[redacted]

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SUMMARY OF SETD MEETING - JANUARY 16, 1962

[redacted]

INTRODUCTION

The following report summarizes the principal events of the SETD Meeting held at the Advanced Project facility on January 16, 1962.

SUMMARY

In attendance:

Chairman - [redacted]

LMSC	Itek	Headquarters
[redacted]	[redacted]	C. Murphy [redacted]
	W. Levison [redacted]	V. H. Webb [redacted]
		AFSSD
		A. W. Johnson [redacted]

The information presented at the meeting was guided by the attached SETD Agenda (Attachment #2):

Ref. Item #1: The LMSC report on M-1 and M-2 status and problem areas was presented by [redacted] (see Attachments #3, #4A and #4B). M-1 testing has slipped 4 days. By adjustments in future scheduling it is anticipated that the 4-day slippage will be recovered. M-2 testing is 3 days behind schedule. The present M-2 schedule is under study to determine if the 3-day slippage can be recovered.

Ref. Item #2: The LMSC equipment delivery report on fairings, barrels, clocks and recovery vehicles (including aft cover qualification test) was presented by [redacted] (see Attachment #5).

a. M-1 through M-5 structures are on schedule.

b. Clocks for the first 5 systems have been delivered to LMSC by FCIC.

c. The aft body cover qualification test has been completed except for the light leak test which is scheduled for completion the week of January 15.

[redacted]

Ref. Item #2: Continued---

d. The modified aft body cover will be the version used for the first 4 flight systems. It is presently anticipated that the unitized aft body will be qualified and incorporated beginning with the fifth system.

Ref. Item #3: a. Boston Master Control Plan #8214 (Attachment #6) was presented by J. Wolfe.

b. The original instrument delivery schedule has slipped and was modified and presented in a new schedule as follows: (Note: Lens fabrication is the gating item.)

Instrument	Delivery at LMSC
M-3	January 23, 1962
M-4	February 4 or 5, 1962
M-5	February 12, 1962
M-6	March 1, 1962 (approx.)

Note: SETD analyzed the Associate Contractor's status presentation relative to the milestone schedule and showed that an "incompatibility" exists due to instrument deliveries and aft covers to the extent that LMSC, although able to meet predicted flight dates, cannot guarantee backup of a flight unit with the next succeeding system. (See Attachment #7).

c. The destructive cassette shock test was temporarily delayed because of the present short cassette supply at Boston.

d. Boston supply spool requirements are as follows:

35 spools during February
35 spools during March
35 spools during April

e. The incompatibility of the instrument clutch on M-3, caused by a Boston change in suppliers, will be the subject of a TD to be issued.

Ref. Item #4: Framing Camera.

a. A calibrated and checked-out framing camera is not available at this time for M-1. SETD recommended that M-1 be flown without a framing camera because no opportunity will exist to complete full compatibility check before alunch activities. The recommendation was accepted.

[redacted] SECRET [redacted] Copy ___

Ref. Item #4: Continued---

b. [redacted] (Itek) presented a technical description of the framing camera and methods of calibration. (See Attachment #8).

c. SETD requested Boston to consider, as an action item, the operation of the framing camera on unregulated 28 volt power instead of the present 28 volt regulated supply. Use of 28 volt regulated would overload certain circuits in the Agena and might also cause problems with the Agena voltage regulator.

Ref. Item #5: The 60-inch collimator lenses should be delivered and installed before February 1.

Ref. Item #6: Associate Contractors were reminded of the responsibility to report to SETD all compatibility changes to be incorporated in the Mural system before the compatibility change is incorporated. Section 3, Paragraph (b) and (c) of the Configuration Control Board Operating Procedures were quoted as follows:

"(b) The SETD is authorized to initiate immediate action to effect 'compatibility changes' without benefit of prior approval provided that the CCB is notified within 48 hours. 'Compatibility changes' are defined as those changes absolutely necessary to make the system work. The need for such changes occurs while conducting subsystem or system testing or operation.

(c) The contractor is not required to submit T/D for insignificant engineering changes which do not effect configuration, operation, reliability, interface, flight schedules, or cost."

Ref. Item #7: a. The procedure of instituting and implementing a TD was presented by [redacted] and is shown in Attachment #2.

b. Report by Associates on outstanding TD's. Current TD's were reviewed; status is shown as follows:

TD-22 Dynamic Resolution Calibration of Main Lens Across Format. Cancelled 1/15/62.

TD-30 Redesign Lamp Pulsing Amplifier. Held open pending further study.

TD-35 Supersonic Parachute Deployment. This TD is open. Action is being taken by the Discoverer Program Office.

[redacted] TD-39 Addition of Dr. A to HATS Test. Released. To be accomplished on M-2.

Ref. Item #7: Continued---

b. TD-41 Modification of V/H Transducer. Cancelled 1/16/62.

