



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SL-1/SL-2

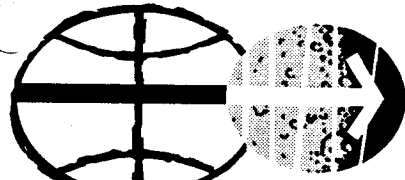
FINAL

SKYLAB FLIGHT PLAN

(MAY 14, 1973 SL-1 LAUNCH)

PREPARED BY

FLIGHT PLANNING BRANCH
CREW PROCEDURES DIVISION



MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FINAL

SKYLAB SL-1/2 FLIGHT PLAN

APRIL 11, 1973

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This document is under the configuration control of the Crew Procedures

FLAG SHEET
SKYLAB FINAL FLIGHT PLAN
SL-1/2

1. Mission requirements utilized for this flight plan were from the following sources:

SL-1/2 Mission Requirements, 1-MRD-001F, Volume 1, dated February 1, 1973.

KW memorandum dated April 1, 1973, subject "SL-1/SL-2 Television Schedule".

Operational DTO's and experiment change requirements pending CCB action were obtained from the MSC Skylab Missions Office.

Headquarters TWX dated 3/27/73 which placed M509 to candidate status and the sixth run of M131-1 to candidate status.

2. In this issue, all mandatory DTO objectives were accomplished and all experiment minimum scheduling requirements were accomplished with the exceptions noted below. Requirements trade-offs are being explored with NASA Headquarters and MSFC and revision A to this flight plan will reflect the results of this activity.

ATM - Approximately 101:30 hours of viewing time was scheduled (105 hours required).

The 101:30 hours does not take into account time required for S020 alignment or T025 attitude hold procedures.

D008 - one of the two required surveys was scheduled (SAA survey scheduled, N. Mag. Pole survey was not scheduled).

M553 - one of the two required wheels was scheduled.

T025 - two of the three required runs were scheduled.

T027/S073 - eleven of the fifteen required scans were scheduled. The early Solar SAL scans were scheduled mid to late mission and the late A-Solar SAL scans were not scheduled.

Refer to Table H-1 for experiment accomplishments.

3. This issue reflects experiment operation times as of March 15, 1973. Since this date, the following experiments have time changes:

<u>EXPERIMENT TITLE</u>	<u>PRESENT FLT PLN</u>	<u>CHANGE</u>	<u>DELTA</u>
M133 ACT	0:30	0:45	+0:15
M133 DEACT	0:30	0:45	+0:15
EREP TAPE XFER	0:20	0:10	-0:10
IMSS-1	0:45	0:40	-0:05
IMSS-2	0:45	1:10	+0:25
ED31 PREP	0:26	1:00	+0:34
ED31 OPS	0:16	0:20	+0:04
ED31 STOW	0:06	0:15	+0:09
ED76 DEP	0:16	0:20	+0:04
ED76 RET2	0:15	0:10	-0:05
M552-1	0:08	0:18	+0:10
M553-2	1:00	0:35	-0:25
S183 OP	0:56	0:15	-0:41

4. Changes to be incorporated into revision A of the Final Flight Plan are as follows:

ATM - the NRL CALROC Launch date may be switched to June 4, 5 or 7.

EREP - VTS TV setup will be performed during EREP prep. In this issue, setup is performed separately on some passes.

M131 - changes are being initiated to switch the -1 and -2 runs scheduled on days 140 and 141.

M131-2 - a change is being initiated to not allow concurrent performance of M131-2 and PT (physical training).

S183 - this issue schedules a crewman for the entire night period on eight of the nine passes. S183 may run unattended on all night passes and this mode will be used in the revision.

5. Section 3 of this flight plan contains detail timelines for rendezvous, activation, entry simulation, entry minus seven checks, deactivation and entry. Detail timelines of the orbital phase will not be issued.

B

A

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NOMENCLATURE

A
 AA
 ACN
 ACT
 AE
 AGO
 AID
 AL
 ALSA
 AM
 AME
 AMRV
 AMS
 AMU
 AOS
 APCS
 ASC
 ASMU
 A-SOL SAL
 ATM
 ATMDC
 ATT
 AZ

 β (Beta)
 BATT
 B&W
 BDA
 BET
 BIOP
 BMAG
 BMD
 BP
 BPMS
 BPSS
 BTMS

 CALI
 CB
 CCU
 CCW
 C&D

Orbital Assembly,
 Crew Station (Airlock Module Forward
 Lock and Aft Compartment)
 Aerosol Analyzer
 Ascension
 Activation
 Activity Element
 Santiago
 Air Interchange Duct
 Airlock
 Astronaut Life Support Assembly
 Airlock Module
 Astronaut Maneuvering Equipment
 Astronaut Maneuvering Research Vehicle
 Articulate Mirror System
 Astronaut Maneuvering Unit
 Acquisition of Signal
 Attitude and Pointing Control System
 Ascension
 Automatically Stabilized Maneuvering Unit
 Anti-Solar Scientific Airlock
 Apollo Telescope Mount
 Apollo Telescope Mount Digital Computer
 Attitude
 Azimuth

 Minimum angle between the Earth-Sun Line
 and the Vehicle Orbital Plane
 Battery
 Black and White
 Bermuda
 Best Estimate of Trajectory
 Biopack
 Body-Mounted Attitude Gyro
 Body Mass Measurement Device
 Biopack
 Blood Pressure Measuring System
 Biopack Subsystem
 Body Temperature Measuring System

 Calibration
 Circuit Breaker
 Crew Communication Umbilical
 Counter Clockwise
 Control and Display

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NOMENCLATURE (CONT)

