

~~CONFIDENTIAL~~
SPECIAL HANDLING

WHS-293
Copy 3 of 3
Total Pages: 51

MOL ENGINEERING BASELINE DESCRIPTION BRIEFING

To Generals Stewart and Bleymaier

and Others

6 April 1967

By

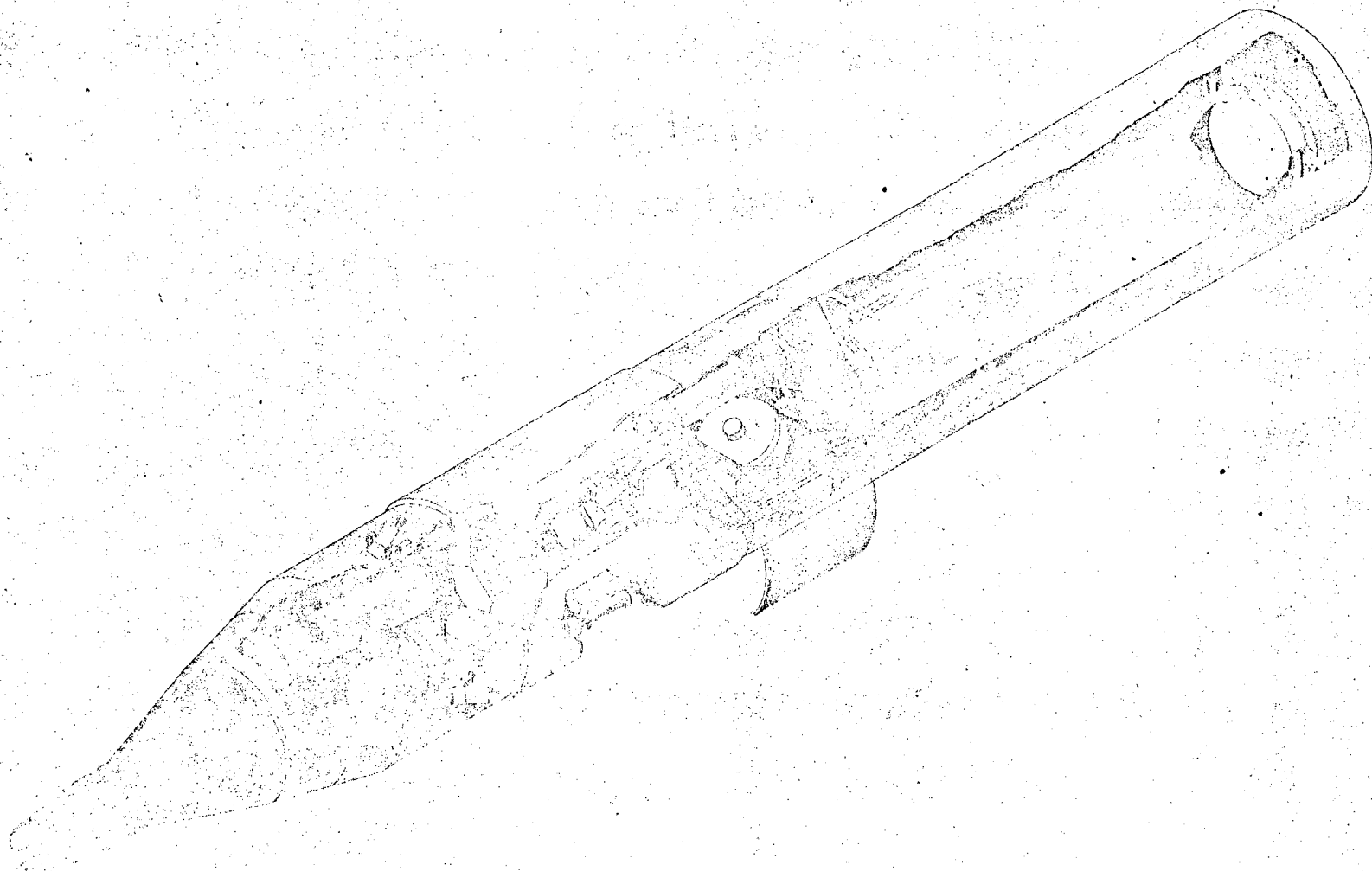
S. M. Tennant

~~CONFIDENTIAL~~
SPECIAL HANDLING

~~SECRET~~
SPECIAL HANDLING

WHS-293
P. 2

INBOARD PROFILE



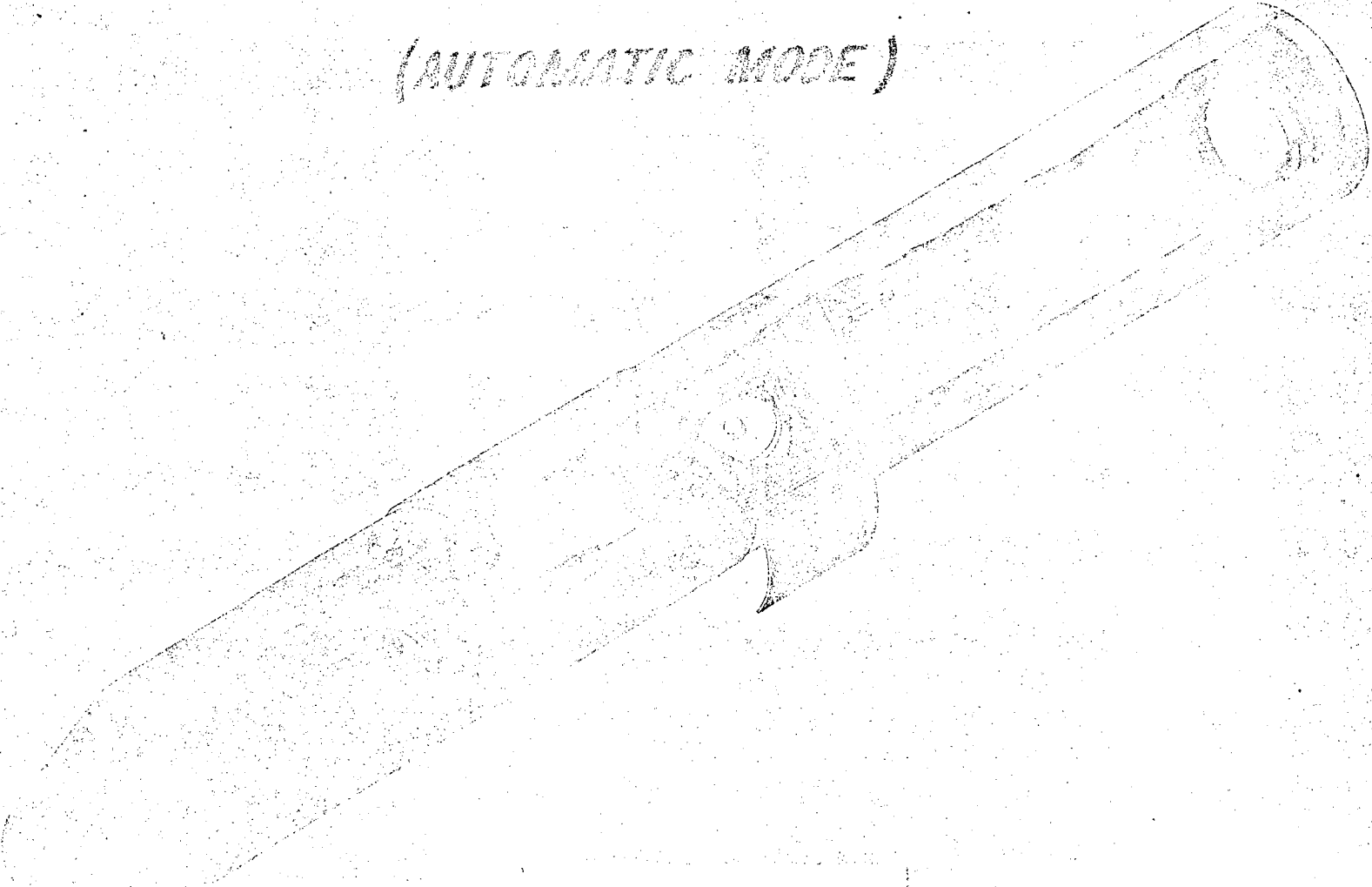
SPECIAL HANDLING
~~SECRET~~

~~SECRET~~
SPECIAL HANDLING

WHS-293
p 3

INDIA PAKISTAN
(AUTOMATIC MODE)

4



2

SPECIAL HANDLING
~~SECRET~~

~~(D) SECRET-SPECIAL HANDLING~~

WHS-293
p. 4

TECHNICAL PROBLEM AREAS

- o TRACKING MIRROR THERMAL CONTROL
 - LOUVERS
 - CERVIT
- o TRACKING MIRROR CONTROL
 - BEARING RIPPLE/ STICTION
- o THERMAL DOOR
 - OUTSIDE DESIGN - EXTERNAL ENVIRONMENT
 - INTERNAL DESIGN - CHANGE AND INTERFERENCE
- o ACTS PROPULSION
 - CONTAMINATION
- o ELECTRICAL POWER SYSTEM
 - 1-SECOND INTERRUPT
 - SWITCHING VERSUS BATTERY

~~(D) SECRET-SPECIAL HANDLING~~

11 ①

WHS-293
p. 5

TECHNICAL PROBLEM AREAS (CONT'D)

- o ENVIRONMENTAL CONTROL SYSTEM
FIRE HAZARD
- o WASTE MANAGEMENT
- o GEMINI B
FIRE HAZARD
ABORT
- o FLIGHTS 1 AND 2
FLIGHT PATH
APPROACH TO MASS SUBSTITUTE

~~(D) SECRET~~ SPECIAL HANDLING

CONTRACTOR RESPONSIBILITIES

MANNED VERSION

WHS-293
p. 6

DOUGLAS

LABORATORY MODULE, MISSION MODULE
STRUCTURE, ORBITAL VEHICLE INTEGRATION,
PROGRAM INTEGRATION, MISSION SIMULATOR
INTEGRATION

MCDONNELL

GEMINI B, ASCENT AND RECOVERY, CREW
OPERATIONS

GENERAL ELECTRIC

MISSION MODULE FORWARD BAY, TRACKING
DYNAMICS, THERMAL CONTROL, MISSION DATA
OPERATIONS

EASTMAN KODAK

DESIGN AND FABRICATION OF OPTICAL SYSTEM,
CAMERA, FILM HANDLING

MARTIN MARIETTA

LAUNCH VEHICLE INTEGRATION, PAD INTEGRATION
FLIGHT VEHICLE LOADS

TO BE SELECTED

PRESSURE SUIT ASSEMBLY

~~(D) SECRET~~ SPECIAL HANDLING

ST-2010

WHS-293
p. 7

CONTRACTOR RESPONSIBILITIES

UNMANNED VERSION

DAC

SUPPORT MODULE STRUCTURE,
INTEGRATION, AND SYSTEM TEST

EK

FILM CHUTES, CAMERA CHANGES,
TAKE-UP REELS, AND CUTTERS

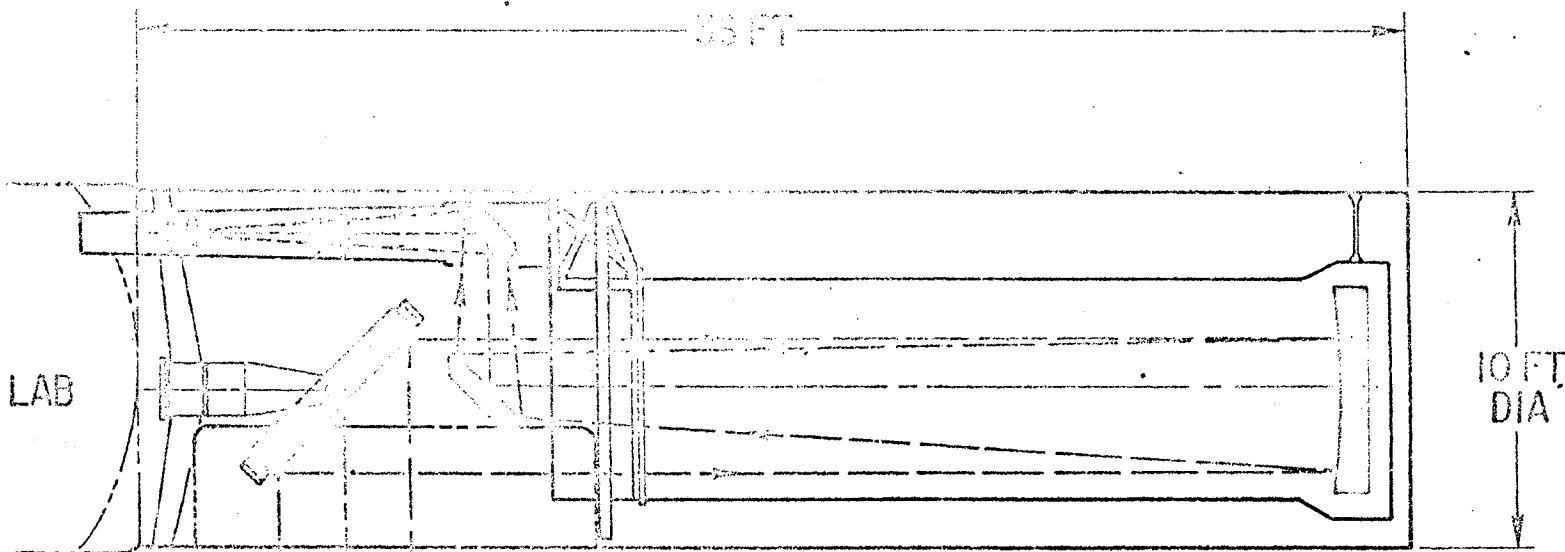
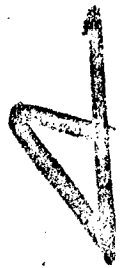
GE

DRV'S, DRV SEPARATION, SOFTWARE

~~SECRET~~
SPECIAL HANDLING

WHS-293
P-8

1-4
L
D



SPECIAL HANDLING
~~SECRET~~

SAMPSON

~~SECRET~~ SPECIAL HANDLING

PAYLOAD CHARACTERISTICS

WHS-293

P. 9

EFFECTIVE CLEAR APERTURE - 60 INCHES

(OPTICAL ELEMENT DIAMETER - 72 INCHES)

FOCAL LENGTH - [REDACTED]

FORM - FOLDED (NEWTONIAN)

- ABERRATION CORRECTION (ROSS, MODIFIED)

EXPOSURE - SINGLE FRAMES

- FOCAL PLANE SHUTTER (MOVING SLIT)

FORMAT - 9 INCH CIRCLE (9,000 FEET)

IMAGE MOTION COMPENSATION [REDACTED] (MR/SEC)

~~SECRET~~ SPECIAL HANDLING

SAMPSON

~~SECRET~~ SPECIAL HANDLING

WHS-293
p. 10

PAYLOAD OPERATING CAPABILITY

ACQUISITION AND TRACKING TELESCOPE

LINE OF SIGHT SLEWING - 6 DEG/SEC

SETTLING TIME - 3 SEC

AUTOMATIC OPERATION - HANDS OFF OR UNMANNED

- PRECISION NAVIGATION
- PRECISION POINTING (STAR TRACKER)
- ELECTRO-OPTICAL IMAGE MOTION COMPENSATION

REAL TIME VISUAL OBSERVATION - MAIN OPTICS

AUXILIARY PLATEN - SECONDARY FILMS

READOUT - ANALOG - 800 IN.² PER DAY

ALIGNMENT - ANGULAR - 1 MIN, LINEAR - .001 IN.