TD-42 Recovery Capsule Destruct System Design Study. Cancelled 1/4/62. Superseded by TD-42A.

TD-42A Recovery Capsule Destruct System, Design and Purchase of Long Lead Items.

Conditional acceptance by LMSC noted and approved by AFCCB. Released 1/16/62.

TD-46 Phase I Command Modification.
TD-47 Phase II Command Modification.

Boston cost and activity report requested. Action delayed approximately two weeks to consider alternatives and process by TWX.

TD-48 Design of T/M Signal Simulators. Held open and referred to LMSC for cost estimate.

TD-51 Recovery System Air Flotation Ballast Devices. This TD is open and has been referred to G.E. for action.

c. New TD's.

TD-52 Recovery Capsule Destruct System. (Qualification and Fabrication of Hardware). A design review was held following the SETD meeting. TD-52 was referred to the Contract Officer for signature and approval.

TD-53 Recovered Hardware. Verbally approved 1/16/62. This TD recommends that extraneous identification be removed from the Recovery hardware. LMSC to recommend that which can be deleted without buying "sterilized" hardware.

Ref. Item #8: The effect of [redacted] Tracking Station on flight operations was presented by [redacted] and is contained in Attachment #10.

Special Report

M-1, West Coast Dynamic Resolution Test Results.

Instruments #70 and #71 were tested for dynamic resolution performance by a through-focus test using SO-132 film. High contrast targets were used in the 48-inch focal length collimator system with the following results:

Instr. #70 peak resolution - 150 li/mm

Instr. #71 peak resolution - 150 li/mm

[redacted]

Special Report (continued)--

The test also showed that the focus point of each instrument was the same at East and West Coast facilities. No change in focal position had occurred due to shipment.

The next SETD meeting is tentatively scheduled for February 14 and 15 at Washington.

Prepared by [redacted]

Approved by [redacted]
SETD Manager

[redacted]

Distribution:

[redacted]

[redacted]

[redacted]

Attachment 2

AGENDA ITEMS FOR SETD MEETING AT AP ON 16 JANUARY 1962

1. LMSC Report on M-1, M-2 status.

2. Equipment delivery report on fairings, barrels, clocks and recovery vehicles (including aft cover qualification test) by LMSC.

3. Itek report on M-3 and subsequent status, including cassette qualification.

4. Itek report on framing camera qualification program.

5. Itek report on collimator lens delivery to and installation at LMSC.

6. Report of changes incorporated by Associate Contractors and notification to SETD.

7. Review of TD's.

   a. Procedure of instituting and implementing a TD.

   b. Report by Associates on outstanding TD's.

   c. New TD's.

8. Effect of [redacted] Tacking Station on operations.

[redacted]
SETD Manager

[redacted]

Prepared	[redacted]	DATE 1/62	LOCKHEED MISSILES & SPACE COMPANY A GROUP DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	LMP	PERT
Checked			TITLE M-1 TEST STATUS	Model		
Approved				Report No	[redacted]	