CDR
 CDT
 CM
 CMC
 CMD
 CMG
 CMGS
 CMN
 C/O
 COAS
 CRO
 CS
 CSM
 CST
 CSU
 CW
 C&W
 CYI

 D

 DA
 DAC
 DAP
 DAS
 DCS
 DDU
 DEBRF
 DOD
 DOY
 DSE
 D/T
 DTO

 E
 EA
 ECS
 ED
 EEG
 EMOD
 EMU
 EOG
 EOH

Commander
 Central Daylight Time
 Command Module
 Command Module Computer
 Command
 Control Moment Gyro
 Control Moment Gyro Subsystem
 Crewman
 Checkout
 Crewman Optical Alignment Sight
 Carnarvon
 Crew Station
 Command and Service Module
 Central Standard Time
 Cassette Support Unit
 Clockwise
 Caution & Warning
 Grand Canary Island

 Dump
 Crew Station (Orbital Workshop
 Forward Dome)
 Deployment Assembly
 Data Acquisition Camera
 Digital Autopilot
 Digital Address System
 Digital Command System
 Digital Display Unit
 Debrief(ing)
 Department of Defense
 Day of year
 Data Storage Equipment
 Delayed Time
 Detailed Test Objective

 Crew Station (Orbital Workshop Experiment
 Compartment)
 Experiment Assembly
 Environmental Control System
 Educational
 Electroencephalogram
 Erasable Memory Dump
 Extravehicular Mobility Unit
 Electro-oculogram
 Experiment Operations Handbook

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NOMENCLATURE (CONT)

EPCS Experiment Pointing Control Subsystem
 EPS Electrical Power System
 ER Earth Resources
 ERD Experiment Requirements Document
 EREP Earth Resources Experiment Package
 ERG Ergometer
 ESS Experiment Support System
 ETC Earth Terrain Camera
 EVA Extravehicular Activity
 EXP Experiment
 EXT Exterior

F Crew Station (Orbital Workshop Forward Dome)
 FAC Facility
 FAM Familiarization
 FAS Fixed Airlock Shroud
 FCMU Foot Controlled Maneuvering Unit
 FMS Force Measuring System
 FMSC Film Magazine Stowage Container
 FMU Force Measuring Unit
 FMURC Force Measuring Unit Restraint Change
 FO Functional Objective
 FOV Field of View
 FWD Forward

G&N Guidance and Navigation
 GDC Gyro Display Coupler
 GDS Goldstone
 GET Ground Elapsed Time
 GG Gravity Gradient
 GMT Greenwich Mean Time
 GND Ground
 GSE Ground Support Equipment
 GSFC Goddard Space Flight Center
 GWM Guam

H Crew Station (Orbital Workshop Waste Management Compartment)
 HAO High Altitude Observatory
 HAW Hawaii
 HBR High Bit Rate
 HCO Harvard College Observatory
 HD Highly Desirable
 HHMU Hand Held Maneuvering Unit

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NOMENCLATURE (CONT)

HK Housekeeping
 HLAA High Level Audio Amplifier
 HOU Houston
 HPN Heavy Primary Nuclei
 HQ Headquarters
 HRS Hours
 HS Headset, Hardsuit
 HSK Honeysuckle Creek
 HSS Habitability Support System

IG Inner Gimbal
 IMD Inhibit Momentum Dump
 IMC Image Motion Control
 IMSS In-Flight Medical Support System
 IMU Inertial Measuring Unit
 INIT Initiate
 INTEGR Integrity
 IPS Inches Per Second
 IR Infrared
 IRS Inertial Reference System
 ISS Inertial Subsystem
 IU Instrument Unit
 IVA Intravehicular Activity

KM Kilometer
 KSC Kennedy Space Center

LBNP Lower Body Negative Pressure
 LCCU Lightweight Crewman Communications Umbilical
 LCG Liquid Cooled Gasket
 LES Launch Escape System
 LIMS Limb Motion Sensor
 LO Lift-off
 LOS Loss of Signal
 LV Launch Vehicle
 LVMS Leg Volume Measuring System

M Mandatory,
 Crew Station (Multiple Docking Adapter Forward and Aft Compartment)
 Metabolic Activity
 Madrid
 Magazine
 Mission Control Center
 Mission Control Center - Houston

MA
 MAD
 MAG
 MCC
 MCC-H

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NOMENCLATURE (CONT)

MCSS Microscopic Camera Subsystem
MD Mission Day
MDA Multiple Docking Adapter
MD/CSU Motor Drive/Cassette Support Unit
MDT Mass Data Table
MEV Million Electron Volts
MIL Merritt Island
MIN Minute(s)
MOL Molecular
MOPS Mission Operations Planning System
MPF Materials Processing Facility or
Multispectral Photographic Facility
MRD Mission Requirements Document
MS Motion Sensivity
MSC Manned Spacecraft Center
MSFC Marshall Space Flight Center
MSFEB Manned Space Flight Experiment Board
MSS Motion Sickness Susceptibility
MU Measuring Unit

N2 Nitrogen
N/A Not Applicable
NAV Navigation
NC1 First Phasing Maneuver
NCC Corrective Combination Maneuver
NEG Negative
NM Nautical Mile
NOAA National Oceanic and Atmospheric Administration
NPV Non-Propulsive Vent
NRL Naval Research Laboratory
NSR Coelliptic Maneuvers or
Slow Rate Phasing Maneuver

O Observer
O2 Oxygen
OA Orbital Assembly
OBS Operational Biomedical System
ODB Operational Data Book
OG Outer Gimbal
OGI Oculogyral Illusion
OMSF Office of Manned Space Flight
OPS Operations
OTG Otolith Test Goggles
OWS Orbital Workshop

NOMENCLATURE (CONT)

