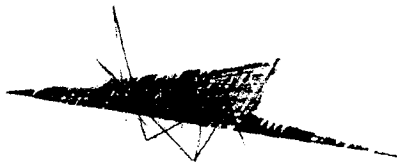


SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

RYE-66217-66



DORIAN PROGRAM

Review

22 DECEMBER 1965

SECRET
SPECIAL HANDLING

EASTMAN KODAK CO.

~~SECRET~~
SPECIAL HANDLING

PHOTO DOCUMENTATION

BOOK 03

PAGE 1 OF 83 PAGES

System Description & Organization

Background

Dec 22 1965

EYI-1 (21765)

BRIEFING OUTLINE

BACKGROUND
SYSTEM DESCRIPTION
TASK STATUS
ORGANIZATION
FACILITIES SUMMARY
SCHEDULE
MANPOWER
FUNDING

EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

PHOTO DOCUMENTATION

BOOK 03

PAGE 2 OF 83 PAGES

System Description & Organization

Back ground

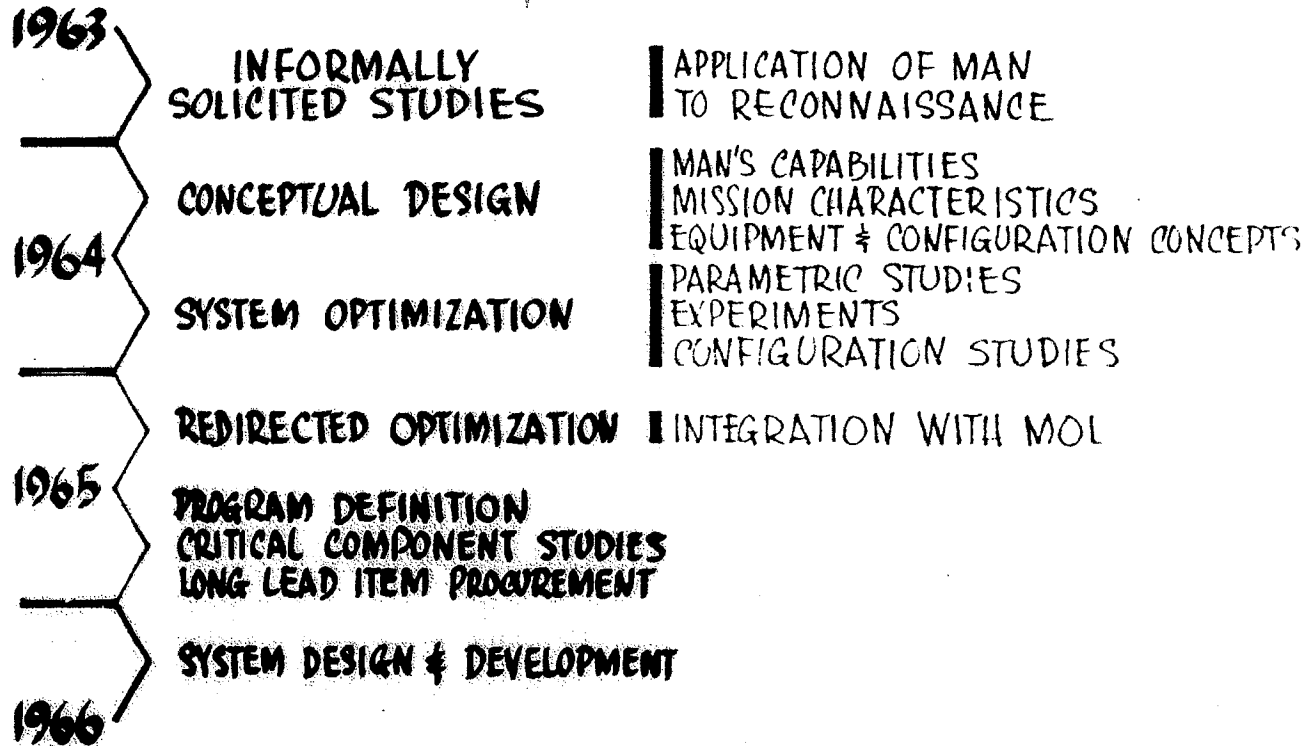
SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

BYE-00217-00

DORIAN PROGRAM HISTORY



EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

PHOTO DOCUMENTATION

SPECIAL HANDLING

~~SECRET~~

STUDY OBJECTIVES

EYE-1017-66

TO CONSIDER MANNED SATELLITE RECONNAISSANCE
SYSTEMS WITH THE FOLLOWING ALTERNATIVE APPROACHES

OPTICS FIXED BEFORE LAUNCH

OPTICS ALIGNED ON-ORBIT

OPTICS EXTENDED AND ALIGNED ON-ORBIT

OPTICS EXTENDED, ALIGNED & FIGURE CORRECTED ON-ORBIT

TO APPLY EACH APPROACH TO THE FOLLOWING LAUNCH CONCEPTS

INTEGRAL LAUNCH

RENDEZVOUS LAUNCH

TO COMPARE THE RESULTING SYSTEMS WITH TITAN III C
UNMANNED SYSTEMS

EASTMAN KODAK CO.

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PHOTO DOCUMENTATION

BOOK 03






PAGE 4 OF 83 PAGES

Dec 22 1965

LENS SELECTION

EYE-002716

COMPARISON

Lens Type	Field	Wt	As- phere	Length	Align.	Obstruc- tion	Size Limit
PARABOLIC 	X		-				
CASSEGRAIN 	-		-		-	-	
ROSS REFLECTOR 			-				
SCHMIDT 		-	-	?			50"
MAKSUTOV 		-					50"

X UNSUITABLE
- DISADVANTAGE

EASTMAN KODAK CO.

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PHOTO DOCUMENTATION

SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

BYE-012,7-86

CAMERA SELECTION

		COMPARISON				
STRIP CAMERA DUAL PLATENS		IMC	CROSS-TRACK COVERAGE	IN-TRACK COVERAGE	FRAMES	VISUAL ACCESS
		~.5% $\frac{1}{h}$	1-2 N.M.	~ 20 N.M.	4	NO
		<.1% $\frac{1}{h}$	1-2 N.M.	1-2 N.M.	10-20	YES

FRAME
CAMERA

EASTMAN KODAK CO.

~~SECRET~~
SPECIAL HANDLING

PHOTO DOCUMENTATION

SPECIAL HANDLING

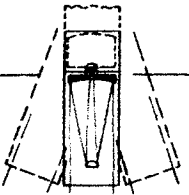
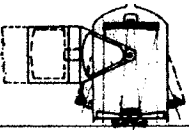

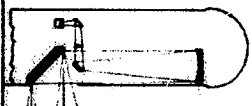
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Dec 22 1965

EYE-00217-06

AIMING METHOD SELECTION

Comparison

		OPTICAL WEIGHT	OPTICAL COMPLEXITY	AIMING INERTIA	DRAG	CAMERA ACCESS	VISUAL ACCESS
	VEHICLE POINTING	LOW	HIGH	VERY HIGH	VERY HIGH	EXCELLENT	YES
	OPTICAL SYSTEM POINTING	LOW	HIGH	HIGH	HIGH	POOR	TV ONLY
	OPTICAL ELEMENT POINTING	HIGH	VERY HIGH	LOW	HIGH	GOOD	YES
	TRACKING MIRROR POINTING	HIGH	LOW	LOW	LOW	GOOD	YES

EASTMAN KODAK CO.

~~SECRET~~
SPECIAL HANDLING

PHOTO DOCUMENTATION

System Description & Organization

SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

BY 402748

MIRROR MATERIALS SELECTION (MID 1965)

MATERIAL	ADVANTAGES	DISADVANTAGES	STATUS
FUSED SILICA	ESTABLISHED TECHNOLOGY	MODERATE COEFFICIENT*	CURRENT STD. MAT'L.
CER-VIT	CAST WITH INTEGRAL CORE & FILLETS (REDUCED STRESS CONCENTRATION) LOW COEFFICIENT*	NEW MAT'L. LITTLE EXPERIENCE	FABRICATION TECHNIQUE UNDER DEVELOPMENT
LOW COEFFICIENT FUSED SILICA	LOW COEFFICIENT*	NOT AVAILABLE NO EXPERIENCE	2 YEARS
PYROCERAM	LOW COEFFICIENT*	SURFACE SCATTER	UNDER DEVELOPMENT FOR LARGE SIZES
BERYLLIUM	HIGH SPECIFIC STIFFNESS HIGH THERMAL CONDUCTIVITY	SURFACE MUST BE COATED FOR POLISHING HIGH COEFFICIENT*	ISOSTATIC PRESSING UNDER DEVELOPMENT
SUPER INVAR	LOW COEFFICIENT*	SURFACE MUST BE COATED FOR POLISHING DIFFICULT TO FABRICATE	UNDER DEVELOPMENT

* THERMAL COEFFICIENT OF EXPANSION

EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

PHOTO DOCUMENTATION

SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

EY-00217-03

SAMPLE OF OPTICAL TEST FACILITY

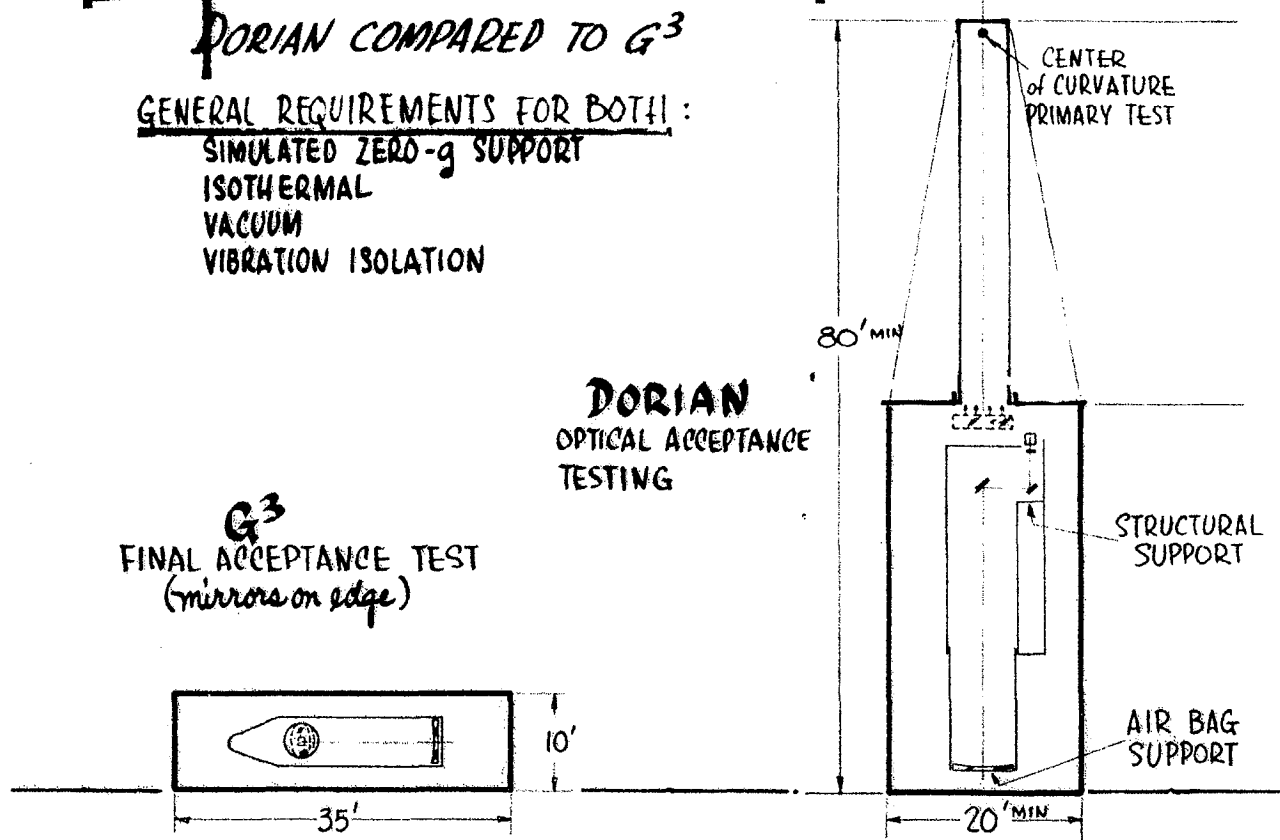
DORIAN COMPARED TO G³

GENERAL REQUIREMENTS FOR BOTH:

- SIMULATED ZERO-g SUPPORT
- ISOTHERMAL
- VACUUM
- VIBRATION ISOLATION

DORIAN
OPTICAL ACCEPTANCE
TESTING

G³
FINAL ACCEPTANCE TEST
(mirrors on edge)



EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

PHOTO DOCUMENTATION

SPECIAL HANDLING

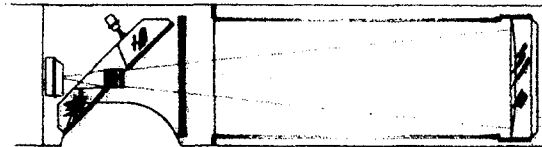
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Dec 22 1965

CAMERA/OPTICS MODULE *Comparison*

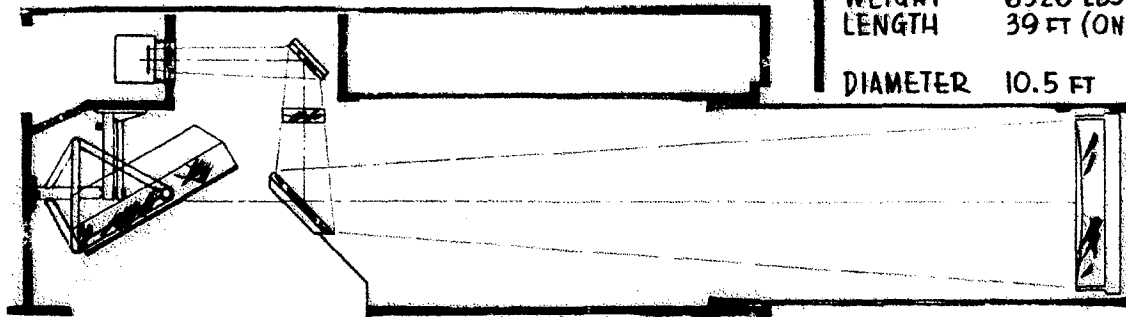


G³ | 160 INCH EF
43.5" APER f/3.68
WEIGHT 2234 LBS
LENGTH 17.5 FT
DIAMETER 5 FT



DORIAN

70" APER EF
WEIGHT 6520 LBS
LENGTH 39 FT (ON-ORBIT)
DIAMETER 10.5 FT



SPECIAL HANDLING

~~SECRET~~

Dec 22 1965



SYSTEM SELECTION SUMMARY

(JUNE '65)

11/17/65

	INTEGRAL LAUNCH	RENDEZVOUS LAUNCH	GROWTH SYSTEMS
APERTURE	50 - 70 "		→
CAMERA	FRAME	FRAME	FRAME
AIMING	TRACKING MIRROR	TRACKING MIRROR	OPTICAL ASSEMBLY
LENS	ROSS	ROSS	ROSS OR CASSEGRAIN
MATERIAL	FUSED SILICA	FUSED SILICA OR CERVIT	CERVIT
ON-ORBIT ADJUST	ALIGNMENT	ALIGNMENT (FIG. CONTROL)	ALIGNMENT FIG. CONTROL

11/17/65

EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

PHOTO DOCUMENTATION

██████████
Dec 22 1965

BYE-00217-06

GENERAL SYSTEM DESCRIPTION

Special Handling - ~~SECRET~~

BOOK 08

PAGE 12 OF 83 PAGES

PHOTO NO. 071111
DATE 12-22-65

PHOTO DOCUMENTATION

Dec 22 1965

EYE-00217-08

JOINT SENSOR CHARACTERISTICS

MISSION MODULE

LAP MODULE

Special Handling - ~~SECRET~~

Special Handling -~~Secret~~

██████████
Dec 22 1965

DORIAN SYSTEM BASELINE
(DECEMBER 1965)

EYE-COPYING

- IN-LINE CONFIGURATION.
- DUAL MODE (MANNED OR UNMANNED) OPERATION.
- FRAME PHOTOGRAPHY.
- ██████████ AVERAGE RESOLUTION REQUIRED.
- MULTIPLE RECOVERY.

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Dec 22 1965

Bill 10710

RESOLUTION

NOMINAL OPERATIONAL

OPERATIONS

ALIGNMENT

AIMING

TRACKING

FILM HANDLING

MAINTENANCE

REQUIREMENTS

GRADE REFERENCE

ORIENTATION

TARGET CENTER UN-
CERTAINTY

BLEWING

LINE-OF-SIGHT RATES

SETTLING TIME

TRACKING ANGLES

ROLL

PITCH

CENTERS NADEL AVERAGE

500-1000 METRIC GAL MILES

MANNEO MODE

ASTRONAUT SENSOR

ASTRONAUT

ASTRONAUT SENSOR

ASTRONAUT

ASTRONAUT

UNMANNED MODE

ALIGNMENT SENSOR

GROUND PHOTO MAPPING

TRACKING SENSOR

AUTOMATIC

NONE

0.1 DEGREE ROLL, PITCH AND YAW

0.5 NM IN-TRACK

0.25 NM ALTITUDE AND CROSS-TRACK

500 FT. IN-TRACK AND CROSS-TRACK

600 FT. ELEVATION

10 DEG. SEC ROLL, 20 DEG. SEC PITCH

< SECONDS

± 40 DEG.

± 30 to -40 DEG. (± 15 DEG. FOR PHOTOGRAPHY)

Special Handling - Secret

Dec 22 1965

BYE-0017-00

GENERAL INFORMATION

APPROVAL AUTHORITY

CLASSIFICATION

ITEM NUMBER

ASTRO-CAMERA

TYPE

ANGLE/CIRCLE TIME

SEQUENCE

EXPOSURE

FRAME EXPOSURE TIME

LOCAL EXPOSURE TIME

EXPOSURE SEQUENCE

ASTRO-POSITION CAMERA

LENSES

FILM SIZE

ACQUISITION SCENES

MAGNIFICATION RANGE

APPARENT FIELD OF VIEW

VISUAL OPTICS

MAGNIFICATION

TYPE OF CAMERA

LENSES

BLACK & WHITE (ISO-500)

COLOR (ISO-120)

FRAME (INTERCHANGEABLE
PLATE(S))

EXPOSURE SEC.

FOCAL PLANE

1/2 SECOND

1/200 SECOND

4 LEVELS TARGET 1 STOP

F.W.O.

35mm. f 2.0 LEITZ-SUMMICRON

35mm

TWO

5X TO 25X

30 DEG.



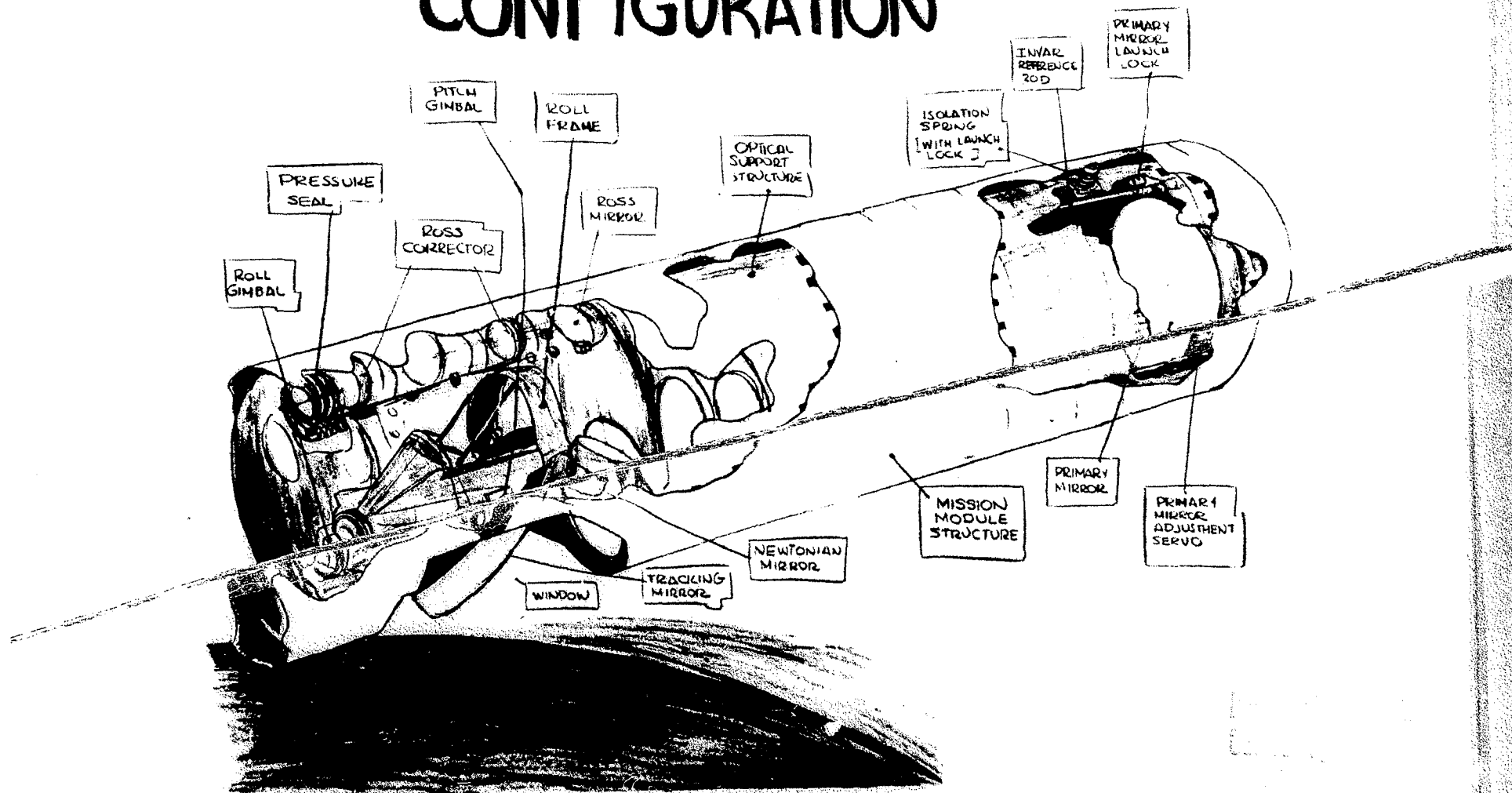
RECEIVED BY
NAME OF THE OFFICER
DATE

SPECIAL HANDLING

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Dec 22 1965

CONFIGURATION



EASTMAN KODAK CO.

