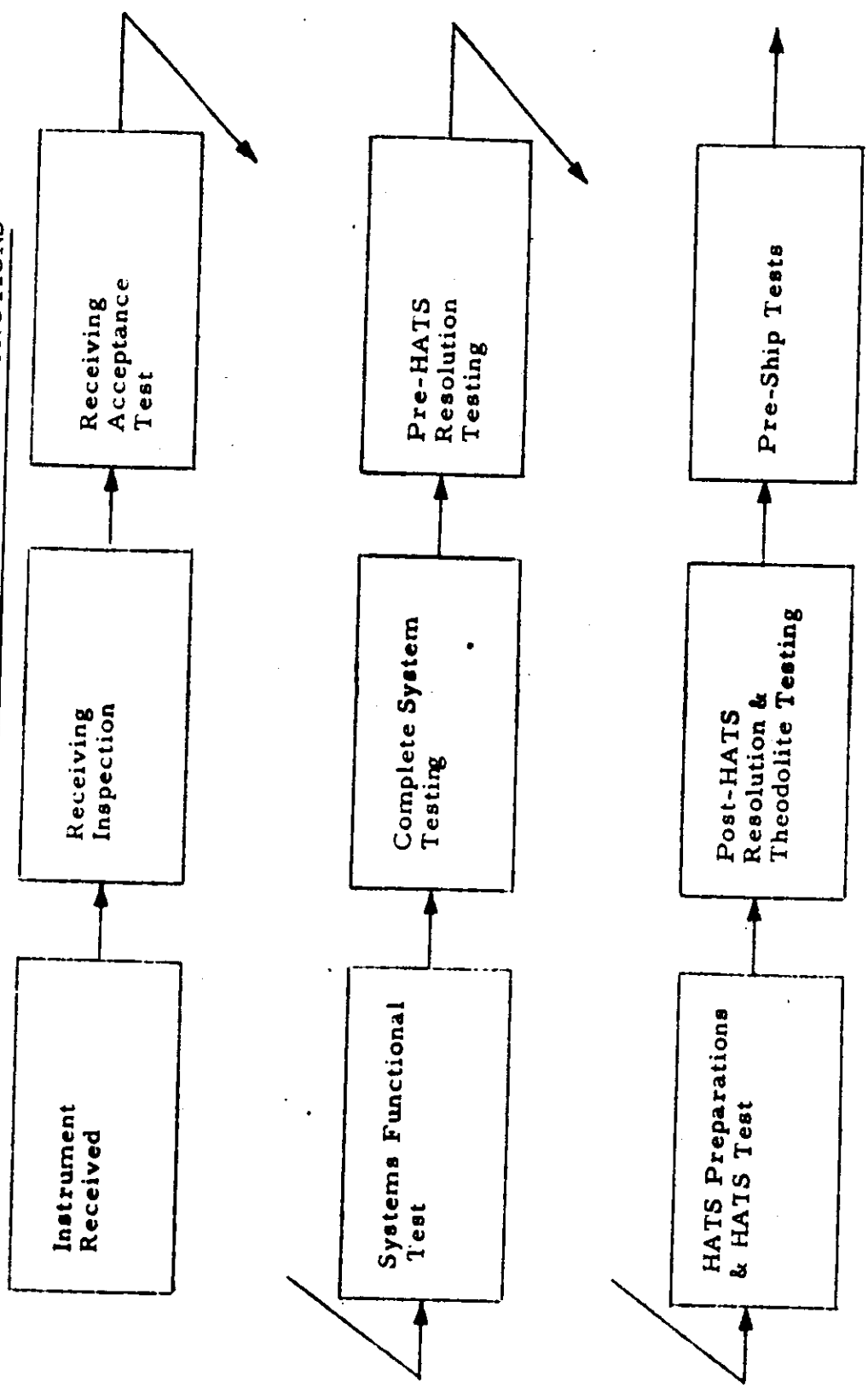


INTRODUCTION

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