P Crew Station (OWS Plenum Area)
PAD Update Pad
PCM Pulse Code Modulation
PCU Pressure Control Unit
PERF Performance
PGA Pressure Garment Assembly
PGU Propulsion Gas Umbilical
PH Personal Hygiene
PLN Planning
PLT Pilot
PMT Photomultiplier Tube
PNL Panel
POS Position
POTS Precision Optical Tracking System
PRF Pulse Repetition Frequency
PROG Program
PS Payload Shroud
PSI Pounds per Square Inch
PSIA Pounds per Square Inch/Absolute
PSS Propellant Supply Subsystem
PT Physical Training
PWR Power

QTY Quantity

RAD Radiation
RCDR Recorder
RCS Reaction Control System
REF Refrigerator
REV Revolution
ROD Number of Extension Rods on T027/S073
RPM Revolutions Per Minute
R&R Rest and Recreation
RSCP Remote Site Command Processor
RSS or RS Refrigeration Sybsystem
R/T Real Time

S Subject
Crew Station (OWS Sleep Compartment)

SA Spectrograph Assembly
SAA South Atlantic Anomaly
SAL Scientific Airlock
SAS Sample Array System
SC or S/C Spacecraft
SCT Scanning Telescope

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NOMENCLATURE (CONT)

S/D Shutdown
 S/HK Systems Housekeeping
 SHT Shutter
 SI Solar Inertial Attitude
 SIA Speaker Intercom Assembly
 SIB Subject Interface Box
 SL Skylab
 SLM Sound Level Meter Skylab Mission
 SLM/f Sound Level Meter Frequency
 SLOH Skylab Operations Handbook
 SM Service Module
 SMMD Specimen Mass Measurement Device
 SMRD Spin Motor Rotation Detector
 SOL-SAL Solar Scientific Airlock
 SOMA Secondary Oxygen Mask Assembly
 SOP Secondary Oxygen Pack
 SPAN Solar Particle Alert Network
 SPEC Specification(s)
 SPS Samples Per Second, Service Propulsion System
 SPT Scientist Pilot
 S-SAL Solar Scientific Airlock
 ST Stow
 Crew Station (Structural Transition Section)
 STDN Spaceflight Tracking and Data Network (Formerly MSFN - Manned Space Flight Network)
 STS Structural Transition Section
 STU Student
 SU Set Up
 SUS Suit Umbilical System
 SW Switch
 SWS Saturn Workshop
 SXT Sextant
 SYS System
 TACS Thruster Attitude Control Subsystem
 TAL Trash Airlock
 TBD To Be Determined
 TBS To Be Supplied
 TCS Thermal Control System
 TEX Texas
 TGT Target
 TIG Time of Ignition

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NOMENCLATURE (CONT)

TLM or TM Telemetry
 TPF Terminal Phase Final
 TPI Terminal Phase Initiation
 TPM Terminal Phase Midcourse
 TPTR Teleprinter
 TV Television
 UHF Ultra-High Frequency
 UMB Umbilical
 UN Unstow
 UNATTD Unattended
 USB Unified S-Band
 UV Ultraviolet
 VAN Vanguard
 VC ATM Center Work Station
 VCG Vectorcardiogram
 VEL Velometer
 VF Crew Station (FAS Work Station), EVA Bay
 VHF Very High Frequency
 VVOH Vacuum Valve Operating Handle
 VS ATM Sun End Work Station
 VT ATM Sun End Transfer Work Station
 VTS Viewfinder Tracking System
 VX Voice Transmission
 W Crew Station (OWS Wardroom)
 WLC White Light Coronagraph
 W/O Without
 WMC Waste Management Compartment
 WMS Waste Management System
 WR or WRDM XFER Wardroom Transfer
 XFER Transfer
 X-IOP/Z Solar Inertial Attitude, Axis in Orbit Plane
 X-REA X-Ray Event Analyzer
 X-RT X-Ray Telescope
 X-PONDER Transponder
 XUV Extreme Ultraviolet
 Z-LV Z-Local Vertical Attitude
 Z-LV(E) Earth Pointing Attitude
 Z-LV(R) Rendezvous Pointing Attitude
 -Z-SAL Anti-Solar Scientific Airlock
 +Z-SAL Solar Scientific Airlock

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FLIGHT PLAN NOTES
MISSION DESCRIPTION

PARAMETER	MISSION			
	SL-1	SL-2	SL-3	SL-4
CSM Number	--	116	117	118
Launch Vehicle	2 Stage Saturn V	Saturn IB	Saturn IB	Saturn IB
Launch	14 May 73	15 May 73	08 Aug 73	09 Nov 73
Day of Year (DOY)	134	135	220	313
(GMT)	17:30:00	16:59:36	06:42:36	16:54:18
Insertion hp/ha/nm	232.3/233.5	80.9/120.0	81.0/120.1	81.0/121.6
Inclination	50.0	50.0	50.0	50.0
CSM/OWS Docking (GET)	--	07:40:00	08:15:00	07:58:58
Orbital Elements after Docking				
hp/ha, nm		232.2/233.7	231.9/234.9	230.9/237.1
Period, min		93.2	93.2	93.2
Trim #1 (DOY) (GMT)		137 17:40:00 18:25:00	221 18:48:39 19:35:17	315 02:26:19
Trim #2 (DOY) (GMT)		143 12:08:42 12:55:12	238 12:56:07 13:42:51	327 15:32:46
Trim #3 (DOY) (GMT)		159 12:02:01 12:48	258 13:06:58	347 15:46:42
Trim #4 (DOY) (GMT)			272 12:55:54	
Activation Complete SWS (DOY) (GMT)		137 23:00	221 21:00	314 16:20
ATM (C/O) (DOY) (GMT)		138 21:19	224 01:50	317 20:40
EVA (DOY) (GMT)		160 17:00	223 22:00 246 14:45 273 11:00	316 17:40 366 10:15