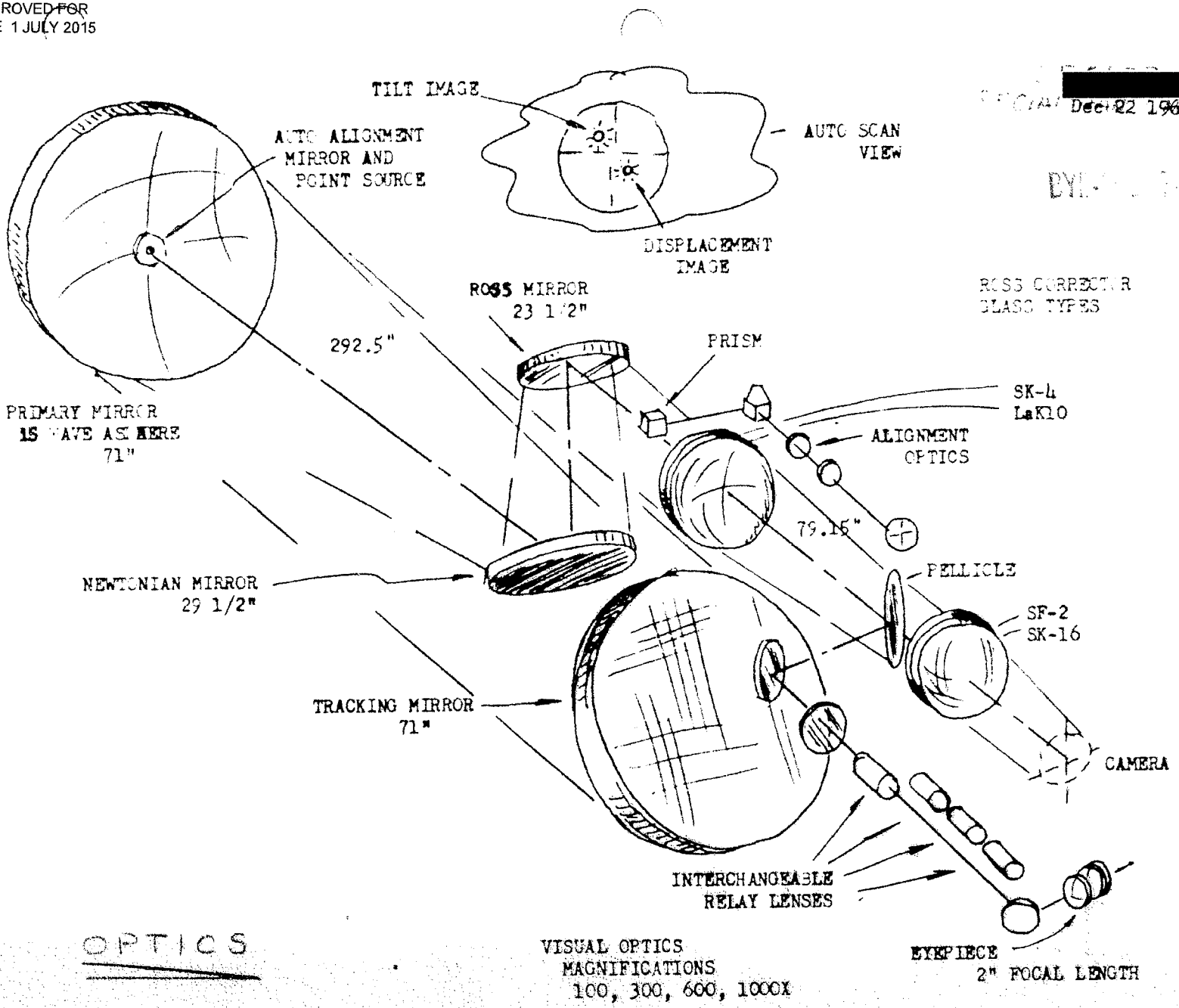
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SPECIAL HANDLING

PHOTO DOCUMENTATION

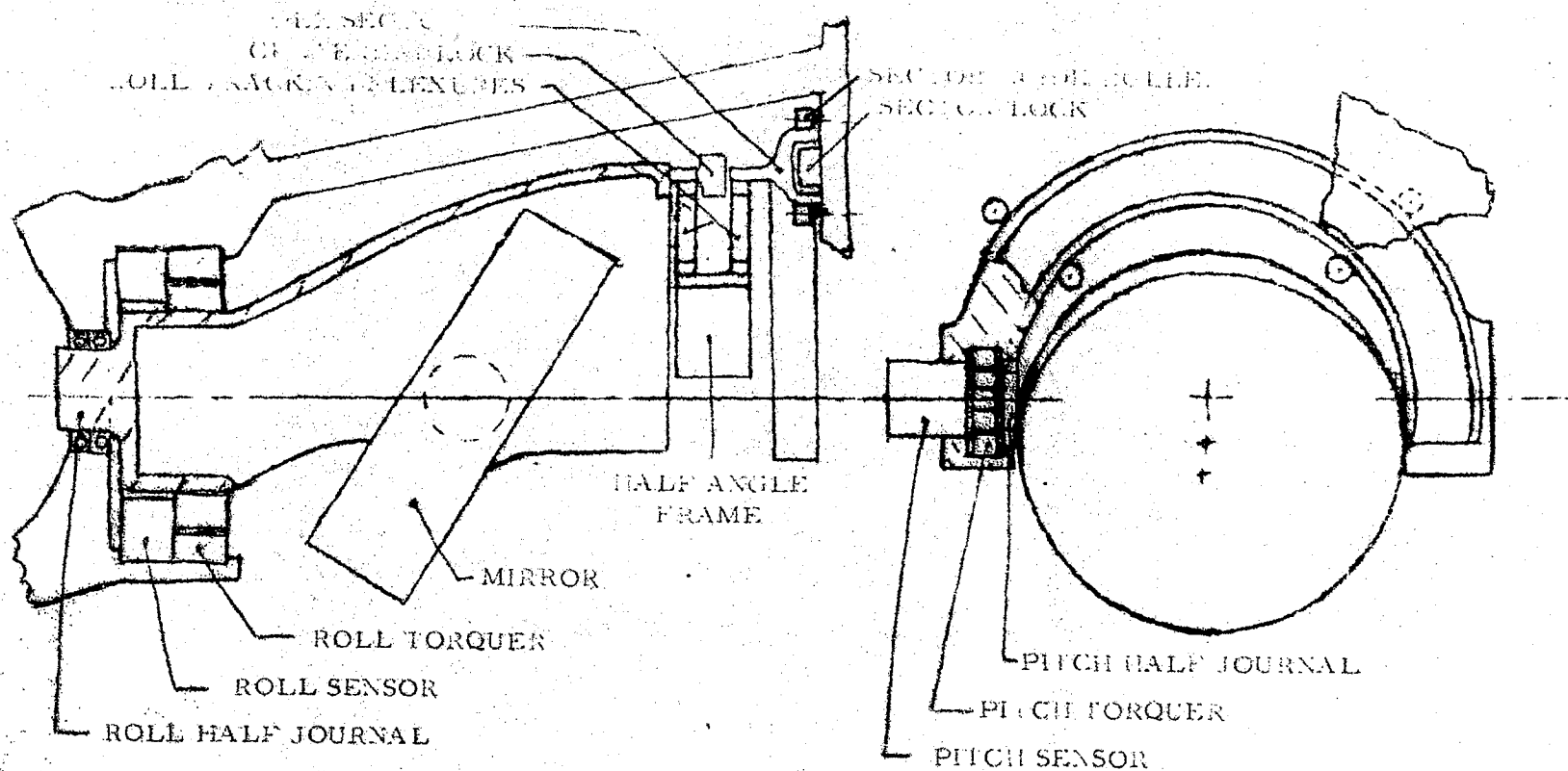
SECRET
Dec 22 1965

DYK-11-1003



Dec 22 1965

EYE-00257-06



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BOOK 03
PAGE 19 OF 83 PAGES

Handled via HYEMAN
Control System
PHOTO DOCUMENTATION

SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

EYE-0021700

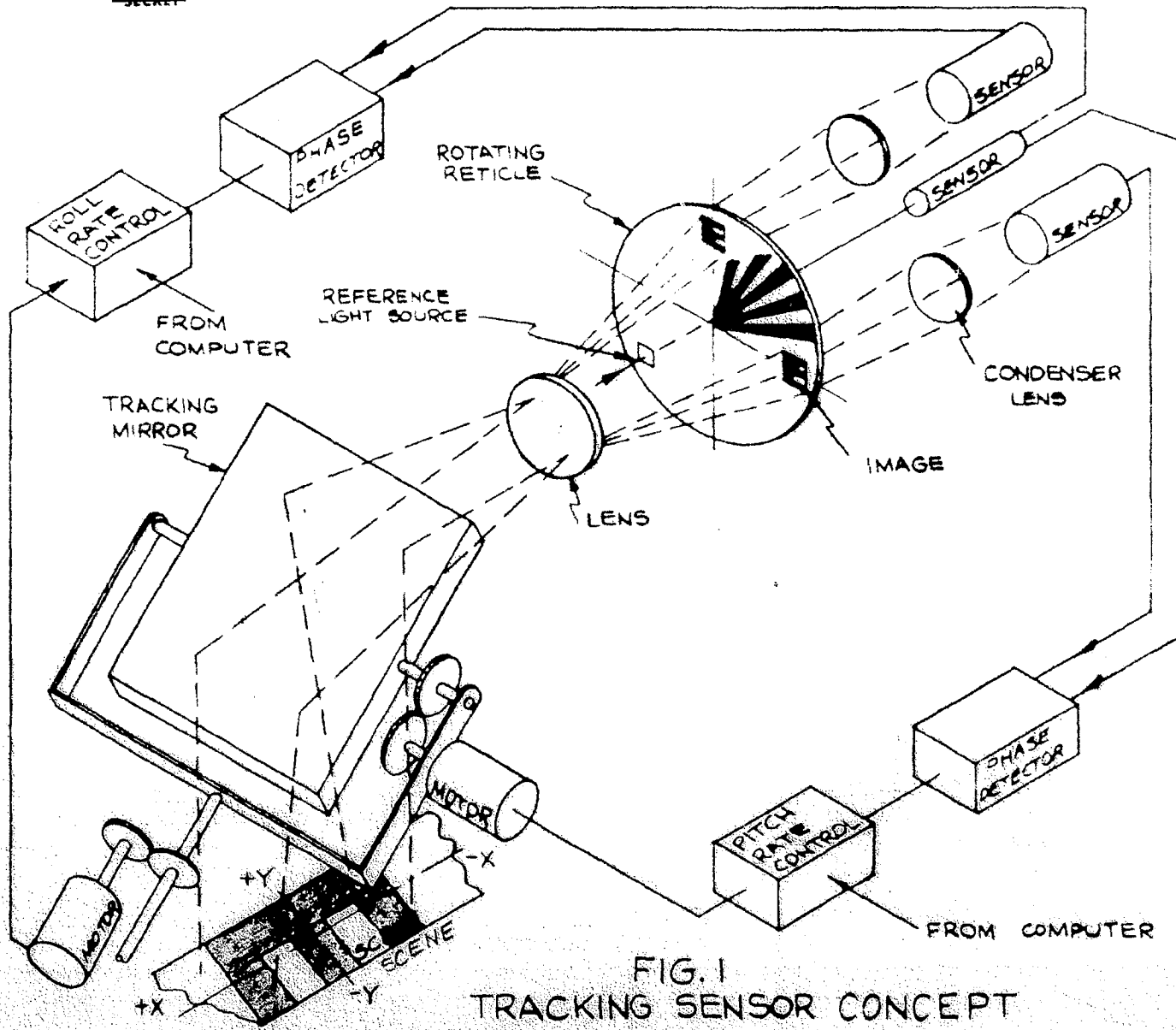


FIG. 1
TRACKING SENSOR CONCEPT

CONTROL SYSTEM
EASTMAN KODAK CO.