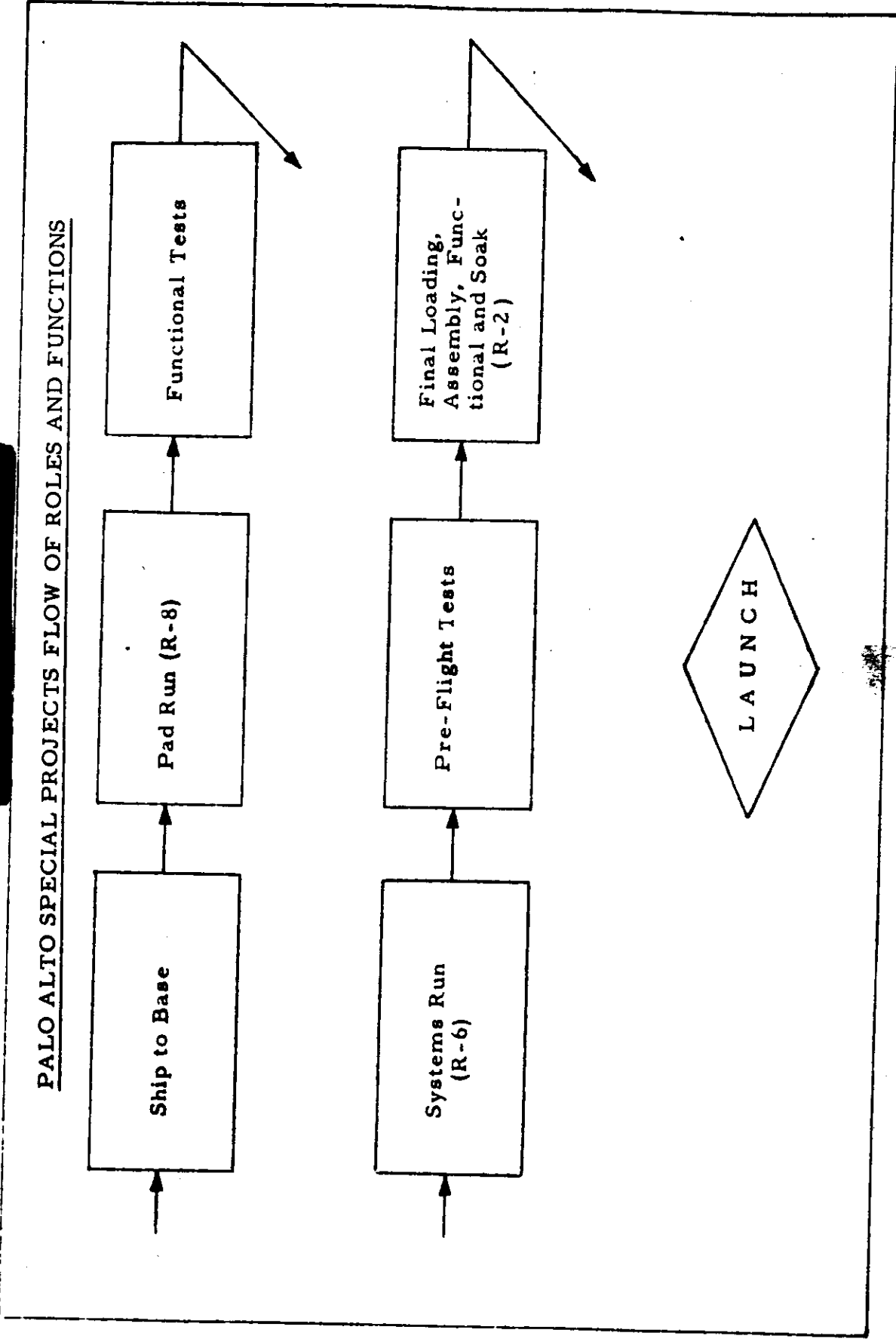
PALO ALTO SPECIAL PROJECTS FLOW OF ROLES AND FUNCTIONS