Table 1-1. Skylab Mission Parameters (Sheet 1 of 2)

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FLIGHT PLAN NOTES
MISSION DESCRIPTION

PARAMETER	MISSION			
	SL-1	SL-2	SL-3	SL-4
Mission Duration	--	28	56	56
Experiment Days	--	21	46	46
Storage Period, Days	--	--	57	37
SWS Deactivation (DOY) Begin (GMT)	--	162 12:50	275 13:00	3 14:45
CSM/SWS (DOY) Undocking (GMT)		163 12:46:55	276 15:07:00	4 19:00
Splashdown (DOY) Time (GMT)		163 17:45 26.94°N 130.09°W	276 20:14:58 25.46°N 62.00°W	4 24:00 28.97°N 160.00°W

Table 1-1. Skylab Mission Parameters (Sheet 2 of 2)

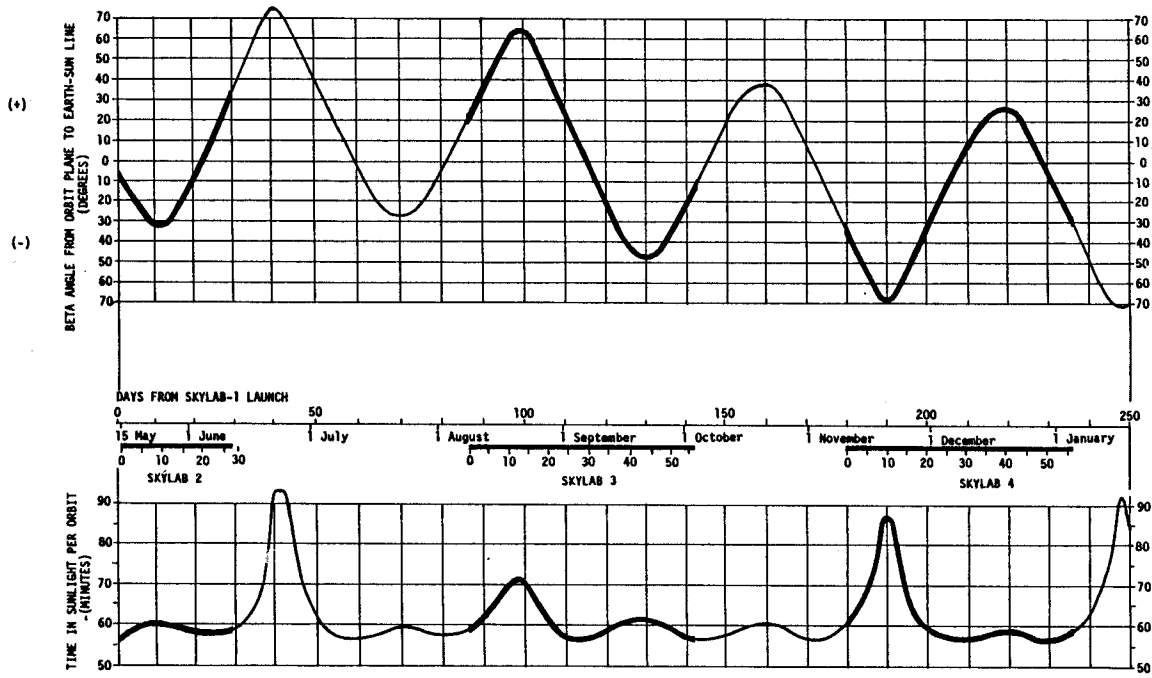
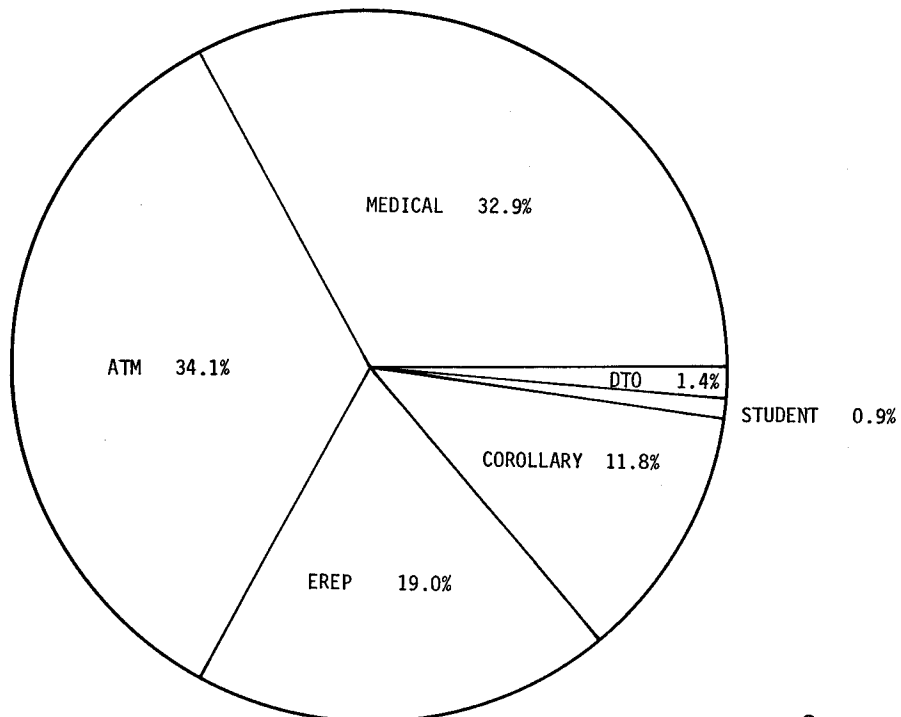