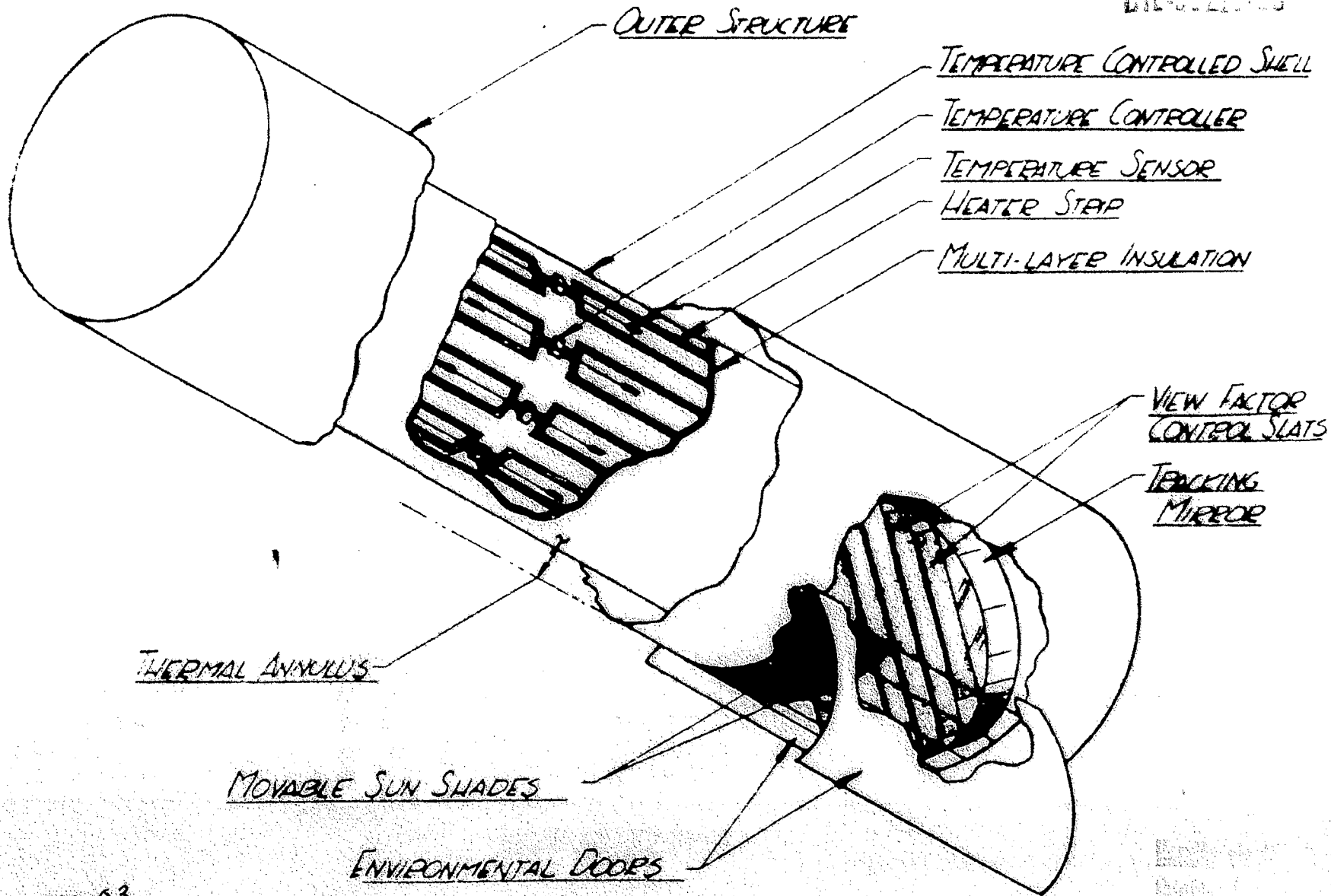
~~SECRET~~
SPECIAL HANDLING

THERMAL CONTROL

SPECIAL HANDLING
~~SECRET~~

Dec 22 1965

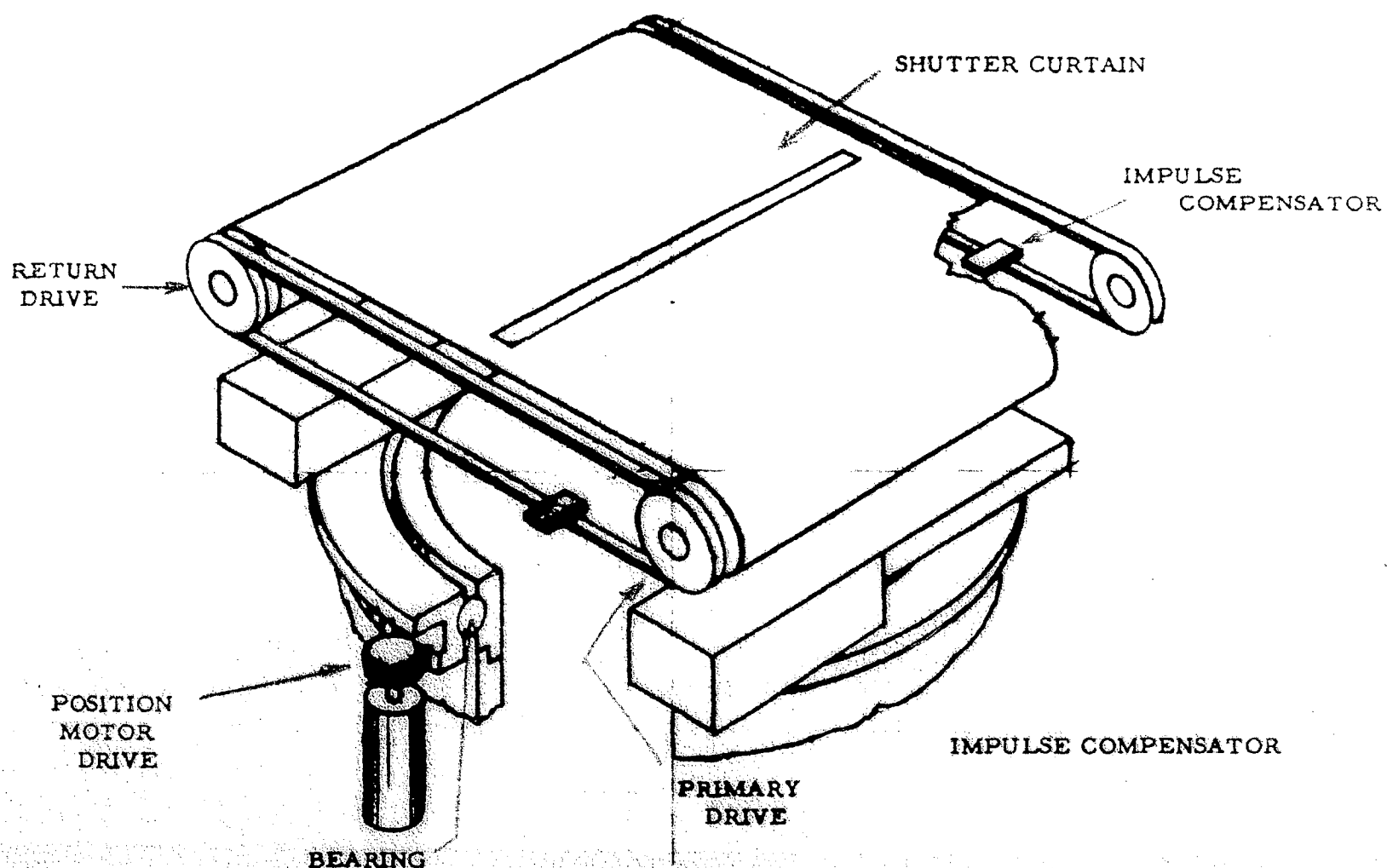
EX-5215-63



Dec 22 1965

Special Handling - ~~Secret~~

EYE-SECRET



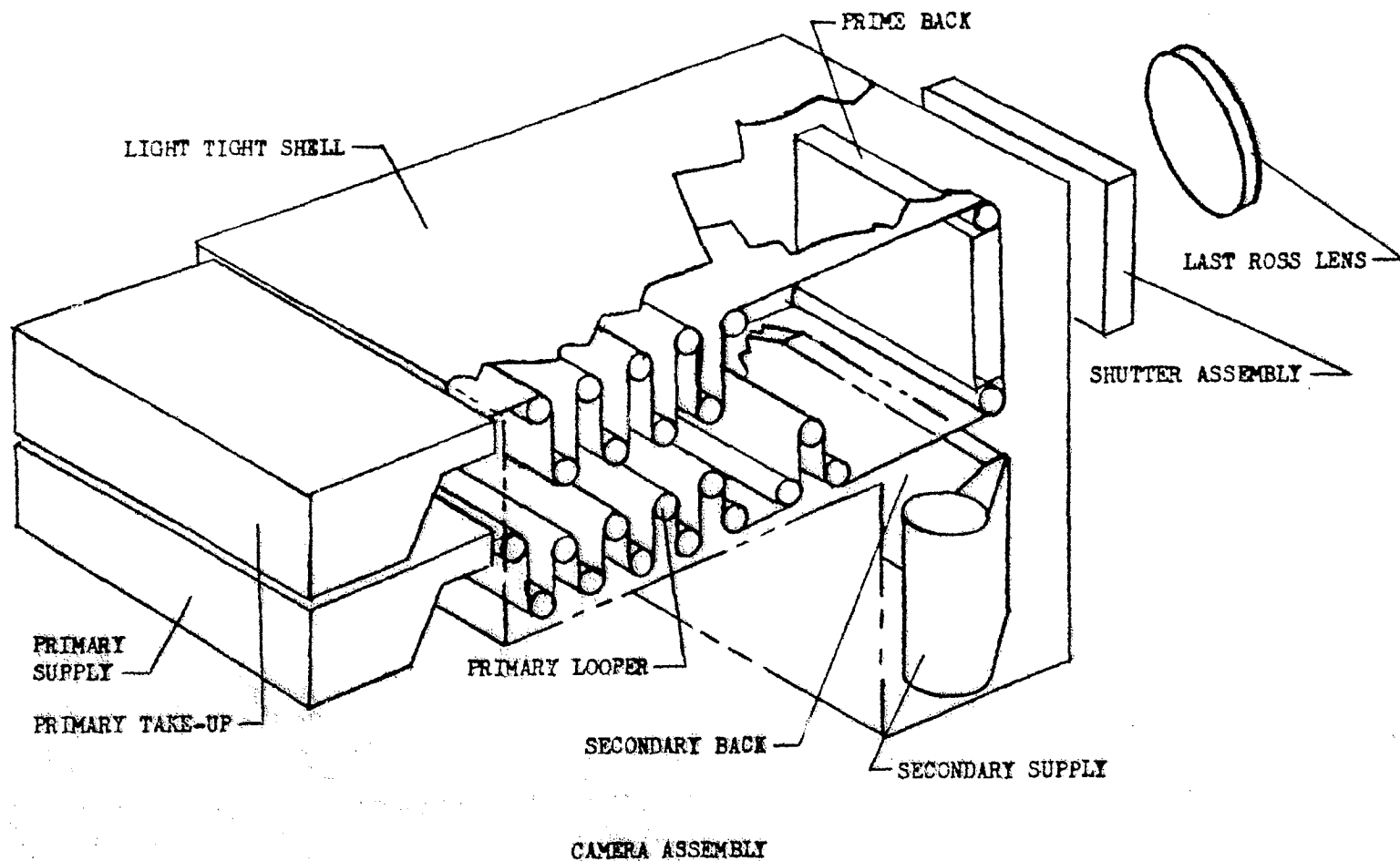
SHUTTER CONCEPT

Special Handling - ~~Secret~~

Dec 22 1965

SPECIAL HANDLING
~~SECRET~~

EYE-GLASS



SPECIAL HANDLING
~~SECRET~~

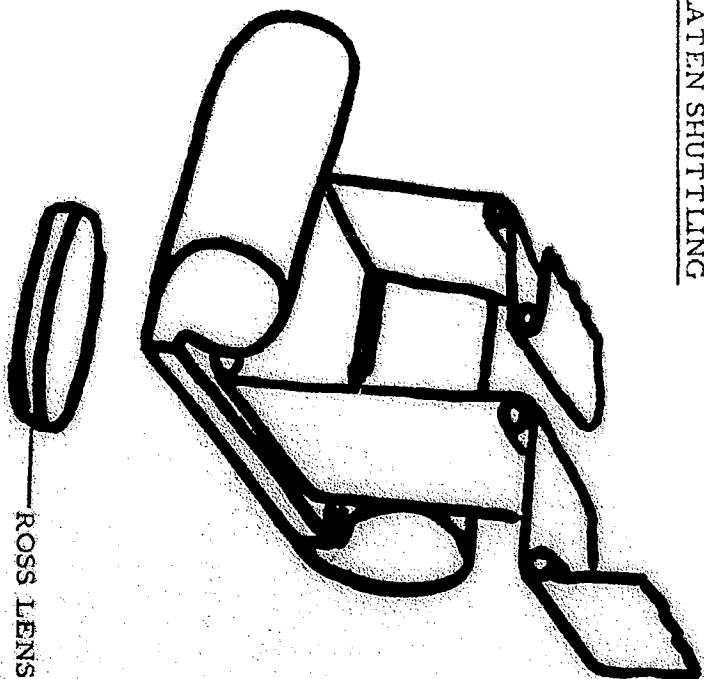
401182148610

Dec 22 1965

Special Handling - ~~Secret~~



PLATEN SHUTTLING



Control System

PHOTO DOCUMENTATION

Special Handling - ~~Secret~~

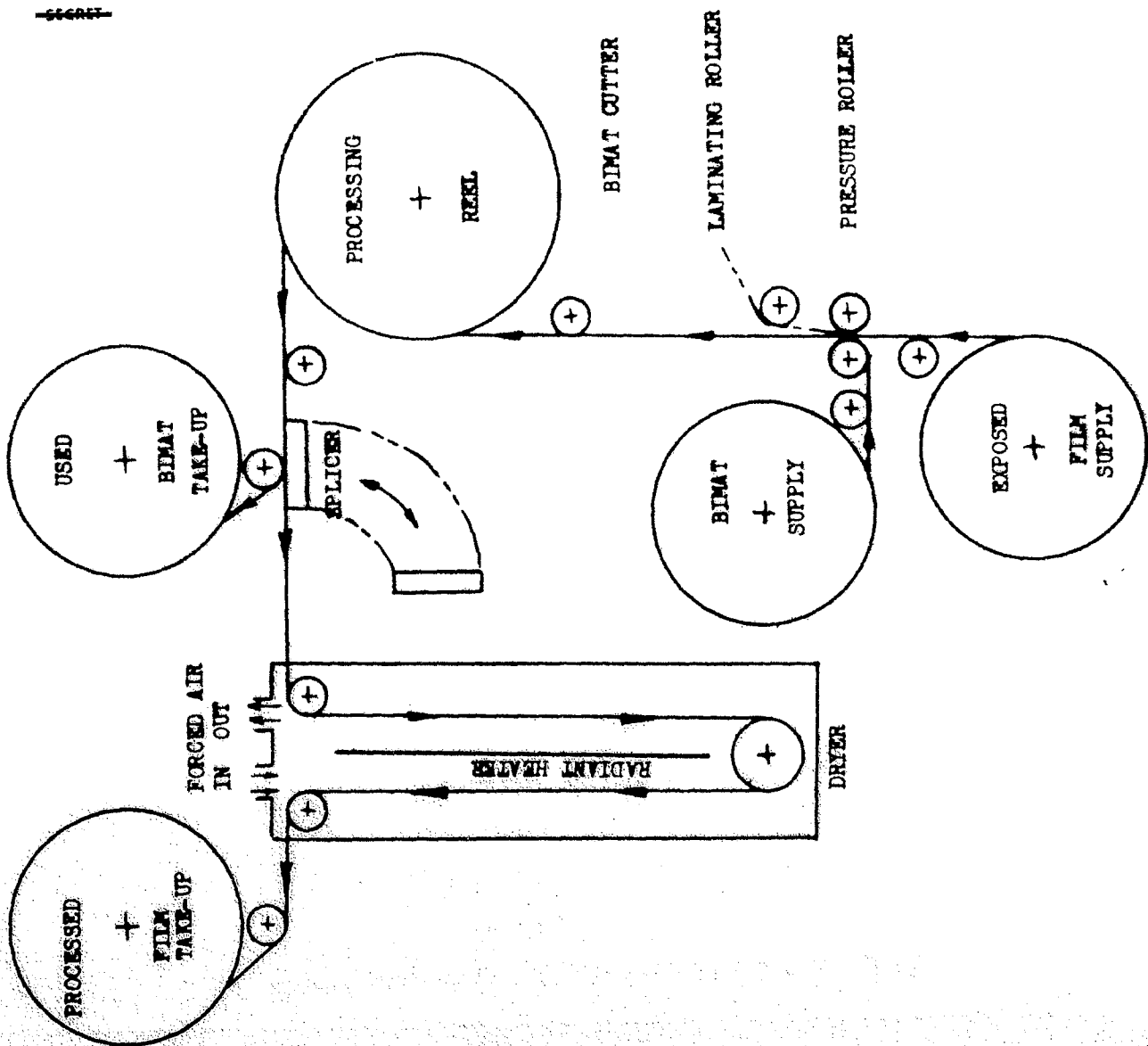
SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

EX-100-103

LOAD
PROCESSED FILM



PROCESSOR CONCEPT

Control via EYEMAN
Control System

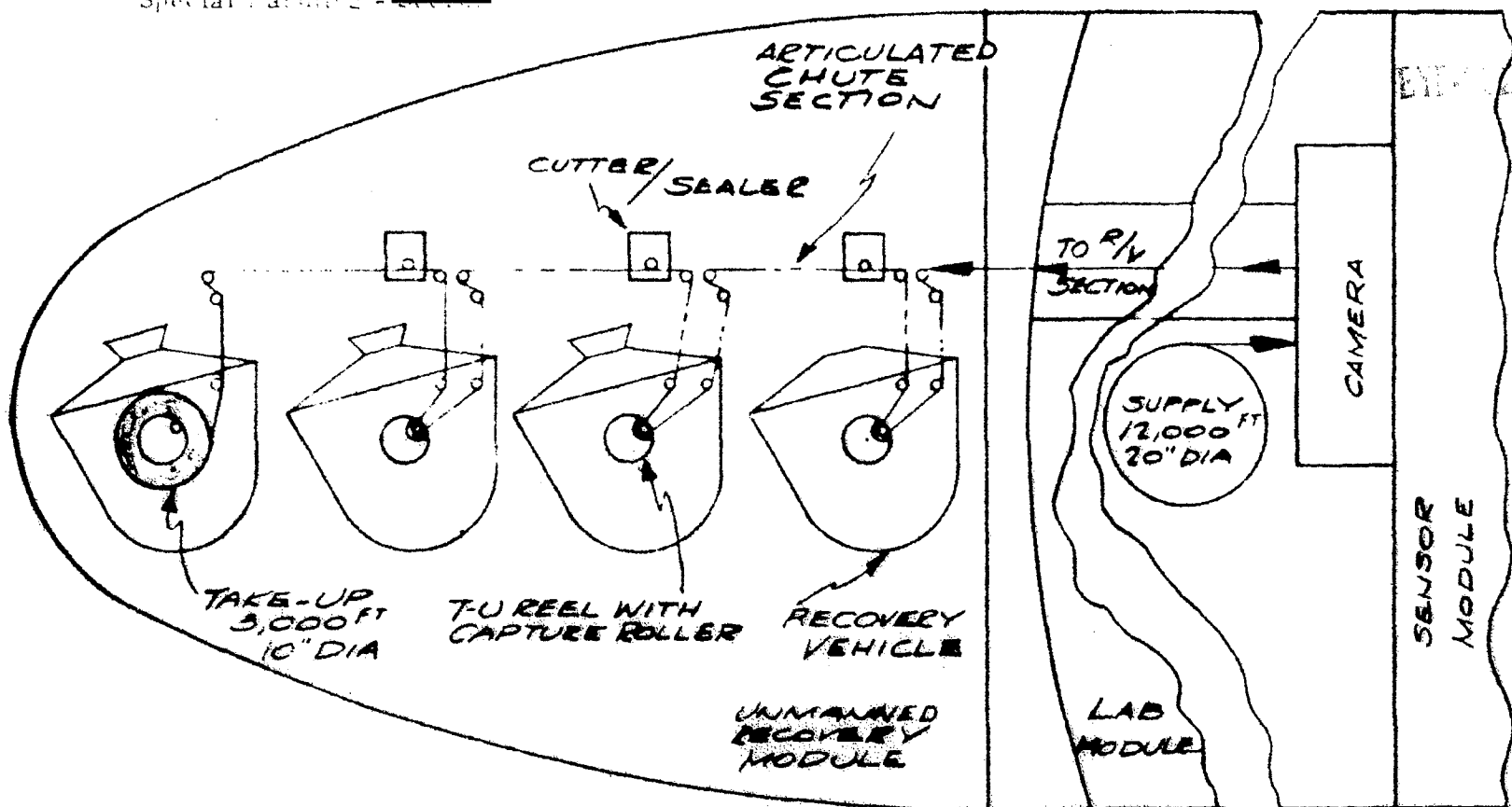
EASTMAN KODAK CO.

~~SECRET~~
SPECIAL HANDLING

PHOTO DOCUMENTATION

Dec 22 1965

Special Handling - ~~Secret~~



FILM HANDLING SYSTEM FOR UNMANNED CONFIGURATION

Special Handling - ~~Secret~~

BOOK 03

PAGE 26 OF 83 PAGES

SENSORS DIVISION

PHOTO DOCUMENTATION

Special Handling - ~~Secret~~

Dec 22 1965

MAJOR INTERFACES

EYLA-127-12

(A) MECHANICAL

OPTICAL SENSOR MOUNTING
LAB EQUIPMENT MOUNTING
CONSOLE AND OPERATING EQUIPMENT REQUIREMENTS

(B) ELECTRICAL

POWER
INSTRUMENTATION
COMMANDS
COMPUTER & DRIVE INFORMATION

(C) ENVIRONMENTAL

THERMAL ENVIRONMENT
LAB ENVIRONMENT
PRE-LAUNCH ENVIRONMENT
EMI

Special Handling - ~~Secret~~

BOOK 03

PAGE 27 OF 83 PAGES

Handle via EYLAN
Control System

PHOTO DOCUMENTATION

Special Handling - ~~Secret~~

Dec 22 1965

CRITERIA FOR JUDGING CONSOLE ARRANGEMENT*

BYE-66217-66

1. ASTRONAUTS MUST BE ABLE TO ACCOMPLISH PHOTOGRAPHIC MISSION.
2. OPTICAL PATH MUST BE SHORT FOR -
BEST OPTICAL QUALITY
LEAST WEIGHT
MINIMUM ALIGNMENT & VIBRATION PROBLEMS
3. MAXIMUM UTILIZATION OF SPACE FOR -
FILM TRANSPORT
PROCESSING AND READOUT
ASTRONAUT LOCOMOTION
4. MAXIMUM REDUNDANCY OF DISPLAYS & CONTROLS.
5. CAPABILITY FOR 1 MAN OPERATION.
6. MINIMUM OPPORTUNITY TO MAKE MISTAKES.

* ORIENTATION OF EQUIPMENT DURING LAUNCH IS NOT CONSIDERED IMPORTANT. FALSE FLOORS AND FIXTURES CAN BE USED DURING CHECKOUT.


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BOOK 03
PAGE 28 OF 83 PAGES

BYE-66217-66
Control System

PHOTO DOCUMENTATION



Special Handling 


Dec 22 1965

PYE-06217-66

TASK STATUS

Special Handling 

006/03

PAGE 7 OF 23 PAGES

UNIT VIA SYSTEM
CONTROL SYSTEM

PHOTO DOCUMENTATION

SECRET

U

ACCOMPLISHED
SCHEDULED Dec 22 1965

PROGRAM PLAN TASKS

BYE-66217-66

NO.	TITLE	DESCRIPTION	SCHEDULE			MARKS		
			1965	1966				
			OCT.	NOV.	DEC.	JAN.	FEB.	MARCH

1. OPTICAL SYSTEM DESIGN COMPARE IN-LINE DUMP TRUCK 100% Complete

Briefing Report 14 31

MANNED vs AUTOMATIC WITH MANUAL OVERRIDE vs UNMANNED COMPARE THREE MODES OF OPERATION PLUS DUAL MANNED UNMANNED 80% Complete

Briefing Briefing Report 10 14 22 21

PROGRAM PLAN DESCRIBE CONFIGURATION CONTRACTOR RESPONSIBILITIES NUMERICAL SUMMARY TEST MODELS, ETC. 10% Complete

C.D. Program Plan Work Statement Cost Proposal Briefing Report

Special Handling

PROGRAM PLAN TASKS

ACCOMPLISHED *
SCHEDULED

Dec 22 1965

TITLE	DESCRIPTION	SCHEDULE		REMARKS
		1965	1966	
		OCT.	NOV. DEC. JAN. FEB. MARCH	
4. SYSTEM PERFORMANCE ANALYSIS	PHOTOGRAPHIC, GEO-METRIC, ACROSS-FORMAT IMC, SMEAR BUDGET, READOUT Report			Preliminary Smear Budget & Performance Estimate with Across-Format IMC. 21
5. CHEMICAL CONTAMINANTS	DETERMINE POSSIBILITY OF CHEM. CONTAMINANTS & MEANS OF CIRCUMVENTING			Guide Lines & Proposed Exp. Requestion of ER Technology Lab. 12/1/65 - Report Scheduled 1/15/66
CONSOLES	PROVIDE M. M. CONTRACTOR WITH SENSOR P. L. CONSOLE REQUIREMENTS Report			LAYOUTS HAVE BEEN STARTED TO EQUIP IN MM TO DEVELOP APPROX. SIZE & LOCATION. 21
THERMAL CONTROL	VERIFY THERMAL CONTROL POINTS & MANOUEVERING OF DESIGN Status Report			COMPLETED. 21

BYE-66217-66

Special Handling - 5

PROGRAM PLAN TASKS

ACCOMPLISHED
SCHEDULED

Dec 22 1965
BYE-66217-66

NO.	TITLE	DESCRIPTION	SCHEDULE			REMARKS		
			1965	1966				
			OCT.	NOV.	DEC.	JAN.	FEB.	MARCH

12	GROWTH POTENTIAL	ANALYSIS OF APPLICABILITY OF SELECTED SYSTEM TO FUTURE GROWTH							This Task Starts after Selection of Pointing
----	------------------	---	--	--	--	--	--	--	--

		Report							21 Concept, Prel. Studies Supported Task 1 & 2.
--	--	--------	--	--	--	--	--	--	---

13	DATA RECORDING	DETERMINE OPTIMUM METHOD OF RECORDING DATA ON EACH PHOTOGRAPHIC FRAME							Three data tapes - description, camera and data rate - to be prepared
----	----------------	---	--	--	--	--	--	--	---

		Report							21 Final Report & Method
--	--	--------	--	--	--	--	--	--	--------------------------

	MOCK-UP AND SIMULATION	EST. CRITERIA FOR DESIGN OF PHOTO SIMULATOR TO AID ENG. & HUMAN FACTORS DESIGN QUESTION FOR CRITERIA							Simulation Design & Eng. Eval. method to be prepared
--	------------------------	--	--	--	--	--	--	--	--

14	CRITICAL LONG LEAD TIME ITEMS	IDENTIFY LONG LEAD TIME CRITICAL ITEMS							16 Long Lead Time Items Identified
----	-------------------------------	--	--	--	--	--	--	--	------------------------------------

		List to Program Office							Approved by [Signature] to order of [Signature] Mirror Blank ASE items have been approved
--	--	------------------------	--	--	--	--	--	--	---

660103
PAGE 33 of 67 PAGES



Special Program

PROGRAM PLAN TASKS

ACCOMPLISHED
SCHEDULED

Dec 22 1965

BYE-66217-66
REMARKS

NO.	TITLE	DESCRIPTION	SCHEDULE		REMARKS			
			1965	1966				
			OCT.	NOV.	DEC.	JAN.	FEB.	MARCH

15. CRITICAL & LONG LEAD ITEMS (cont'd.)

Approval
Requested to
Order S-ASE
Items

16. SPECIFICATIONS

PREPARATION OF
INITIAL SPEC. FOR ALL
SUBSYSTEMS AND MAJOR
COMPONENTS

5 Spec. Com-
pleted. 10
Scheduled for
Completion by
March 21, 1966

17. SAFETY, RELIABILITY, STUDY & ASSESS & PREPARE
EMI & QUALITY CONTROL PROGRAM PLANS. (PT. AS
PART OF TASK 3)

Finaling

Report

2nd. will respond
to MIL-STD-785
Systems Safety will
respond to MIL-5-
38130
EMI will respond
to MIL-IT-26600
QC will comply
with MIL-STD-2000

1
28

both 50% compl.
EMC, QC, EMI
MIL-STD-2000

18. COMPLIANCE DOCUMENTS

PREPARE LIST OF COMPLIANCE
& GUIDE DOCUMENTS FOR PHASE
II REPORT. (PT AS PART OF
TASK 3)

Finaling

Report

10% compl. O
interim rep. pub-
lished final
Print Manual
Compliance for
Phase II

600103
1034/183

BYE-66217-66

PHOTODOCUMENTATION



ACCOMPLISHED
SCHEDULED

Dec 22 1965

BYE-66217-66
REMARKS

Special Handling - ~~5~~

PROGRAM PLAN TASKS

NO.	TITLE	DESCRIPTION	SCHEDULE		REMARKS			
			1965	1966				
			OCT.	NOV.	DEC.	JAN.	FEB.	MARCH

1.	INITIAL DEVELOPMENT	INITIAL DESIGN, MOCK-UP, BREADBOARDING OF CRITICAL COMPONENTS OR NEW CONCEPTS							1/8 Scale Mock-Up Up of In-Line Cont. Started
----	---------------------	---	--	--	--	--	--	--	---

Report 21

Structural Dynamics Analysis
Underway
Spec. Chm. for
Tracking Studies
Est. 35% Completion

2.	MANAGEMENT CONTROL	PERFORMANCE OF MANAGEMENT CONTROL FUNCTION (i.e. BRIEFING AIDS, COST ACCOUNTING, PROGRESS REPORTING, ETC.)							
----	--------------------	---	--	--	--	--	--	--	--

Monthly Reports

Special Handling - 5

Special Handling - ~~Secret~~

Dec 22 1965

CDP PROGRAM MAJOR OBJECTIVES
(WORK STATEMENT)

BYF-66217-66

- ✓ SELECT A CAMERA POINTING CONFIGURATION.
- ✓ INVESTIGATE UNMANNED MODES OF SENSOR OPERATION.
- ✓ DETERMINE PERFORMANCE REQUIREMENTS.
- ✓ SPECIFICATIONS AND INTERFACE DATA FOR THE
SENSOR AND VARIOUS SUPPORT EQUIPMENTS.
- ✓ PROVIDE PHASE II PROGRAM PLANS FOR SENSOR
SYSTEM ACQUISITION.