FOCUS - AUTOMATIC - XXXXXXXXXX PLATEN POSITION ACCURACY

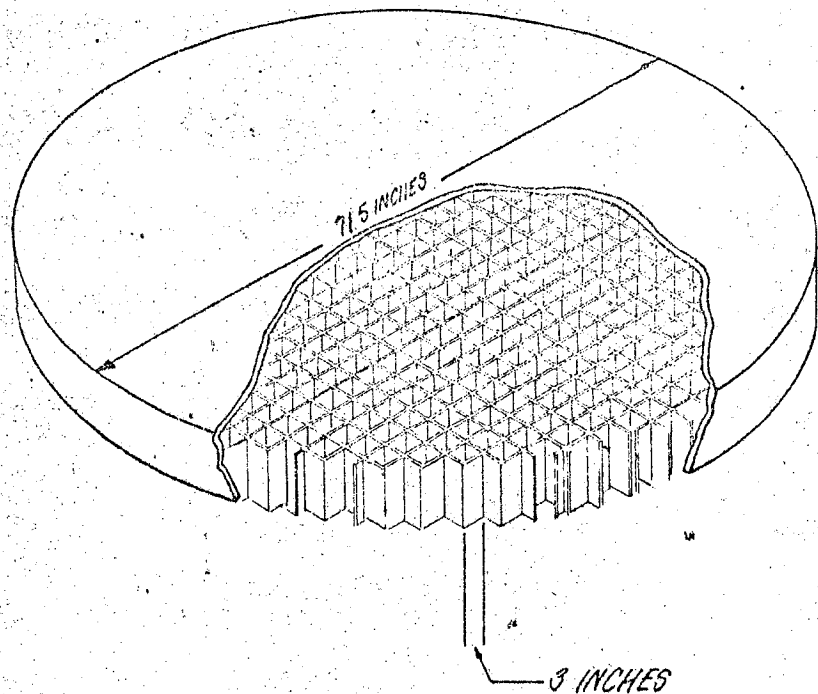
DATA RECOVERY - DRV - 60 LBS CAPACITY

GEMINI - 240 LBS CAPACITY

~~SECRET~~ SPECIAL HANDLING

~~SECRET~~
SPECIAL HANDLING

WHS-293
P. 11

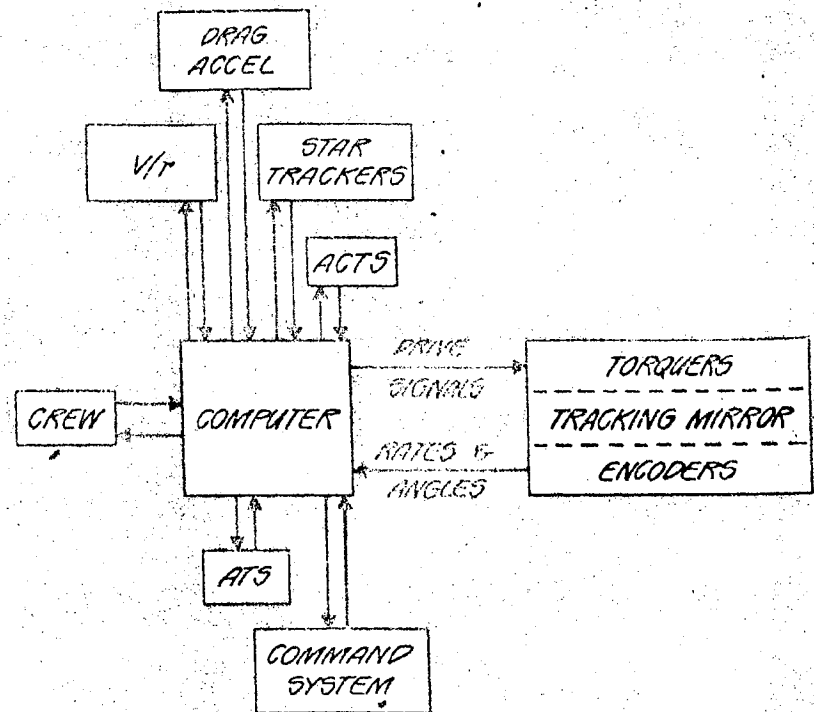


- ▷ PRIMARY & TRACKING MIRRORS
- ▷ "EGG-GRATE" CONSTRUCTION
- ▷ MATERIAL - FUSED SILICA
- ▷ WEIGHT - 1020 LBS EACH
- ▷ THICKNESS
 - ▷ FACE PLATE _____ 0.9 IN.
 - ▷ BACK PLATE _____ 0.5 IN.
 - ▷ CORE _____ .22 IN.
- ▷ OPTICAL TOLERANCE
1/10 WAVE LENGTH

SPECIAL HANDLING

~~SECRET~~
SPECIAL HANDLING

WHS-293
p. 12

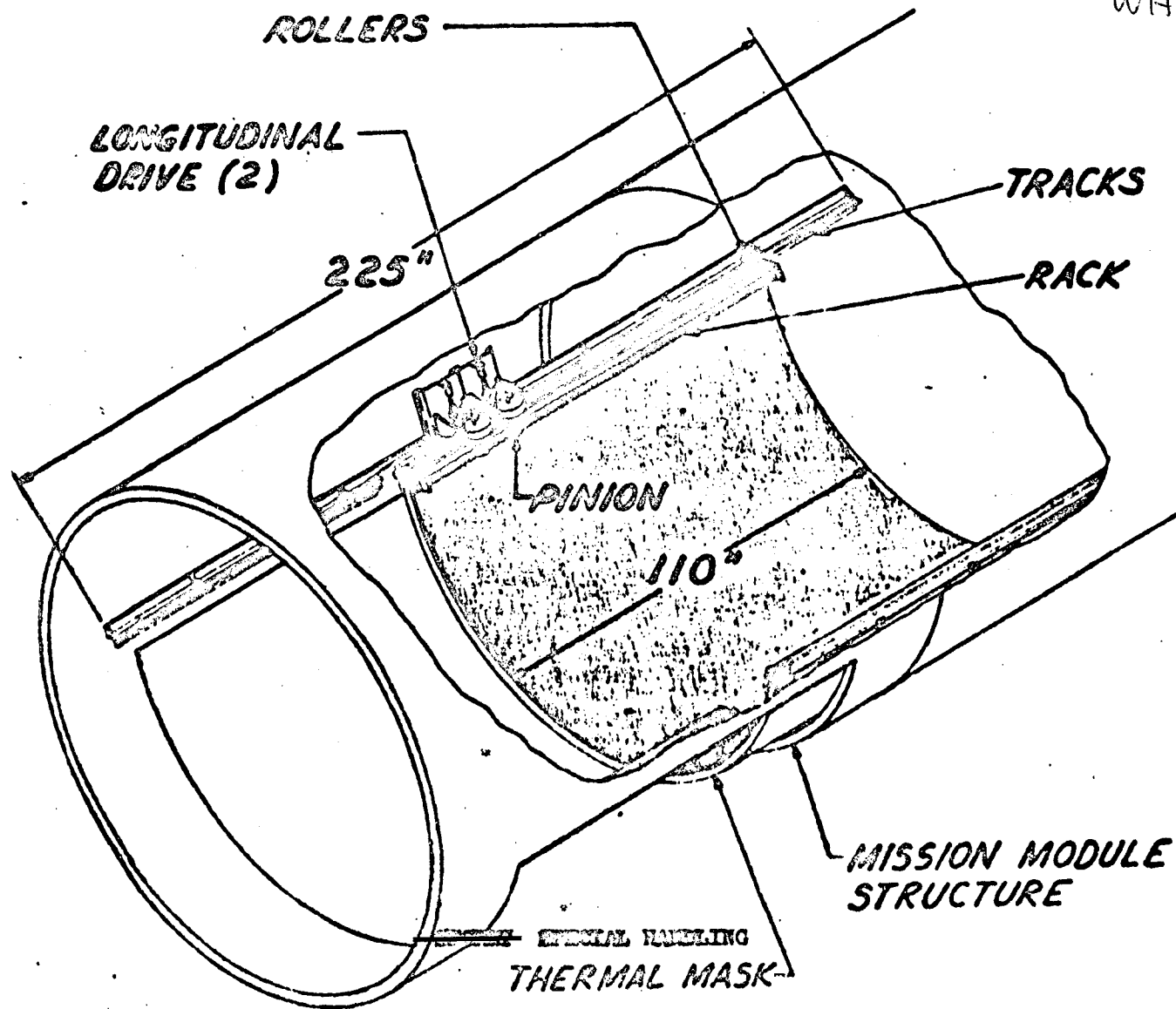


ACTS - ATTITUDE CONTROL / TRANSLATION SYSTEM
ATS - ACQUISITION & TRACKING SCOPE

SPECIAL HANDLING
~~SECRET~~

THERMAL MASK ASSEMBLY & INSTL

WHS-293
p. 13



555-101

(D) ~~SECRET~~-SPECIAL HANDLING

WHS-293
p. 14

MANNED FUNCTIONS

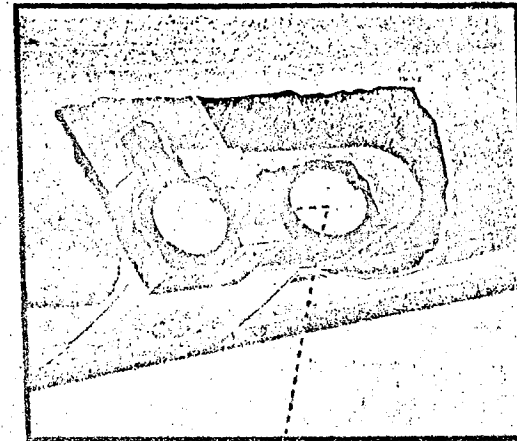
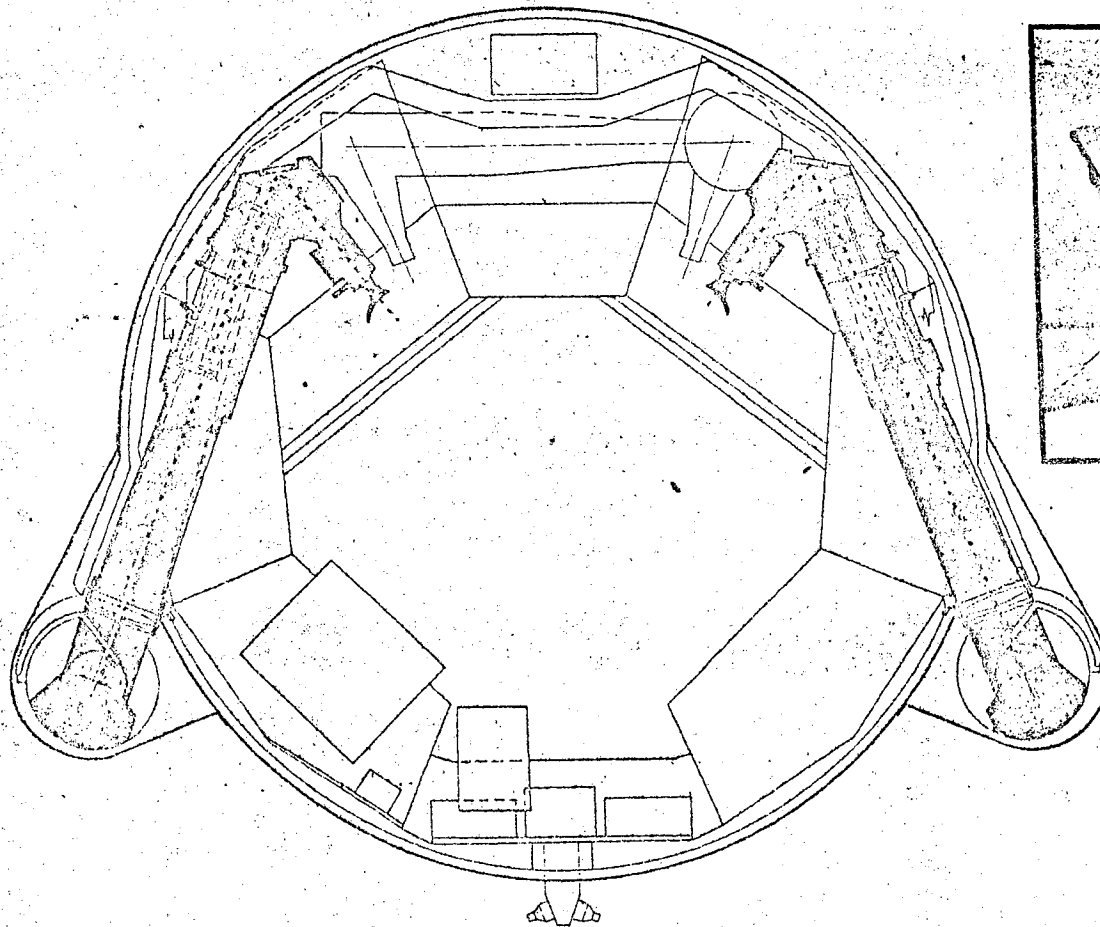
- o REAL-TIME TARGET REPROGRAMMING FOR MAXIMUM INTELLIGENCE TAKE
- o VERIFICATION FOR SUBSEQUENT REPROGRAMMING
- o ACQUISITION AND TRACKING FOR HIGH-PRIORITY TARGETS AND AUTOMATIC EQUIPMENT BACKUP
- o EDITING FOR IMMEDIATE DATA RETURN
- o OVERALL SYSTEMS MANAGEMENT, ALTERNATE MODE SELECTION, AND/OR MANNED BACKUP
- o SELECTIVE MAINTENANCE

(D) ~~SECRET~~-SPECIAL HANDLING

ST-2009

~~SECRET~~
SPECIAL HANDLING

WHS-293
P. 15



HIGH RANGE 63-127X

LOW RANGE 16-32X

1° FOV @ 63X

4° FOV @ 16X

2 MM. EXIT PUPIL

@ 127X

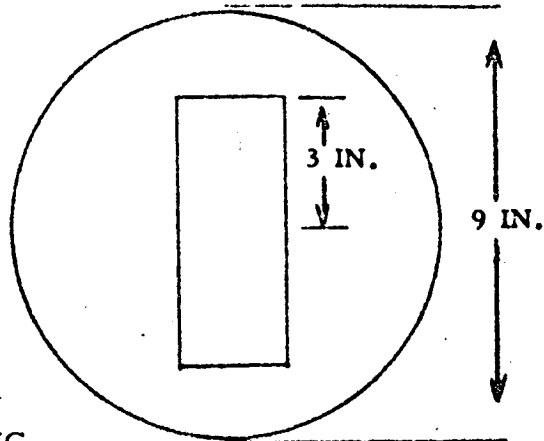
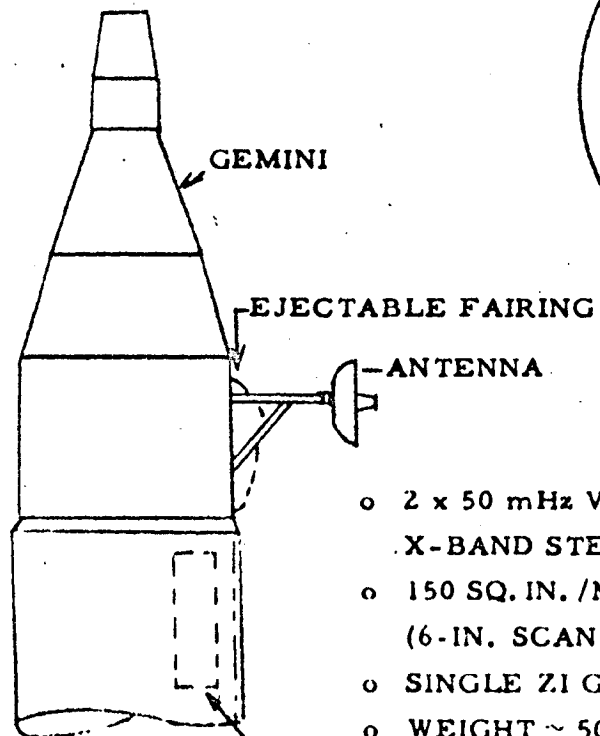
10" APERTURE

SPECIAL HANDLING
~~SECRET~~

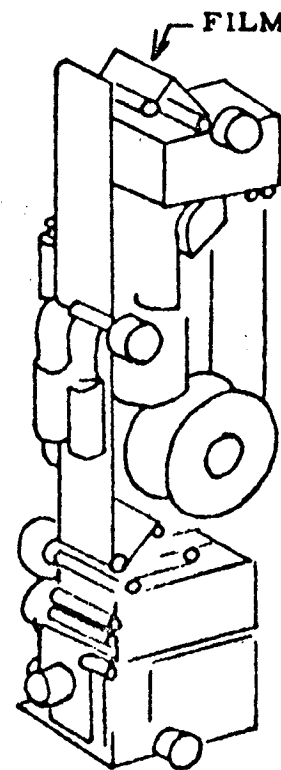
~~(D) SECRET SPECIAL HANDLING~~

WIDEBAND READOUT

WHS-293
p. 176



EDITING APPROACH



- o 2 x 50 mHz VIDEO CHANNELS
- o X-BAND STEERABLE ANTENNA - 3 FT. DISH
- o 150 SQ. IN. /MIN. FILM READOUT (6-IN. SCAN WIDTH)
- o SINGLE ZI GROUND STATION
- o WEIGHT ~ 500 LB
- o PEAK POWER ~ 630 WATTS