FIELD ENGINEERING - A/P FACILITY

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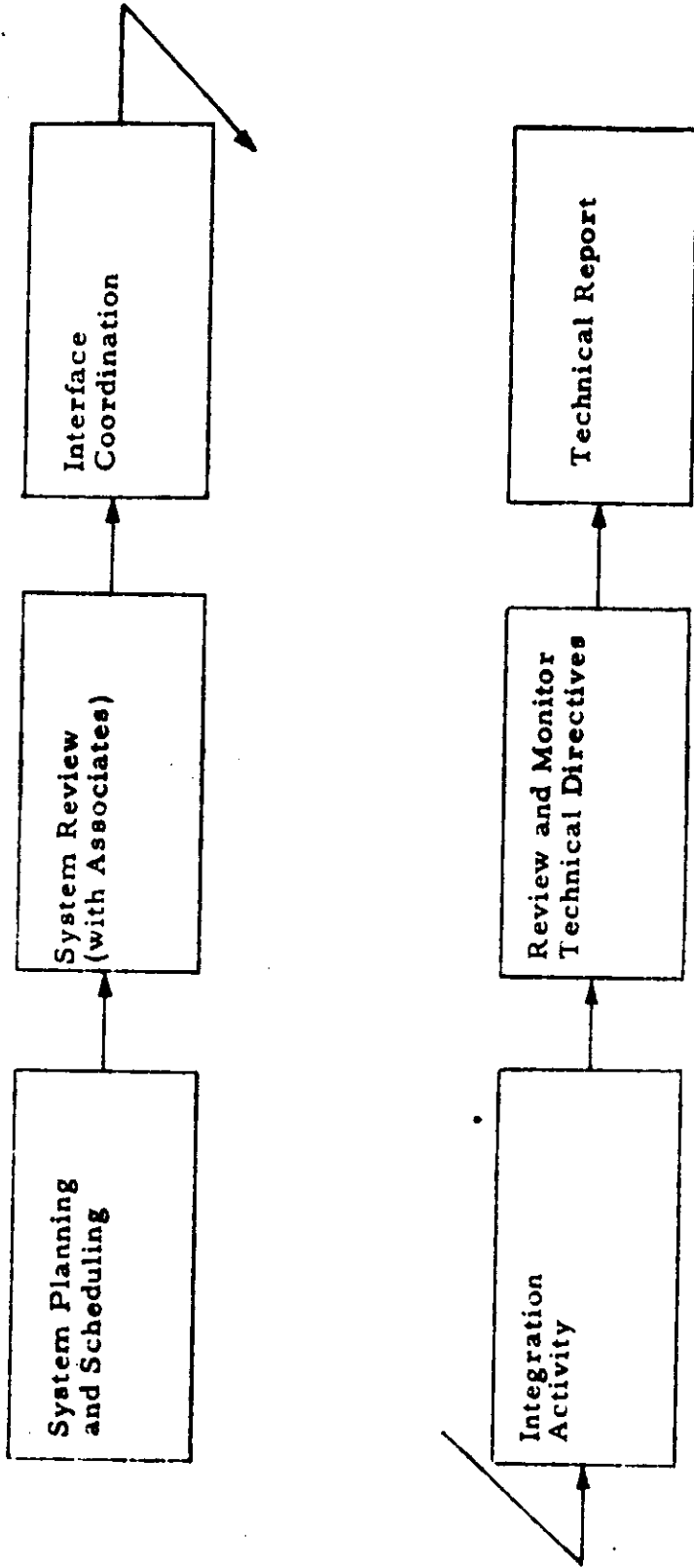
FIELD ENGINEERING - VAFB