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BOOK 03
PAGE 36 OF 83 PAGES

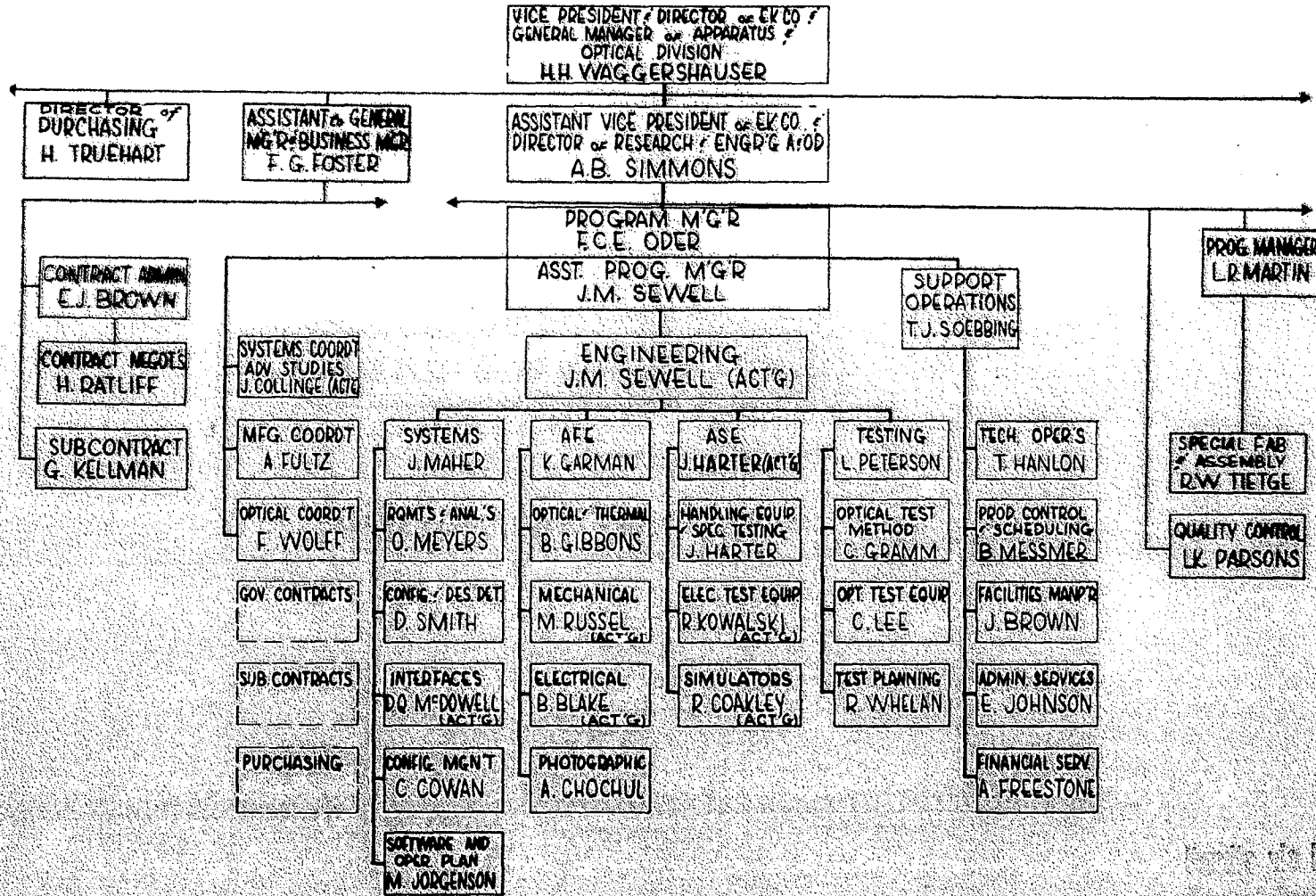
PHOTO DOCUMENTATION

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~~SECRET~~

Dec 22 1965

BYE-00217-66



EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

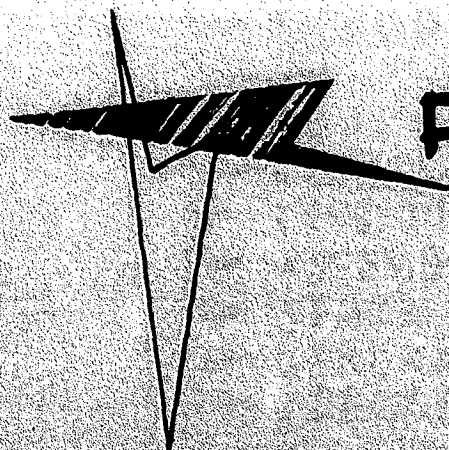
PHOTO DOCUMENTATION

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Dec 22 1966

BVE #6217-66



F-PROGRAM

BUILDING & SUPPORT
EQUIPMENT PLAN

Eastman DYEMAN
Control System
EASTMAN KODAK CO.

~~SECRET~~

SPECIAL HANDLING

PHOTO DOCUMENTATION

BOOK 03

PAGE 38 OF 83 PAGES

Schedule Funding

SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

EYE-08217-68

~~SECRET~~ PRESENTATION OUTLINE

- ✓ SCHEDULES
- ✓ ASSUMPTIONS
- ✓ MAJOR EQUIPMENT REQUIREMENTS & CONCEPTS
- ✓ MAJOR EQUIPMENT *and* ASE SCHEDULES
- ✓ CONSTRUCTION CONSIDERATIONS
- ✓ ASSEMBLY *and* TEST FLOW
- ✓ SPACE REQUIREMENTS
- ✓ GENERAL BUILDING & EQUIPMENT PLAN
- ✓ AREAS REQUIRING MANAGEMENT ATTENTION

BOOK 03

PAGE 39 OF 93 PAGES

EASTMAN KODAK CO

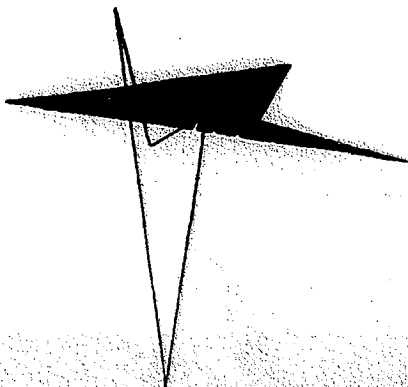
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Dec 22 1965

BYE-66217-66



ASSUMPTIONS

- 1 — MAXIMUM AFE SIZE 105' x 45'
- 2 — TRACKING MIRROR ASS'YS. ARE REQUIRED
- 3 — DELIVERY — 1 FLIGHT UNIT EVERY 4 MONTHS *for*
FIRST 5 UNITS :
— 1 UNIT EVERY 2 MONTHS THEREAFTER
- 4 — ALL MAJOR AFE WILL BE SUBCONTRACTED

BOOK 03

PAGE 40 OF 93 PAGES

EASTMAN KODAK CO.

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MAJOR EQUIPMENT REQUIREMENTS AND CONCEPTS

EASTMAN
KODAK COMPANY

EASTMAN KODAK CO.

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BOOK 63

PAGE 41 OF 83 PAGES

Sched. 101, Funding

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EYE-CC217 66



TECH REQ'MT-MECHANICAL

- VERTICAL ASSY STAND - 5 REQ'D
 - ▮ 2-MISSION MODULE INTEGRATION CAPABILITY
 - ▮ 3-SENSOR BUILD UP
- ERECTOR- MULTI-PURPOSE 1 REQ'D
 - ▮ ERECT SENSOR
 - ▮ MISSION MODULE POSITION CHANGES
- WEIGHT/BALANCE 1 REQ'D
 - ▮ WEIGHT
 - ▮ POSITION OF CG
 - ▮ 2ND MOMENTS CALCULATED
- VIBRATION FACILITY
 - ▮ COMPONENTS
 - ▮ SENSOR
 - ▮ MISSION MODULE

BOOK 03

PAGE 42 OF 83 PAGES

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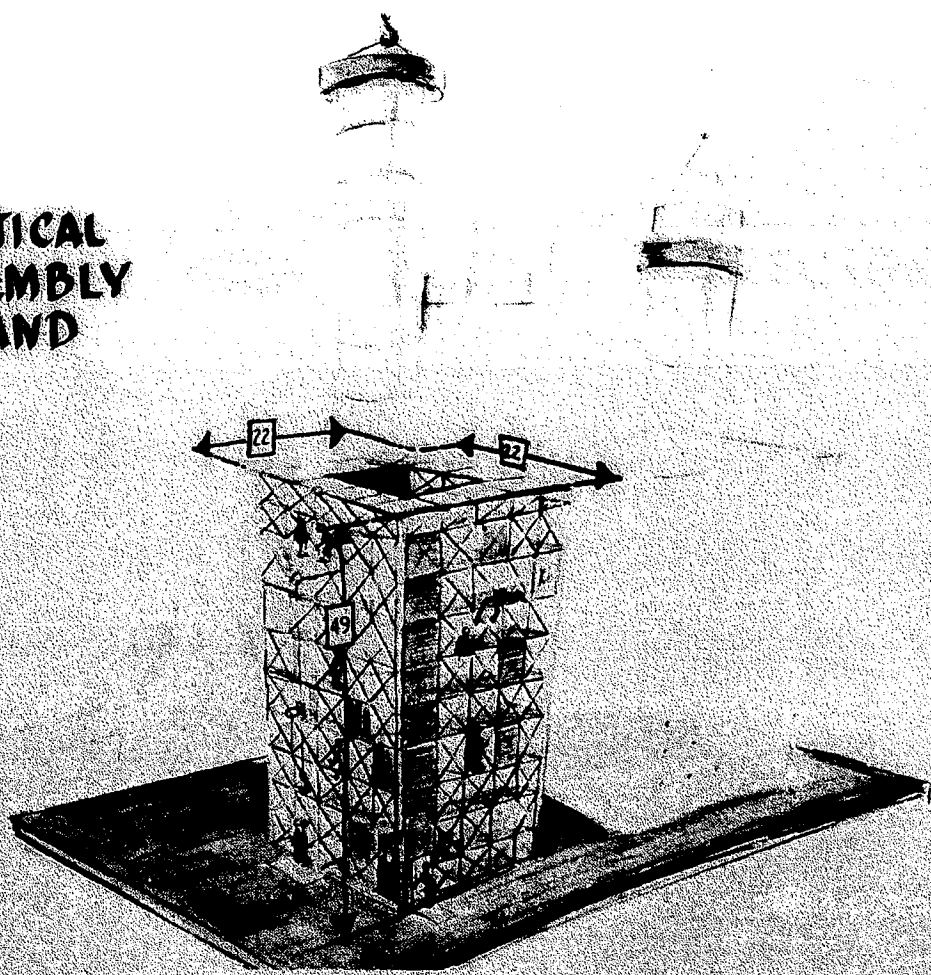
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VERTICAL ASSEMBLY STAND



FRANK E. DYERMAN
General Counsel
EASTMAN KODAK CO.

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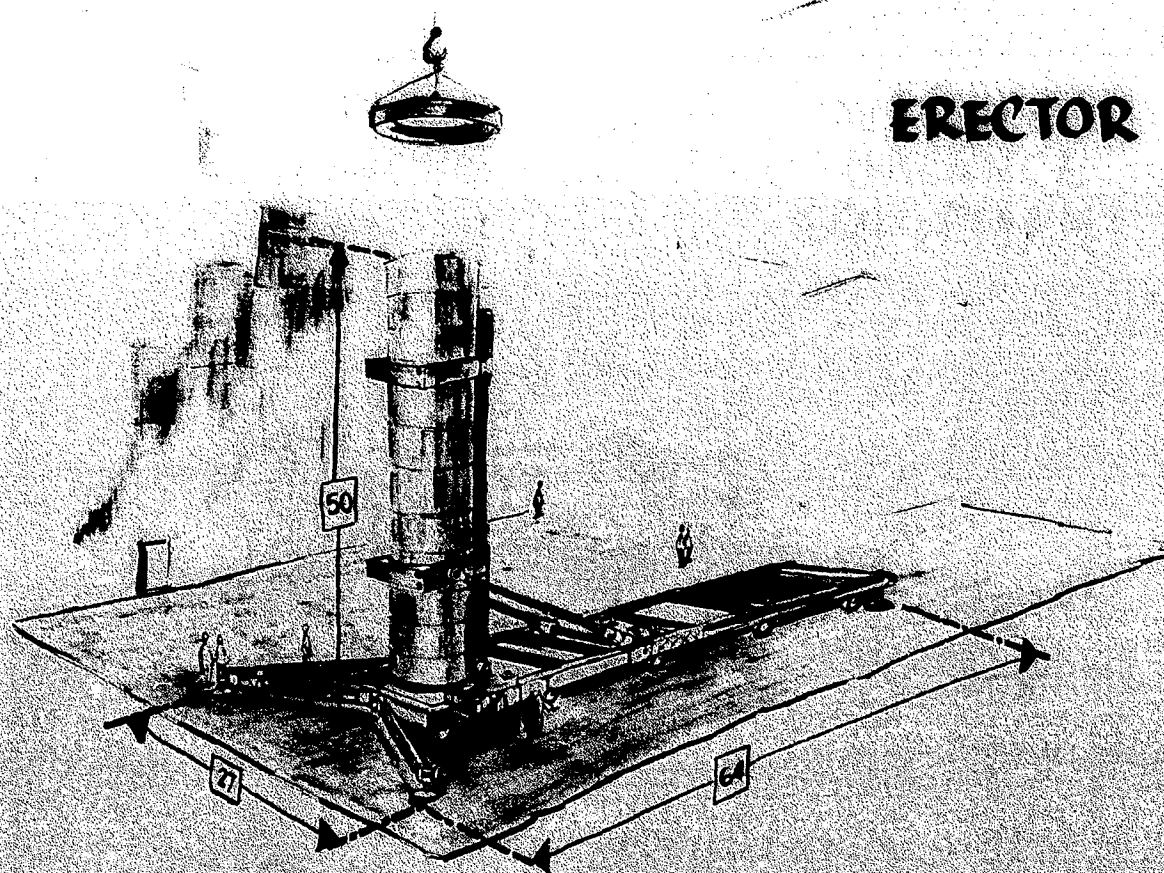
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ERECTOR



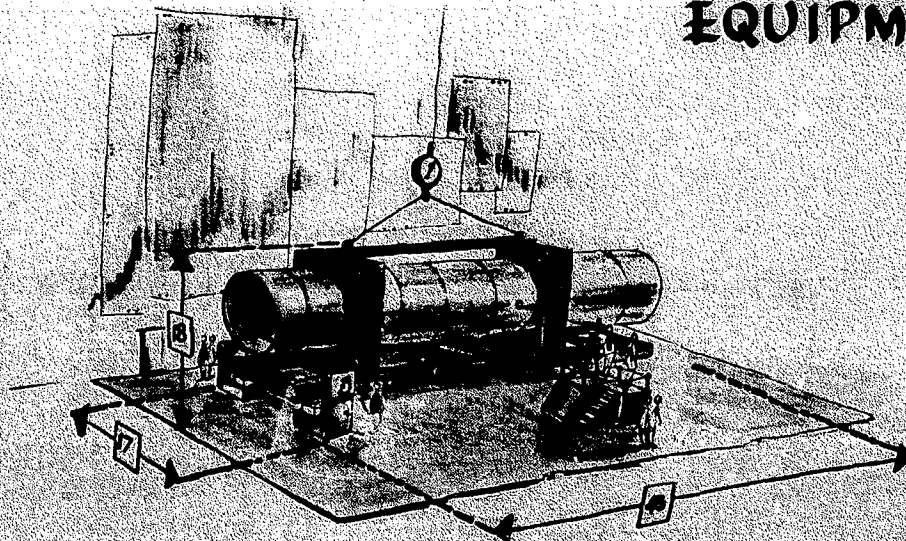
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WEIGHT & BALANCE EQUIPMENT



BOOK 03

PAGE 45 OF 83 PAGES

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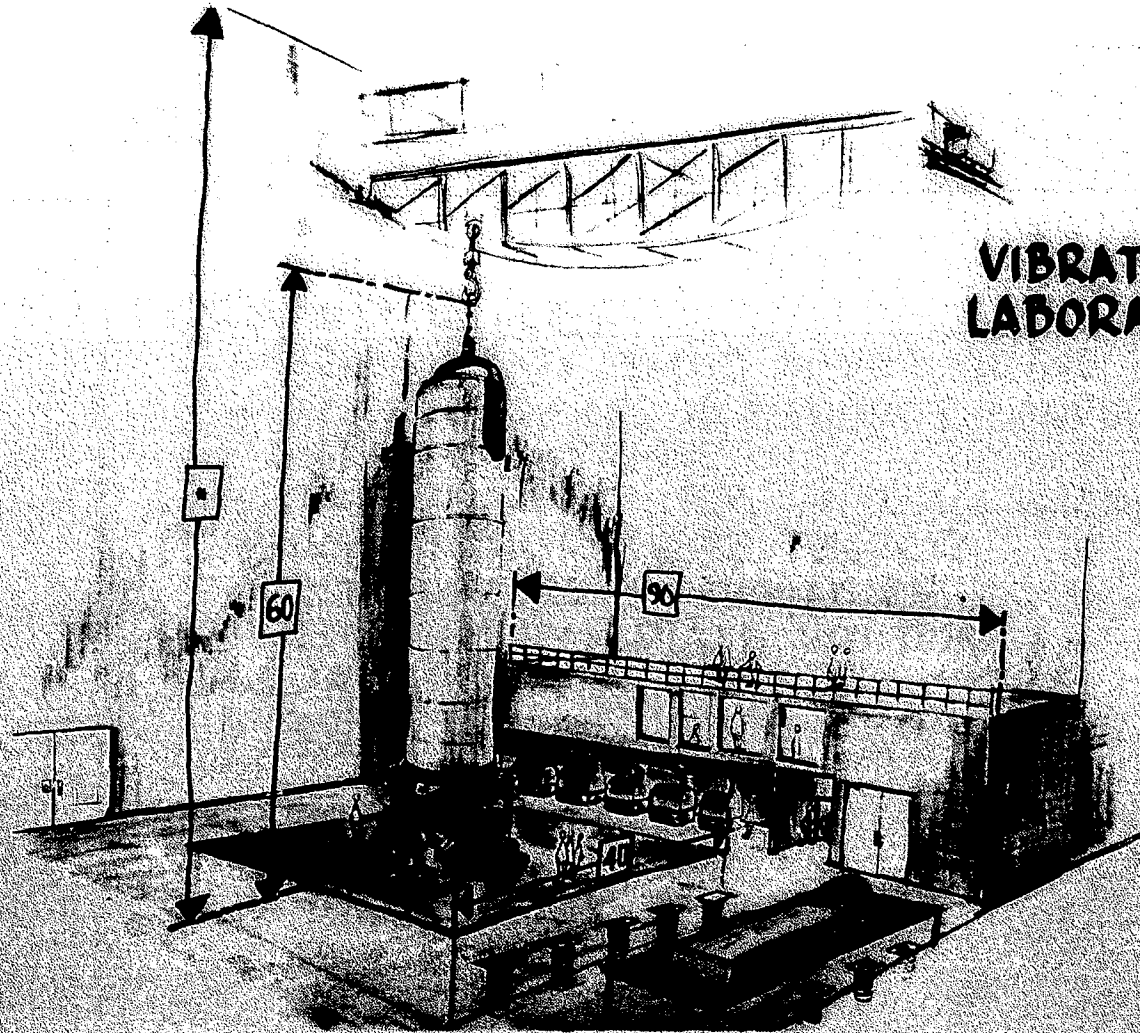
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VIBRATION LABORATORY

BOOK 03
PAGE 46 OF 83 PAGES

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TECH REQ'M'T

OPTICAL

GROUND RULES

- LARGE MIRRORS TESTED IN HORIZONTAL POSITION
- VACUUM CHAMBERS TO ELIMINATE CONVECTION
- VIBRATION ISOLATION
- TEMPERATURE CONTROL OF TEST CHAMBER

PRIMARY MIRROR TEST TOWER

- TEST AT CENTER OF CURVATURE
- TEST AT INTERMEDIATE POSITION

TRACKING MIRROR TEST CHAMBER

- TEST SPHERE CALIBRATION STATION
- ROTATABLE TABLE

TEST CHAMBER FOR COMPLETE OPTICAL ASS'Y

- TEST BY AUTOCOLLIMATION FROM MASTER FLAT
- LAB. MODULE PRESSURE SIMULATION AT OBSERVATION STATION

Contract with BYEMAN
Optical System

EASTMAN KODAK CO.