~~(D) SECRET SPECIAL HANDLING~~

T-17

~~SECRET~~ SPECIAL HANDLING

WHS-293

P. # 17

LABORATORY VEHICLE ARRANGEMENT

PRE-SUBORIZED COMPARTMENT

CONSOLES & DISPLAYS

CREW EQUIPMENT

CAMERA

FILM

FILM HANDLING

FILM PROCESSOR

AGTS ELECTRONICS

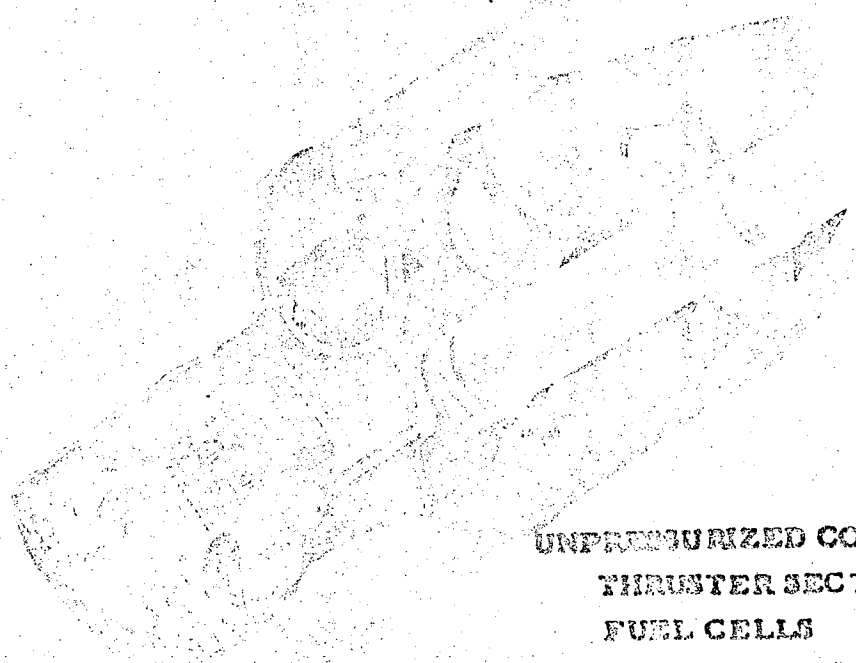
COMPUTERS

BIG EYE

TVTC

RC/LS

DRY'S



UNPRESSURIZED COMPARTMENT

THRUSTER SECTORS

FUEL CELLS

PROPELLANTS

CRYOGENICS

HEAT EXCHANGERS

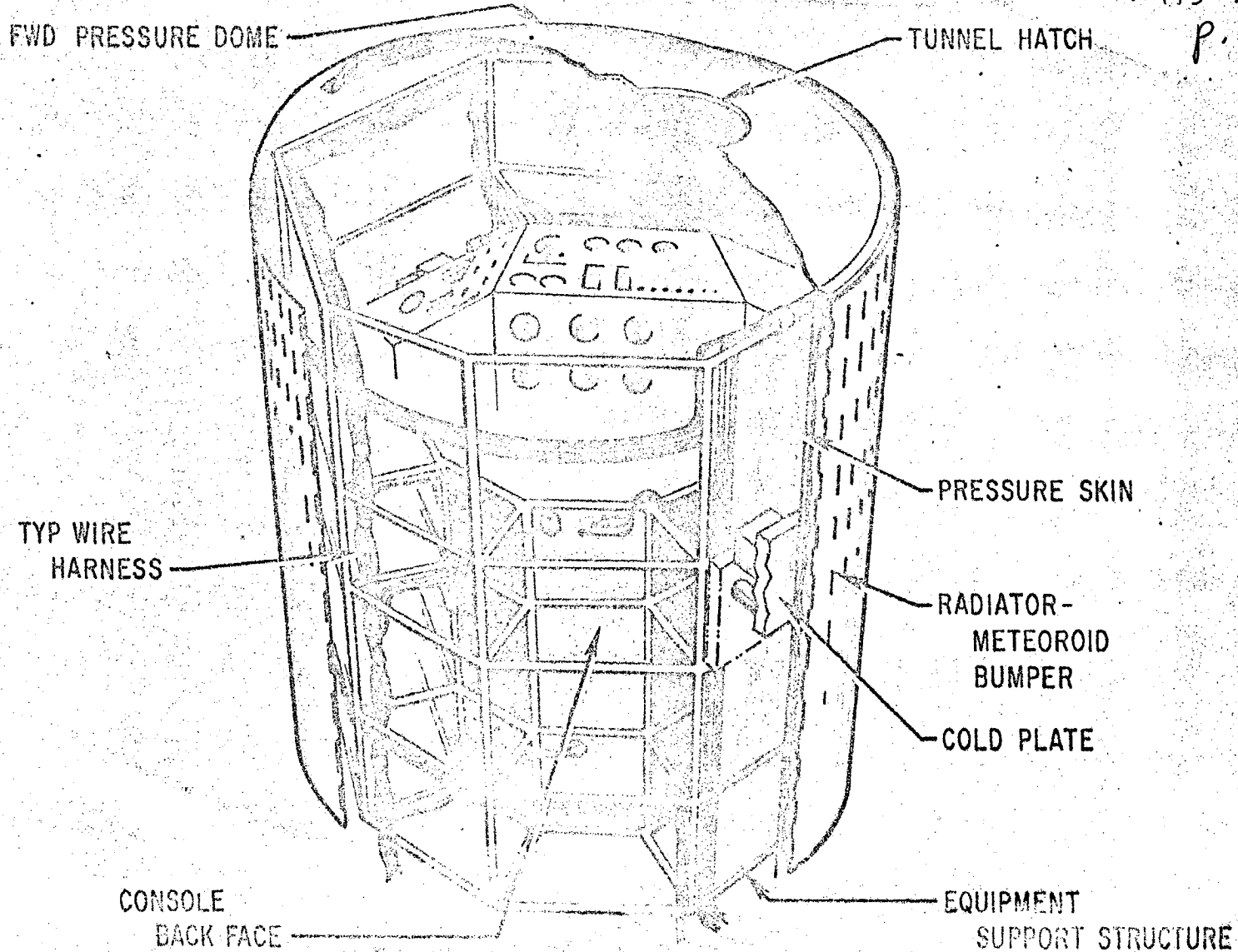
ECL3 PUMPS

CREW TRANSFER TUNNEL

LABORATORY PRESSURIZED COMPARTMENT

TYPICAL EQUIPMENT AND WIRING ARRANGEMENT

WHS-293
P. 18

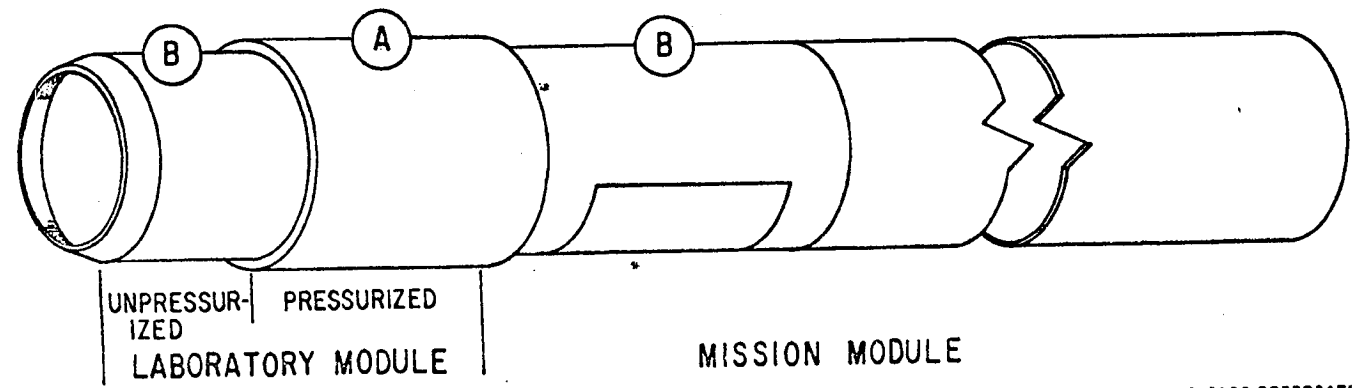
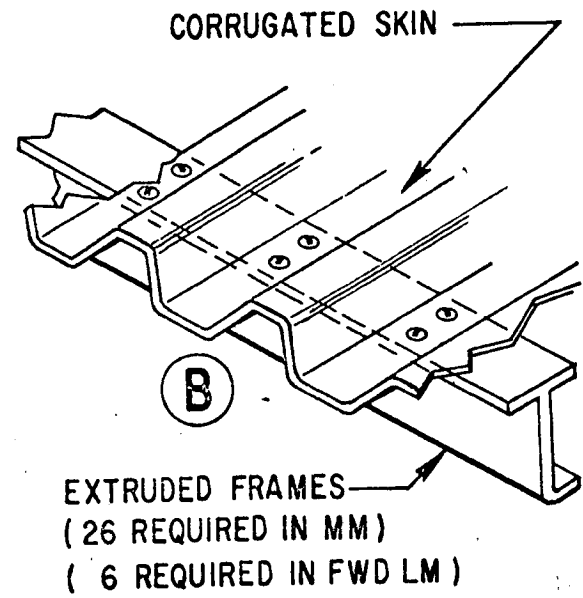
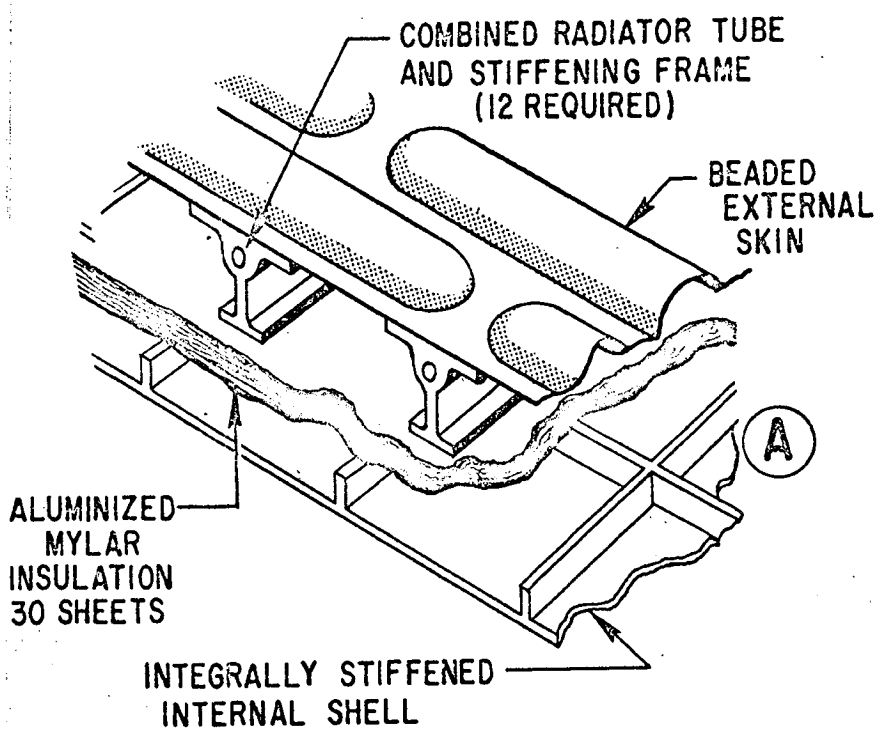


SAMPSON

STRUCTURAL ARRANGEMENT

V-28911
~~WFS-090~~

WHS-293
p. 10



2011PS ON

WFS-090

T 20

L

WHS-293

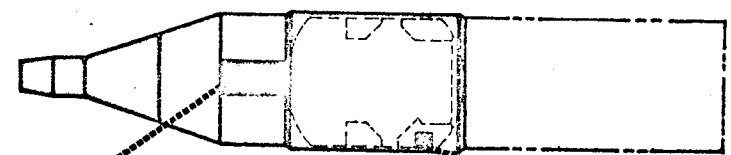
EE-65- Y21489-R1111

p 20

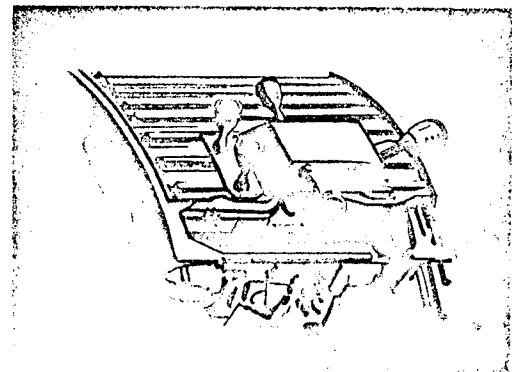
10

~~CONFIDENTIAL~~

ATTITUDE CONTROL & TRANSLATION SYSTEM BASELINE LABORATORY VEHICLE

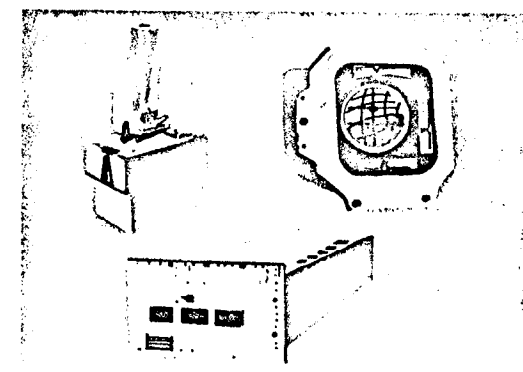


REACTION JETS



- 16-25 LBS
- 4-100 LBS
- RADIATION COOLED
- HYPERGOLIC BI-PROPELLANT
- MODULAR UNITS

A.C.T.S. ELECTRONICS



- 0.5 DEG POINTING TOLERANCE
- 0.004 DEG/SEC RATE TOLERANCE
- MULTIPLE MODES, MANUAL AND AUTOMATIC
- COMPUTER INDEPENDENT ELECTRONICS; HORIZON SENSORS AND BMG REFERENCE

THIS DOCUMENT CONTAINS NEITHER RECOMMENDATIONS NOR
NATIONAL POLICY STATEMENTS. IT IS THE PROPERTY OF THE
OFFICE OF NAVAL AIR OPERATIONS AND IS LOANED TO YOUR
OFFICE. IT AND ITS CONTENTS ARE TO BE RETURNED TO THE
OFFICE OF NAVAL AIR OPERATIONS AT THE END OF THE
LOAN PERIOD. IT IS TO BE KEPT IN A SECURE PLACE.
IT IS NOT TO BE DISTRIBUTED OUTSIDE YOUR OFFICE.
IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.