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PALO ALTO SPECIAL PROJECTS FLOW OF ROLES AND FUNCTIONS

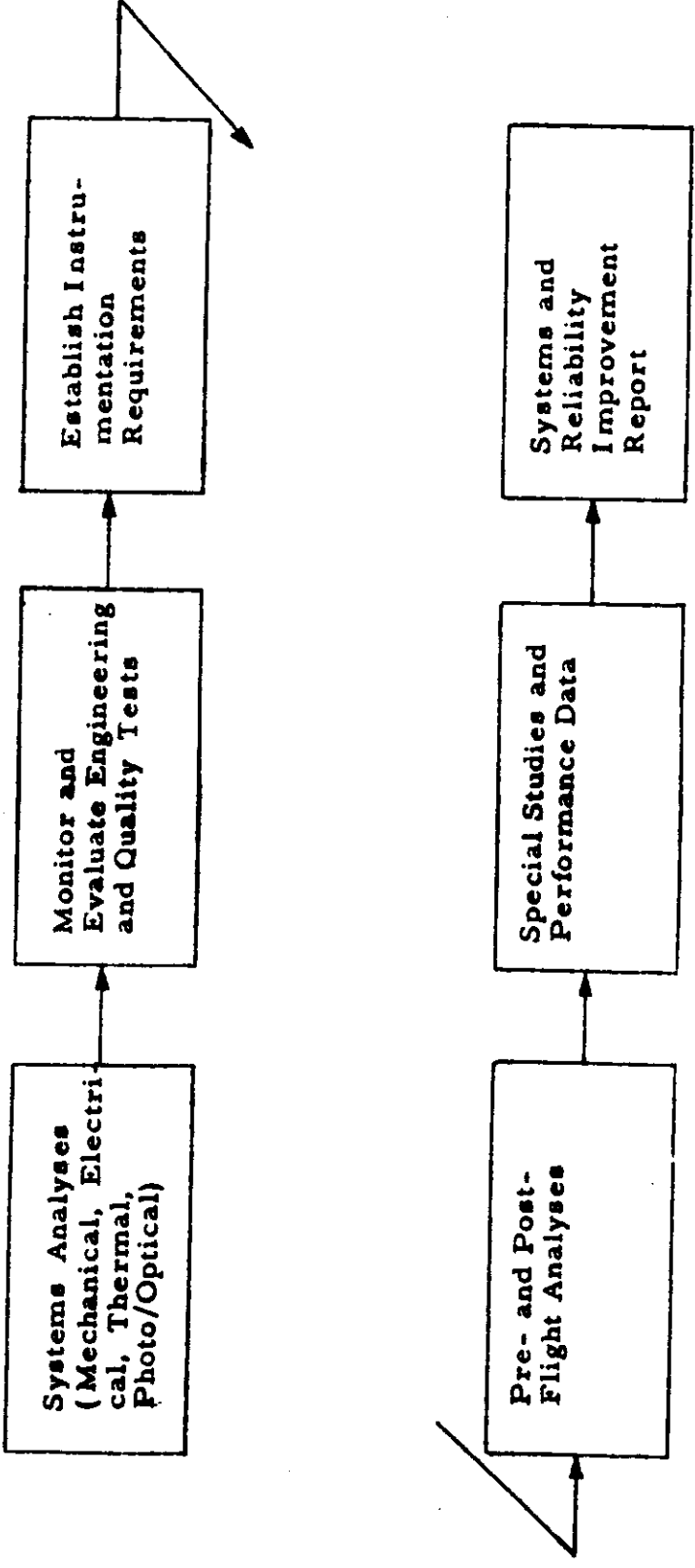


SYSTEM ENGINEERING

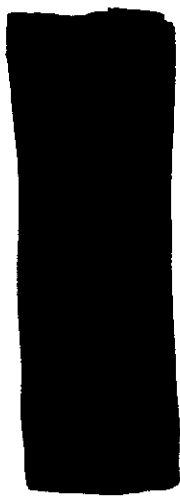
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PALO ALTO SPECIAL PROJECTS FLOW OF ROLES AND FUNCTIONS



SUPPORT ENGINEERING



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SYSTEMS TESTS AND OBJECTIVES (continued)

Post-HATS Test

After completing normally a four-day simulated orbit operation the system is returned to the dynamic resolution testing facility and the same type of optical performance test is made as in the Pre-HATS optical performance test.

Pre-Ship Test

Confidence runs are executed on the total system prior to preparing it for transportation to the launch site. A total check-off is made from the acceptance procedure and an acceptance certificate is acknowledged by official representatives of the associate contractors.

Pre-Pad Test

A complete functional test is made after receipt of the system at the launch site and an evaluation completed on its performance.

Pad Run

The total system is tested mechanically and electrically after integration with the booster vehicle.

Pre-Flight Test

A final confidence test is made while in its mated condition. Several cycles of film are transported to assure satisfactory operation.



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SYSTEMS PREPARATION OBJECTIVES

Receiving Inspection

On receipt of the camera system, the instruments are uncrated and a thorough quality assurance inspection is made. At this time, all shipping damages are recorded and corrected.

Acceptance Test

The camera system is operated in accord with acceptance test specifications and procedures. During this operational phase simulated cycling rates are imposed and the results are recorded. The system is completely and favorably operational prior to its integration into the structures.

System Functional Test

The camera system is put through a complete electrical checkout. All of the monitoring events are recorded and evaluated. If any of these events are out of specification these must be corrected prior to systems integration.

Complete Functional System Test

After integrating the camera system into the structural subsystem another series of electrical and mechanical operational checks are made. All of these operational events are recorded and evaluated. Compliance to the System Acceptance Test Procedures must be adhered to.

Pre-HATS Test

The total system is placed on the dynamic resolution test and a prescribed series of optical performance checks are made. The results of these performance tests which are made on operational film are evaluated and the figure of merit of the camera system is established.

HATS Preparation and HATS Test

The total system is prepared for environmental testing by subjecting the system through a series of various cycle speeds. During this time, the events are recorded. After monitoring and evaluating their accuracies, the system is then subjected to vibration and high altitude thermo simulation tests.

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SYSTEM HISTORY REPORT

SYSTEM UNDER TEST



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M-1

PRE-FLIGHT TESTS AND ANALYSES

Date	Test	Result	Corrective Action	Remarks
1961 12/20	Receiving Inspection			
12/26	Receiving/Acceptance Test	Main Motor #1 Plug faulty	Repaired	#1 - 117# - #2 - 110.5#
1962 1/2	Systems Functional	Double Interrogate	Lamp Sync Unit modified	
1/29	Complete System Test	Satisfactory		Mated
1/29	Pre-HATS	Good		
1/29	HATS Preparations & Test	Lamp problem	Lamp Sync Unit modification	Post-HATS installed new LSU boards, installed shuttle guides
2/11	Post-HATS Resolution & Theodolite Testing	faulty	#1 - Ran resolution-replaced frequency lamp amplifier replaced shafts & pins in #70; installed LSU moded boards; replaced frequency lamp	Faults corrected
2/16	Pre-Ship	checked pins - OK Mis-timed	Torn down	OK
2/19	Pad Run	weak T/M electrical ground; problems mechanical bind in third unit	Corrected	