Figure 1-1. Beta Angle History and Sunlight Time

Based on total hours of 490:54
(Includes experiment activation, checkout and deactivation)



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FLIGHT PLAN NOTES
CREW SCHEDULING

A. Crew Scheduling

1. Crew designations for SL-2, SL-3, SL-4 and rescue mission are as follows:

Mission	Designation	Prime	Backup
2	CDR	Conrad	Schweickart
	SPT	Kerwin	Musgrave
	PLT	Weitz	McCandless
3	CDR	Bean	Brand
	SPT	Garriott	Lenoir
	PLT	Lousma	Lind
4	CDR	Carr	Brand
	SPT	Gibson	Lenoir
	PLT	Pogue	Lind

2. The nominal CM couch positions are:

Activity	Left	Center	Right
Launch thru docking	CDR	SPT	PLT
Undocking thru splashdown	CDR	SPT	PLT

3. The crew/garment configurations are delineated as follows:

Activity	Pressurized Hard Suit	Suited Soft Suit	Partial Suit W/O Helmets and Gloves	Shirt Sleeves
Launch		All		
Docking				All
AM/MDA Activation				All*
OVS Activation				All*
Experiment Ops				All
EVA Ops	2 CMN		1 CMN	
M509-3/T020/IVA	1 CMN			2 CMN
Deactivation				All
Undocking & separation		All		
Entry				All

* w/masks if necessary

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FLIGHT PLAN NOTES
CREW SCHEDULING

4. The operational biomedical harness will be worn as follows:

Activity	Crewmen
Launch	ALL
Rendezvous	ALL
Activation	As req'd
Orbital Ops	As req'd
EVA	2 CMN
Deactivation	As req'd
Undocking & Separation	ALL
Deorbit & Entry	ALL

The OBS will not be used for daily monitoring but may be used if changes in crew condition are indicated by experimental biomedical data. The OBS is required for subject during T020/IVA and M509/IVA hard suit operations.

The operational biomedical measurements include electrocardiogram, respiration rate, heart rate, and subject identification.

5. A typical crew day is shown in Figure A-1a; post-sleep and pre-sleep activities are shown in Figures A-1b thru A-1e.

- All crewmen are scheduled for 8 hours of sleep each day.

- The crew duty day is between 08:00 and 18:15 CDT.

- Simultaneous eat periods (07:00, 12:00 and 18:15 Houston time) except for noon meal of crewman performing ATM (does not eat at console).

- Each crewman is scheduled 1/2 hour during duty day for personal hygiene (two 15 minute blocks).

- Housekeeping will be scheduled as follows:

The time required for the Housekeeping activities, as determined pre-mission, plus one hour. (The minimum to be scheduled is 1.5 hours.) The additional hour is not allocated for any specific activity, and is to be available only for real time use, i.e., for trouble-shooting, malfunction procedures, etc.

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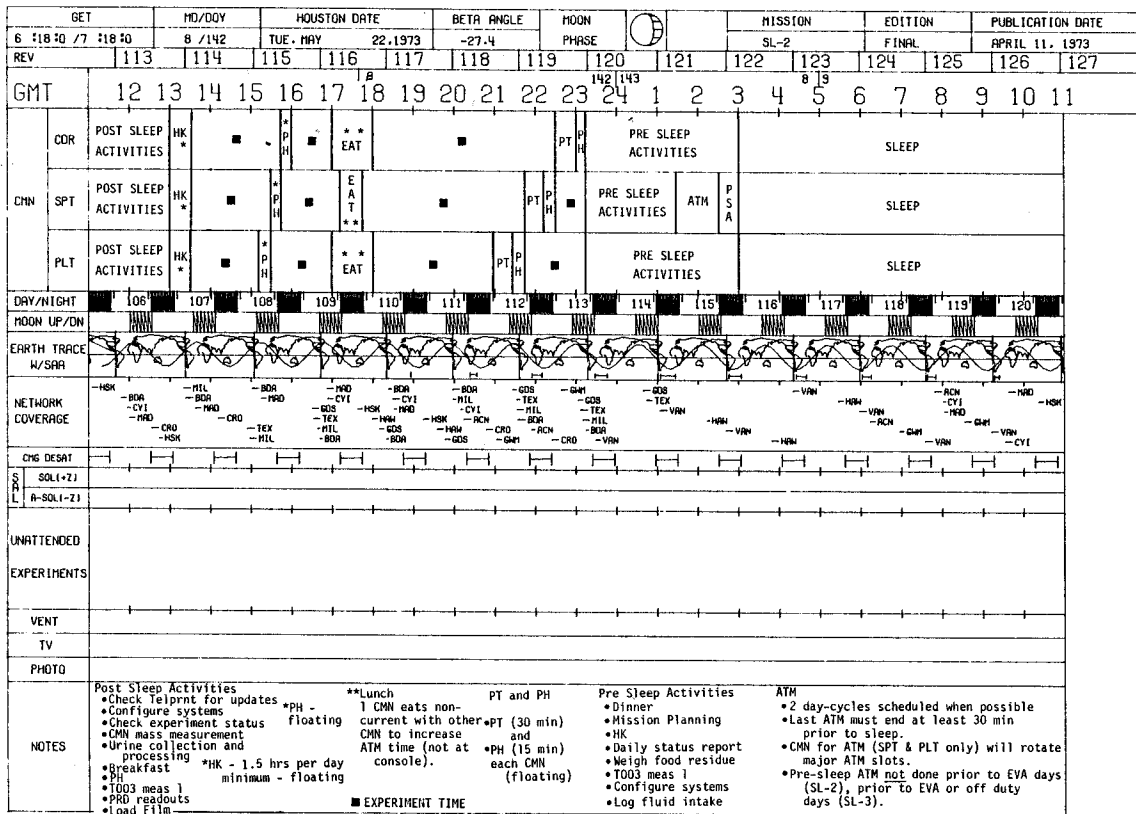
FLIGHT PLAN NOTES
CREW SCHEDULING