~~CONFIDENTIAL~~

DOWNGRADED AT 3 YEAR INTERVALS
EXCEPT WHERE SHOWN OTHERWISE
END DS 1

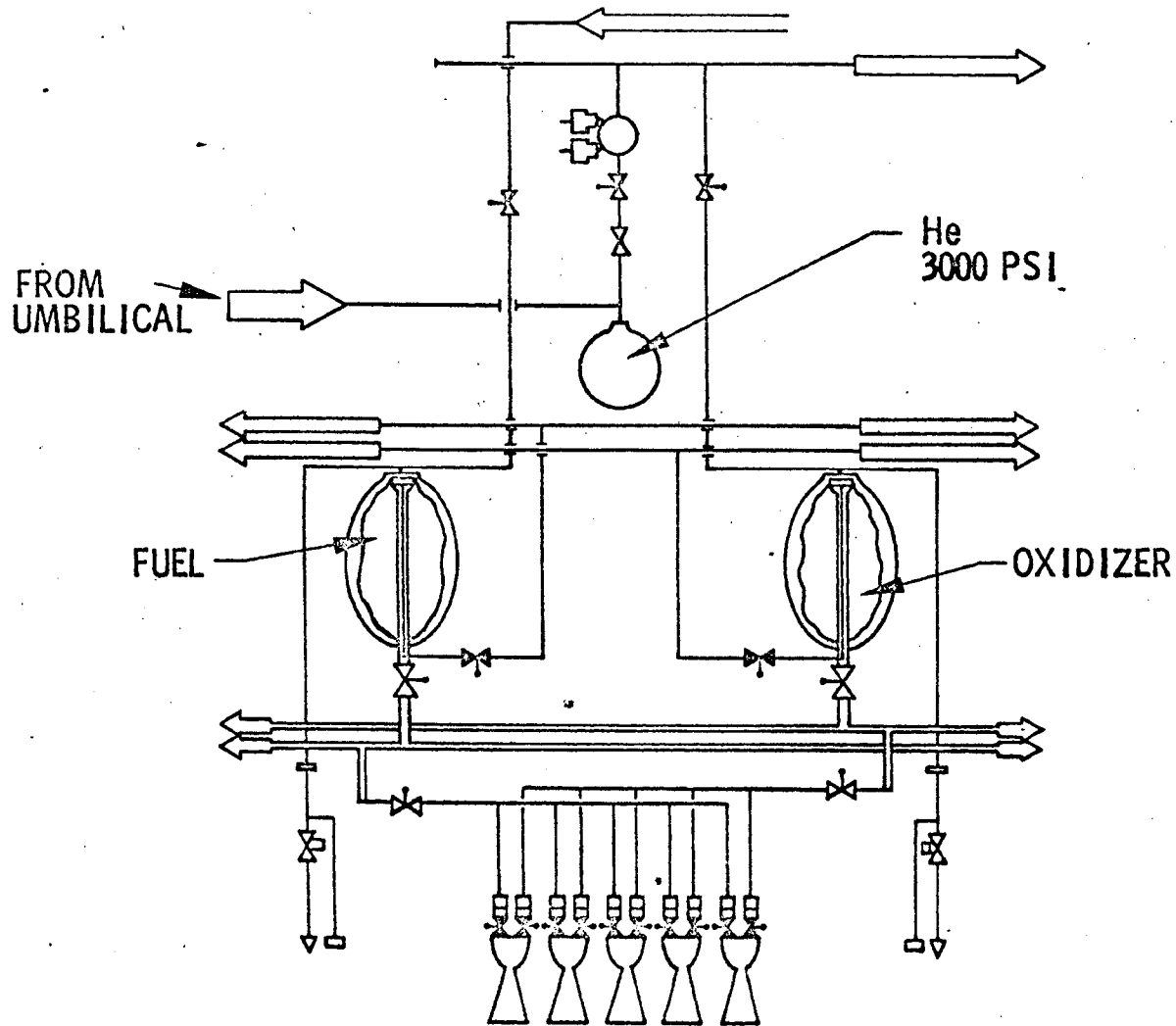
AEROSPACE CORPORATION 

20

ACTS/PROP SINGLE SECTOR SCHEMATIC

V587-6B

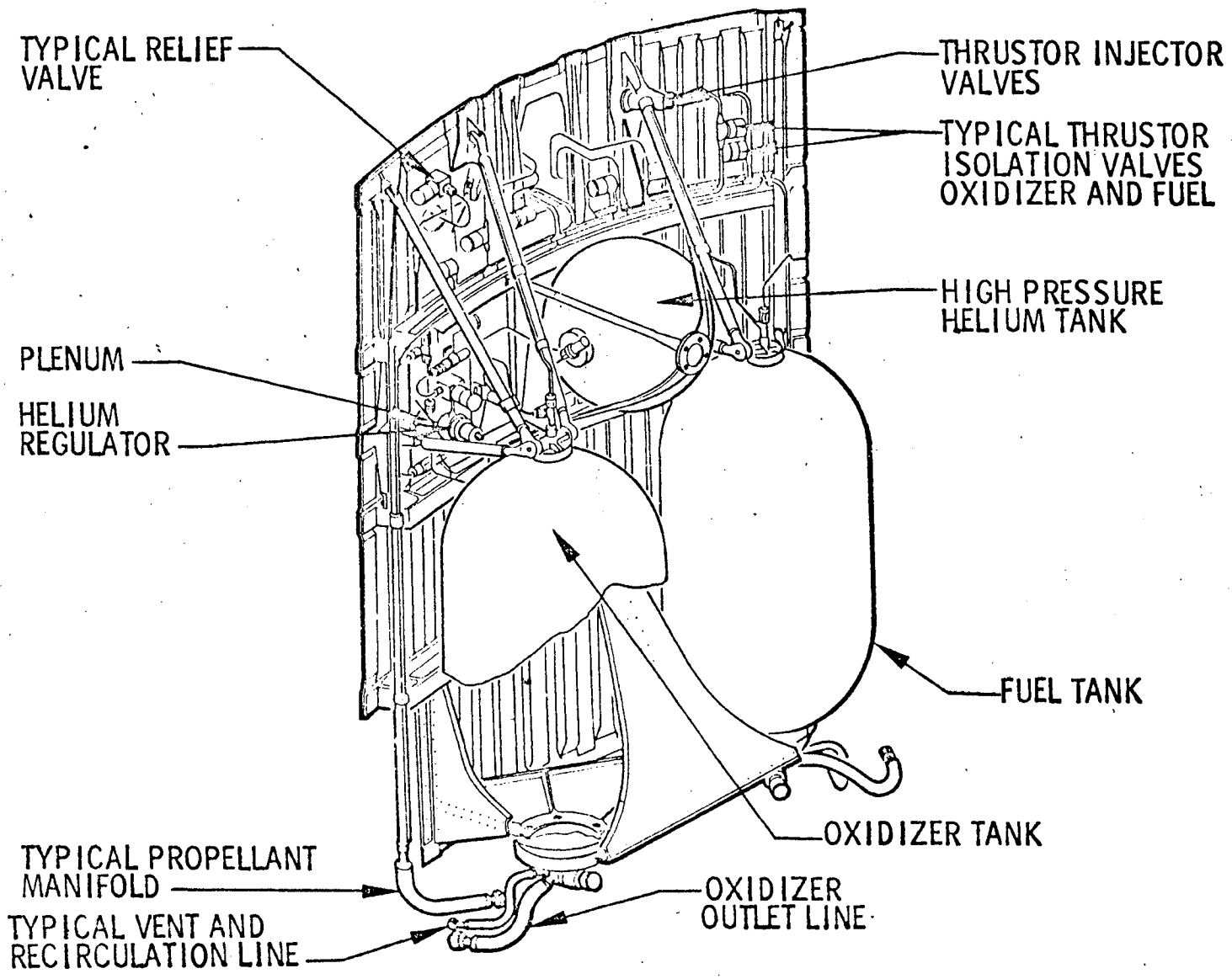
WHS- 293
P. ~~20~~ 21



TYPICAL ACTS/PROP SECTOR

V587-5

WHS- 293
p. 22



TYPICAL RELIEF VALVE

THRUSTOR INJECTOR VALVES

TYPICAL THRUSTOR ISOLATION VALVES OXIDIZER AND FUEL

HIGH PRESSURE HELIUM TANK

PLENUM

HELIUM REGULATOR

FUEL TANK

OXIDIZER TANK

TYPICAL PROPELLANT MANIFOLD

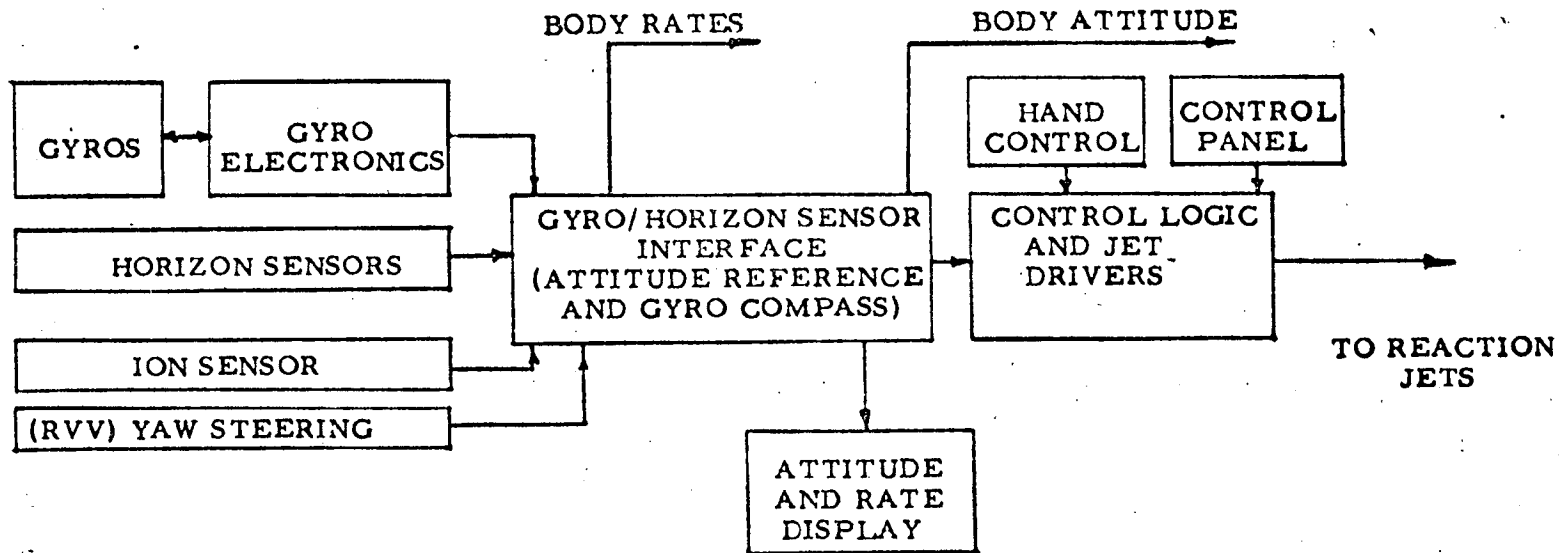
OXIDIZER OUTLET LINE

TYPICAL VENT AND RECIRCULATION LINE

MOL

ACTS BLOCK DIAGRAM

WHS - 293
p. 23



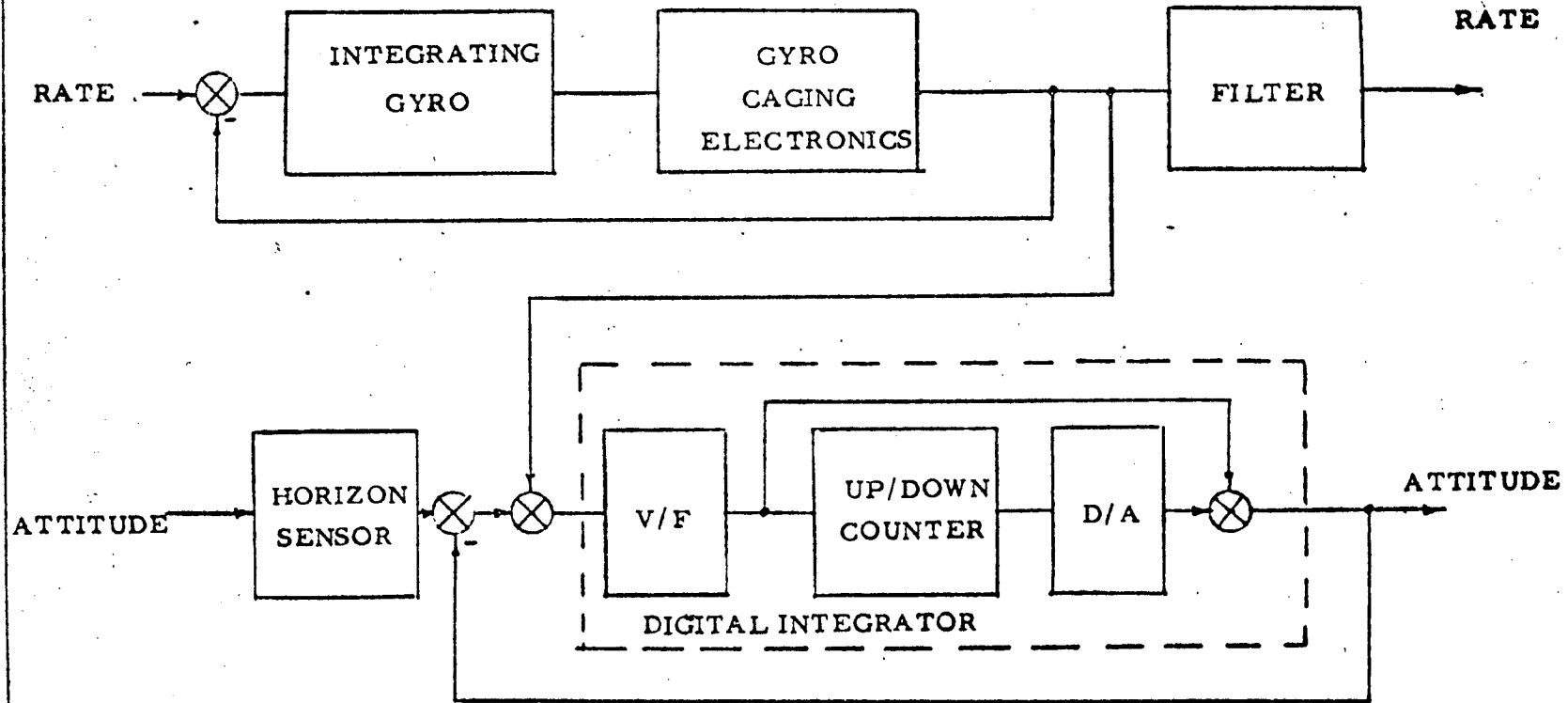
CONTROL MODES

- LOCAL VERTICAL/ORBIT PLANE
- LOCAL VERTICAL/RELATIVE VELOCITY VECTOR
- INERTIAL ATTITUDE HOLD
- RATE STABILIZATION
- DIRECT CONTROL (MANUAL ACCELERATION COMMAND)
- LOW MODE POWER

MOL

BASIC ATTITUDE REFERENCE

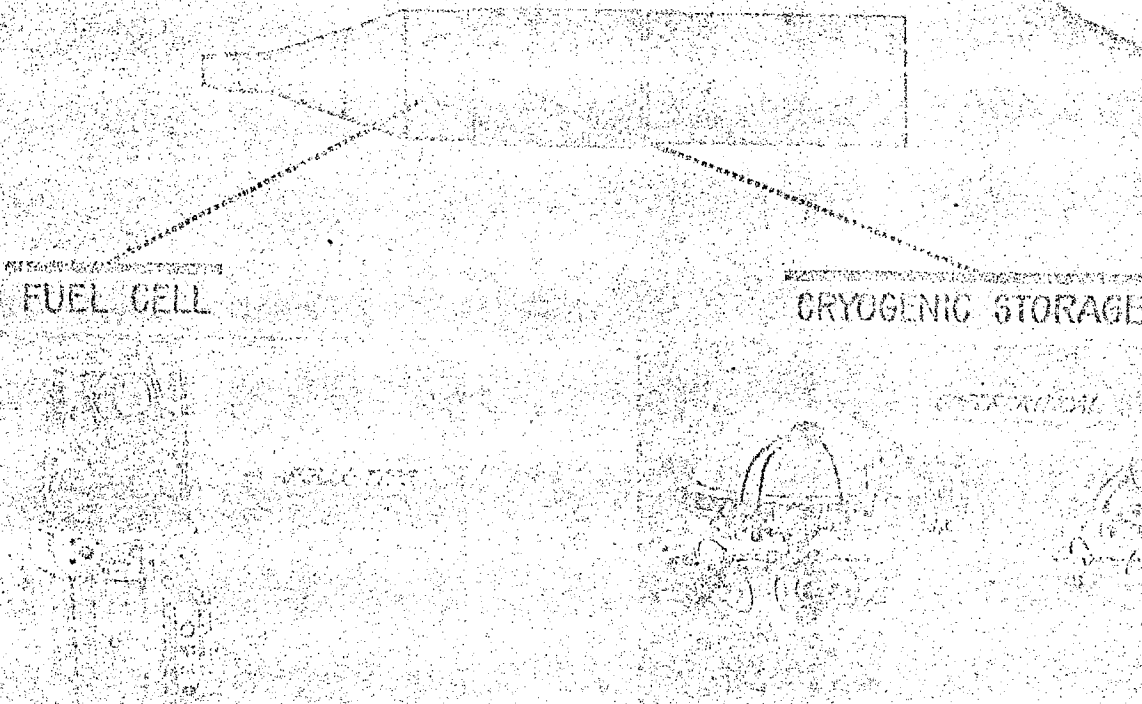
WHS- 293
p. 24



SAMPSON

L
WHS-293
P. 25

ELECTRIC POWER SYSTEM
BASELINE LAB VEHICLE



- THREE 1000 HR FUEL CELL MODULES
- 2.0 KW MAXIMUM POWER
- 4.5 KW PEAK POWER

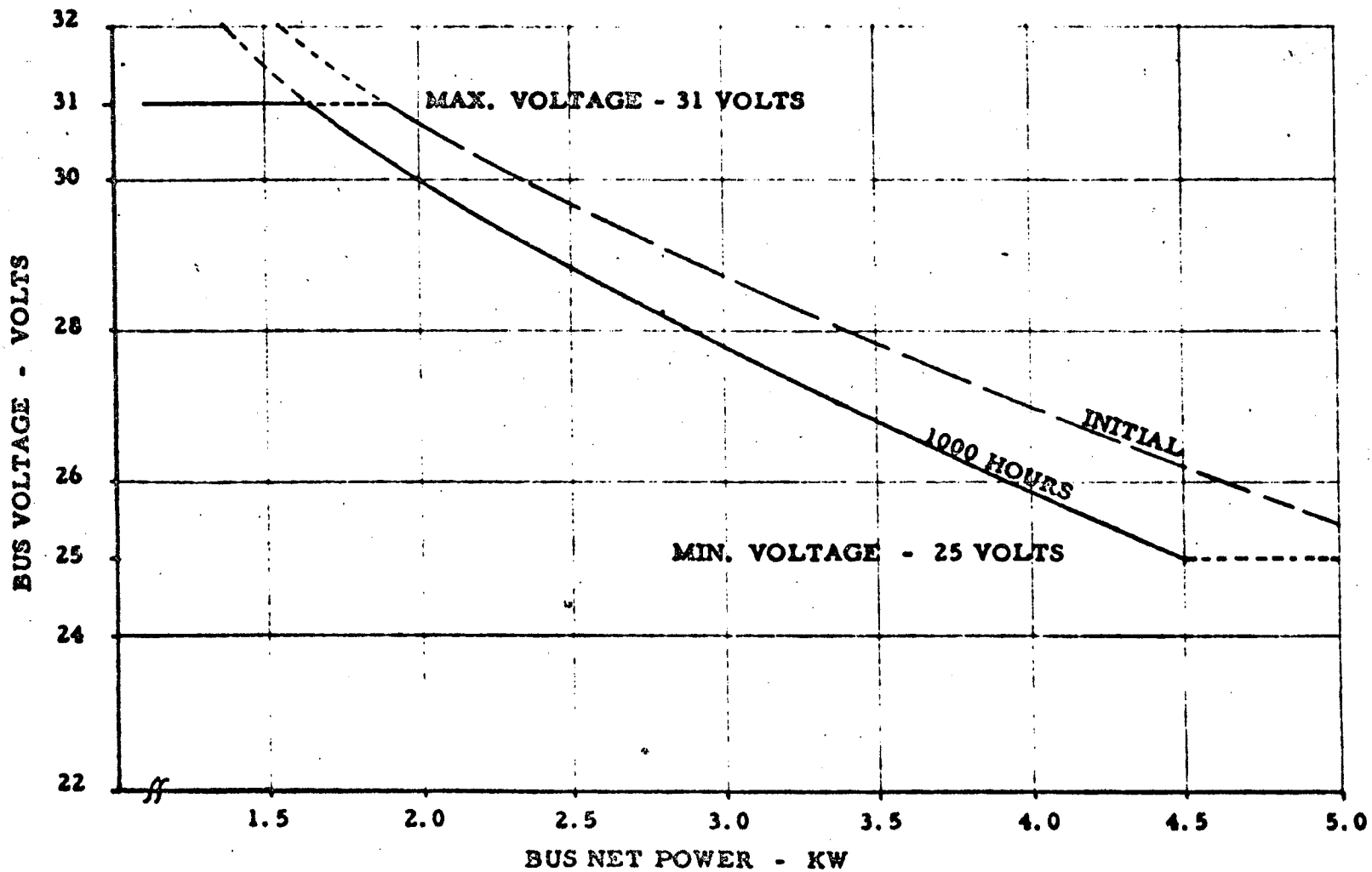
- TWO 14 AND TWO 0.3 KW PS
- 30 DAY CAPACITY

~~SECRET~~ SPECIAL HANDLING

WHS-181
Page 3

MOL FUEL CELL ELECTRICAL PERFORMANCE
(INCLUDING TRANSIENTS)