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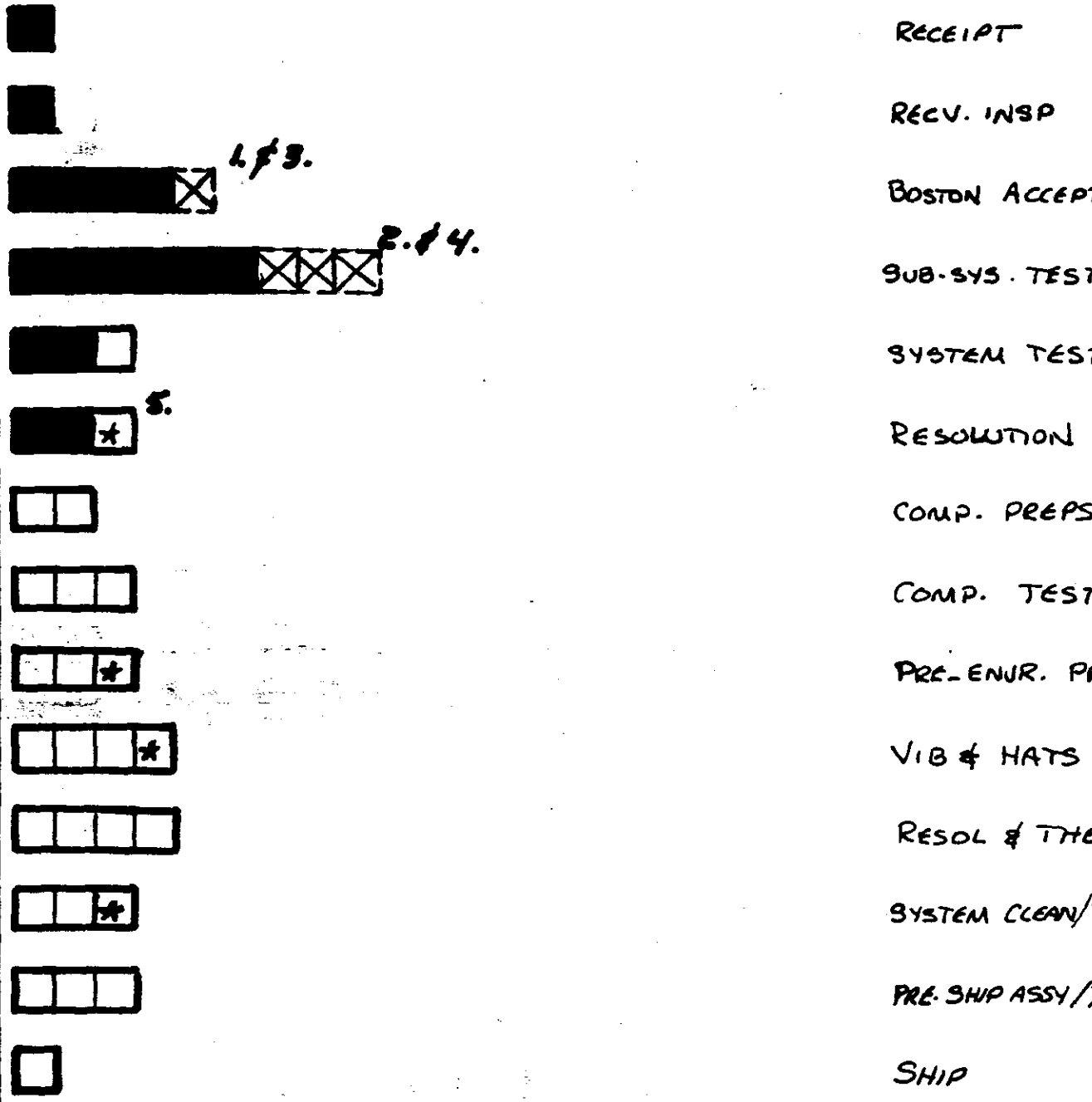