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BOOK 03

PAGE 47 OF 83 PAGES

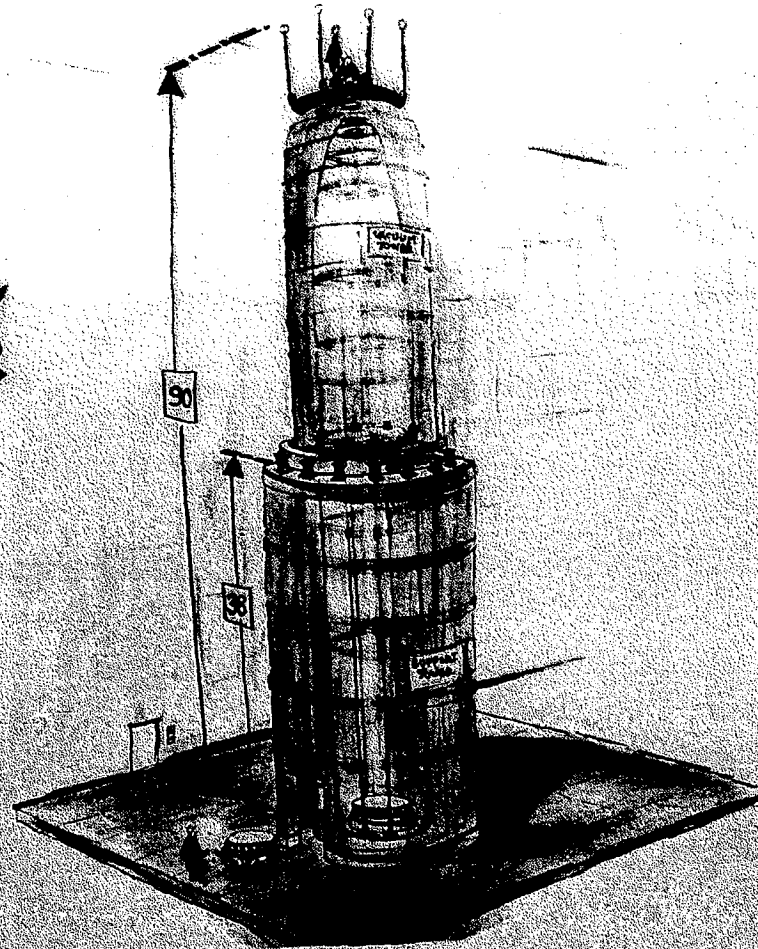
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TEST
TOWER
for
PRIMARY
MIRROR



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PHOTO DOCUMENTATION

BOOK 03
PAGE 48 OF 83 PAGES

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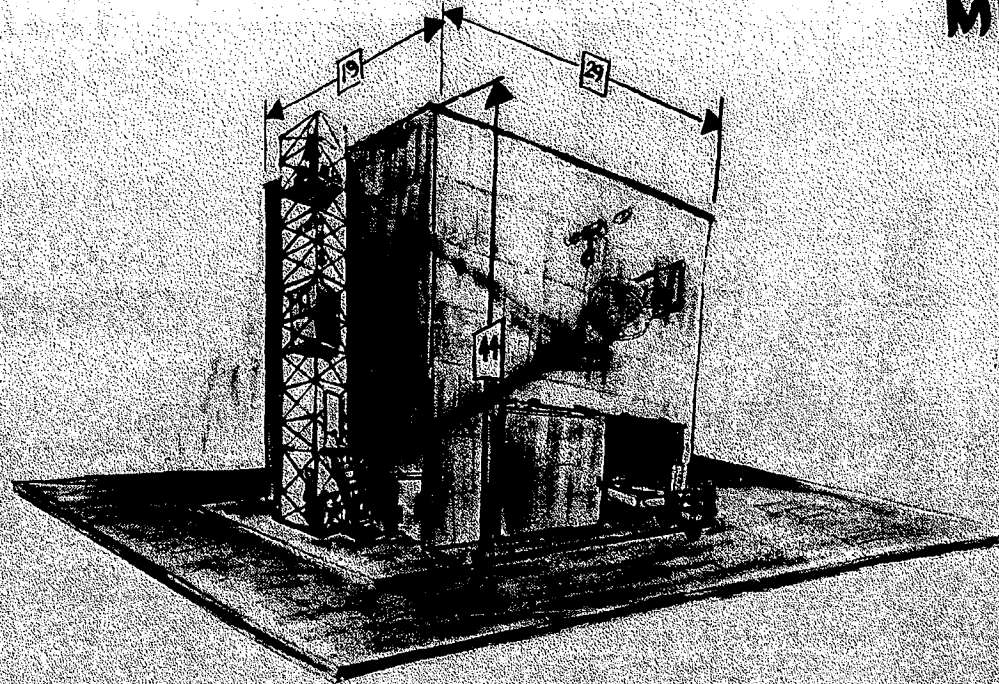
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TEST
CHAMBER
for
TRACKING
MIRROR



Handwritten notes or stamps, partially illegible.

EASTMAN KODAK CO.

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BOOK 03
PAGE 49 OF 83 PAGES

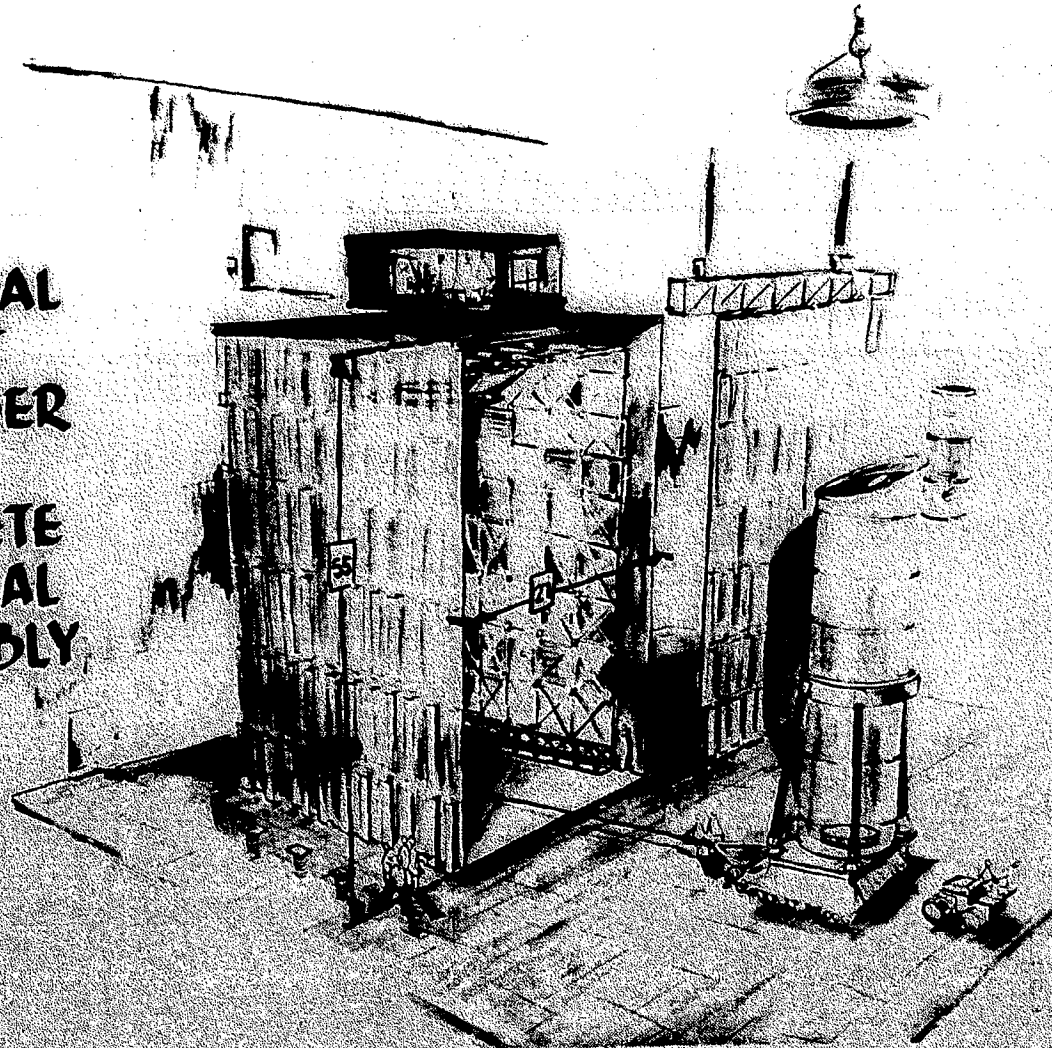
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VERTICAL
TEST
CHAMBER
for
COMPLETE
OPTICAL
ASSEMBLY



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BOOK 03

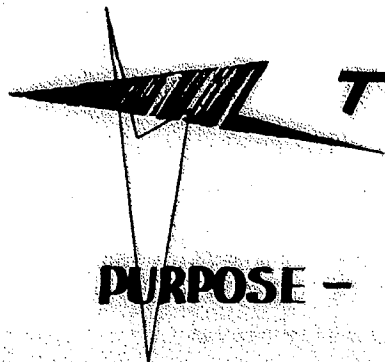
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TECH REQ'MTS

LAB MODULE ENVIRONMENTAL SIMULATION CHAMBER

PURPOSE - ♦ 5 PSIA ATMOSPHERE FOR OPERATIONAL AND HUMAN FACTORS TESTING OF LAB MODULE EQUIPMENT

FEATURES - ♦ 8x8x12 WORKING VOLUME
♦ TEMPERATURE CONTROLLED WALL
♦ 5 PSIA PRESSURE WITH O₂ ENRICHMENT PROVISIONS
♦ AIR LOCK FOR PERSONNEL MOVEMENT

EXPERIMENTS - ♦ OPERATION OF PROCESSOR, EFFECTS OF O₂ ENRICHMENT ON BIMAT AND FILM
♦ CONTAMINATION OF ATMOSPHERE BY PROCESSOR
♦ OPERATIONAL SIMULATIONS, CUEING, ETC.
♦ OPERATION OF CAMERA & FILM CASSETTES
♦ THERMAL EXPERIMENTS

Handle via OVERMAN
Control System
EASTMAN KODAK CO

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BOOK 03

PAGE 51 OF 83 PAGES

SPECIAL HANDLING

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TECH-REQ'M'TS 8 x 8 x 22-THERMAL TEST CHAMBER

PURPOSE

- ON-ORBIT ALTITUDE TESTING of MISSION MODULE EQUIPMENT, BOTH SCALE & FULL-SIZE COMPONENTS
- CAPABILITY FOR OPTICAL TESTS

FEATURES

- 10^{-7} TORR CAPABILITY
- $+40^{\circ}\text{F}$ to $+90^{\circ}\text{F}$ TEMP CONTROLLED WALL
- OPTICAL PORTS
- -100°F REFRIGERATION SYSTEM

EXPERIMENTS

- THERMAL/OPTICAL EXPTS. FOR ALBEDO DISTORTION CORRELA'TN
- MIRROR BAY ZONED THERMAL CONTROL - $\frac{1}{2}$ SCALE BB
- LENS BARREL ZONED THERMAL CONTROL - $\frac{1}{2}$ SCALE BB
- ROSS CORRECTOR ASS'Y THERMAL CONTROL - FULL SIZE
- INSULATION BLANKET CONDUCTANCE MEASUREMENTS
- DEVELOPMENT TESTS - SUCH AS, ACTIVE CONTROL, PASSIVE STABILIZATION, & REFLECTANCE INCREASE AS MEANS of ELIMINATION of TRACKING MIRROR ALBEDO DISTORTION

EASTMAN KODAK CO

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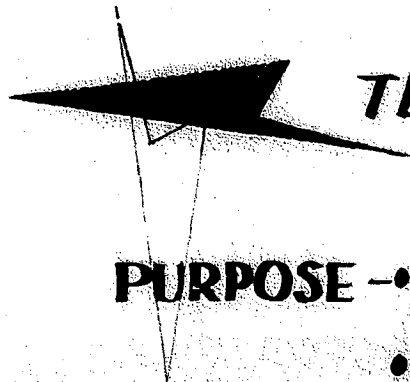
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TECH. REQ' M'TS

15X15X45 THERMAL TEST CHAMBER(S CHAMBER)

PURPOSE - • ON ORBIT ALTITUDE TESTING OF MISSION MODULE EQUIPMENT FULL SIZED BB'S / MODELS.
• CAPABILITY FOR OPTICAL TESTING OF FLATS
• ASCENT PROFILE VENTING TEST

FEATURES - • 10^{-7} TORR CAPABILITY
• +40°F TO +90°F TEMP. CONTROLLED WALL
• OPTICAL PORTS
• -100°F REFRIGERATION SYSTEM
• FAST PUMP DOWN ASCENT PROFILE SIMULATION

EXPERIMENTS • FULL SIZED BB MODULE THERMAL CONTROL (MIRROR / LENS BAY)
• THERMAL TEST OF FULL SIZED BB
• VENTING TEST OF FULL SIZED BB
• ALBEDO DISTORTION / CONTROL TESTS ON 70" FLATS
• VENTING TESTS ON TM, EM, QM
• ADDITIONAL TESTS ON QM (30 DAY LIFE, RELIABILITY, ETC.)

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BOOK 03

PAGE 53 OF 83 PAGES

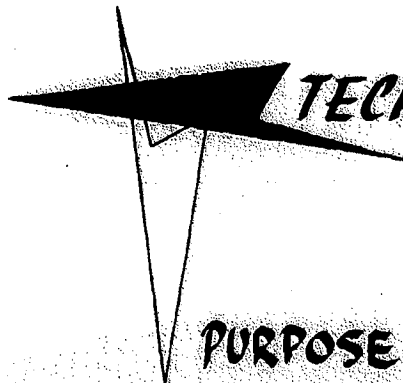
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TECH REQ'M'TS

THERMAL TEST CHAMBER 25 x 25 x 60

PURPOSE

ON-ORBIT ALTITUDE & RADIANT ENERGY
INTERCHANGE TESTING OF TM
plus OPTICAL/THERMAL TESTING
OF QM & FMS

FEATURES

10⁻⁷ TORR
CRYO-WALL, LN₂
RADIANT FLUX INPUTS TO TM SKIN
AIRLOCK FOR PERSONNEL TRANSFER TO
and FROM LM SIMULATOR

EXPERIMENTS

DEVELOPMENT TESTS OF TM
THERMAL DESIGN VERIFICATION TEST
OPTICAL TESTS OF SENSOR with REALISTIC
THERMAL GRADIENTS (QM)
THERMAL/OPTICAL ACCEPTANCE TESTS (FM)

ASSEMBLED BY
Control System
EASTMAN KODAK CO

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BOOK 03

PAGE 54 OF 83 PAGES

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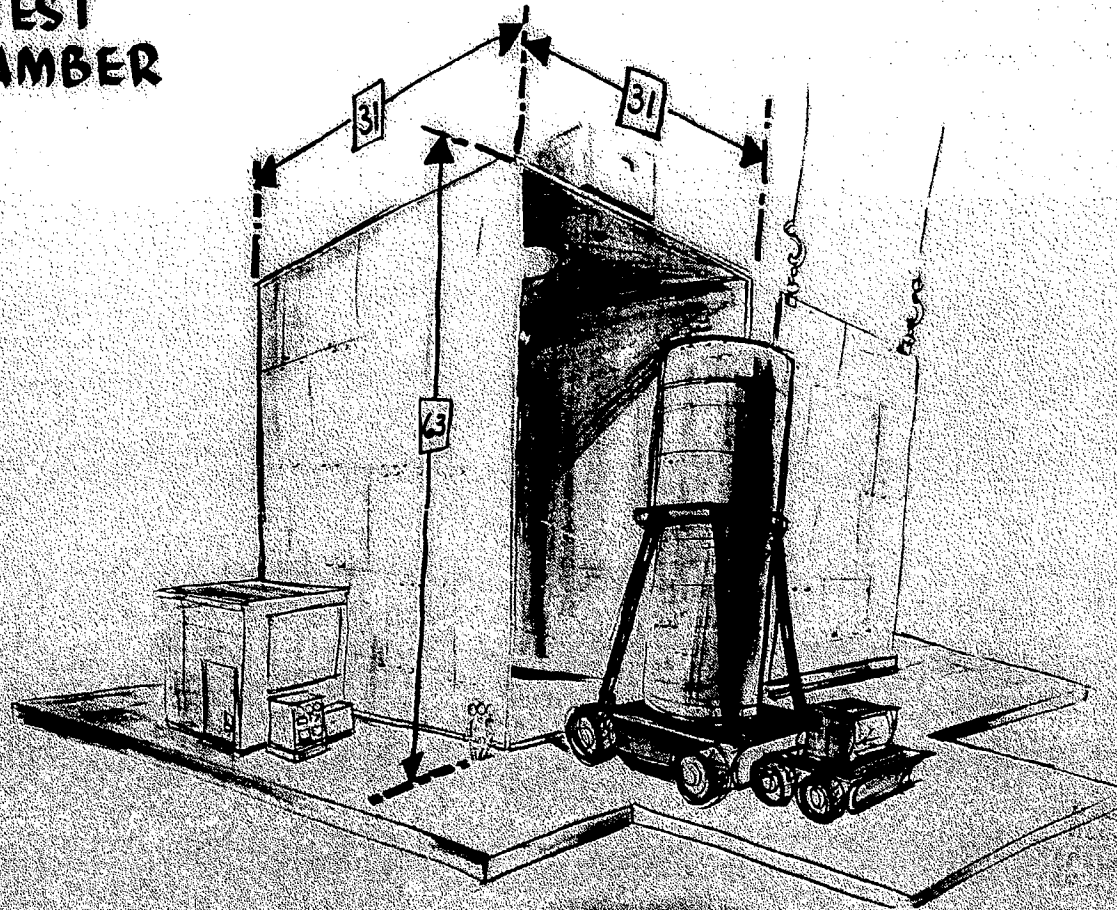
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THERMAL TEST CHAMBER



EASTMAN KODAK CO

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BOOK 03

PAGE 55 OF 83 PAGES

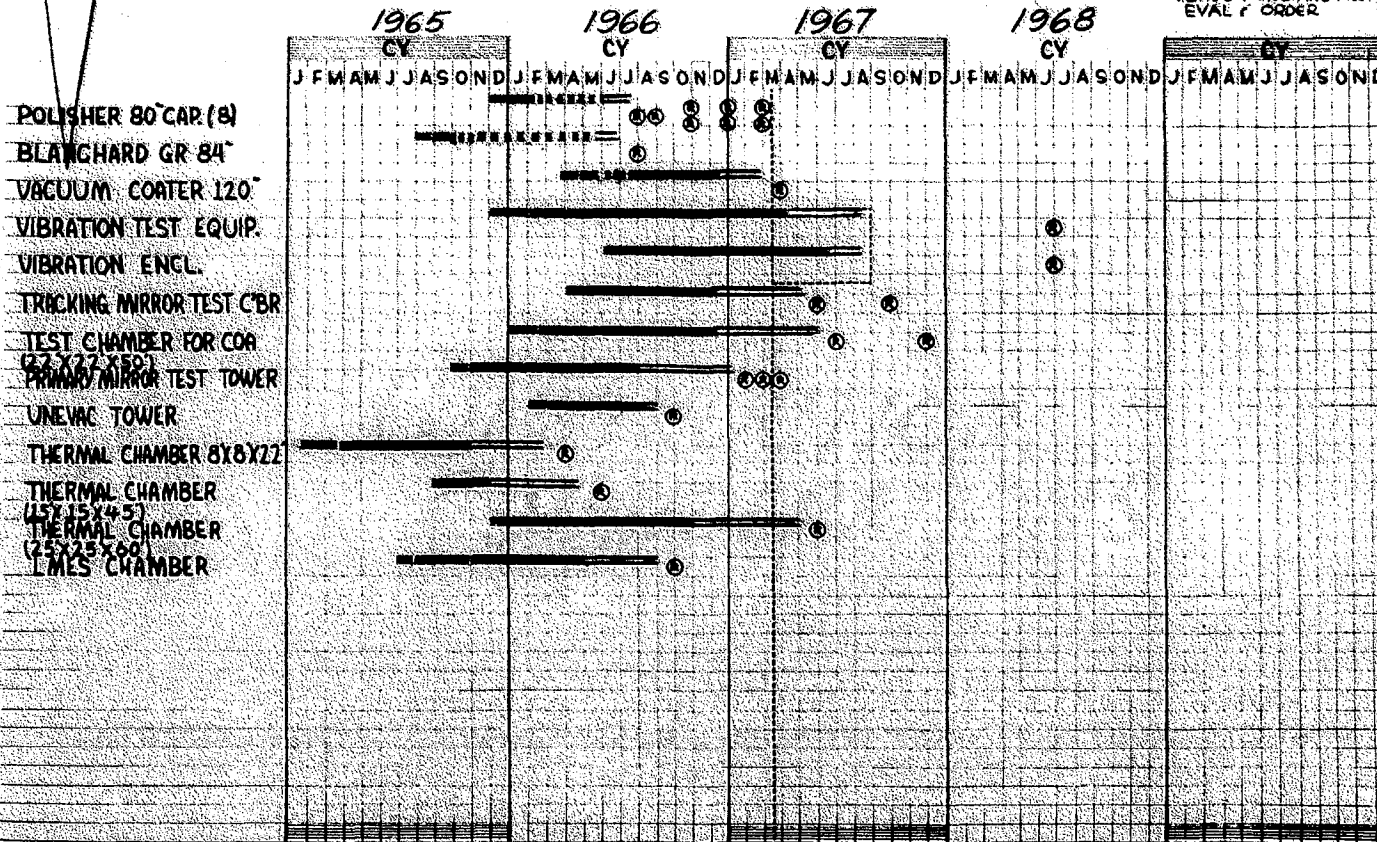
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EYE-002174B

MAJOR EQUIPMENT CASE REQUIREMENTS SCHEDULE

- PREPARE SPECS
- FABRICATE
- INSTALLATION & CHECKOUT
- VENDOR PREPARE PROP EVAL & ORDER



* COMPLETE DEFINITION OF REQUIREMENTS FROM PROJECT (PERFORMANCE REQ.)