WHS-293
P. 26



~~SECRET~~ SPECIAL HANDLING

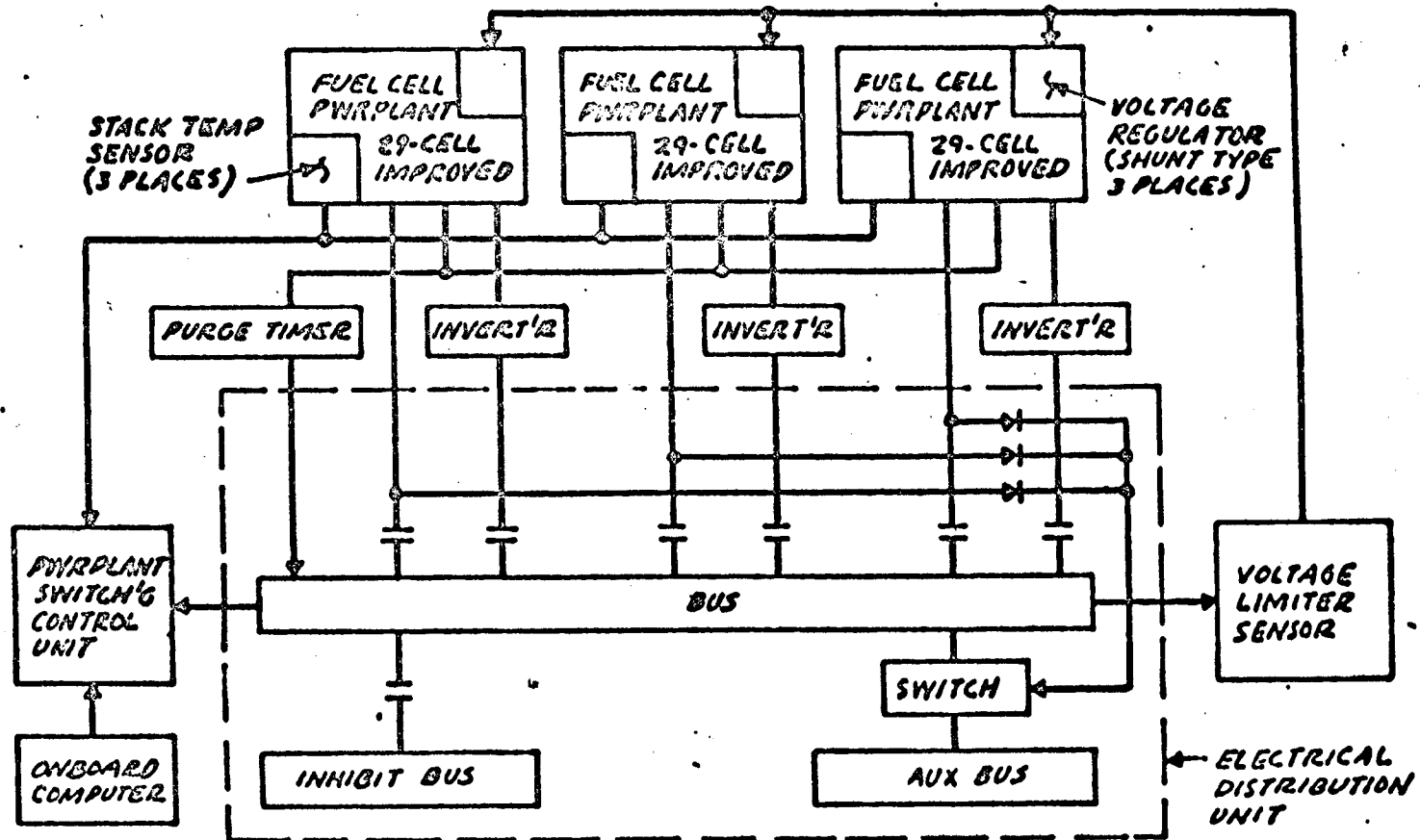
R

FUEL CELL BLOCK DIAGRAM

WHS-293

P. 27

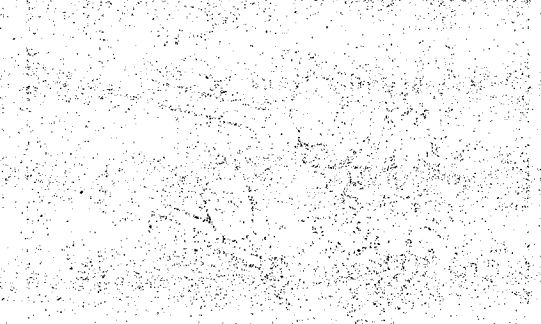
F. S. Temp. Instrumentation



SAMPSON

~~7-2~~
7-2
WHS-293 L
p. 28

AIR/ATMOSPHERE CONTROL



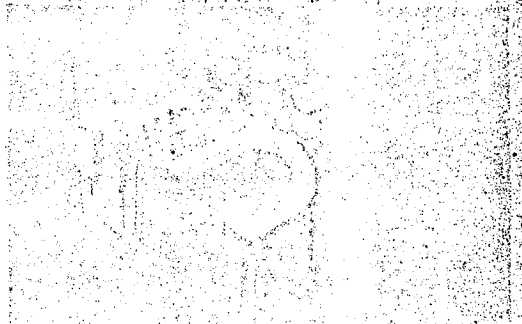
- COM. O₂ ATMO/STORAGE, O₂ BACK-UP
- O₂ IN, "SHORT-CUT"
- O₂ STORAGE
- MOLECULAR SIEVE FOR CO₂ CONTROL
- O₂ COMPARTMENT
- METABOLIZATION
- O₂ CONTROL FOR EMERGENCY