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Date	Test	Result	Corrective Action	Remarks
1962	Pre-Flight	Steller Calibration - cannot hand wind - shutter not good	Removed cassette idler wipers	Trimmed lamps

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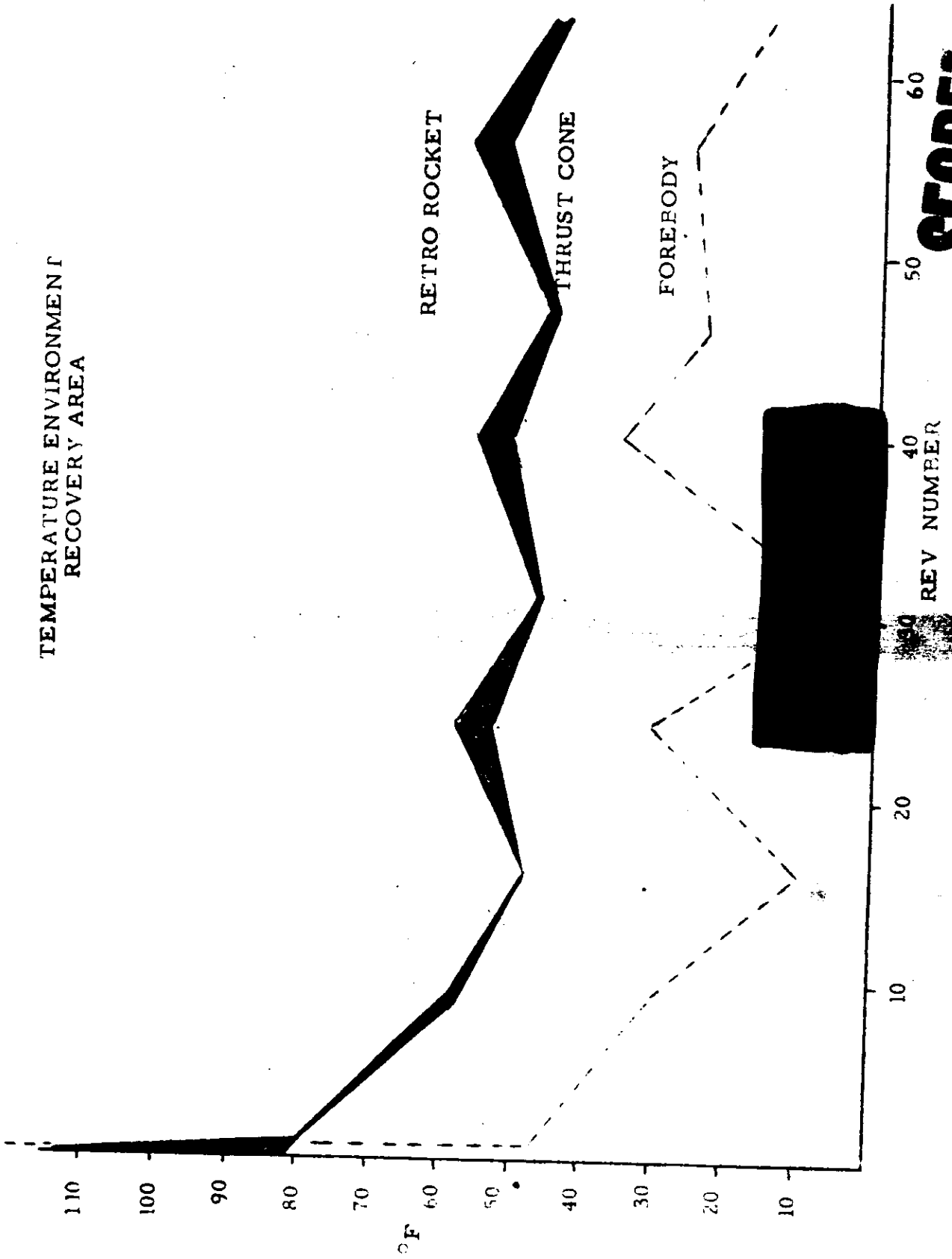
Engineering Order	Description	Remarks
07317	Modified magnetic amplifier assembly Added + 28V DC unreg for magnetic amplifier circuit Added wires for cassette anti-backup Changed #3 Programmer to unreg Added cassette idler guide Removed cassette idler wipers Shortened #3 program to 7 pulses	These modifications made at A/P facility
07318		
07320		
07322		
07333		
07343		
07553		