X - SCHEDULED DAY LOST

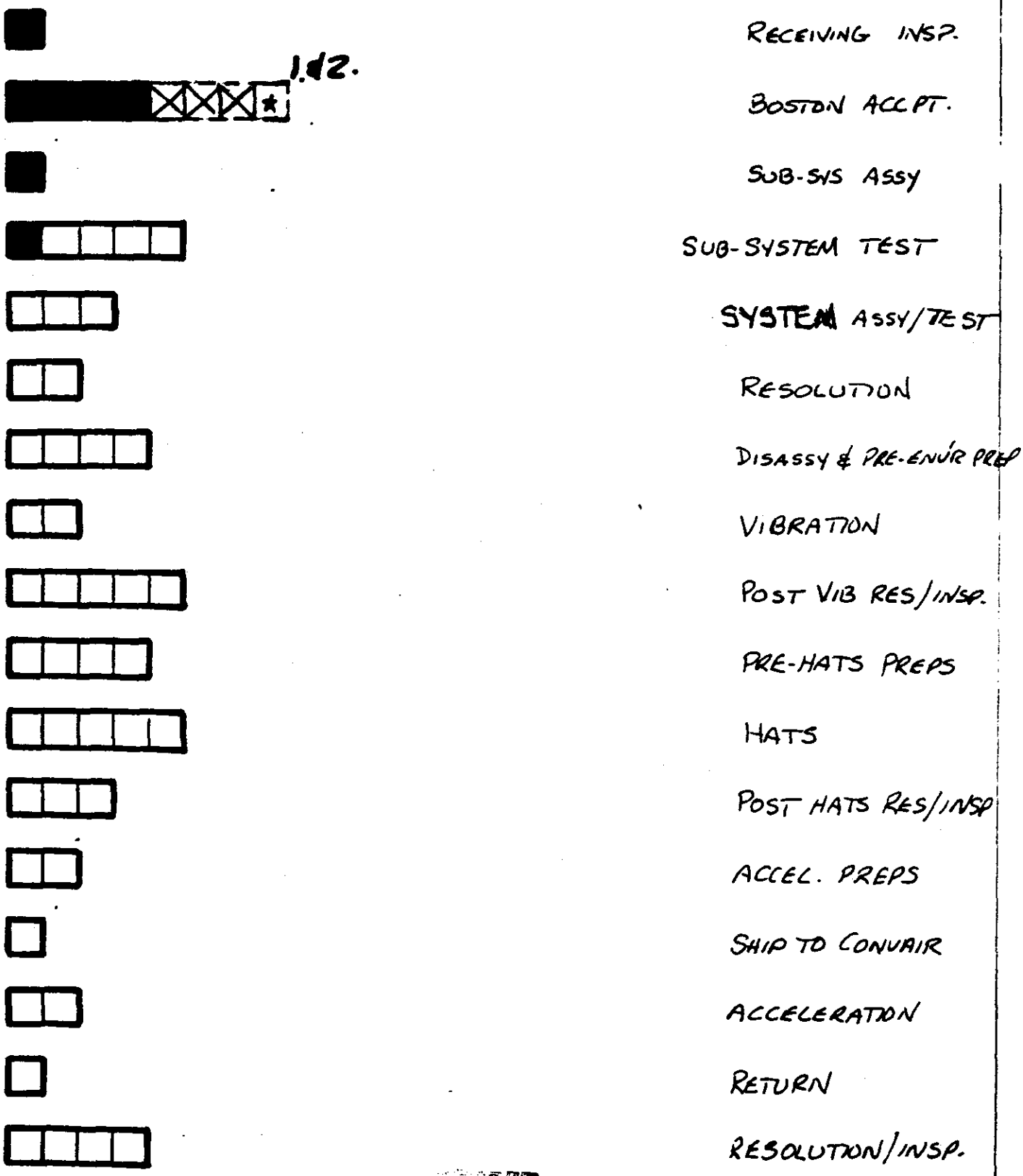
★ - SUNDAY WORKED - SCHEDULED DAY RECOVERED

■ - ACTIVITY COMPLETED

[redacted]

Prepared	[redacted]	DATE 5/62	LOCKHEED MISSILES & SPACE COMPANY A GROUP DIVISION OF LOCKHEED AIRCRAFT CORPORATION
Checked			TITLE M-2 TEST STATUS
Approved			[redacted]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



X - SCHEDULED DAY LOST, ★ - SUNDAY WORKED.

■ - ACTIVITY COMPLETED [redacted]

Attachment 4A

[redacted]

[redacted]

ML PROBLEM AREAS

		STATUS
1.	Cassette instrumentation problems.	Resolved.
2.	Instrument double pulsing.	Resolved.
3.	Cassette film footage pot problem.	Resolved.
4.	Supply torque motor circuit problem.	Pending.
5.	Serial Number cut, blanking pulse not working.	Pending.

[redacted]

[redacted]

[redacted]

EXPLANATION - [illegible] INST STATUS

1. The loss of instrumentation in the M1 Cassette resulted in the re-assembly for repair. During this assembly the retaining ring [illegible] due to excessive amounts of lock/tite. Replacement parts and special tools had to be shipped here from Boston.

2. Each instrument, 70 and 71, caused double interrogate pulses. This resulted in both sets of binary lamps firing every time either primary or slave instrument interrogated the digital clock. Boston's [illegible] mods to "Lamp Sync Unit" did not correct the problem. In addition to above, a 4 volt spike on the Regulated Bus was observed. Problem of the double interrogates and the spike were eliminated by relocating electrically the capacitor filter in the "Lamp Sync Unit" directly to the Regulated Bus.

3. The Cassette film footage pot failed and required replacement. Spares were shipped from Boston since they were unavailable at the AP facility. Problem of spares are in process of being resolved at this time.

4. Supply spool torque motor, during "Launch Mode", caused instrument to cycle in reverse direction.

Boston incorporated modification to program torque on supply schbol through normal inflight puck arm programming.

Modification caused slave instrument to cycle for 7 seconds when regulated voltage was applied. It also caused slave instrument to cycle 7 seconds after primary instrument was shut down. Ground loops were also found to exist.

Modification incorporated by Boston was removed at this point and instrument returned to original configuration. Boston is analyzing problem and we are holding pending decision.

Interim fix to install "Fixed Resistor" in series with Supply Spool Torque Motor is in progress.

5. During resolution test, analysis revealed Serial Number and Fiducial Marks not present and blanking Pulse inoperative. Relay in "Lamp Sync Unit" found to be welded in "Norm Open" position. Repair to this unit is in progress. Substitutes may be installed in order to meet compatibility schedule, and be replaced at a later date.

[redacted]

Attachment 4B

[redacted]

[redacted]

M2 PROBLEM AREAS

1. Supply torque motor circuit. Pending.

2. Instrument double pulsing. Pending.

[redacted]

[redacted]

[redacted]

EXPLANATION - M2 TEST STATUS

1. Supply Spool Torque Motor, during "Launch Mode", caused instrument to cycle in reverse direction.

   Boston incorporated modification to program torque on supply school through normal inflight puck arm programming.

   Modification caused slave instrument to cycle for 7 seconds when regulated voltage was applied. It also caused slave instrument to cycle 7 seconds after primary instrument was shut down. Ground loops were also found to exist.

   Modification incorporated by Boston was removed at this point and instrument returned to original configuration. Boston is analyzing problem and we are holding pending decision.

   Interim fix to install "Fixed Resistor" in series with Supply Spool Torque motor is in progress.