HEAT CONTROL



- HEAT EXCHANGERS & COOLERS
- INSULATED WALL HEATING
- SPACE RADIATOR

WASTE MANAGEMENT

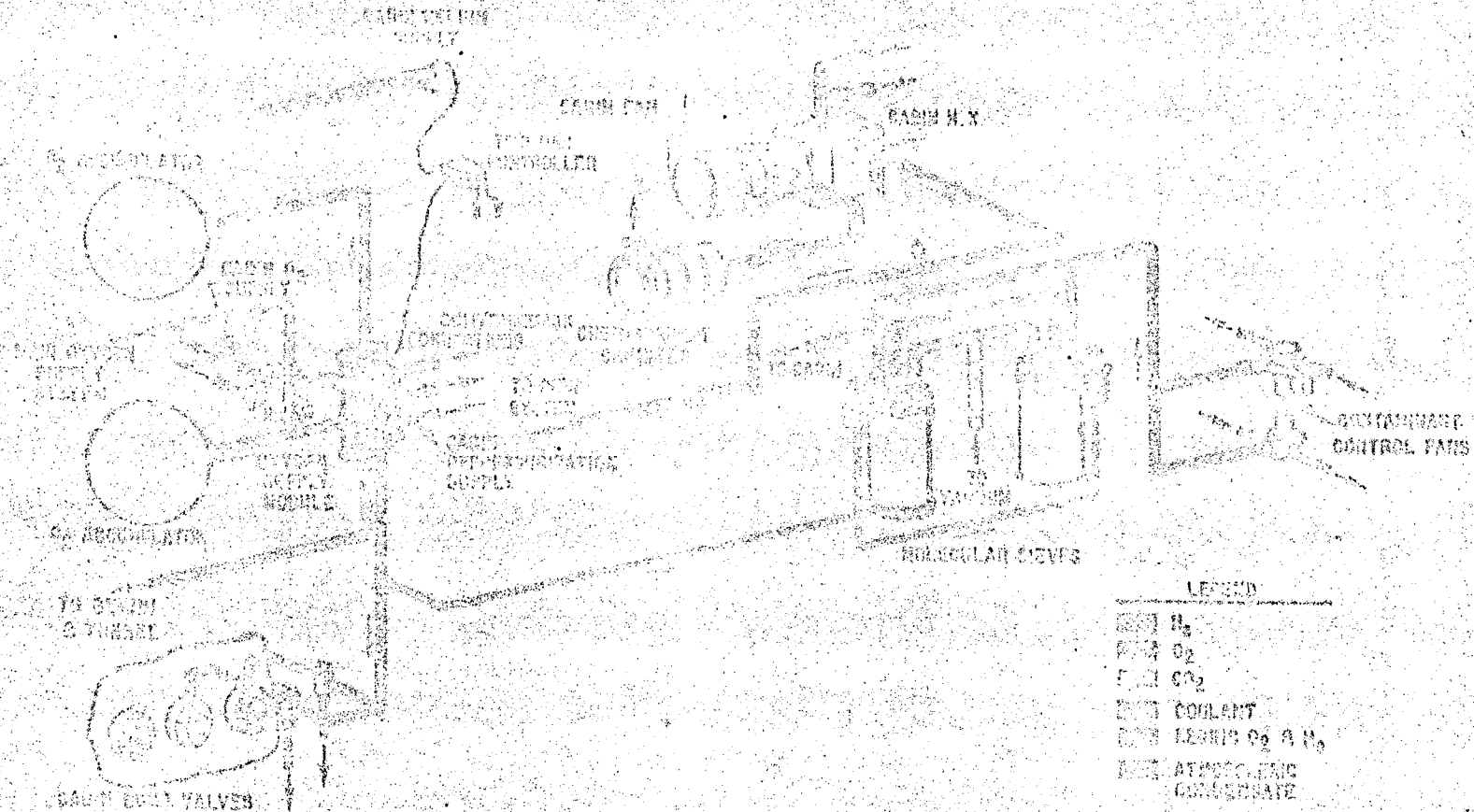


- COLLECT METABOLIC WASTE
- PROCESS & STORE WASTE MATTER
- VACUUM DEBRIS COLLECTION

41

ENVIRONMENTAL CONTROL SYSTEM

WHS-293
p. 29

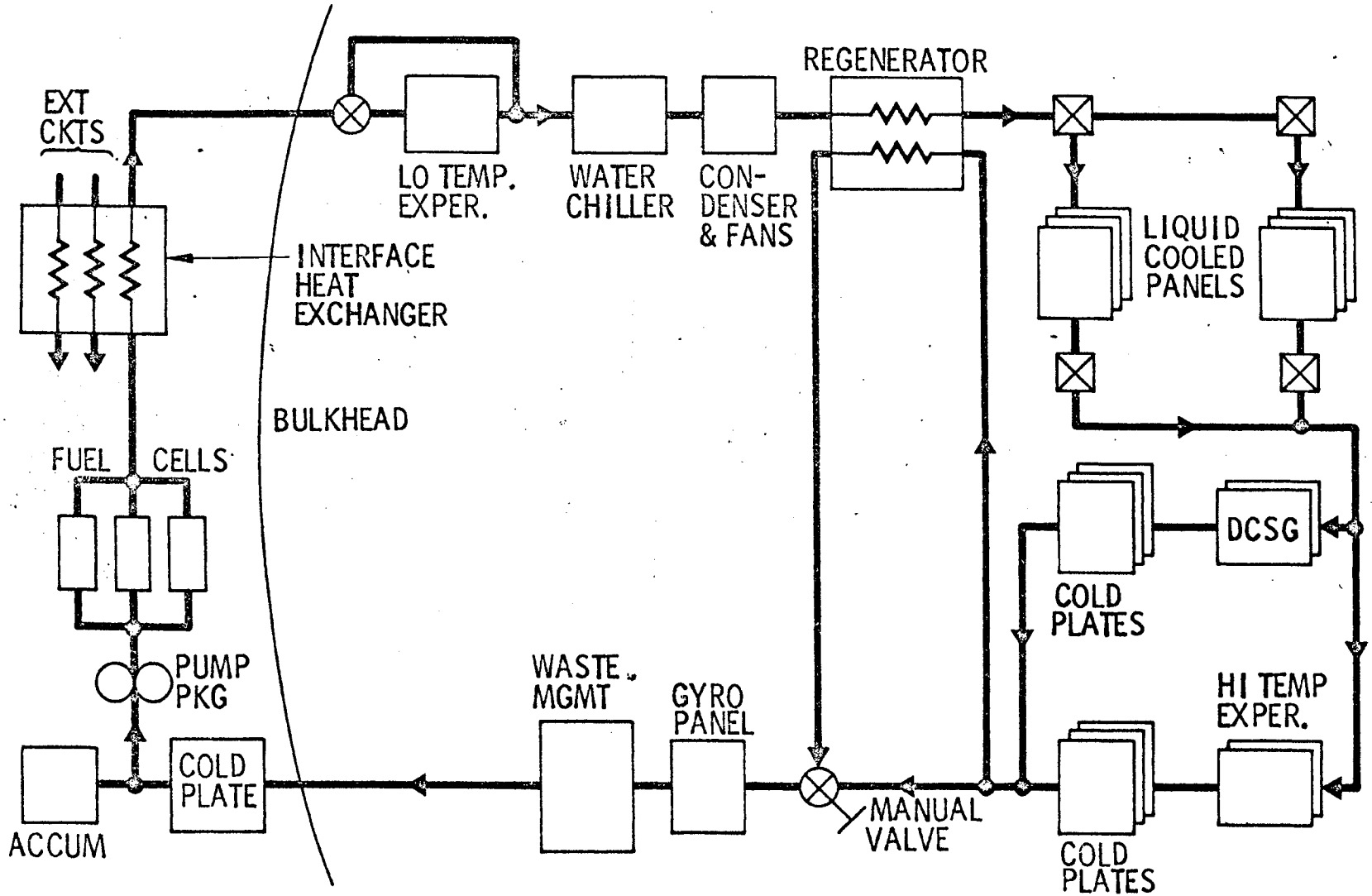


THERMAL CONTROL SUBSYSTEM GROUP

V758-2

INTERNAL CIRCUIT

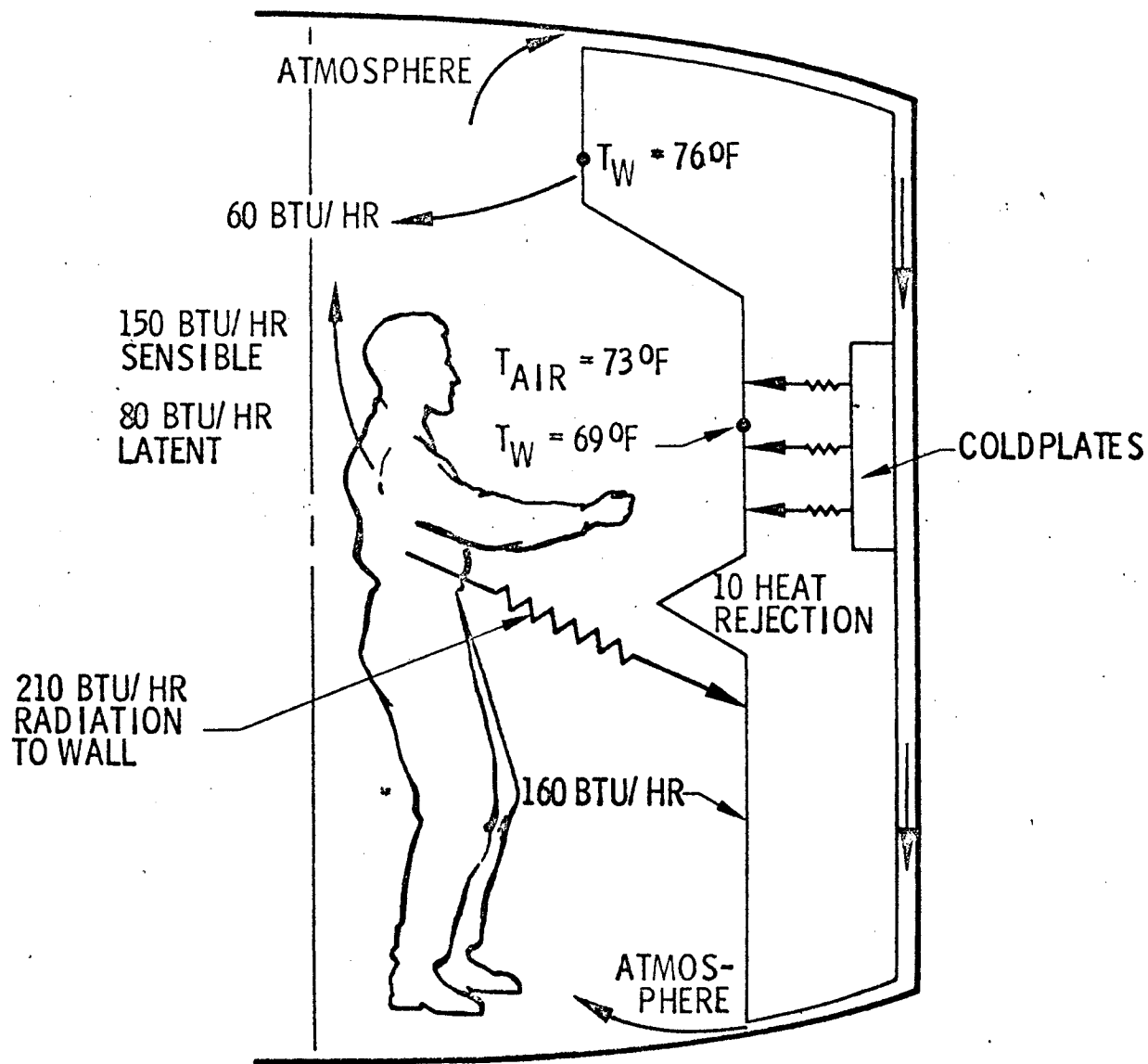
WHS-293
P. 30



COLD WALL METABOLIC BALANCE

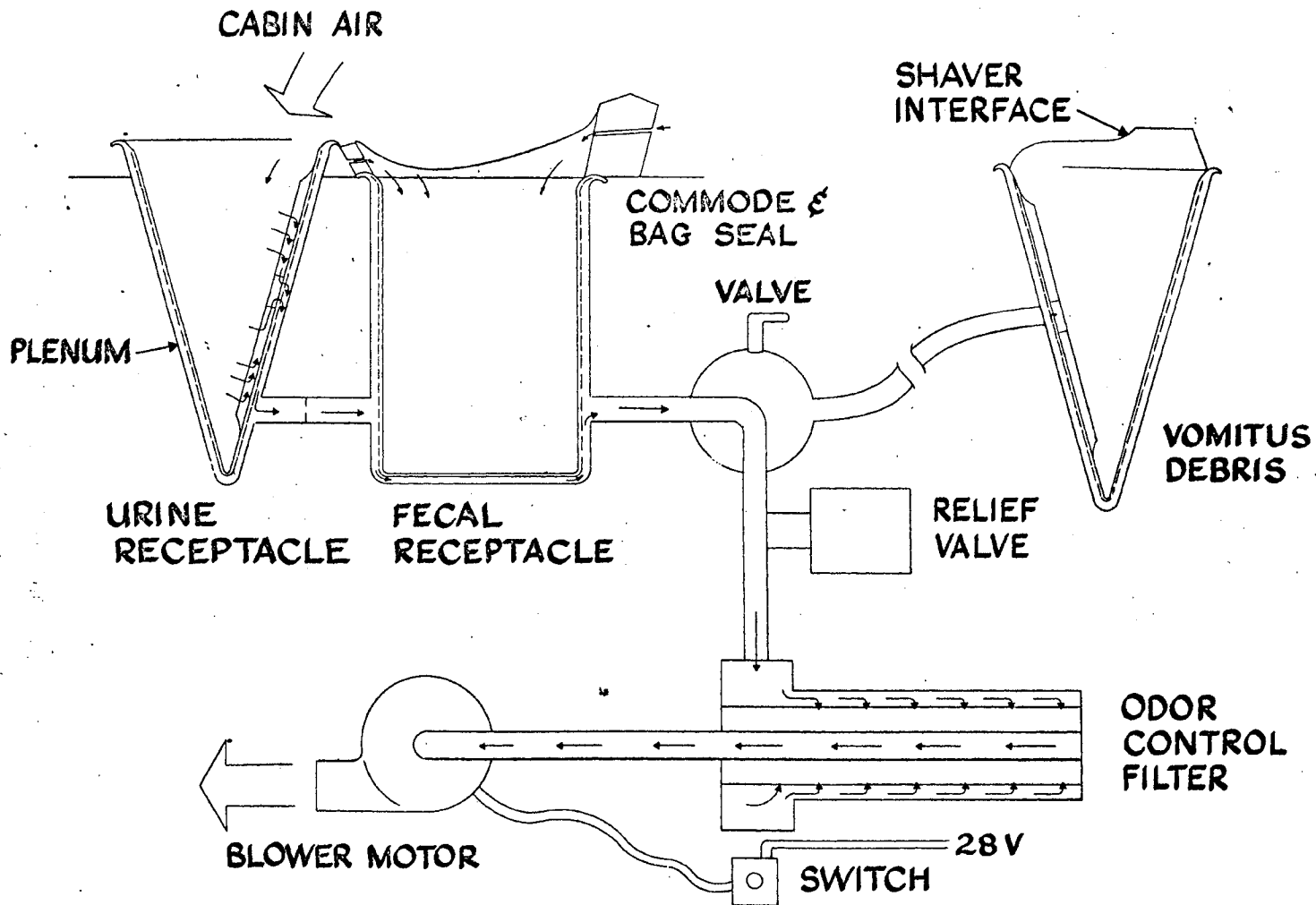
V754-9 B

WHS-293
p. 31



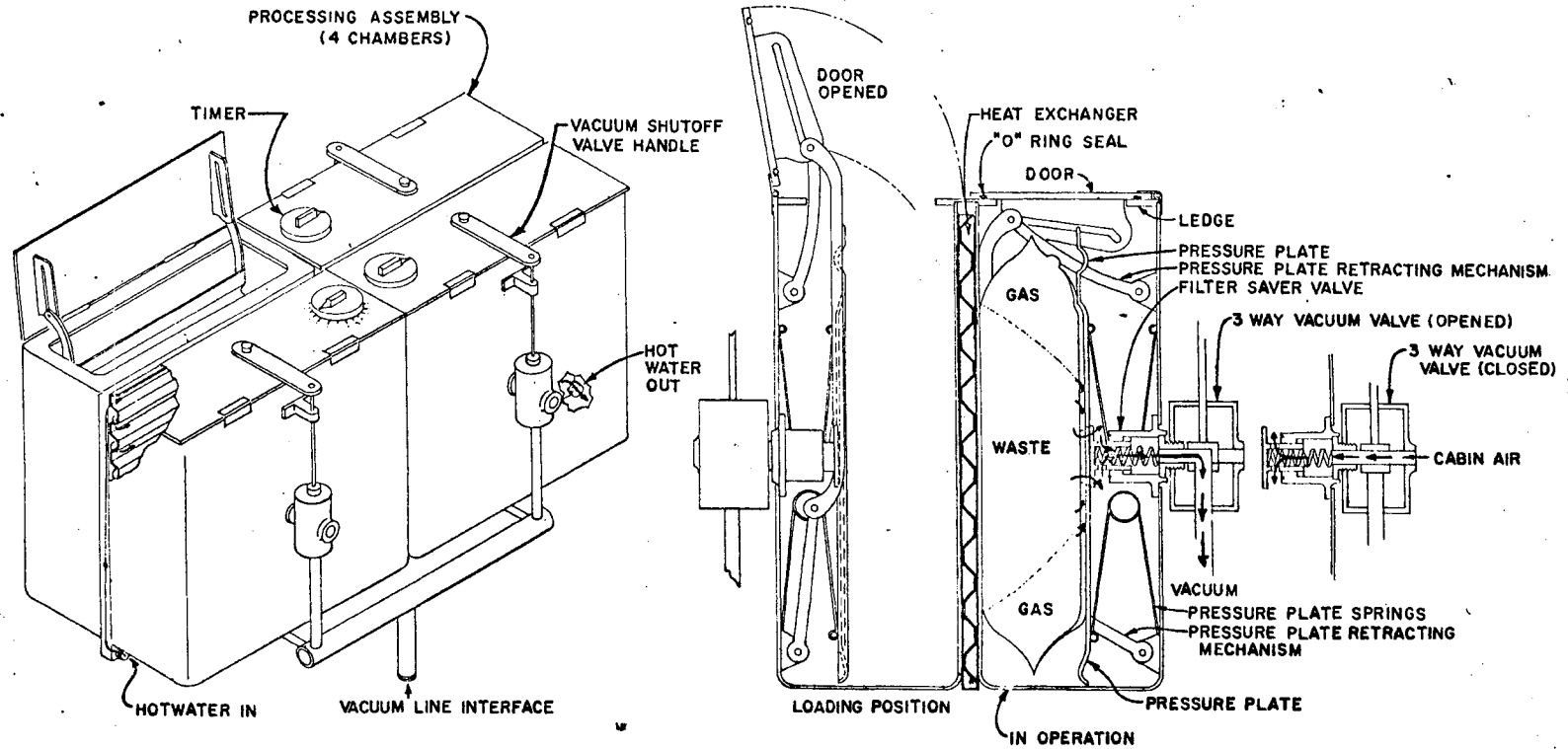
COLLECTION SYSTEM

WHS 293
p. 32



WASTE PROCESSOR UNIT

WHS-293
p. 38



SLIDE # 9

No. 9

6 MAR 67

WHS

293

P. 34

TYPICAL A/RSS TANK HEATER AUTOMATIC CONTROL

PRESS
CONTROL

↑
PRESSURE

SUPERCRITICAL PT.

SATURATION LINE

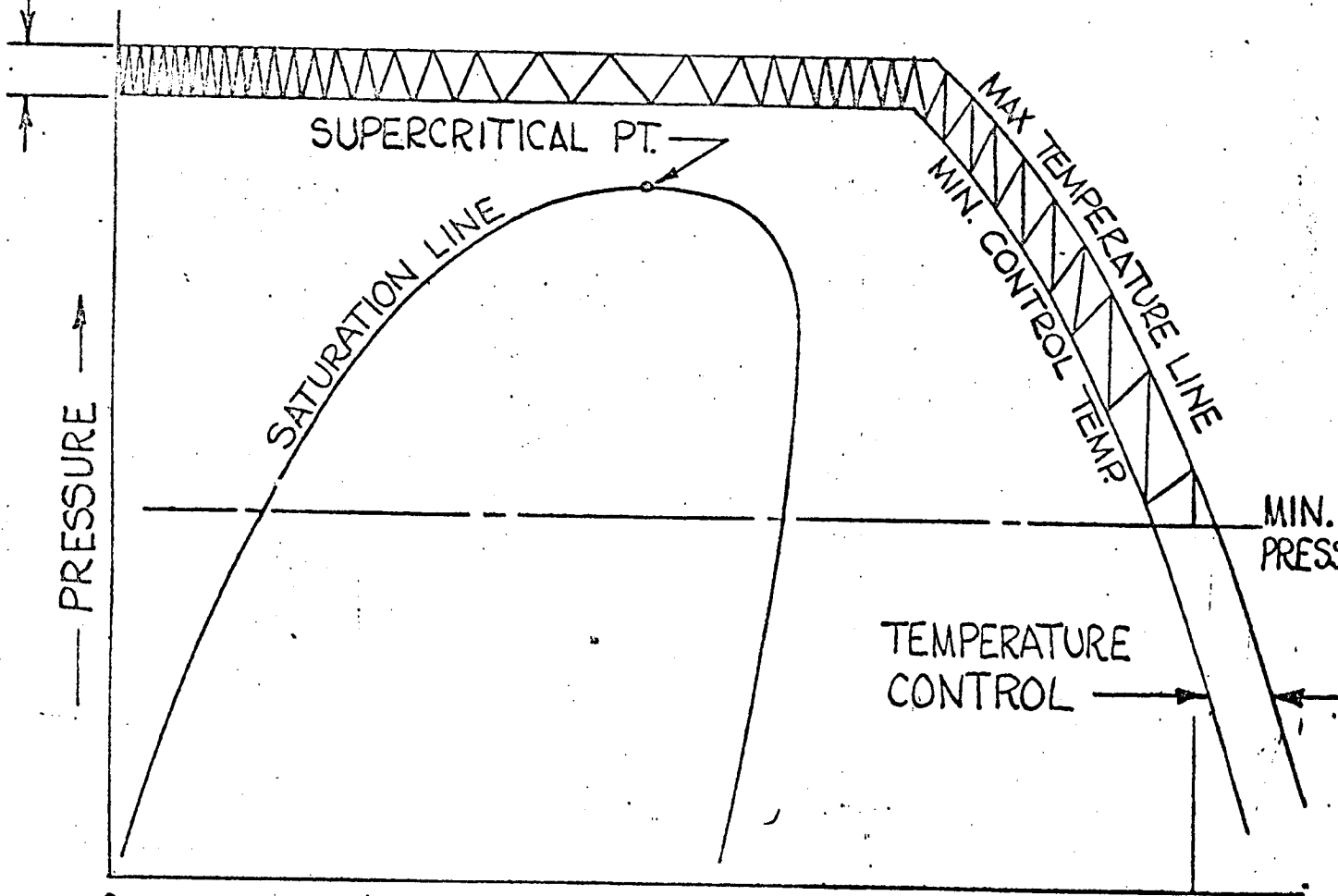
MAX TEMPERATURE LINE
MIN. CONTROL TEMP

MIN.
PRESS.

TEMPERATURE
CONTROL

→ MISSION TIME

END



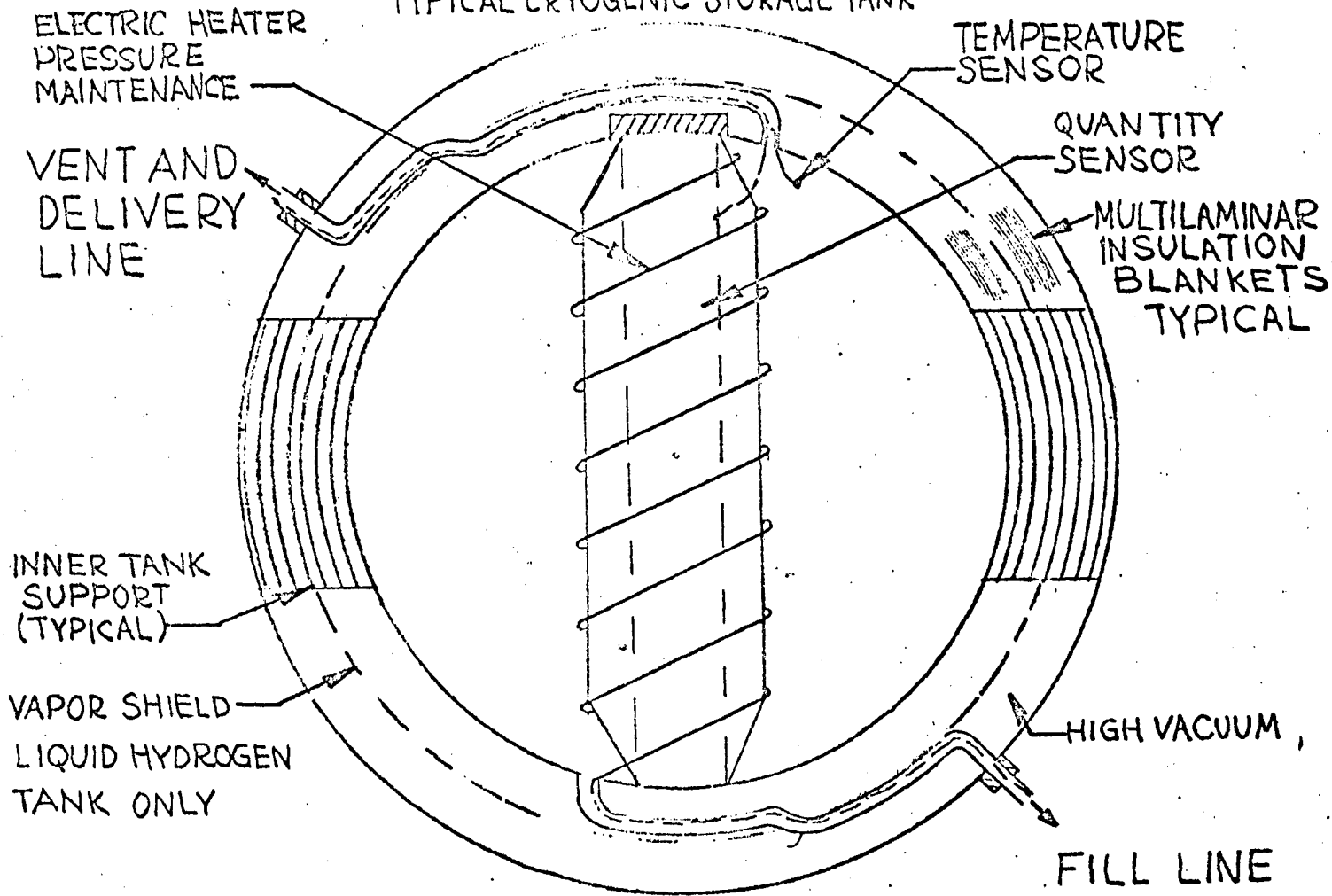
plan, 26

ATMOSPHERE AND REACTANT SUPPLY SUBSYSTEM

#21
6.MAR 67

WHS-293
p. 35

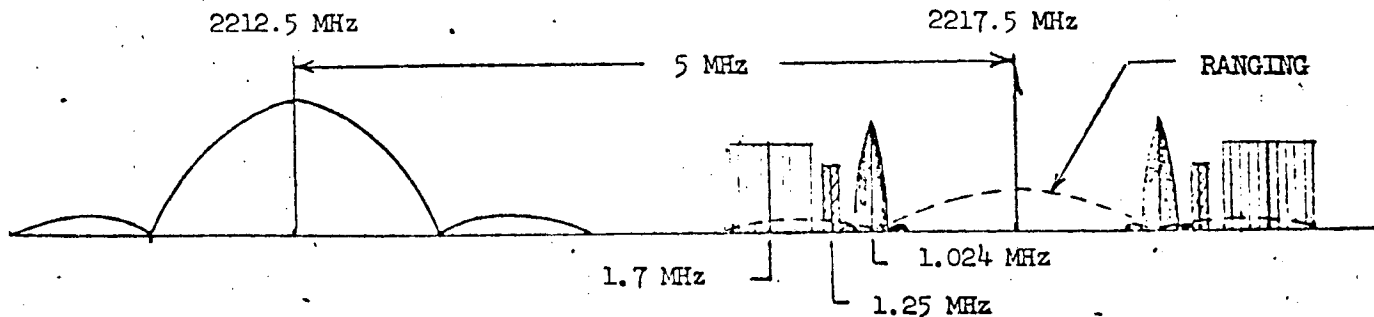
TYPICAL CRYOGENIC STORAGE TANK



MOL

DOWNLINK COMMUNICATIONS CHANNELS

WHS 293
P. 36



NON-COHERENT CARRIER

STORED TELEMETRY (1 MBPS)