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CM # 1

TEMPERATURE ENVIRONMENT
RECOVERY AREA



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REV NUMBER

POST FLIGHT SYSTEM DATA

System Number CM-1 Payload Transferred 75.1 lbs.
Instrument Numbers 70/71 Film Type SO132
Recovery System No. 581 Filter Type WR-21
Vehicle Number 1123 Slit Width .200
Thor Number 241 S J Number 74
Launch Date 2-27-62 Recovery Date 3-3-62

SUMMARY OF SYSTEM EVENTS

Successful orbit.
Air recovery on 65th revolution.
Ablative shield recovered intact.
Instrument operation satisfactory.
Framing camera failed.
Full spools of main payload recovered.

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SYSTEM HISTORY REPORT

SYSTEM NUMBER *11-2*



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PRE-FLIGHT

Date	Test	Result	Corrective Action	Remarks
1962				
1/6	Receiving	Console Problem Double Pulse Interrogate	Correction continuing	#1 44105 - #2 44286 Low voltage
1/10	Acceptance	Interrogate Ground Loop in regulated and unregulated power	Lamp Sync Unit Modified Magnetic amplifier modified	none and double
1/27	System Functional			
1/31	Complete System Testing			
2/12	Pre-HATS	Satisfactory	Shuttle modifications #40 shutter repaired	
2/12	HATS Preparations & HATS	Satisfactory	Lamp Sync Unit modification for lights	
2/12	Field Flatener Test (Dr. A. check)	Double Pulsing Problems	Lamp Synch Unit modification for lights	Delayed due vibration equipment
2/14	Post-HATS & Theodolite	Ran Dr. A. check Cassette Binding Shuttle Guides Modified	Lamp Sync Modifications	
4/4	Pre-Ship Tests	Satisfactory	Reworked	Shipped to San Diego for centrifuge test
4/10	Pad Run	Burned out #3 (S. I.)	Replaced Motor #73	Lamp Sync Unit qualified
4/14	Pre-Flight			No #3 (S. I.) No #3 (burn out)

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M-2

MODIFICATIONS

Engineering Order	Description	Remarks
07304	Added 3 fuses to capacitor circuit	
07306	Added T/M wiring	
07307	Added resistor	
07309	Reversed cassette T/M pots	
07313	Added jumper in #3 programmer	
07315	Added jumper per schematic	
07317	Modified magnetic amplifier assembly	
07318	Added + 28V DC unreg for magnetic amplifier	
07319	Added jumper in cycle counter circuit	
07320	Added wires for cassette anti-backup	
07321	Cassette motor changed to unreg	
07322	Changed #3 programmer to unreg	
07330	Separated #1 and #2 operate functions	
07333	Added cassette idler guide	
07552A	Changed functions to + 28V DC unreg	
07553	Shortened #3 program to 7 pulses	

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SUMMARY TEMPERATURE INSTRUMENTATION

CM# 2

INSTRUMENT NO. 2

Pass Number

Temp. Sensor	LAUNCH	1	2	7	9	15	22	25
8-33	82.7	90.5	90.7	91.3	91.6	93.8	93.0	90.5
7-35	80.7	96.8	101.7	101.9	102.5	105.0	104.8	101.5
6-42	84.8	93.2	92.5	90.3	91.9	93.8	93.0	92.6
5-44	84.0	90.0	91.3	94.7	95.3	98.7	98.0	96.6
4-53	86.6	88.2	105.3	103.6	104.8	107.7	105.6	105.3

FAIRING

1-43	out of band	-----	-----	-----	-----	-----	-----	-----
2-49	"	89.2	87.0	71.0	72.0	95.0	57.0	78.0
3-54	"	86.8	75.5	51.0	48.0	75.0	55.2	50.0
4-56	"	143.4	137.0	120.0	115.6	132.2	118.0	110.0
5-57	"	-----	-----	174.0	180.0	-----	180.0	164.0



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POST FLIGHT SYSTEM DATA

System Number	CM-2	Payload Transferred	45 lbs.
Instrument Number	72/73	Film Type	SO 132
Recovery System No.	584	Filter Type	WR-21
Vehicle Number	1124	Shit Width	.200
Thor Number	331	S. I. Number	None

Launch Date 4-17-62 Recovery Date 4-20-62

SUMMARY OF SYSTEM EVENTS

- Successful orbit.
- Air recovery on 33rd revolution.
- Instrument operation satisfactory.
- Framing camera was not flown.
- 60 Percent of payload on spools.