- Mission planning and R&R periods prior to crew day off may be used for experiment performance (SL-2 only).
 - Day off every 7 days (+ TBD).
 - Each crewman is scheduled 30 minutes per day for exercise except when the crewman is subject for M171, M509, T020, or EVA.
 - Two crewmen are scheduled for simultaneous mission planning and R&R periods (part of PSA) at the conclusion of each crew day. To increase ATM viewing time, the third crewman (SPT or PLT only) will delete mission planning or R&R period each day (except on the day prior to EVA on SL-2 and on days prior to EVA's and off days on SL-3). Each crewman (SPT and PLT) is limited to one ATM day pass after dinner.
6. Crew days off will be scheduled to avoid impacting EREP passes of primary interest and/or the scheduling constraints levied against the major biomedical experiments.
 7. No crew activities scheduled on day off except system house-keeping, flares (real time), M071, re-entry simulations, debriefings, and crew actions required for experiments S015, S009 and T003.
 8. There is at least one M092/M093 or M092/M171 performance per day with the exception of OFF DUTY days and EVA days.
 9. Each crewman is assumed to be proficient in specific system operations and mission assigned experiments. Specialties as scheduled in the timelines are delineated in Table A-1.
 10. One EVA is scheduled on SL-2, three on SL-3 and two on SL-4.
 - Two crewmen will be fully suited for each EVA. The third crewman (partial hardsuit) will be located forward of the airlock and will perform monitoring as required.
 - No EVA shall be scheduled where longitude of descending node is >-50 degrees and <+60 degrees.
 - Although not a presently identified requirement, scheduling of EVA over the continental United States was attempted to achieve maximum network coverage.

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FLIGHT PLAN NOTES
CREW SCHEDULING

11. Each crewman will weigh any food residue after each meal or during pre-sleep activities. All food residue must be weighed and logged each day.
12. Estimated crew translation times between crew stations are shown in Table A-2.
13. The ATM audible flare alarm in the OWS may be inhibited during sleep with concurrence of the ground.
14. Re-entry simulations are scheduled on each mission for crew review of detailed entry procedures.
15. At the end of each day, a crew status report will be made. This status will include flight plan, stowage, photographic, medical and possible anomalies.
16. ATM crew changes during set up or viewing time require 15 minutes overlap for crew briefings. When crew changes overnight period, the second shift crewman should make an attempt to be at the ATM console sometime during the last day pass of the first shift to observe sun behavior.
17. A private medical conference is scheduled everyday during the presleep activities. The conference will be between a crewman and ground medical personnel.



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Figure A-1a. TYPICAL CREW DAY

FLIGHT PLAN NOTES
CREW SCHEDULING

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TIME (MIN)	CREWMAN 1	CREWMAN 2	CREWMAN 3
5	RECONFIGURE SIA DRESS	RECONFIGURE SIA DRESS	RECONFIGURE SIA DRESS
15	OPEN	PERSONAL HYGIENE URINE SAMPLING (DECAL)	LOG H2O GUN COUNTERS (LEAVE EVENING STATUS REPORT AT THE BMMD) OBTAIN TELEPRINTER PADS ACTIVATE FLARE ALERT
25	T003	URINE DRAWER RE-SUPPLY (DECAL)	
35	PERSONAL HYGIENE URINE SAMPLING (DECAL)	BMMD	
45	URINE DRAWER RESUPPLY (DECAL)		
50	VOICE RECORD PRD'S (3) (LOCATION & READOUT)		
65	MITO	MITO	
70	BMMD		
80			
85	MEAL PREP		
95	EAT	EAT	EAT
150			

Figure A-1c. Typical Post-Sleep Activities with M110*

* Reference SWS Systems Checklist

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FLIGHT PLAN NOTES
CREW SCHEDULING

TIME (MIN)	CREWMAN 1	CREWMAN 2	CREWMAN 3
5	RECONFIGURE SIA DRESS	RECONFIGURE SIA DRESS	RECONFIGURE SIA DRESS
15	PERSONAL HYGIENE	LOG H2O GUN COUNTERS (LEAVE EVENING STATUS REPORT AT THE BMD)	SNACK (W)
25	BMD	OBTAIN TELEPRINTER PADS ACTIVATE FLARE ALERT MOVE SOP/SOMA'S VOICE RECORD PRD'S (3) (LOCATION & READOUT)	PERSONAL HYGIENE
35	SNACK (W)	GENERAL VEHICLE INSPECTION	BMD
45	EREP (VTS)	PERSONAL HYGIENE	EREP
55		BMD (RETURN EVENING STATUS REPORT TO W)	
65		SNACK (W)	
75		URINE SAMPLING (DECAL) URINE DRAWER RESUPPLY (DECAL) (ALL 3 DRAWERS)	
85		URINE SAMPLING (ALL 3 DRAWERS) DUMP URINE BAGS/TAL OPERATION (DECAL)	
95		LOAD FILM CASSETTES	
105		T003	
115		ETC OPERATIONS (PAD)	
145		ETC STOW (IF REQ)	
165			
180	EAT	EAT	EAT
225			

Figure A-1d. Typical Post-Sleep Activities with Early EREP*

1-15 * Reference SWS Systems Checklist

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FLIGHT PLAN NOTES
CREW SCHEDULING