CONST DATE COMPLETION PROVIDING COND HEAD IN MEMO 10-21-65 ARE MET

Control System
EASTMAN KODAK CO

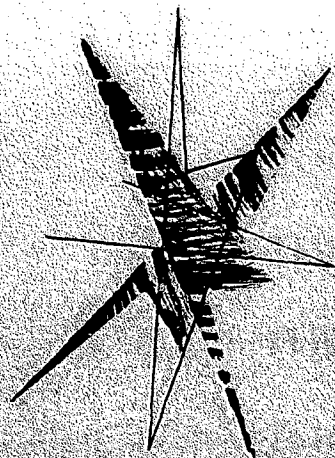
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CONSTRUCTION CONSIDERATIONS

Handle via BYEMAN
Control System
EASTMAN KODAK CO.

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BOOK 03

PAGE 57 OF 83 PAGES

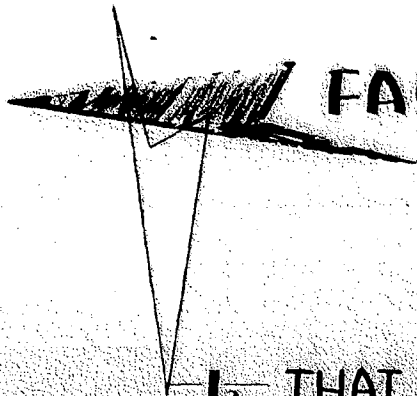
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FACILITIES ASSUMPTIONS

1. THAT ALL STRUCTURES & SERVICES TO THE STRUCTURES ARE PROJECT FUNDED.
2. THAT NO GROWTH IS TO BE BUILT IN.
3. THAT IMPORTANT PERIMETERS BE ENLARGEABLE.
4. THAT UTILITIES ARE AVAILABLE TO MEET NEED DATES.
5. THAT USE OF 601 BE MAXIMIZED WITH MINIMUM INSTALLATION OF FIXED EQUIPMENT.

Headed by BYEMAN
Control System
EASTMAN KODAK CO

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SPECIAL HANDLING

PHOTO-DOCUMENTATION

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Dec 22 1965

PYF-66217-06

CRASH SCHEDULE CRITERIA

IF

- 1- WE CAN KNOW BUILDING SIZES, SHAPES & CONFIGURATIONS BY NOV 1, 1965
- 2- WE KNOW SPECIFIC LOCATION BY DEC. 10, 1965
- 3- HAVE AUTHORITY TO ORDER STEEL BY JAN. 15, 1966
- 4- HAVE AUTHORITY TO OPERATE ON A FEE BASIS
- 5- HAVE DIRECTION ON 1966 EASTMAN CONSTRUCTION BY JAN 1, 1966
- 6- HAVE LEGAL PROBLEMS ON PROPERTY OR ASSIGNMENT SETTLED BY JAN 15, 1966
- 7- HAVE EASTMAN AUTHORITY ON GENERAL SERVICES BY JAN 15, 1966
- 8- HAVE C AUTHORITY TO ISSUE CONSTRUCTION CONTRACT BY FEB 1, 1966

WE CAN

- 1- HAVE ENOUGH CONSTRUCTED TO START MAJOR TEST EQUIPMENT INSTALLATION BY NOVEMBER 1966.
- 2- HAVE FACILITY COMPLETE FOR OPERATION BY MARCH, 1967 EXCEPT FOR VIBRATION FACILITY & UNDELIVERED TEST EQUIPMENT.

PROVIDED

- 1- THERE IS NO DELAY IN EQUIPMENT LAYOUT DECISIONS & SPECIFICATIONS
- 2- NO BUILDING TRADES STRIKES IN 1966
- 3- WE HAVE IMMEDIATE C APPROVAL ON SUB-BIDS ON CONSTRUCTION
- 4- EASTMAN UNIT # 1 ON PROPERTY IS PLACED IN SECONDARY PRIORITY, IF NECESSARY.

SLIP OF THESE DATES MAY RESULT IN MORE THAN DAY FOR DAY SLIP.
DEPENDING UPON WEATHER - A FEW DAYS COULD RESULT IN MONTHS OF DELAY.

EASTMAN KODAK CO.

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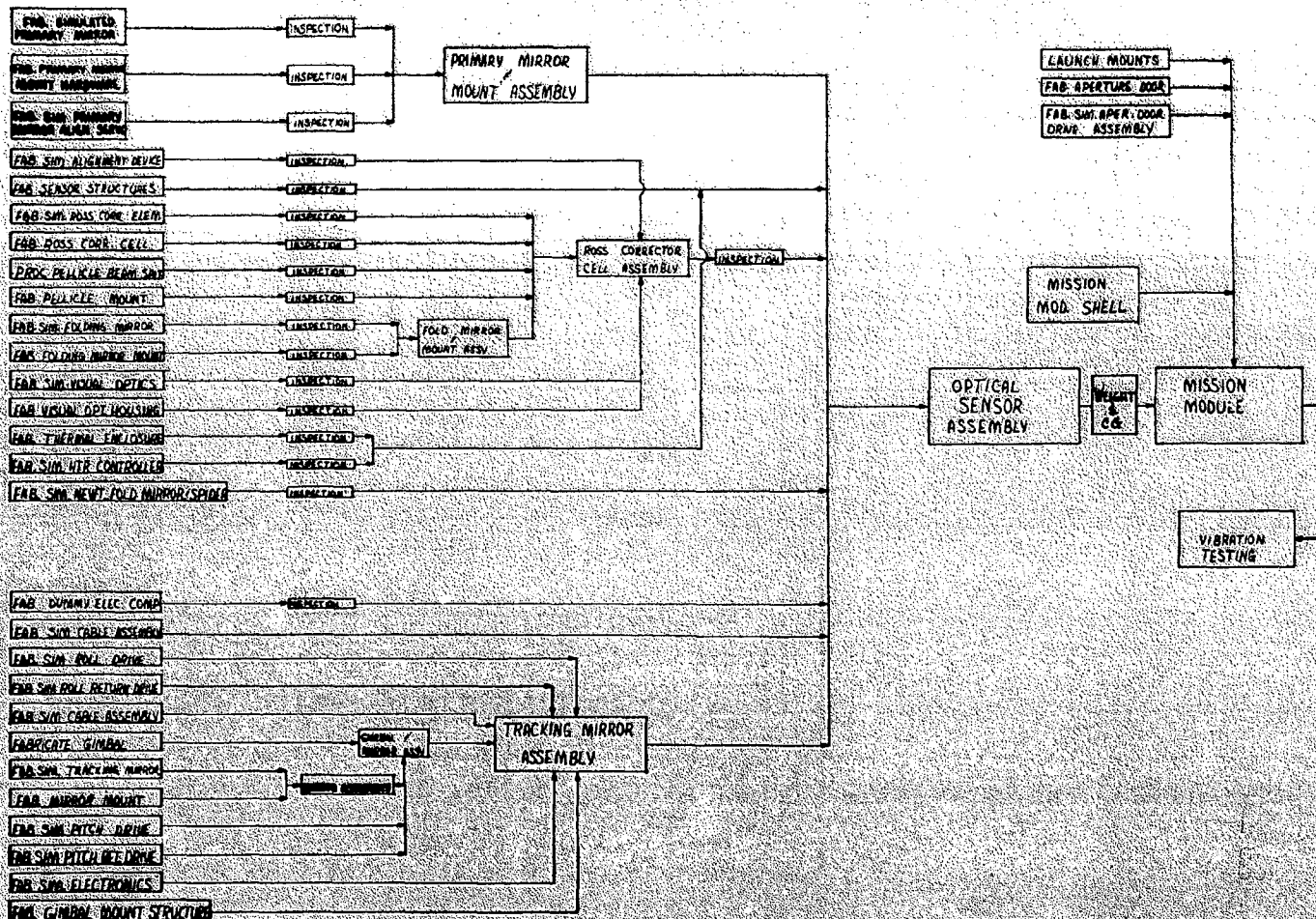
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'DS' ASSEMBLY FLOW



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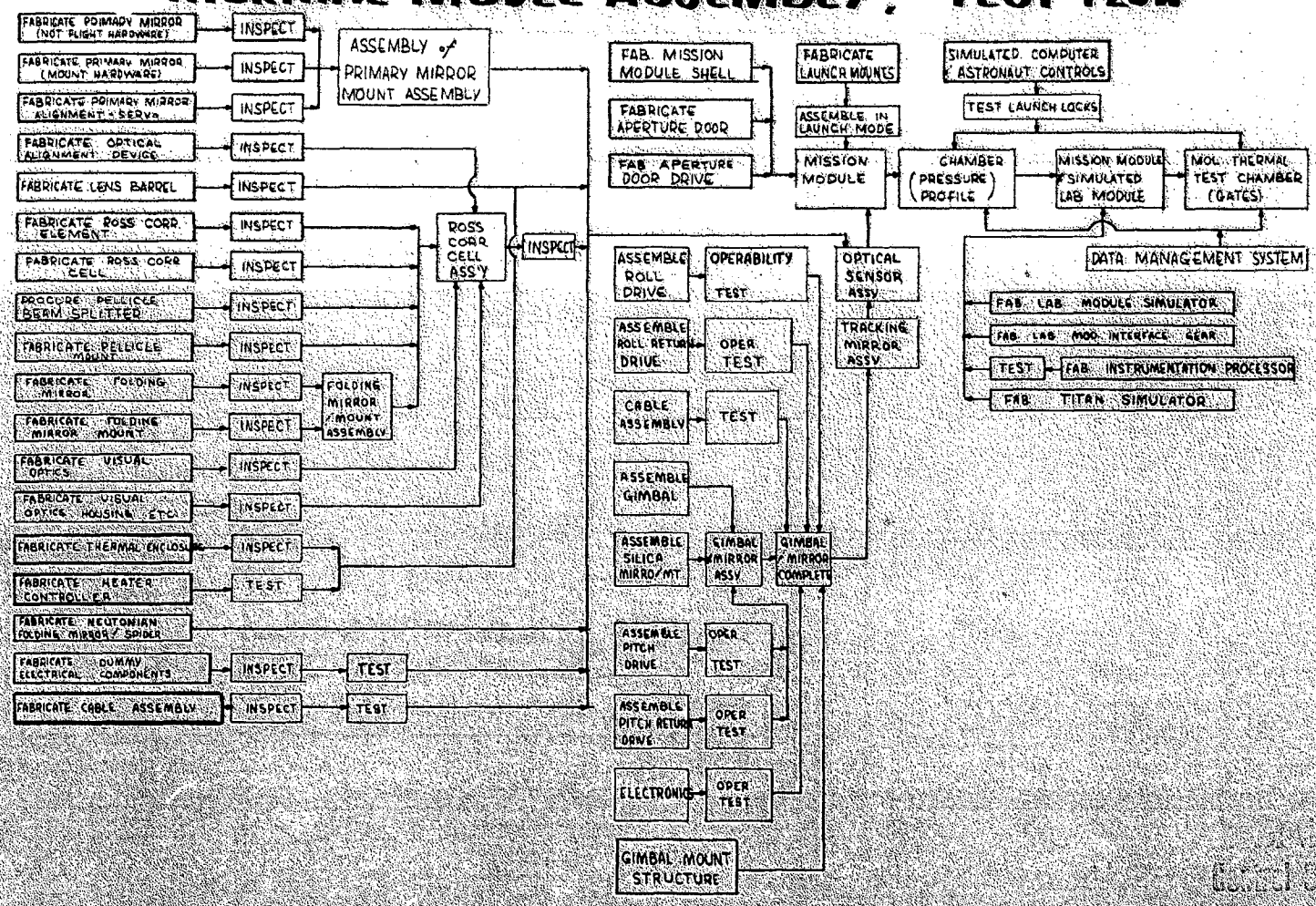
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THERMAL MODEL ASSEMBLY & TEST FLOW



BOOK 03
 PAGE 62 OF 83 PAGES

Eastman Kodak
 Eastman Kodak Co

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Schedule Funding

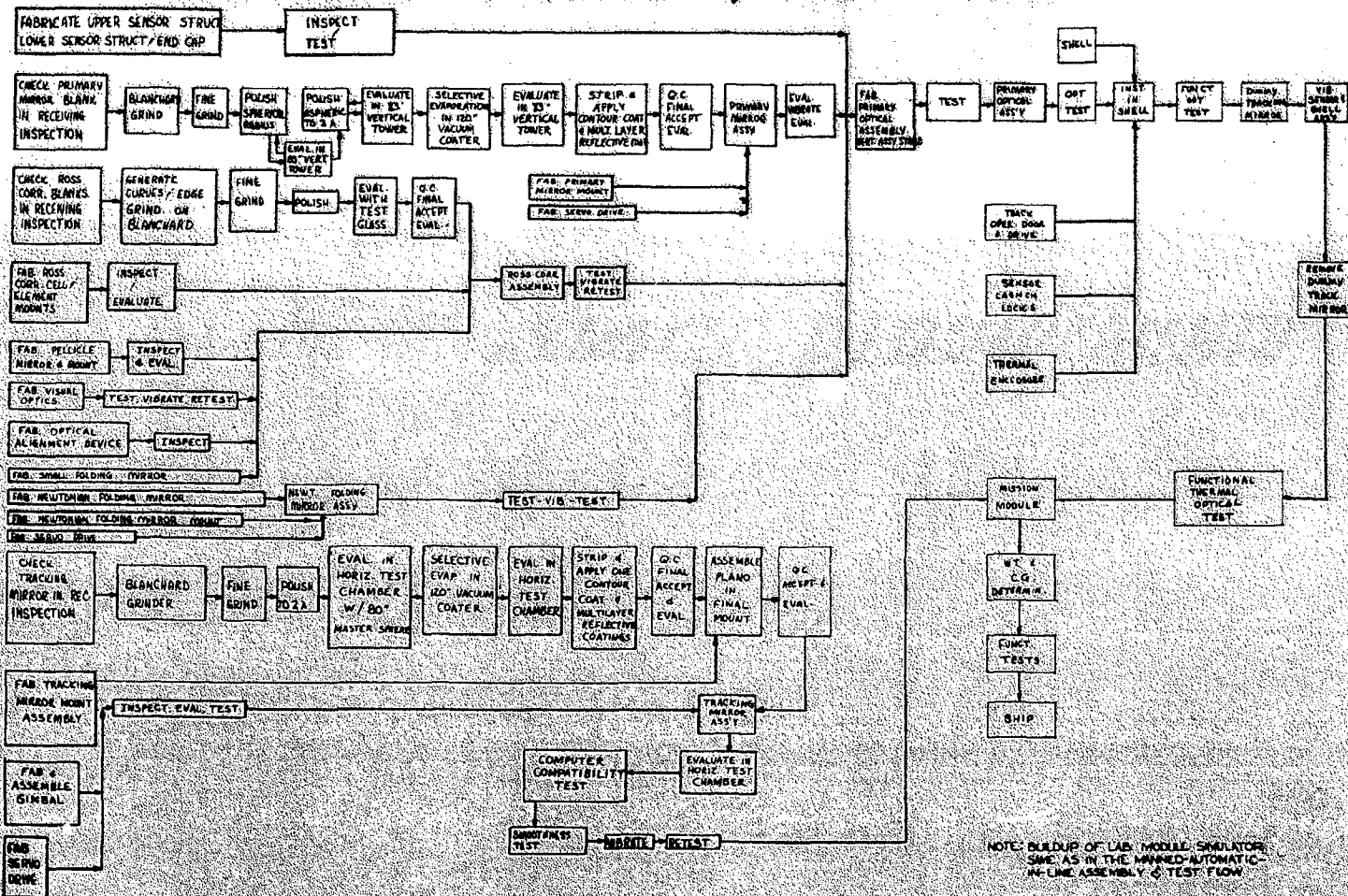
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FYF-00217-00

MANNED-IN-LINE-SYSTEM: FM SENSOR ASSEMBLY & TEST FLOW



NOTE: BUILDUP OF LAB. MODULE SIMULATOR
SHEAS IN THE MANNED-AUTOMATIC
IN-LINE ASSEMBLY & TEST FLOW

EASTMAN KODAK CO.

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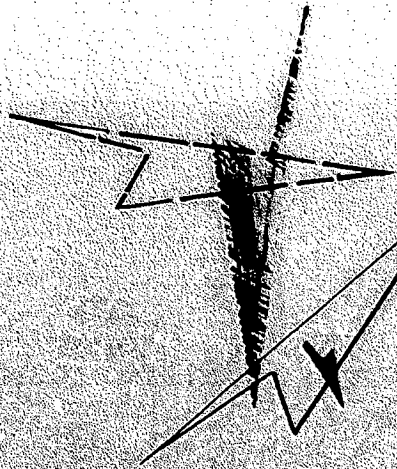
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SPACE REQUIREMENTS

EASTMAN KODAK COMPANY
CONTROL SYSTEMS
EASTMAN KODAK CO.

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BOOK 03
PAGE 64 OF 83 PAGES

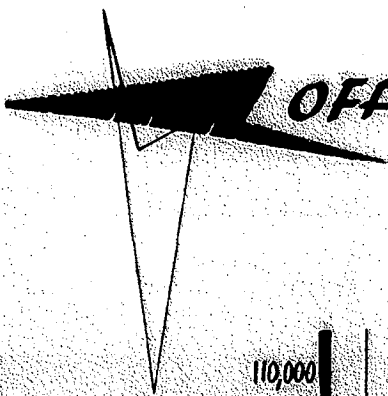
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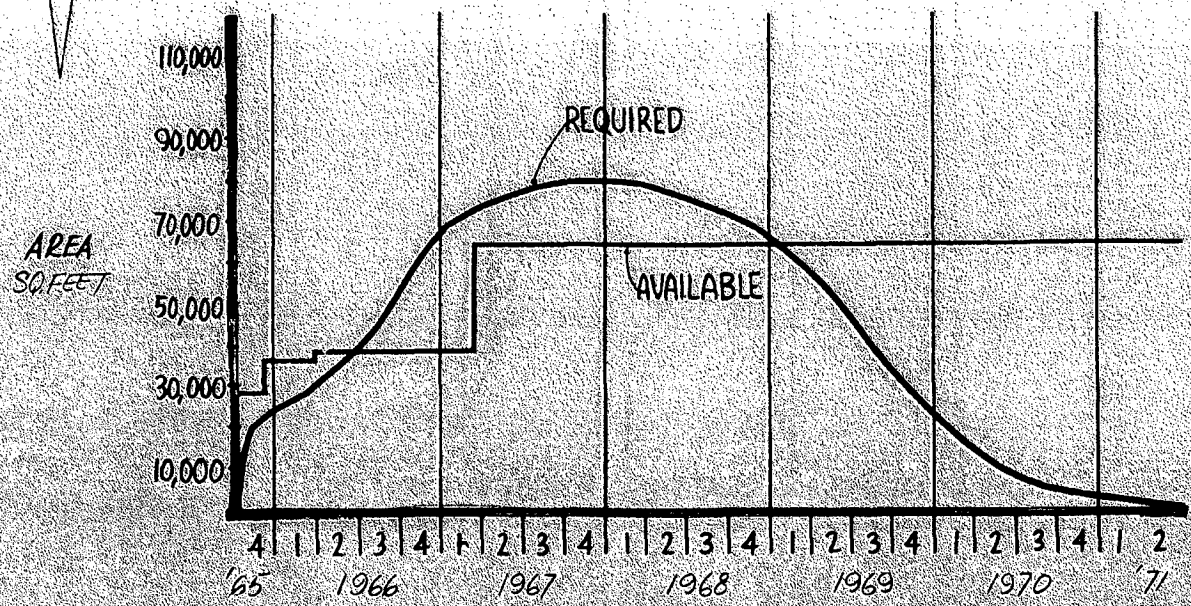
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OFFICE SPACE - INCLUDING DRAFTING



BOOK 03
PAGE 65 OF 83 PAGES

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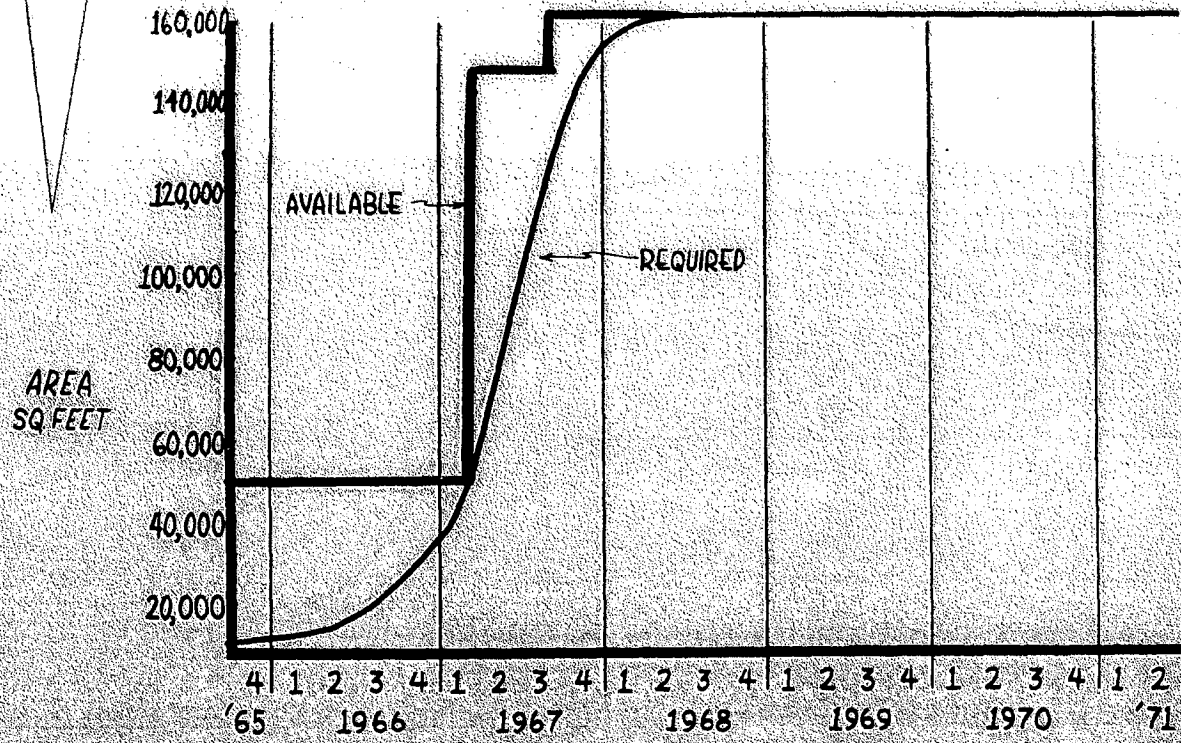
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MANUFACTURING, ASS'Y, TEST & SUPPORT AREAS