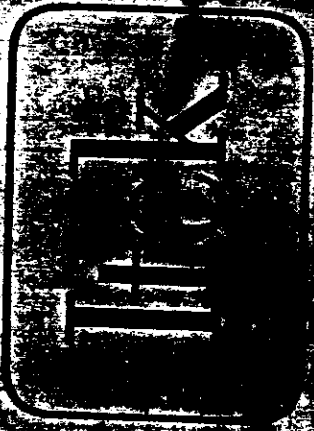


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SYSTEM HISTORY REPORT

SYSTEM NUMBER 723



OFFICIAL FROM

DATE

PRE-PROGRAMMING TESTS AND ANALYSES

Date	Test	Result	Corrective Action	Remarks
1962				
1/27	Receiving	Satisfactory		#1 113# - #2 107.5#
1/27	Acceptance	Satisfactory		Installed Lamp Sync Unit (Modified type)
2/5	System Functional	(mated)	Changed lamp sync unit	#75 motor hot
2/5	Complete System		Replaced Main Motor on #75	
2/27	Pre-HATS Resolution	Satisfactory	Replaced geneva pins due to waivering	
2/27	HATS	Satisfactory	Replaced frequency lamps	Modified #3 Programmer
3/7	Post-HATS Resolution	Satisfactory		
4/10	Pre-Ship	Satisfactory as modified	Repaired stove damage #75	
4/15	Pre-Pad	Satisfactory	Replaced pins (74 bent)	
4/16	Pad Run	#2 Cassette didn't read out	Repaired #3 Programmer (Mechanical bind)	
4/25	Pre-Flight	Interference of #1 Cassette spool to cable	Replaced #3 Programmer	
			72-73 Cassette damaged	
			Replaced with 90/91	
			Repaired lamps in binaries	
			corrected	
			corrected	

Engineering Order	Description	Remarks
07304	Added 3 fuses to capacitor circuit	These modifications made at A/P facility
07306	Added T/M wiring	
07307	Added resistor	
07309	Reversed cassette T/M pots	
07313	Added jumper in #3 programmer	
07315	Added jumper per schematic	
07317	Modified magnetic amplifier assembly	
07318	Added + 28V DC unreg for magnetic amplifier	
07319	Added jumper in cycle counter circuit	
07320	Added wires for cassette anti-backup	
07321	Cassette motor changed to unreg	
07322	Changed #3 programmer to unreg	
07327B	Added #3 fuse protection	
07328	Added V/H transducer T/M	
07330	Separated #1 and #2 operate function	
07333	Added cassette idler guide	
07552A	Changed functions to + 28V DC unreg	
07553	Shortened #3 program to 7 pulses	

SUMMARY TEMPERATURE INSTRUMENTATION

CM# 3

INSTRUMENT NO. 1

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Temp. Sensor	LAUNCH	1	2	9	14	15	16	17	Pass Number
1-11	108.4	106.0	97.6	82.6	82.3	84.9	85.0	85.6	
13-22	68.9	85.9	85.8	74.9	78.3	81.0	80.7	82.2	
12-24	96.8	84.9	80.3	65.7	68.2	72.4	84.0	74.9	
11-27	107.0	88.5	85.8	72.8	76.8	80.7	80.7	80.8	
10-29	71.2	86.3	92.8	83.4	86.1	89.3	89.3	90.3	
9-30	74.9	85.5	91.9	74.2	78.8	83.1	83.5	83.9	
8-33	81.1	83.3	81.7	71.1	74.7	78.3	78.3	79.4	
7-35	68.7	85.1	91.2	84.0	85.5	89.0	89.2	90.3	
6-42	68.7	85.1	92.8	85.4	85.7	90.1	89.3	90.9	
5-44	78.0	82.6	82.2	74.9	76.2	80.7	80.7	82.2	
4-53	89.8	86.0	82.2	66.4	69.6	73.7	74.7	76.0	

INSTRUMENT NO. 2

2-38	118.0	107.4	---	---	90.2	91.3	91.6	---
13-22	60.0	74.2	---	---	82.1	83.1	82.0	---
12-24	65.8	78.3	---	---	81.0	84.9	85.5	---
11-27	70.4	86.6	---	---	92.4	93.8	95.2	---
10-29	66.3	82.6	---	---	86.7	88.0	89.9	---
9-30	65.0	69.6	---	---	62.3	63.8	63.8	---
8-33	65.0	75.4	---	---	74.4	76.2	76.7	---
7-35	76.7	103.7	---	---	120.2	123.4	123.0	---
6-42	66.6	76.3	---	---	75.8	75.8	76.0	---
5-44	63.8	70.5	---	---	73.7	74.5	74.8	---
4-53	62.7	78.3	---	---	80.7	83.3	83.3	---