2. Double pulsing was encountered similar to the double pulsing experienced on M1. Modification will be incorporated into "Lamp Sync Units". This modification will be identical to the mod made on M1.

[redacted]

[redacted]

Attachment #5

STATUS REPORT AS OF JANUARY 19, 1962

"M" PRODUCTION SCHED. L.O.B.

27. Start mod. of barrel (door cut-out)

Two (2) barrels received 1-17-62
One (1) mod. started

28. Compl. fab. main door frame details

Shop overloads due to special programs:

aft covers
destruct components
ballast and retro-fits, etc.

29. Compl. mod. of barrel (door cut-out)

Affected by #27

30. Compl. fab. aux. door frame details

Refer to #28

32. Compl. fab. main door details

Affected by #28

40. Compl. fab. main and aux. boots and details

Still awaiting arrival of oven. Ship date of January 8, 1962 to A/P from vendor. Wire sent to vendor inquiring as to location of shipment. No reply as of 1-19-62.

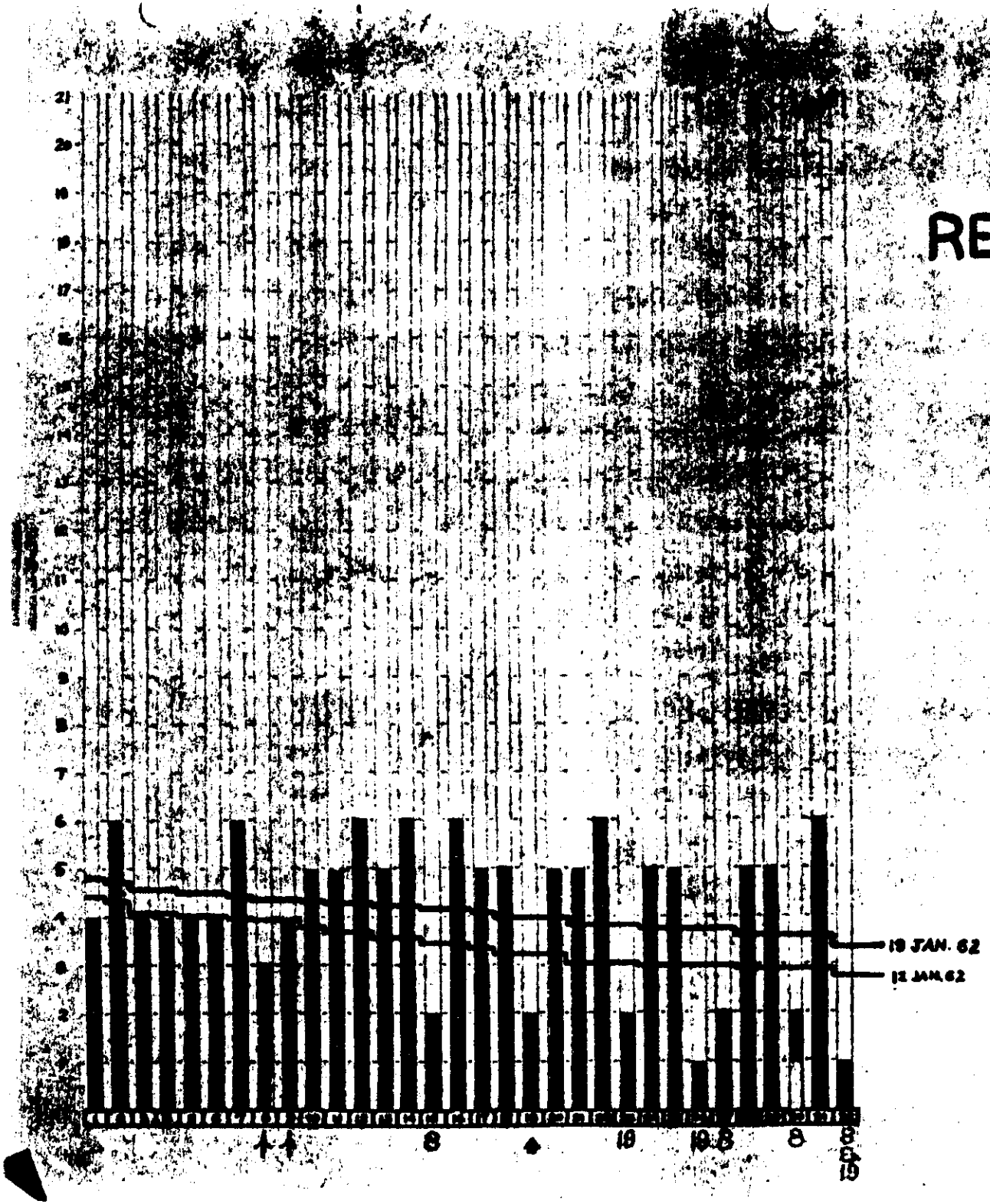
46. Compl. fab. and assembly light shield (Gold Dollar)

Design change has affected this item but will be ready on the 29th as scheduled for Unit #5.