BOOK 03
PAGE 66 OF 83 PAGES

Schedule Funding

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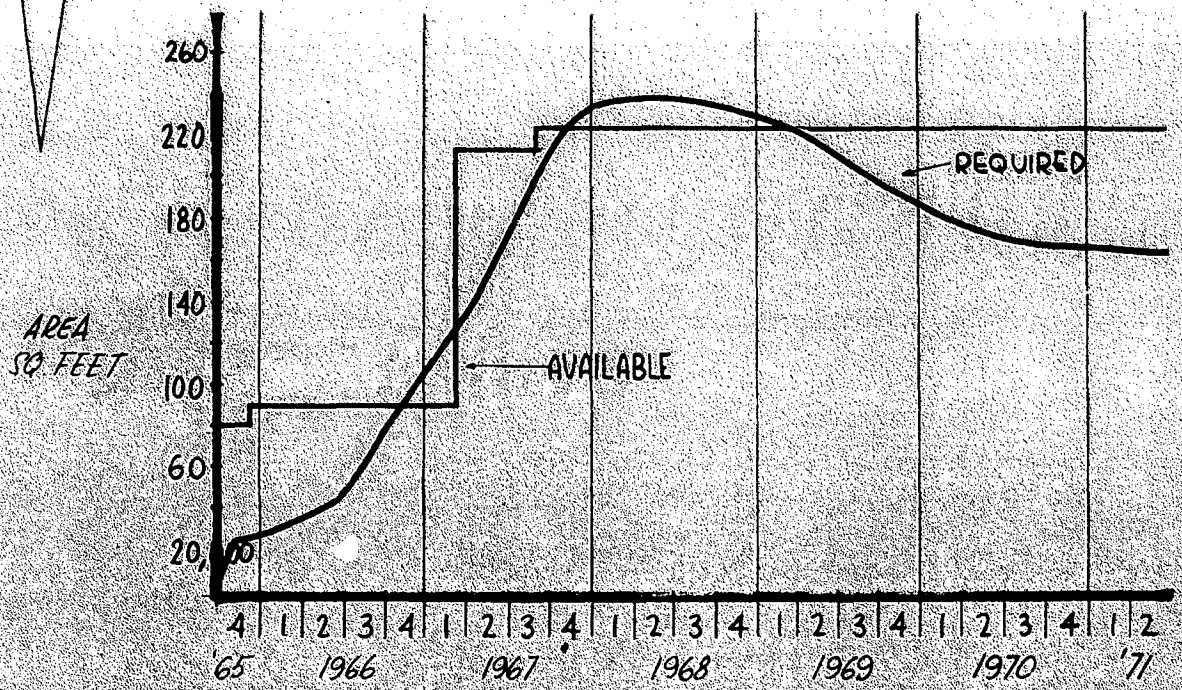
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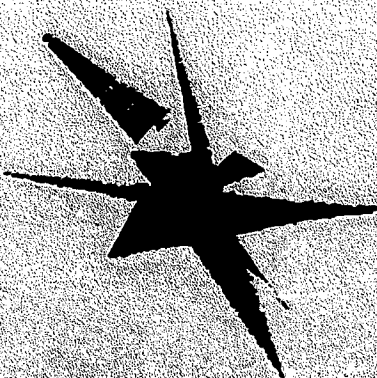


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GENERAL FACILITIES PLANS

Control

EASTMAN KODAK CO.

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BOOK 03
PAGE 19 OF 83 PAGES

Schedule Form 1

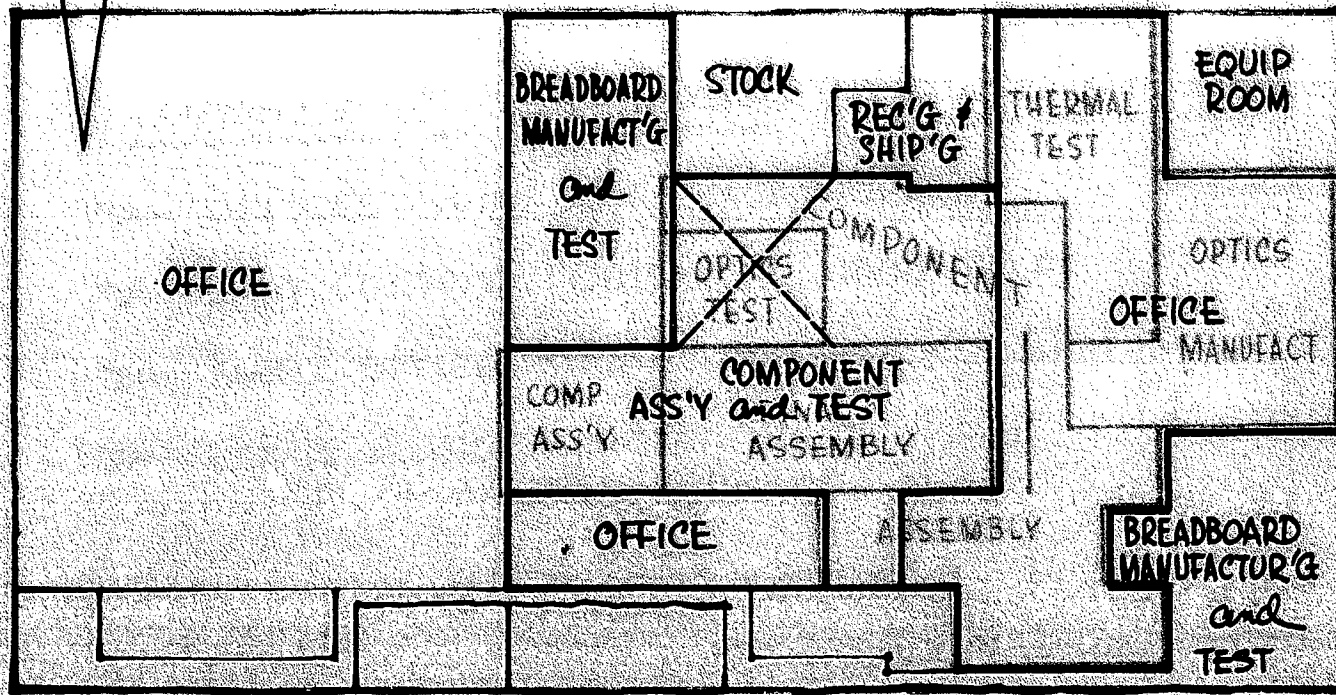
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B-601

PRODUCTION PHASE



DEVELOPMENT PHASE

EASTMAN KODAK CO.

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Dec 22 1965

NY-69217-66

FACILITIES PLAN

HAWKEYE 14,200 SQ FT

- OFFICES 6900 SQ FT (75 PEOPLE)
- DATA CONTROL EQUIPMENT 1800 SQ FT
- SMALL OPTICS MANUFACTURING & TEST 3,000 SQ FT
- LARGE PLANO MANUFACTURING & TEST 2,500 SQ FT
(PRIOR to NEW FACILITY)

EASTMAN KODAK CO.

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FYE-FC217-66



MAJOR CONSIDERATIONS FOR NEW BUILDING

- 1—MATERIAL FLOW
- 2—FUTURE EXPANSION COMPATIBILITY
- 3—VIBRATION TEST FACILITY LOCATION
- 4—THERMAL VACUUM TEST EQUIPMENT—
DATA MANAGEMENT SYSTEM LOCATION
- 5—VACUUM PUMP LOCATION

REPRODUCED BY
EASTMAN KODAK CO

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BOOK 03

PAGE 71 OF 83 PAGES

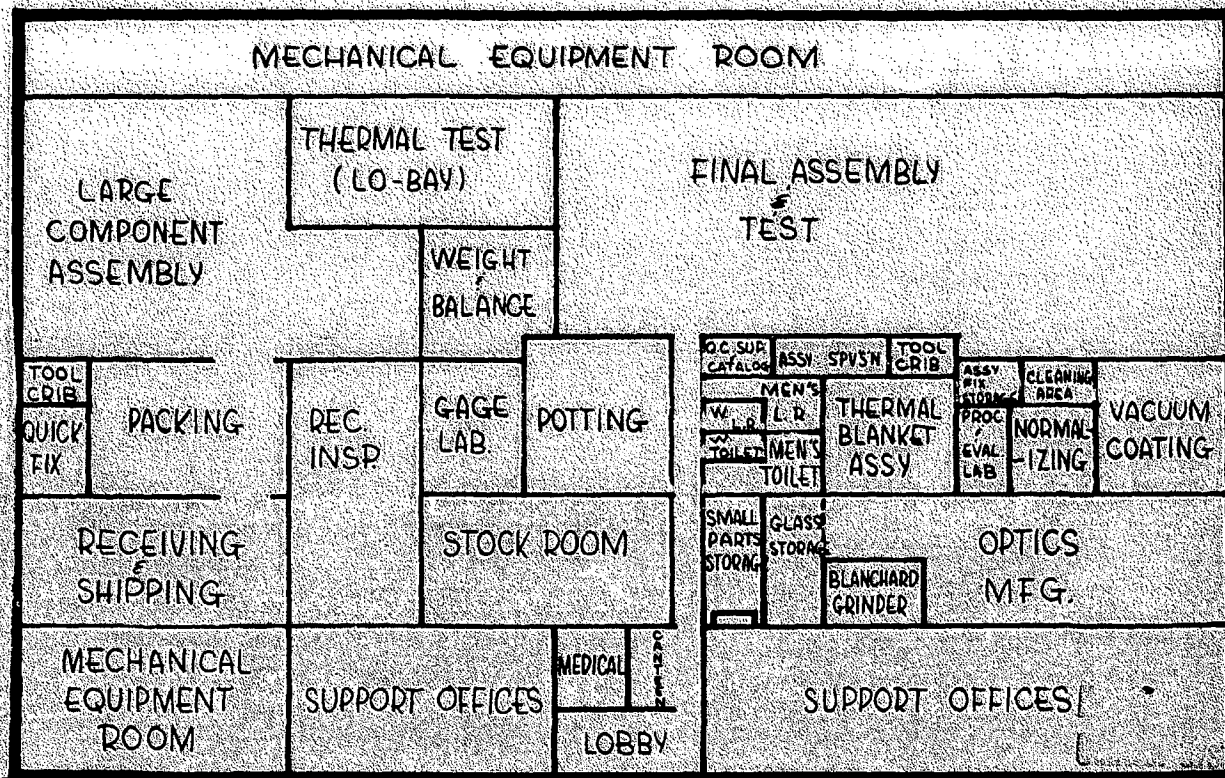
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NEW BUILDING PLAN



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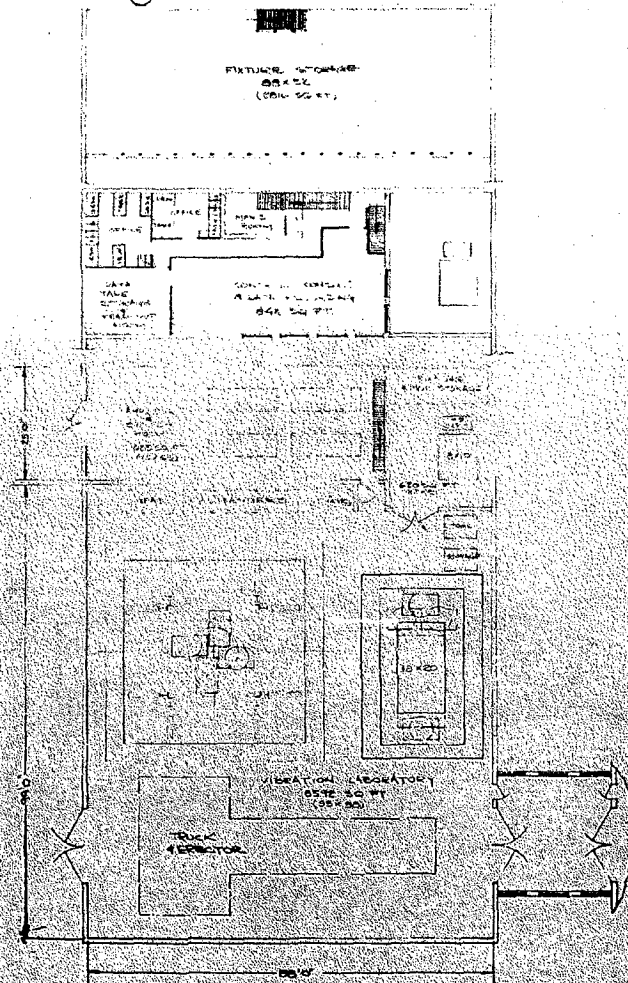
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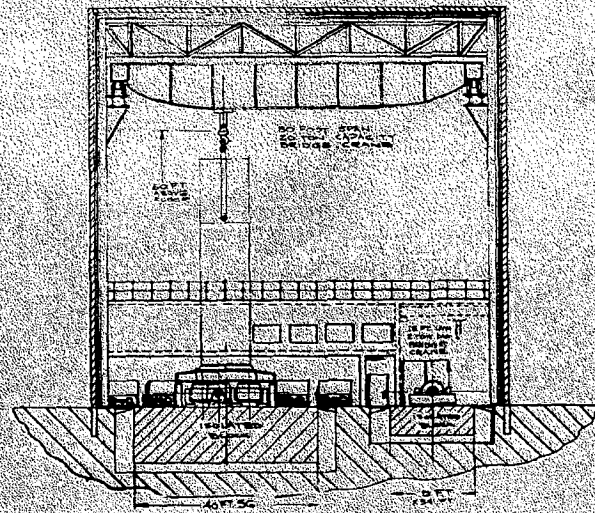
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FYF-86217-86



VIBRATION FACILITY

(PRELIMINARY CONCEPT)



Control System
EASTMAN KODAK CO.

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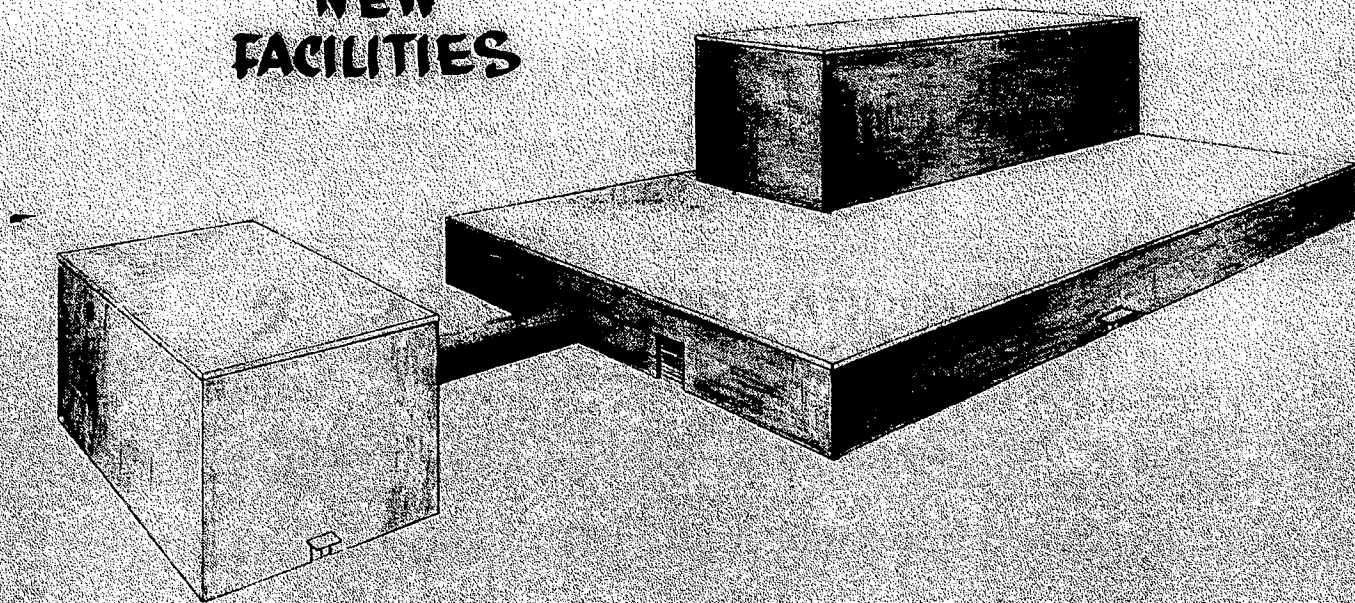
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NEW FACILITIES



MADE BY BYEMAN
Control System
EASTMAN KODAK CO

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BOOK 03
PAGE 74 OF 83 PAGES

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Dec 22 1965

812-512775



**AREAS REQUIRING
MANAGEMENT ATTENTION**

1 EARLY AUTHORIZATION FOR OPTICAL &
THERMAL TEST EQUIPMENT

2 EARLY AUTHORIZATION FOR
VIBRATION TEST EQUIPMENT

EASTMAN KODAK CO

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BOOK 03

PAGE 75 OF 83 PAGES

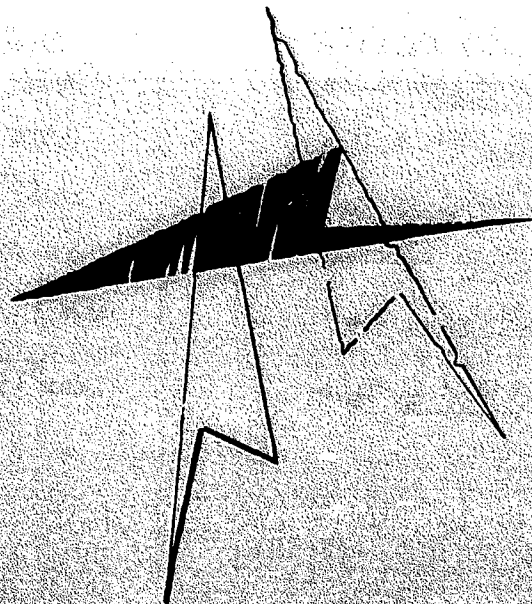
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SCHEDULES

KODAK SAFETY FILM
EASTMAN KODAK CO.