- STATUS - LAB/MISSION PAYLOAD
- MISSION PAYLOAD
- BIOMED
- CONTINGENCY

STORED VOICE (1 MBPS)

COHERENT CARRIER

CARRIER

- RANGING
- 1.024 MHz SUBCARRIER
- REAL-TIME PCM TELEMETRY (32 KBPS)

1.25 MHz SUBCARRIER

- LAUNCH - GEMINI (5.12 KBPS)
- ON-ORBIT - VOICE (42.6 KBPS)

1.7 MHz SUBCARRIER

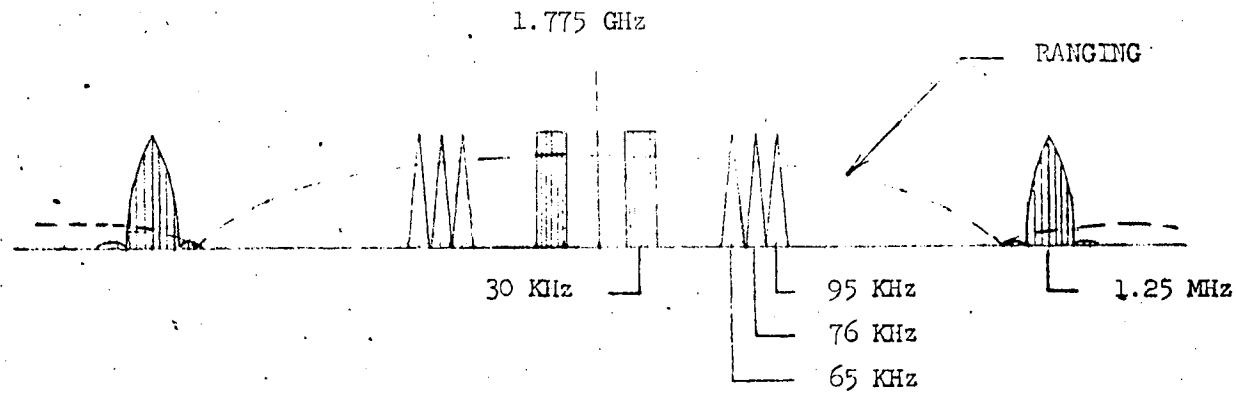
- LAUNCH - ANALOG FM (150 KHz)
- ON-ORBIT - GEMINI (5.12 KBPS)
- HEART RATE (32 KBPS)

LVO-1735 4/5/67

MOL

UPLINK COMMUNICATIONS CHANNELS

WHS 293
p. 37



CARRIER

- RANGING (R, R)

30 KHz SUBCARRIER

- ANALOG VOICE

COMMAND SUBCARRIERS

- 1 Kbps FSK (0, 1, S)

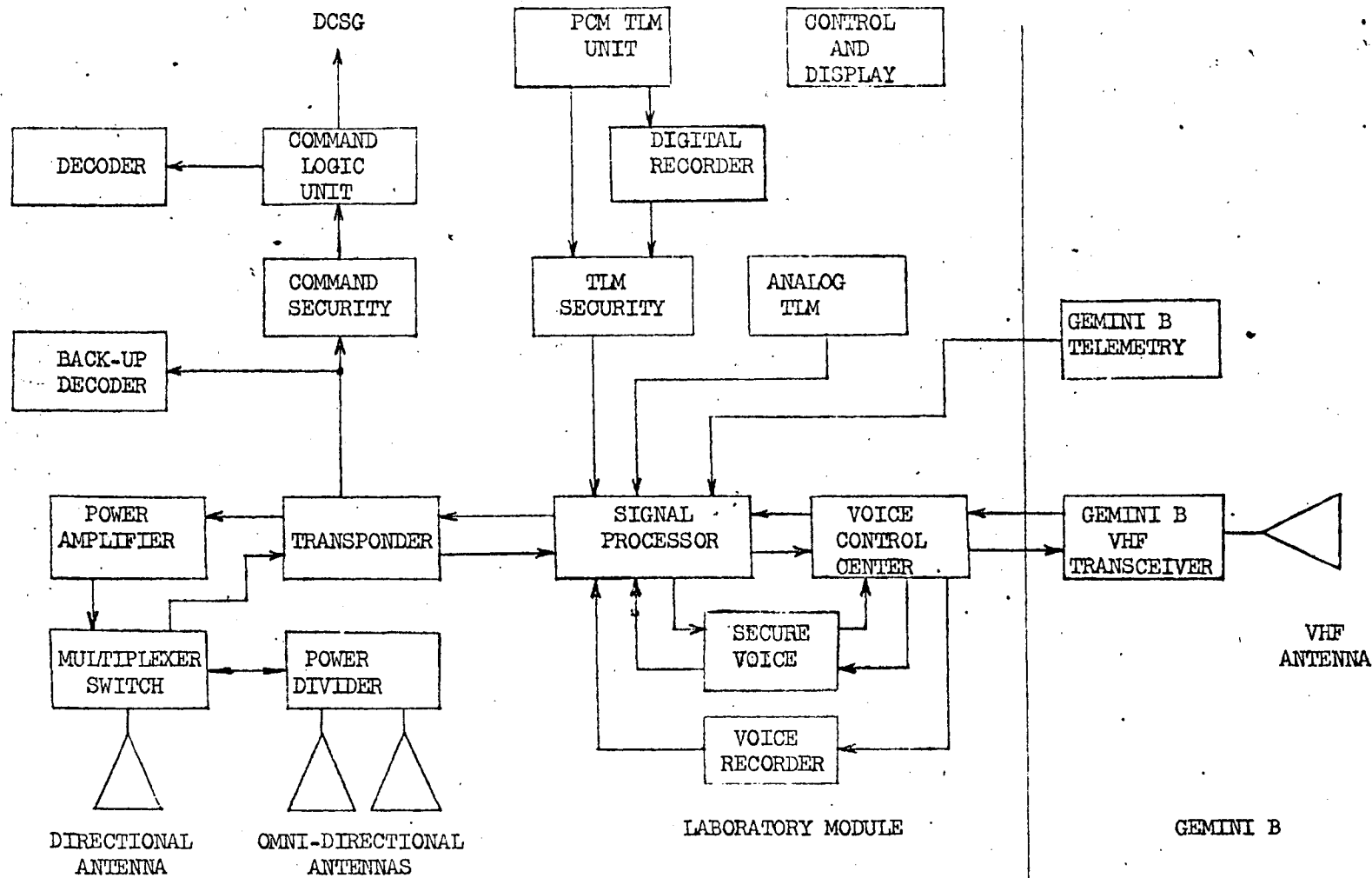
1.25 MHz SUBCARRIER

- DIGITAL VOICE (42.6 Kbps)

MOL

TELEMETRY, TRACKING, COMMAND AND VOICE SUBSYSTEM

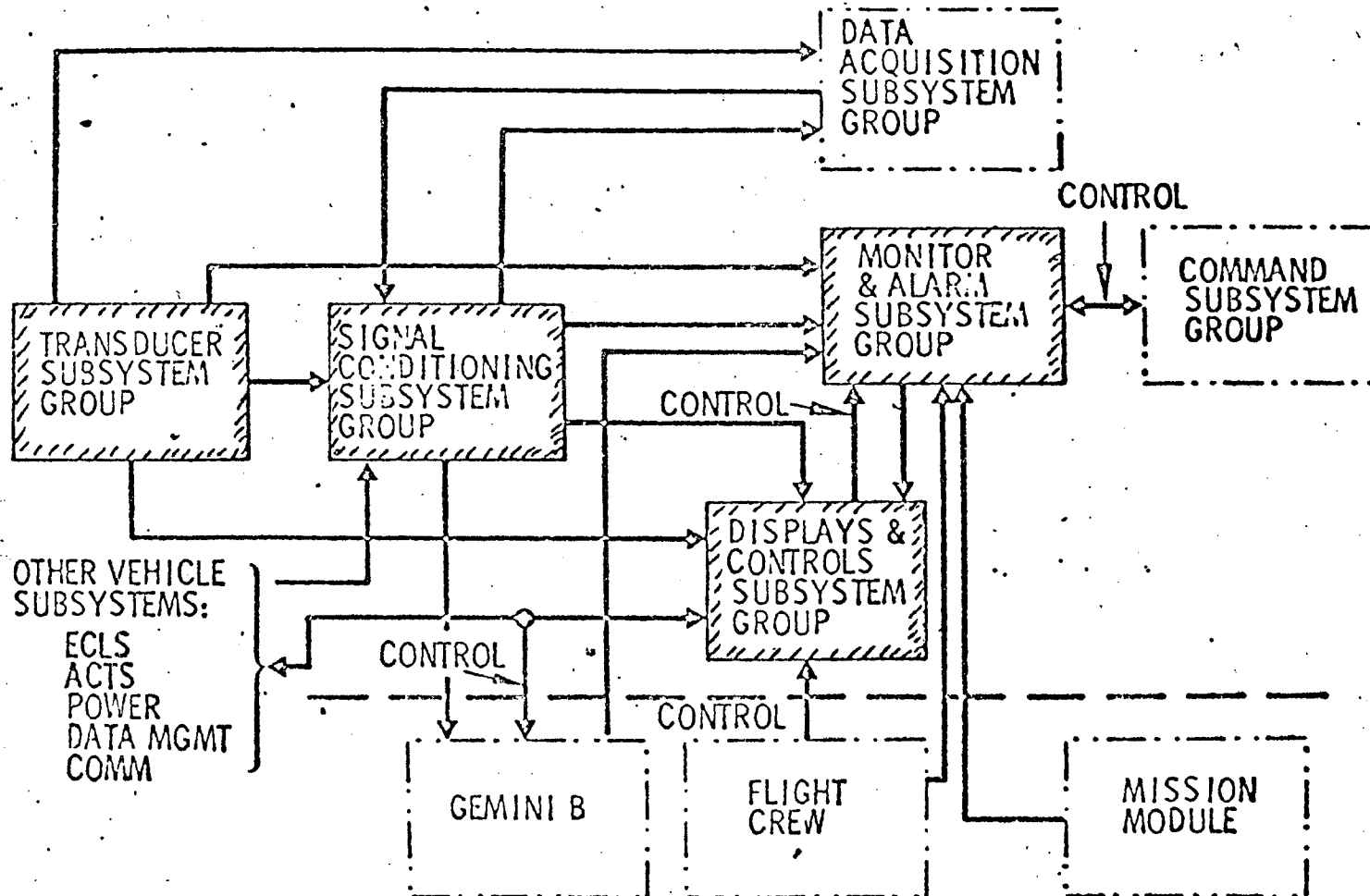
WHS - 293
p. 38



INSTRUMENTATION/DISPLAYS & CONTROLS SUBSYSTEM

V111-7D

WHS-293
P. #039



ALL INTERFACES ARE DATA UNLESS OTHERWISE NOTED

TOTAL MEASUREMENTS PER MISSION FLIGHT

V613-2C

WHS-293
p. 40

LABORATORY MODULE SUBSYSTEMS

MEAS	ACTS/ PROP	ACTS/ SCE	EC/LS	DATA MGMT	INST/ DISPLAYS AND CONT	COMM	POWER	BIO- MEDICAL	GEMINI B	
TEMP	72	-	27	1	-	-	6	2	-	108
PRESSURE	84	-	20	-	-	-	-	-	-8	112
EVENTS	57	21	30	98	-	8	43	-	2	259
QUANTITY	9	-	4	4	-	-	-	-	-	17
CURRENT, FREQ VOLTAGE	-	18	0	2	4	7	11	3	-	45
FLOW	-	-	1	-	-	-	3	-	-	4
RPM	-	-	3	-	-	-	-	-	-	3
ANALYSIS	-	-	1	-	-	-	-	28	-	29
TOTAL	222	39	86	105	4	15	63	33	10	577

WHS-293
p. 47

Pressure Suit Assembly

SECRET

WHS-293

P. 42

NEW LIGHT
SAMPLER STRUCTURE

NEW LIGHT
SAMPLER STRUCTURE

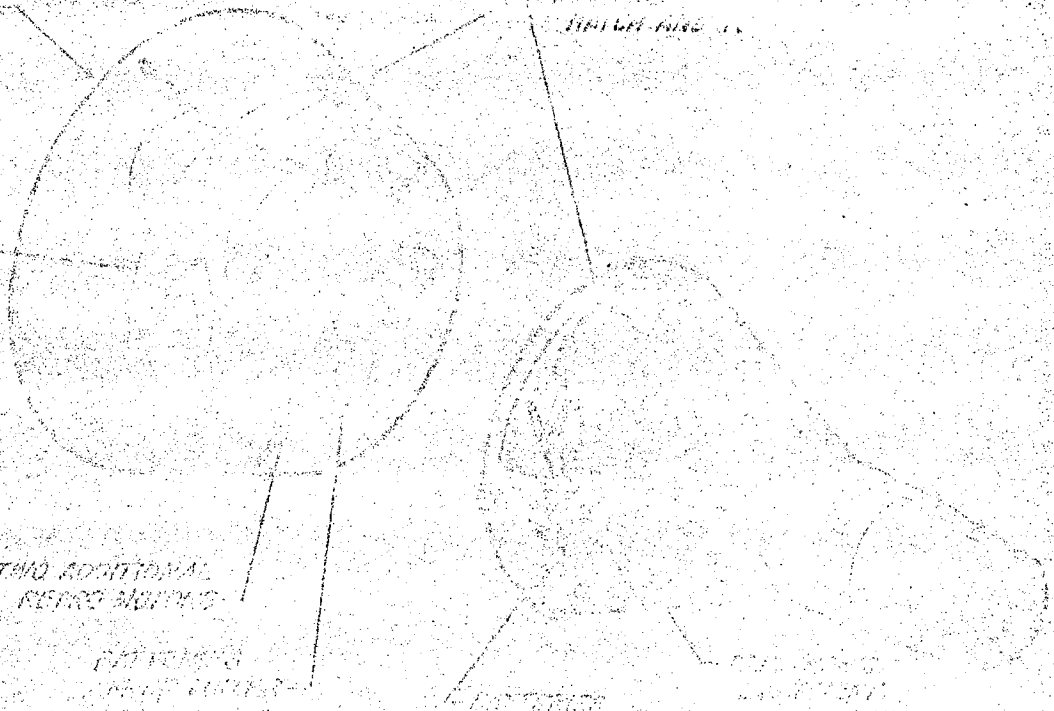
NEW SEPARATION
PLANE

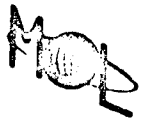
TWO ADDITIONAL
REFRIGERATORS

NEW LIGHT
SAMPLER STRUCTURE

NEW LIGHT
SAMPLER STRUCTURE

NEW LIGHT
SAMPLER STRUCTURE





MAJOR GEMINI B DIFFERENCES FROM NASA GEMINI

WHS- 293
p. 4B

- o ALL NEW ADAPTER - SHORTER - NO RADIATOR - TITANIUM
- o CREW TRANSFER PROVISIONS - HATCHES AND TRANSFER TUNNEL
- o MANEUVERING PROPULSION REMOVED - SEPARATION ROCKETS ADDED
- o SIX RETROROCKETS INSTEAD OF FOUR
- o DOWN RATED EJECTION SEATS
- o BATTERIES INSTEAD OF FUEL CELLS
- o TELEMETRY THROUGH LABORATORY TRANSMITTER
- o MONITORING AND CONTROL OF LABORATORY
- o ORBITAL STORAGE PROVISIONS
- o REVISED BACK UP GUIDANCE CONCEPT
- o ALL GASEOUS OXYGEN SUPPLIES
- o DATA STOWAGE PROVISIONS



GEMINI B ABORT CAPABILITY

WHS- 293
P. 44

MODE C - SPACECRAFT ESCAPE USING SEPARATION ROCKETS WITH NORMAL RETROGRADE, RE-ENTRY AND RECOVERY

MODE D - ABORT INTO ORBIT USING LABORATORY PROPULSION TO PERMIT NORMAL RE-ENTRY AND RECOVERY AT PLANNED SITES

ASCENT

INSERTION

ON ORBIT

t = 488 SECS

t = 464 SECS
(24000 FPS)