FAIRING

1-43	out band	---	---	---	---	---	---	---
2-49	" "	65.6	---	---	61.2	67.0	66.0	---
3-54	" "	---	---	---	---	---	---	---
4-56	" "	113.3	---	---	---	---	---	---
5-57	" "	138.8	---	---	99.0	102.5	102.4	---
			---	---	122.8	128.5	128.0	---

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SUMMARY OF TEMPERATURE INSTRUMENTATION (Continued)

CM# 3

INSTRUMENT NO. 1

Temp. Sensor	25	31	40	47	56	63	64
1	84.5	84.0	83.1	82.6	81.8	83.0	81.6
13	79.2	80.6	78.6	77.0	76.0	76.7	75.8
12	71.2	71.2	71.0	67.8	68.9	68.6	67.5
11	76.0	80.0	76.0	76.0	73.5	77.0	75.4
10	85.5	89.3	86.4	85.5	83.9	85.6	84.4
9	80.3	81.2	79.2	77.6	77.2	77.6	76.0
8	77.6	77.7	77.8	74.0	76.0	73.9	73.7
7	88.0	88.3	85.9	85.7	86.4	85.6	84.4
6	90.0	90.0	90.0	86.8	86.7	86.2	86.3
5	81.2	80.6	80.7	77.6	78.9	77.0	76.5
4	73.0	73.0	72.0	69.7	70.4	69.7	68.5

INSTRUMENT NO. 2

Temp. Sensor	25	31	40	47	56	63	64
2	90.3	92.4	89.8	90.6	89.3	91.6	91.2
13	80.6	81.0	80.3	79.4	78.3	79.0	77.0
12	79.8	83.0	79.2	79.4	77.4	79.8	77.2
11	87.0	92.8	87.0	91.3	84.8	90.2	86.3
10	84.3	86.3	84.4	85.0	81.8	84.5	82.7
9	64.2	61.9	63.8	61.2	62.8	61.1	60.2
8	76.0	75.4	76.0	73.7	75.6	73.7	73.2
7	123.8	124.3	126.4	124.7	126.9	126.7	124.0
6	76.6	74.9	76.2	72.7	74.6	73.9	74.1
5	75.7	73.7	76.0	73.3	75.2	72.7	71.3
4	81.2	81.2	80.5	79.7	78.7	80.0	76.7
FAIRING							
1	Out band	-----	-----	-----	-----	-----	-----
2	54.0	66.8	54.0	65.4	55.2	69.0	62.0
3	Out band	-----	-----	-----	-----	-----	-----
4	83.0	99.0	82.0	94.0	79.2	94.0	89.3
5	74.0	121.0	82.0	103.9	74.7	111.0	99.0



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POFT FLIGHT SYSTEM DATA

System Number	CM-3	Payload Transferred	68.8 lbs.
Instrument Numbers	74/75	Film Type	SO 132
Recovery System No.	586	Filter Type	WR-21
Vehicle Number	1125	Slit Width	.200
Thor Number	333	S I Number	70
		(Frame)	
Launch Date	4-28-62	Recovery Date	Not Recovered.

SUMMARY OF SYSTEM EVENTS

Successful orbit.

Recovery attempted on 64th revolution failed - parachute did not eject.

Instrumentation Data revealed:

- a. 80 percent payload transferred to cassettes.
- b. Instruments apparently performed satisfactorily.

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SYSTEM HISTORY REPORT

SYSTEM NUMBER ~~1234~~



COMMUNICATION
PAO ALTO DIVISION

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PRE-FLIGHT

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Date	Test	Result	Corrective Action	Remarks
1962	Receiving Inspection	Satisfactory		
2/16	Acceptance Test	Satisfactory		Lamp Sync Unit modified Sheared pin #77
2/28	System Drive (Elect)	Mated		Lamp Sync Unit modified
3/7	Complete System Test	Satisfactory		
3/16	Pre-HATS Resolution	Satisfactory		
3/17	HATS Preparations & HATS Test	Satisfactory		
3/21	Post-HATS Resolution and Theodolite Testing	Satisfactory		
5/13	Pre-Ship Tests	Satisfactory as modified	Cleaned HO's V/H Transducer Mods Replaced pins #77 Replaced burned Binaries	
5/21	Pad Run	Burned framing camera motor due fairing wiring		
5/26	Pre-Flight	Satisfactory		



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