[redacted]

PROGRESS

RECOVERY MODS. PROGRESS



8. Start instl. of water seal cut-out doublers and stiffeners.

   Project office authorizes fab. of two-piece cover for M3 and M4 1-10-62. Fab. not started for 3rd and 4th units until 1-11-62. Estimated start of installation on next 2 units 1-26-62.

9. Complete hat to cover bonding.

   One to be returned to S.V. for re-sealing of hat section. Has been bonded.

15. Complete instl. of water seal doublers and stiffeners.

    Affected by #8.

19. Start assembly of ballast components.

    Nickel plating of springs not completed at S. V. E.C.D. 1-22-62 on springs.

23. Compl. assembly of ballast components.

    Affected by #19.

26. Compl. instl. of ballast assembly.

    Affected by #19

27. Complete painting processes of aft cover assembly.

    Affected by #8.

30. Q. C. buy-off of aft cover - ready to install

    Affected by #8.

32. Complete capsule mods.

    Affected by #8 and #19.

[redacted]

Attachment #6

8214 STATUS REPORT AS OF JANUARY 11, 1962

CASSETTE

General Statement of Schedule

Two units have been accepted and shipped with the Main Units on December 19, 1961 and January 4, 1962, respectively. The third unit will be delivered to the test facilities on January 11, 1962. The fourth and fifth units are following right behind this unit and will be completed in time for testing with the Main Unit; Serial 76-77 and Serial 78-79. There are no major or minor problems at this time.

MAIN INSTRUMENT

General Statement of Schedule

The first unit (70) was delivered with the M2 Unit (Serial 72-73) on January 4, 1962. The second unit (71) is in the debugging area and will be ready for the test facilities on January 15, 1962. The assembly of other units are progressing along on schedule. There are no major or minor problems on this unit at this time.

PHASE .13

General Statement of Schedule

The two units on this phase are basically 100% completed. The first Element of three Elements was delivered January 6, 1962. The balance are working in Optics.

PHASE .11

General Statement of Schedule

A. Serial 70 - 71

The M1 Unit was delivered on December 19, 1961.

B. Serial 72 - 73

The M2 Unit was delivered on January 4, 1962.

C. Serial 74 - 75

The M3 Unit will be delivered on January 23, 1962. It will be completed by the debugging group on January 14, 1962 and the test group will be completed on January 23, 1962.

[redacted]

D. Serial 76 - 77

Shipping date: Planned January 31, 1962. Estimated Feb. 5, 1962.

1. The Main Assembly of Serial 76-77 will be completed on January 15, 1962.

2. The debugging of this Unit will be completed on January 24, 1962.

3. The testing of this Unit will be completed on January 31, 1962.

E. Serial 78 - 79

Shipping date: Planned February 7, 1962; Estimated Feb. 12, 1962.

1. This unit presently working in the Main Assembly area. The completion date is January 19, 1962.

2. The debugging completion date is January 31, 1962.

3. The testing completion date is February 7, 1962.

F. Serial 80 - 81

Shipping date: Planned February 17, 1962; Estimated February 20, 1962.

1. This unit presently working in the Main Assembly area. The completion date for this unit is February 7, 1962.

2. The debugging completion date is February 12, 1962.

3. The testing completion date is February 17, 1962.

PHASE .21

General Statement of Schedule

The first plates for this phase (Serial 82 - 83) are presently working in the Main Assembly Area. The completion date for this unit is February 7, 1962, and at that time it will be ready for debugging.

The delivery dates for the Main Plates are: two (2) by January 15, 1962, two (2) by January 17, 1962, and two (2) by January 19, 1962.

Sub-assembly Status

1.	Shuttle & Star Wheel Assembly	3 units 35% complete
2.	Film Clamping Assembly	4 units 75% complete
3.	Main Drive Gear Box Assembly	8 units 80% complete
4.	Torque Motor & Supply Spool	8 units 35% complete