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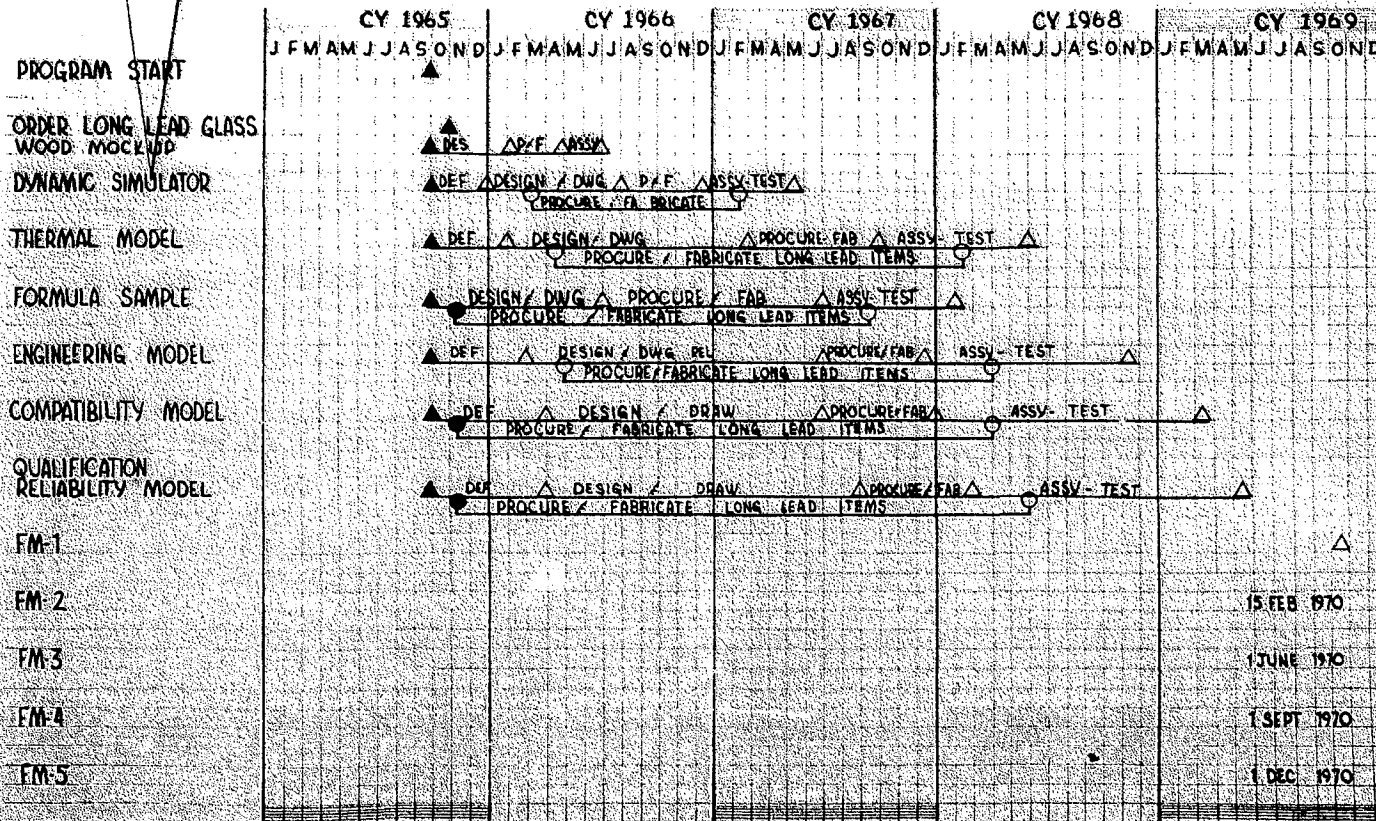
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Dec 22 1965

E.K.C. MASTER SCHEDULE/ HARDWARE

△ ○ SCHEDULED MILESTONE ▲ ● COMPLETED



15 FEB 1970
1 JUNE 1970
1 SEPT 1970
1 DEC 1970

EASTMAN KODAK CO

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PHOTO DOCUMENTATION

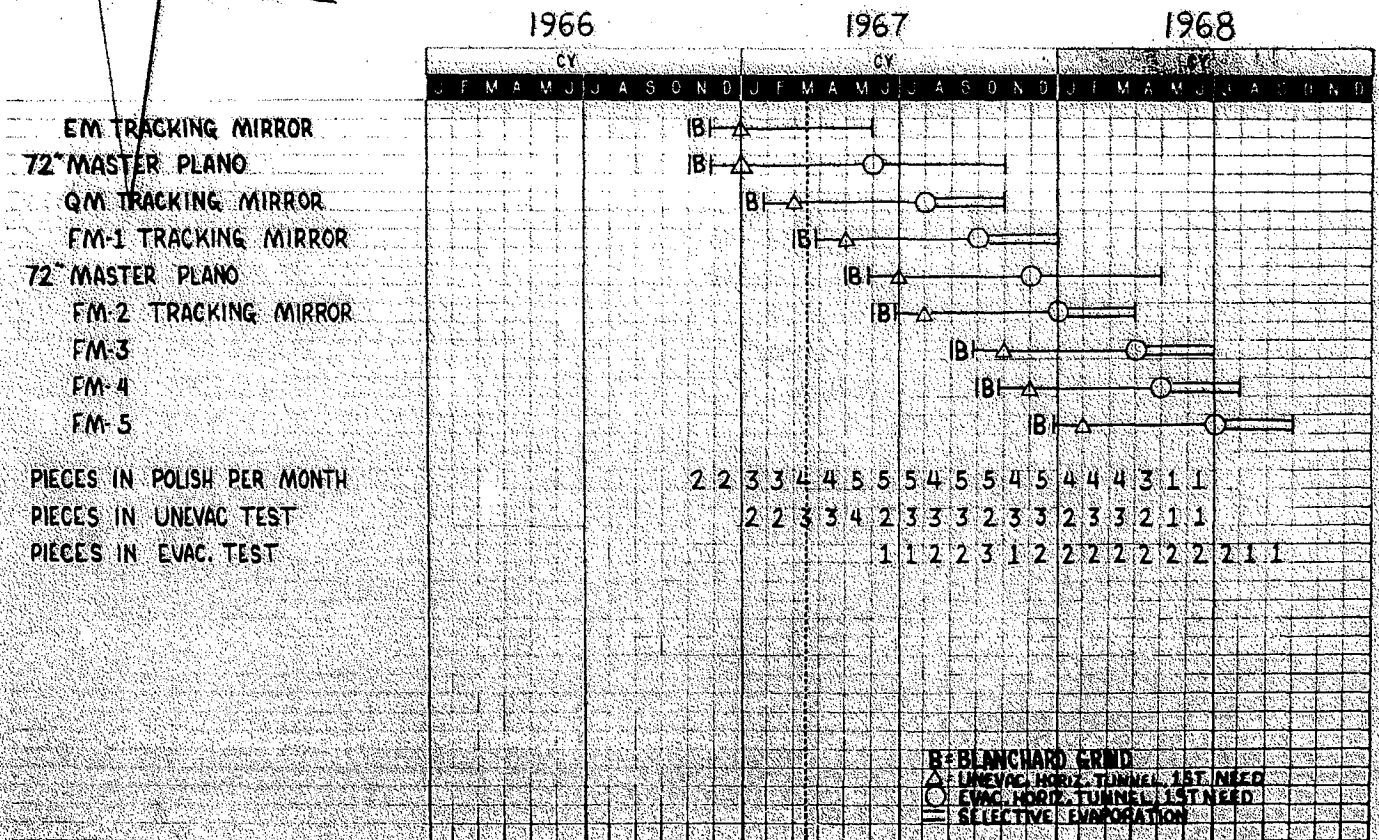
SPECIAL HANDLING

~~SECRET~~

Dec 22 1965

BYE-00237 00

LARGE PLANO MIRROR MANUFACTURE



B=BLANCHARD GRIND
 △ UNEVAC. HORIZ. TUNNEL, 1ST. NEED
 ○ EVAC. HORIZ. TUNNEL, 1ST. NEED
 ▬ SELECTIVE EVAPORATION

EASTMAN KODAK CO

~~SECRET~~
SPECIAL HANDLING

PHOTO DOCUMENTATION

SPECIAL HANDLING

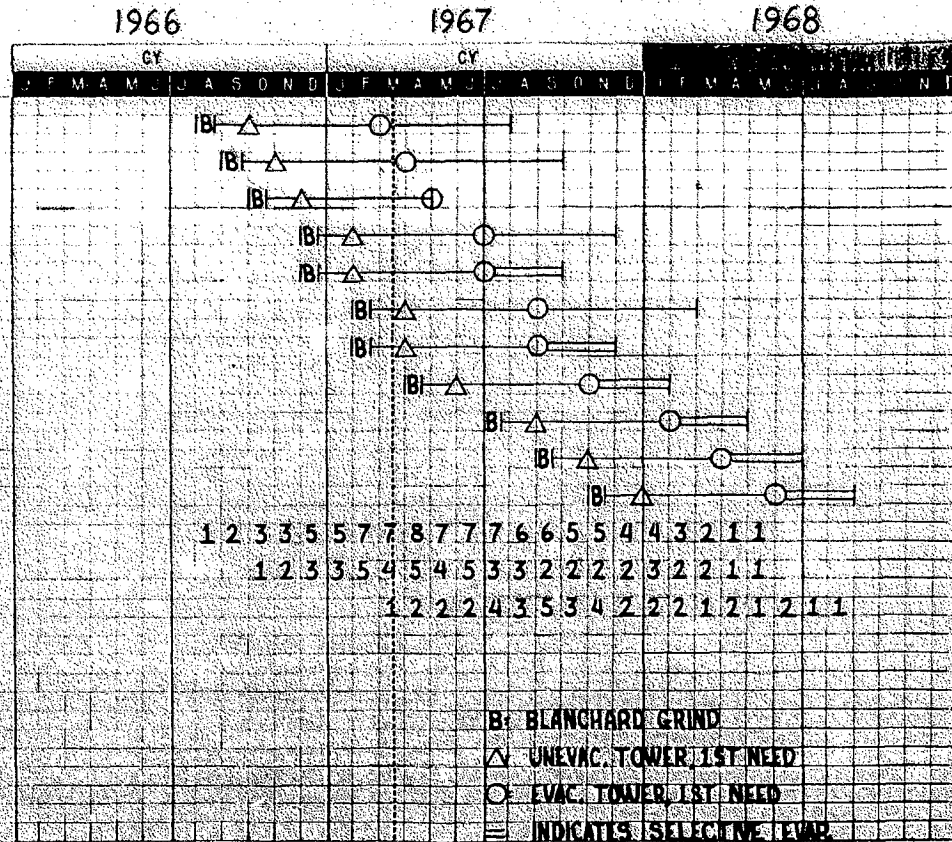
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Dec 22 1965

BY 805-000

LARGE CURVED SURFACE MIRROR MANUFACTURE

- 82" MASTER SPHERE
- 72" MASTER PARABOLA
- 71 3/4" EM ASPHERE
- 82" MASTER SPHERE
- 71 3/4" QM ASPHERE
- 72" MASTER PARABOLA
- 71 3/4" FM-1 ASPHERE
- FM-2
- FM-3
- FM-4
- FM-5
- PIECES IN POLISH PER MONTH
- PIECES IN UNEVAC. TEST
- PIECES IN EVAC. TEST



BOOK 03

PAGE 79 OF 83 PAGES

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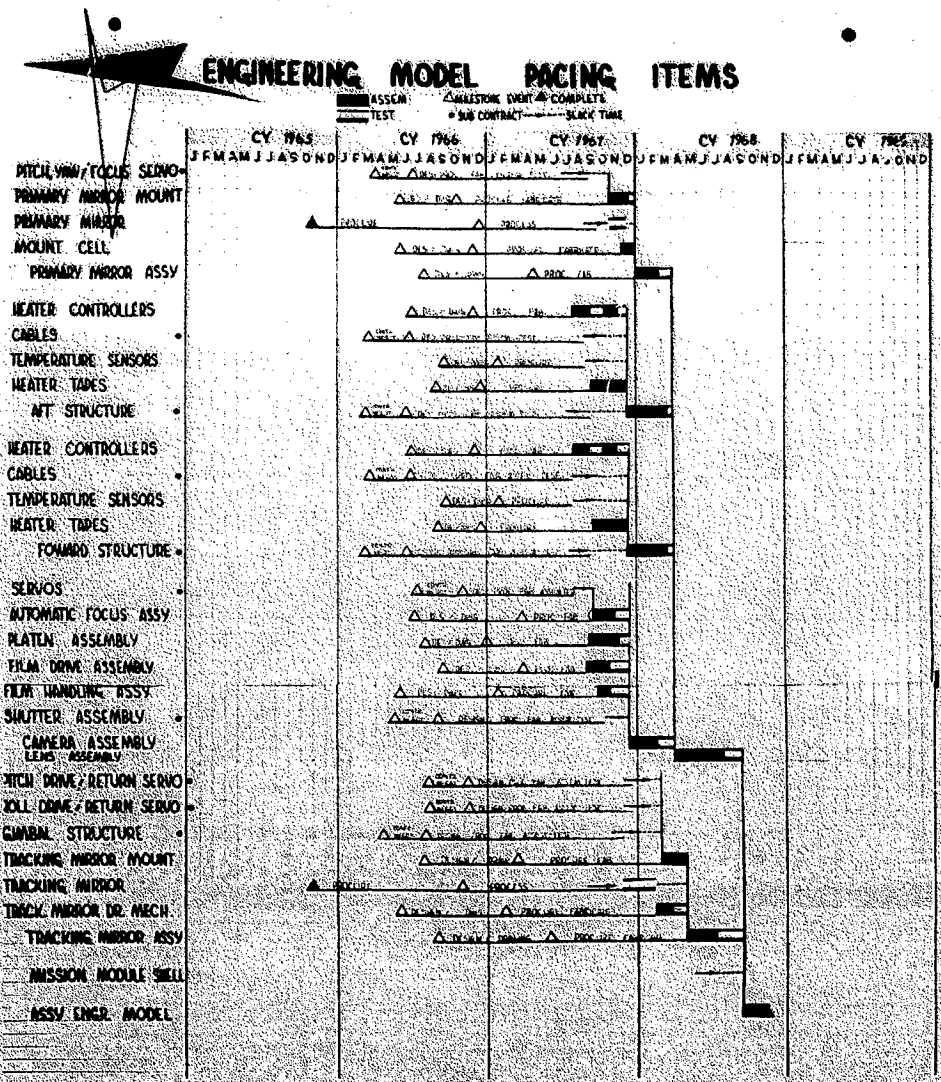
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SPECIAL HANDLING

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Dec 22 1965

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BOOK 03
PAGE 80 OF 83 PAGES

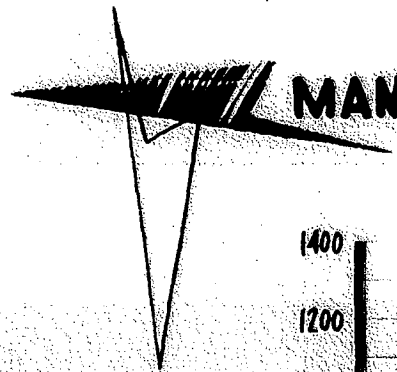
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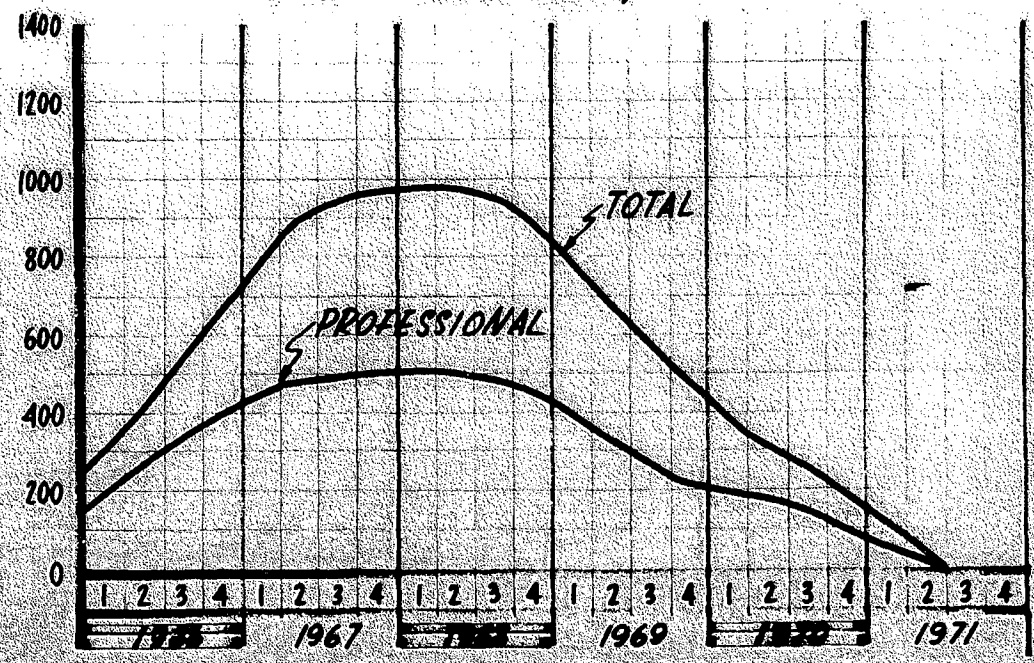
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Dec 22 1965



MANPOWER REQUIREMENTS *for* DORIAN PROGRAM (DIRECT LABOR ONLY)

MANPOWER



EASTMAN KODAK CO.

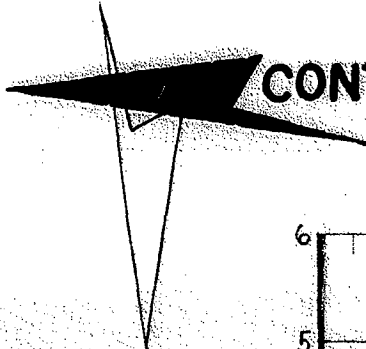
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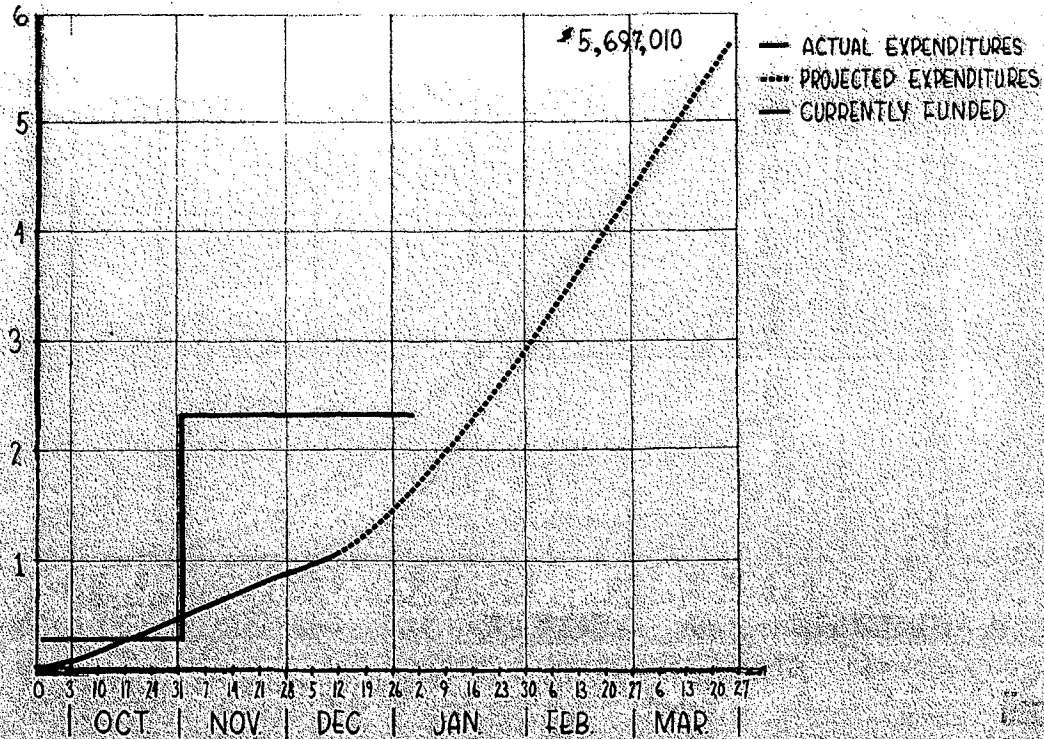
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Dec 22 1965



CONTRACT DEFINITION PHASE- CONTRACT AF 18(600)-2843 - DORIAN PROGRAM

MILLIONS
of
DOLLARS



BYEMAN
G. W. SYSTEM

EASTMAN KODAK CO.

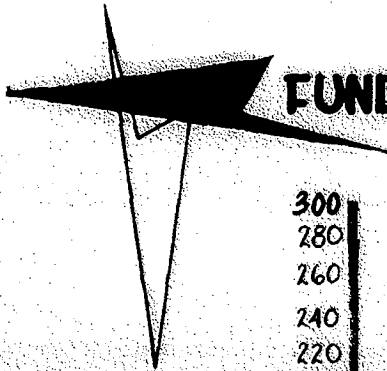
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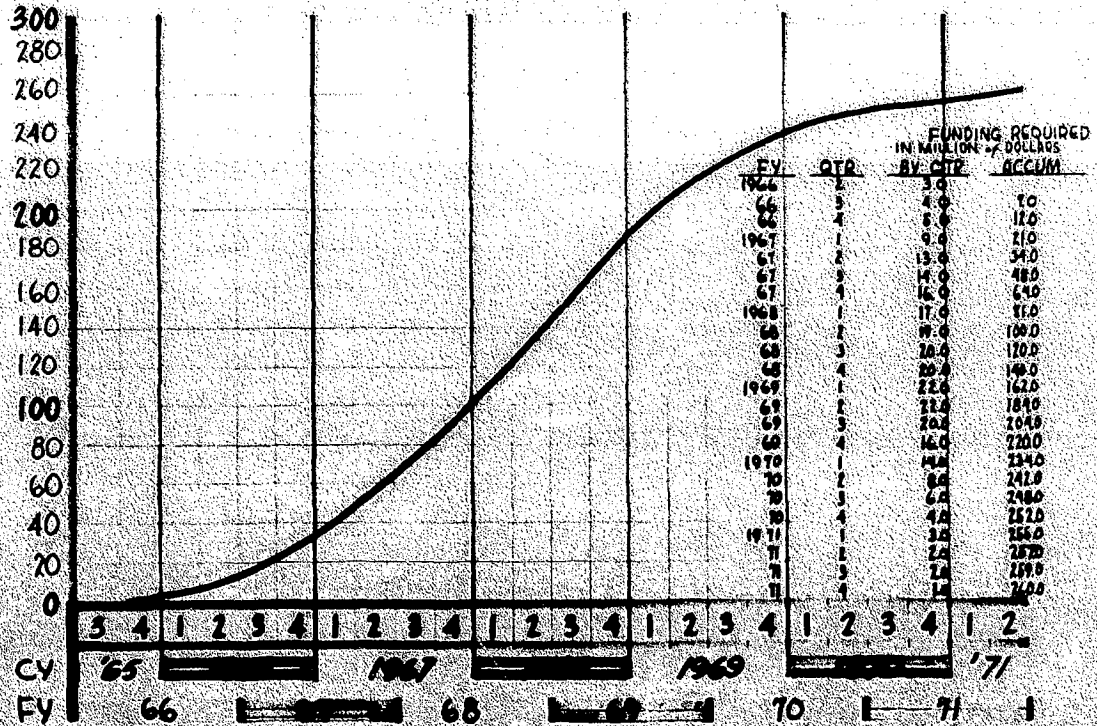
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Dec 22 1965



FUNDING REQUIREMENTS *for* DORIAN PROGRAM

MILLIONS
of DOLLARS



FORM 100-1
1-67

FORM 100-1

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~~SECRET~~
SPECIAL HANDLING

PHOTO DOCUMENTATION