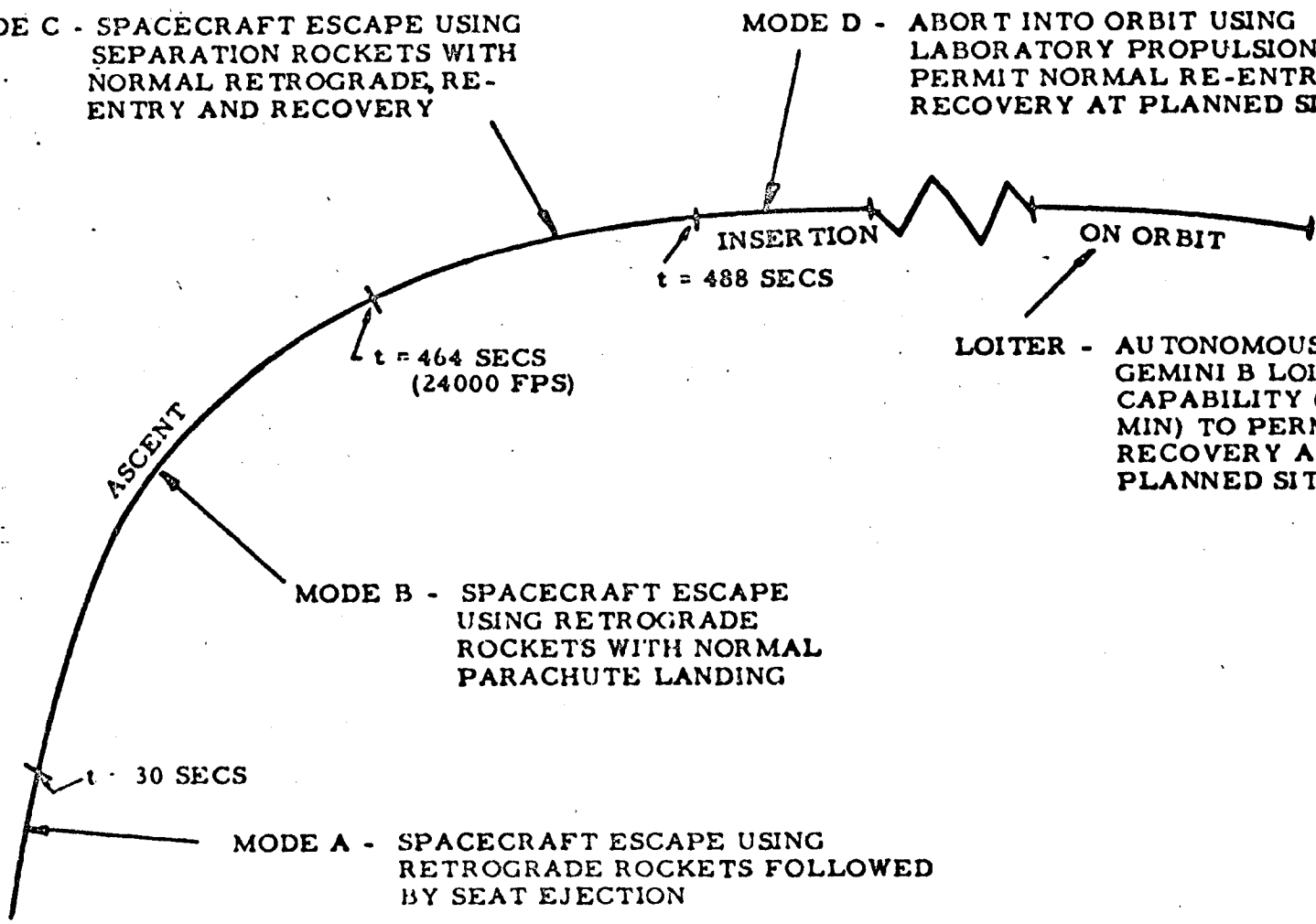
LOITER - AUTONOMOUS GEMINI B LOITER CAPABILITY (14 HRS MIN) TO PERMIT RECOVERY AT PLANNED SITES

MODE B - SPACECRAFT ESCAPE USING RETROGRADE ROCKETS WITH NORMAL PARACHUTE LANDING

t = 30 SECS

MODE A - SPACECRAFT ESCAPE USING RETROGRADE ROCKETS FOLLOWED BY SEAT EJECTION

PAD



T-27

TITAN IIM DESCRIPTION

WHS-293
P. 45

MAJOR FEATURES

- PERFORMANCE
32,000 LBS @ 90°-99/130 N. ML.
- TOTAL THRUST AT LIFTOFF - 3 MILLION POUNDS
- 7 - SEGMENT SOLIDS
- CORE - 3 STAGES
NO TRANSSTAGE
STAGE 1 ENGINES - 15:1 NOZZLE EXPANSION RATIO
- REDUNDANT FLIGHT CONTROL SYSTEM
- BOOSTER INERTIAL GUIDANCE SYSTEM DURING ASCENT
(SICS)
- GEMM INERTIAL GUIDANCE SYSTEM BACKUP
(SICS)

~~D-SECRET SPECIAL HANDLING~~

~~WHS-285~~
~~Page 1 of 2~~

WHS-293
P. 46

ORBITING VEHICLE SYSTEM SEGMENT

WEIGHT SUMMARY - 1 APRIL 1967

	<u>Contr.</u>	<u>SP/DR Weight</u>	<u>Current Weight</u>	<u>Proj. Chg's.</u>	<u>Predicted Weight</u>
<u>GEMINI-B</u>		<u>6,120</u>	<u>6,104</u>	<u>+318</u>	<u>6,422</u>
GEMINI-B SYSTEM SEGMENT	MAC	5,680	5,664	+118	5,982
FLIGHT CREW SYSTEM SEGMENT	SPO	360	360	0	360
PRESSURE SUIT ASSEMBLY SEGMENT	SPO	80	80	0	80
<u>LABORATORY VEHICLE SYSTEM SEGMENT (AVE)</u>	DAC	<u>14,449</u>	<u>14,549</u>	<u>0</u>	<u>14,549</u>
<u>MISSION PAYLOAD SYSTEM SEGMENT</u>		<u>8,622</u>	<u>8,453</u>	<u>+490</u>	<u>8,943</u>
G. E.	GE	2,435	2,476	-117	2,359
E. K.	EK	5,583	5,556	0	5,556
GFE	SPO	441	421	0	421
WIDEBAND READOUT SYS.	---	163	0	+431	431
BIG EYE Δ	---	-----	-----	+176	176
<u>TOTAL</u>		<u>29,191</u>	<u>29,106</u>	<u>+808</u>	<u>29,914</u>

LAUNCH VEHICLE CAPABILITY 32,373 (80° INCL., 80/180 N.M., LAT_p 55° N, WTR, NO YAW STEERING) ($Q_{max} = 930$)

PAYLOAD MARGIN: 2,459

1260
1700
X MAC 1260 1700 740 210

32,373
29,914

~~D-SECRET SPECIAL HANDLING~~

~~D-SECRET~~ SPECIAL HANDLING

~~WHS-285~~
Page 2 of 2

PROJECTED CHANGES

ESTIMATED CONTRACTUAL
WEIGHT CHANGES

WHS-293
P. 48

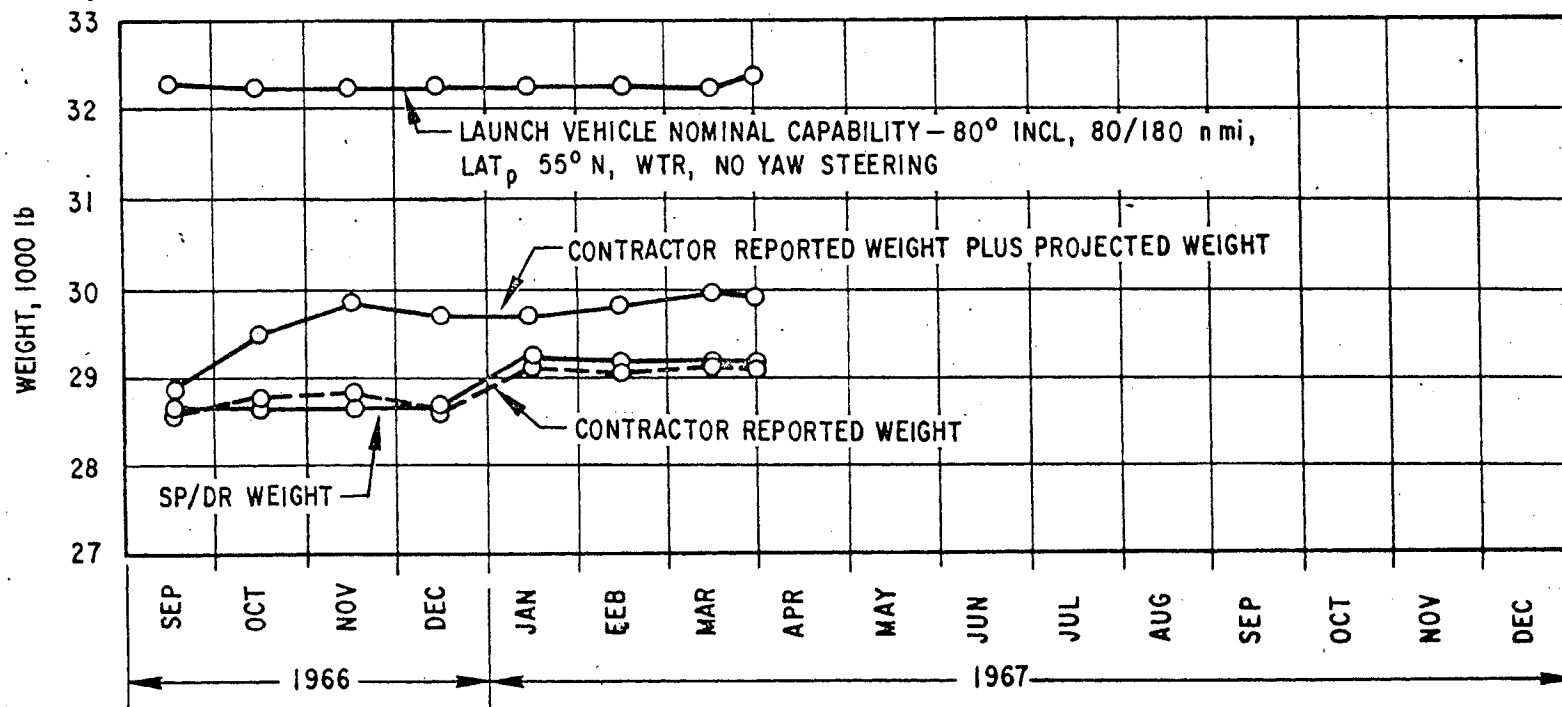
o	GEMINI B		
	PAD ABORT CONTROL SYSTEM	+ 46	
	STRENGTHEN ADAPTER INTERMODULE	+ 14	
	DELETE AGENA DOCKING FITTINGS	- 6	
	REDESIGN RADAR COMPARTMENT COVER	- 3	
	DELETE 400 CPS FREQUENCY SENSOR	- 1	
	BLAST PROTECTION FOR ABORT	<u>+268</u>	
			+318
o	THERMAL DOORS		
	DELETE CURRENT THERMAL DOOR SYSTEM	-388	
	ADD PITCH MASK - STRUCTURE, MASK, MECHANICAL DRIVES, AND ELECTRONICS	+174	
	ADD MIRROR LOUVERS AND MOUNTS	<u>+ 97</u>	
o	W/E		-117
o	WIDEBAND READOUT SYSTEM		
	ADD ANTENNA SYSTEM & ELECTRONICS	+173	
	ADD OPTICAL SYSTEM - CBS	+127	
	ADD STRUCTURAL PROV. & COLD PLATES - DAC	<u>+131</u>	269
	Delete the...	-163	<u>+431</u>
o	ACQUISITION SUBSYSTEM		
	ADD 10" SYSTEM (2)	+496	
	DELETE 5" SYSTEM	<u>-320</u>	
			+176
o	TOTAL PROJECTED CHANGES		+808 466

~~D-SECRET~~ SPECIAL HANDLING



(S-3) FIGURE 1. ORBITING VEHICLE SYSTEM SEGMENT WEIGHT HISTORY

WHS- 293
p. 48

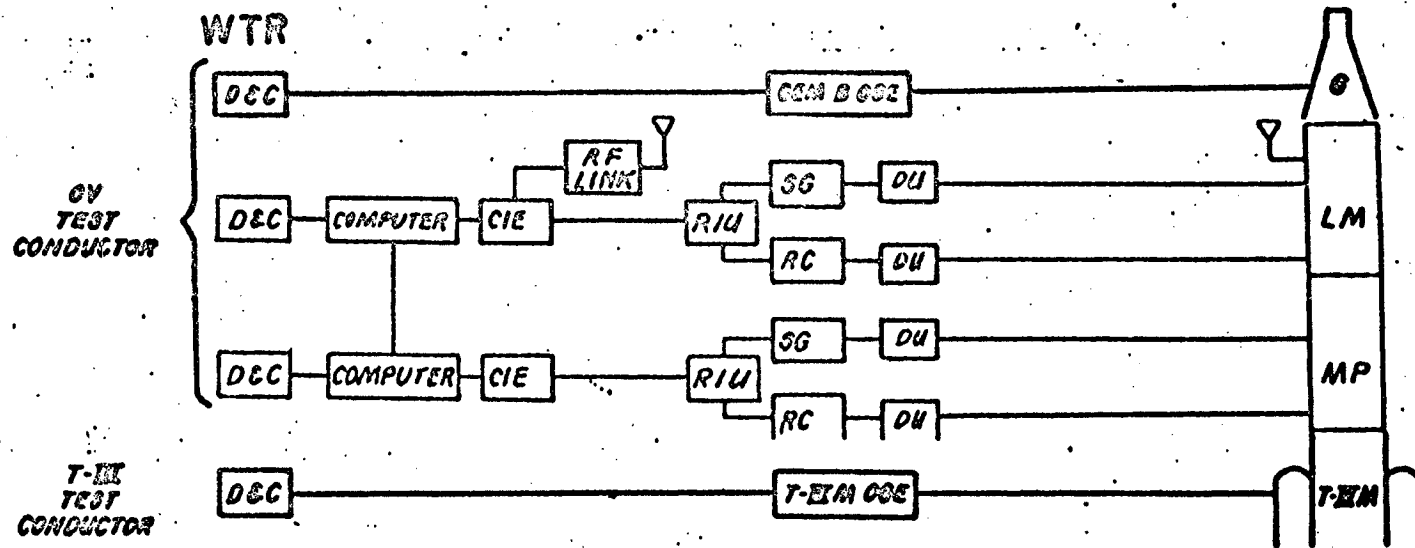


-9-

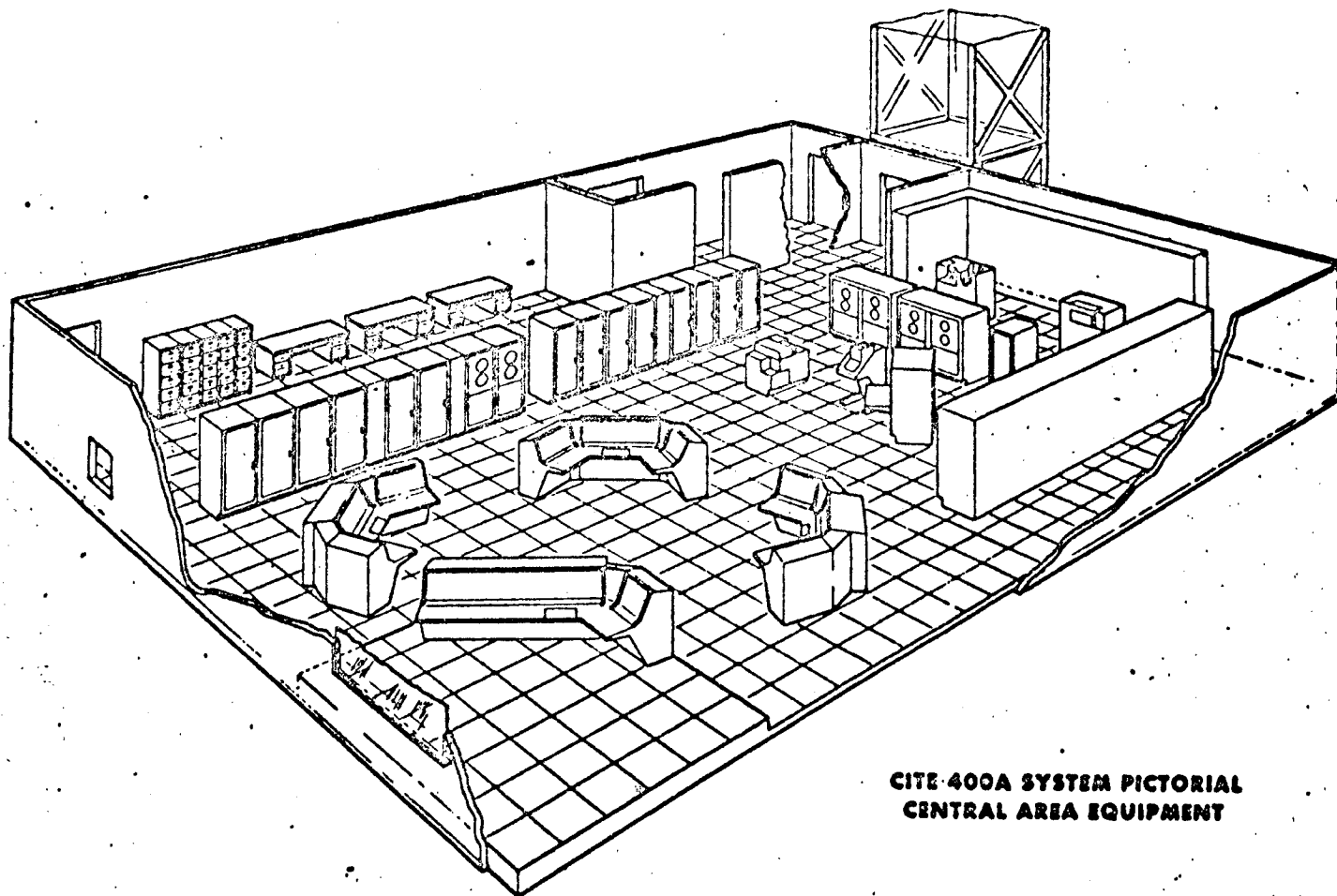
~~SECRET~~

WHS-293
P 49

MOL AGE CONCEPT COMPUTER INTEGRATED LM-MP AGE



WHS-293
p. 50



**CITE 400A SYSTEM PICTORIAL
CENTRAL AREA EQUIPMENT**

HUNTINGTON BEACH AGE INSTALLATION

WHS-293
p. 51