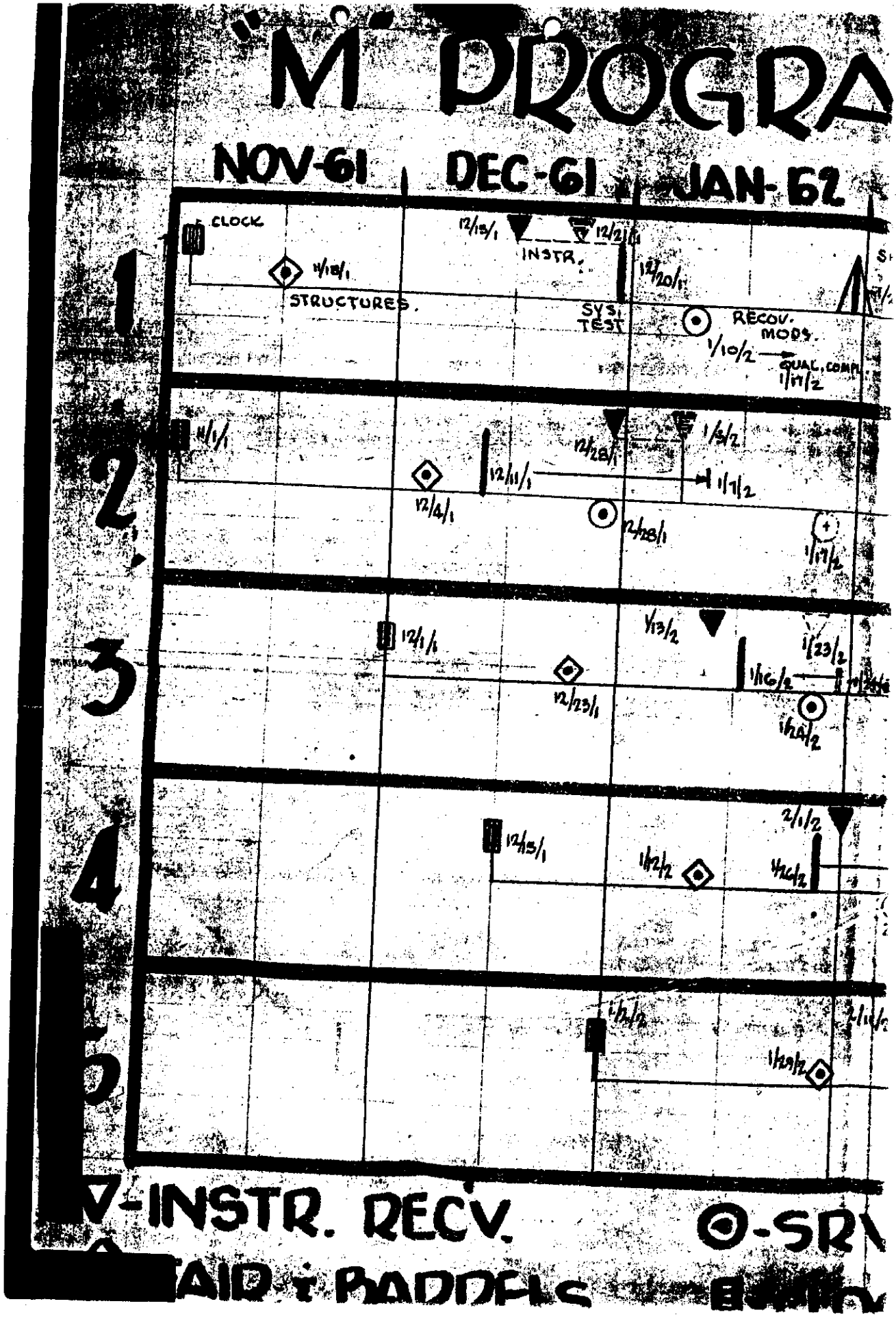
5.	Input Drive Assembly	8 units 15% complete
6.	Sensor Arm Assembly	8 units 70% complete
7.	Roller Brackets Assembly	8 units 80% complete
8.	Lens Cell Drum & Shutter Assembly	1 unit 10% complete
9.	Solenoid Assembly	3 units 40% complete

PHASE .31 AND .51

General Statement of Schedule

A. Phase .31 and .51 are now 90% released for fabrication and purchase of parts.

B. There are nine electrical component board assemblies which are 100% completed on both of these phases.


M PROGRA
NOV-61
DEC-61
JAN-62
CLOCK
STRUCTURES.
INSTR.
SYS. TEST
RECOV. MODS.
QUAL. COMP.
1
2
3
4
5
V-INSTR. RECV.
O-SR
AID & PADDLE

M SCHEDULE

FEB-62 | MAR-62 | APR-62 | MAY-62

2/10/2

2/22/2

X

LAUNCH

2/18/2

3/13/2

3/26/2

PAYLOAD READINESS.

LAUNCH

X

4/17/2

3/29/2

4/10/2

4/18/2

LAUNCH

X

4/26/2

4/6/2

4/20/2

4/29/2

LAUNCH

X

5/9/2

2/7/2

2/12/2

4/4/2

2/13/2

4/25/2

5/8/2

5/24/2

V MOD'S

"D" DAY (TEST)

PROGRAM SCHEDULE

[redacted]

ATTACHMENT #8

Itek Laboratories Design of a 1½" Focal Length f/4.5 Frame Camera Using a Zeiss Biogon Lens

Design Features

1. Total camera weight including 120 feet of film - 5½ lbs. maximum.

2. Format size - 2¼" x 2¼" on 70 millimeter photographic film utilizing thin base estar of approximately 3 mills thickness.