TIME (MIN)	CREWMAN 1	CREWMAN 2	CREWMAN 3	
5	RECONFIGURE SIA DRESS	RECONFIGURE SIA DRESS	RECONFIGURE SIA DRESS	
10	URINATE	URINATE	OBTAIN TELEPRINTER PADS	
15	MOVE SOP/SOMA'S	IMSS-3	ACTIVATE FLARE ALERT	
20	LOG H2O GUN COUNTERS (LEAVE EVENING STATUS REPORT AT THE BMD)		LOAD FILM CASSETTES	
25	VOICE RECORD PRD'S (3) (LOCATION-READOUT)		URINATE	
30				
35				
40	IMSS-3			
45	PERSONAL HYGIENE			IMSS-3
50	URINE SAMPLING (DECAL)			
55	URINE DRAWER RESUPPLY (DECAL)			
60				
65	BMD		PERSONAL HYGIENE	
70			URINE SAMPLING (DECAL)	
75	T003		URINE DRAWER RESUPPLY (DECAL)	
80				
85		PERSONAL HYGIENE	BMD	
90		URINE SAMPLING (DECAL)		
95			DUMP URINE BAGS/TAL OPERATION (DECAL)	
100	MEAL PREP	BMD (RETURN EVENING STATUS REPORT TO W)		
105				
110				
155	EAT	EAT	EAT	

Figure A-1e. Typical Post-Sleep Activities with IMSS

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FLIGHT PLAN NOTES
CREW SCHEDULING

TIME	CREWMAN 1	CREWMAN 2	CREWMAN 3
225			
165	EAT	EAT	EAT
40	EVENING STATUS REPORT	ATM (ONE PASS)	MISSION PLANNING
	MISSION PLANNING	MISSION PLANNING	R&R
	R&R	R&R	ATM (ONE PASS) (VOICE RECORD FILM USAGE - LAST PASS)
30	TELEPRINTER PAPER CARTRIDGE REFILL(4-6) MOISTURE REMOVAL (M,ST) (2-118)	TRASH COLLECTION(W,H) (HK 1A)/TAL OPERATION (DECAL)	ATM UNATTENDED OPS (CUE CARD)
	FUEL CELL PURGE(HK 2 or 4) & SQUEEZER BAG DUMP (HK 3A) (WHEN REQUIRED)	PERFORM T003 STOW LOOSE OBJECTS (OWS) SET HEAT CONTROL CONFIGURE LIGHTS (OWS)* MOVE SOP/SOMA's	FILM IN VAULTS (verify) STOW LOOSE OBJECTS (AM/ MDA) ENABLE ATM STDN CMD (verify) INHIBIT FLARE ALTER CONFIGURE LIGHTS(AM/MDA)
5	UNDRESS CONFIGURE SIA A-SLEEP (OFF DUTY) A-ON, LOW VOL (NIGHT WATCH)	UNDRESS CONFIGURE SIA A-SLEEP (OFF DUTY) A-ON, LOW VOL (NIGHT WATCH)	UNDRESS CONFIGURE SIA A-SLEEP (OFF DUTY) A-ON, LOW VOL (NIGHT WATCH)
0	SLEEP	SLEEP	SLEEP

* OWS - EXP 13 & 14 - on
DOME 7 & 8 - on
MDA - DOME 1 & 3 - on
AM - PNL LTS - on

Figure A-1f. Typical Crew Day Pre-Sleep Activities**

**Reference SNS Systems Checklist

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FLIGHT PLAN NOTES
CREW SCHEDULING

Experiment	SL-2 C S P	SL-3 C S P	SL-4 C S P
Flight Planning AM/MDA/OWS Sys	P P	P P	P P
ATM Exps	P P P	P P P	P P P
ATM SYS	P	P	P
Med Sys	P	P	P
EVA TV Install		P	
M074 (Cal)	B P B	P B	B P B
M110	B P B	P P P	B P
M131-1	P P	P P	
M131-2	P P P	P P P	
M133	P	P	
M151	P P P	P P P	P P P
M172 (Cal)	B P B	P B	B P B
D008	P		
M479			B P
M487	B B P	B B P	B B P
M509	B P	P B	P B
M551	P B		
M552	P P		
M553	P B		
M555	P P		
M555 RCD	P P P		
M516	B B P	P P P	B B P
M518			B P
S009	P B		
S015	P		
S019	B P	B P	B P
S020	B P	B P	B P
S071/72		P	
S073/T027	B P	P P	B P
S063 (Ozone)		P	P
S063 (Twilight)		P B	
S149	B P	B P	B P

P-Prime; B-Backup; C-CDR; S-SPT; P-PLT

Table A-1a. Crewmen Speciality Assignment
(Sheet 1 of 2 Sheets)

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FLIGHT PLAN NOTES
CREW SCHEDULING

Experiment	SL-2		SL-3		SL-4	
	C	S P	C	S P	C	S P
S183	B	P	B	P		P
S228		P		P	P	P
EREP C&D	P	P	P	P	P	P
EREP V/TS	P	P	P	P	P	P
ETC		P		P		P
T002			B	P		P
T003	B	B P	P	P P	B	B P
T013			P	B	P	B
T020			P	B	P	B
T025	B	P	B	P	B	P
T027	B	P	B	P		
ED23	B	P				
ED26	B	P				
ED31		P				
ED32			P			P
ED41						
ED52			P		P	P P
ED61/62						
ED63			P		P	P P
ED72						
ED74			P			
ED76		P				P
ED78						P P P
Contamination	P	P P P	P	P P P	B	P P P
IMSS	B	P P B	B	P P B	B	P P B
Radiation	P	P P P	P	P P P	P	P P P
CO ₂ Dewpoint	P	P P P				
Temperature	P	P P P				
Water Sample	P					