3. Field angle is 72 degrees by 72 degrees on a square format or approximately 36 degrees off axis to each side of the format and roughly 93 degrees across corners.

4. The camera is capable of cycle times faster than two seconds per cycle. The camera has also included a slew feature for rapidly indexing any remaining film that may be in the camera whenever it is desired to deplete the camera supply.

5. The camera is designed to withstand shocks and vibrations as specified in LMSC 6117B.

6. The camera is designed to operate in an environment of less than 1 x 10^{-3} millimeters of mercury and at temperature ranges of 70 ± 10 degrees fahrenheit.

7. The camera is equipped to operate with shutter speeds of 1/500, 1/250, and 1/125; and for ground handling purposes it is equipped with a time setting.

8. The camera is designed as a separate module complete within itself with the exception of a take-up system which is intended to be located remotely from the camera. The take-up system weights approximately 1½ lbs. and is shown in the accompanying photographs.

9. The camera is designed to operate from signals of 50 milliseconds duration spaced not less than two seconds apart where the first pulse triggers the shutter and the second pulse initiates a completely automatic cocking, framing, and film positioning sequence. The pulse required consists of 28 volt DC and about 1 ampere capability. The camera requires a B^+ supply of 28 volts DC with a 5 ampere capability to perform the cocking, framing, and take-up functions.

10. The shutter release solenoid simultaneously accuates a micro-switch which pulses a one cycle mult-vibrator and has a output of a 50 millisecond square wave in order to record the time exposure with respect to other time elements within the system.

11. The camera is equipped with a standard photographic filter and in the current application is a Wratten No. 21 whose filter factor is approximately 2.2. Of course, this filter factor can be changed throughout the filter spectrum with no difficulty.

[redacted]

12. The camera is designed to produce an area weighed resolution of approximately 90 with high contrast illumination conditions on 50 - 130 thin base photographic film.

13. The lens camera system is equipped with a Reseau Grid, shown in detail in the accompanying detailed prints, for purposes of calibrating the distortions in the lens film Reseau combination. This Reseau Grid is of the evaporated nickel chromium type on a one millimeter Boro silicate glass plate. The Reseau Grid interval is 2.5 millimeters over the entire format. Calibration procedures have been and are being evolved at Itek Laboratories and will be performed on units with a Goniometer technique.

14. The lens used as mentioned above is a Ziess Biogon 1½" focal length f/4.5 and has a transmission in percent in the area of 500 millimicron wave length light of approximately 86%.

15. The camera can be available on a very short cycle delivery program in three to four months time. Normal delivery schedules should be approximately six to seven months. It is likely in some unusual circumstances that cameras can be removed from an existing production schedule to meet requirements for one to two units.

16. The camera is equipped with a light tight envelope which allows the camera to be threaded and loaded in a subdued light; the cover installed on a camera; then handled in normal light. The camera is equipped with aBendix connector for electrical connections and this connector is so installed to allow connections under ordinary room light conditions.

17. The frame lengths are 2 3/8" long leaving a margin between frames of about 1/8". The minimum load with thin base film is conservatively 400 frames allowing ten feet for leader on each end.

Attachment #9

1-16-62

DIAGRAMMATIC PROCEDURE OF INSTITUTING and IMPLEMENTING A TECHNICAL DIRECTIVE

PROGRAM OFFICE ISSUES A TD TASK STATEMENT TO SE/TD. → SE/TD PREPARES A PRELIMINARY T.D. AND SUBMITS A REPRODUCIBLE TO PROGRAM OFFICE. → PROGRAM OFFICE MAKES DISTRIBUTION TO ITS PARTICIPATING ORGANIZATIONS. → AFFECTED CONTRACTOR PREPARES WORK STATEMENT →

AFFECTED CONTRACTOR PREPARES COST ESTIMATE. → PROGRAM OFFICE SUBMITS WORK STATEMENT, COST ESTIMATE AND OTHER SUPPORT DATA TO SE/TD. → SE/TD PREPARES FORMAL T.D. →

SE/TD OBTAINS APPROPRIATE SIGNATURES. → SE/TD SUBMITS THE ORIGINAL SIGNED-OFF VELLUM TO AFFECTED PROGRAM OFFICE. → AFFECTED CONTRACTOR IMPLEMENTS T.D. →

AFFECTED CONTRACTOR SUBMITS A DOCUMENT TO SE/TD WHICH CONFIRMS IMPLEMENTATION. → SE/TD TRANSFERS T.D. FILE FROM ACTIVE TO COMPLETED.

NOTICE OF REMOVED PAGES

Page 26 is not provided because the full page text does not contain CORONA, ARGON, LANYARD programmatic information.