P-Prime; B-Backup; C-CDR; S-SPT; P-PLT

Table A-1a. Crewmen Speciality Assignment
(Sheet 2 of 2 Sheets)

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FLIGHT PLAN NOTES
CREW SCHEDULING

CREWMAN POSITION DESIGNATIONS FOR EVA				
CREWMAN	SL-2 EVA 1		SL-3 EVA 1	
	NOMINAL ALTERNATE		NOMINAL ALTERNATE	NOMINAL ALTERNATE
CDR	EV1	EV2	EV1/EV2	
SPT	EV2		EV1	EV2
PLT		EV1	EV2	EV1/EV2
CREWMAN	SL-3 EVA 3		SL-4 EVA 1	
	NOMINAL ALTERNATE		NOMINAL ALTERNATE	NOMINAL ALTERNATE
CDR	EV2		EV1/EV2	
SPT		EV1/EV2	EV2	EV1 EV2
PLT	EV1		EV1	EV1

EV1 - Crewman who egresses first and performs operations at the FAS Work Station (VF)

EV2 - Crewman who egresses second, transfers along handrails and performs operations at the Center Work Station (VC) and Sun-end Work Station (VS)

Table A-1b. Crewman Speciality Assignment

FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

Communications and Instrumentation

1. CSM

- a) CSM high bit rate TM with the power amplifier in the low power mode, will be the normal mode of operation.
- b) S071/S072 experiment memory will be dumped by ground command via the CSM real time TM link.
- c) The CSM tape recorder (DSE) will not normally be used to record routine systems data, with the exception of the periods from launch through activation and deorbit through re-entry.
- d) The DSE is required for D008 operations (SL-2 only) for 5 SAA and 1 outer belt pass per day for 14 days and for astronaut operations. The DSE is also required to meet CSM Spectrometer recording requirements in the SAA and outer belt.
- e) All normal cluster voice is via the CSM communication system. The CSM is an integral part of the intercom system and will also be used for downlinking R/T voice on S-band (VHF backup). If VHF is required, antenna switching must be performed by the crew.
- f) Selection of CSM omni antennas is normally under ground control via CSM or AM command systems. Crew selection of antennas is available as backup.
- g) TV ground rules and schedules are presented in note C.2.9, SWS Communications and Instrumentation.

2. SWS

- a) Intercom

Both parallel channels may be used simultaneously and either A or B can be recorded, but only the selected one can be recorded at a time unless the CSM audio stations are bussed together or the AM to CSM call or crew alert command is initiated.

Experiment recording may be effected by crew at recorder control panels 204, 542, and 617 in the STS, OMS forward compartment and OMS experiment compartment. Voice recording

Command Module
Multiple Docking Adapter
Structural Transition Section
Airlock Module
Forward Dome
Forward Compartment
Experiment Compartment
Sleep Compartment
Wardroom

	H	W	S	E	F	D	A	ST	M
CM	2.8	2.8	2.8	2.6	2.3	1.8	1.2	.8	.6
M	2.2	2.2	2.2	2.0	1.7	1.2	.6	.2	
ST	2.0	2.0	2.0	1.8	1.5	1.0	.4		
A	1.6	1.6	1.6	1.4	1.1	.6			
D	1.0	1.0	1.0	.8	.5				
F	.5	.5	.5	.3					
E	.2	.2	.2						
S	.2	.2							
W	.2								

NOTE:

Times are estimated and noted in minutes. These are unnumbered times, i.e. not suited and not carrying equipment.

Table A-2. Translation Times (Estimated)

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FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

can be initiated at AM tunnel Aft lock compartment panel 316 or at any of 13 speaker intercom assemblies which are located as follows:

Location	Crew Station	Panel No.	Location	Crew Station	Panel No.
MDA Forward Compartment	M	102	Wardroom	W	702
MDA Forward Compartment	M	116	WMC	H	801
MDA Aft Compartment	M	131	Sleep Compartment	S	901
OWS Dome	D	401	Sleep Compartment	S	902
OWS Forward Compartment	F	520	Sleep Compartment	S	903
OWS Forward Compartment	F	540			
Experiment Compartment	E	600			
Experiment Compartment	E	627			

The same voice channel is routed to all AM recorders.

Selection of channel for recording is made at the AM control panel 204.

The volume control on each SIA is bypassed by the C&W tones (caution and warning). The C&W HLAA tones are applied directly to the SIA speaker except in the sleep mode. The sleep mode is overridden by AM crew alert or crew call.

b) Teleprinter

Ground command functions will be given priority over teleprinter messages on the data uplink.

The teleprinter will be controlled by ground command.

All ground stations have teleprinter uplink capability.

Detailed information concerning teleprinter message characteristics and specific update formats are found in SKYLAB FLIGHT PLAN UPDATE MESSAGES, MSC, DECEMBER 15, 1972

c) STDN (Spaceflight Tracking and Data Network) ground stations considered for this Skylab flight plan are Ascension, Bermuda, Carnarvon, Goldstone, Grand Canary, Guam, Hawaii, Honeysuckle Creek, Madrid, Merritt Island, Texas, Newfoundland for launch support, and the Vanguard off the coast of South America.

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FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

d) Cluster Data Systems General Information

Table B-1 presents AM and ATM experiment data recording requirements.

Table B-2 presents a summary of which systems and functions are controlled by each cluster command system. Also indicated is whether the crew or ground has primary control over the function for normal mission operations.

Table B-3 presents a summary of the cluster data link by function and frequency for each module data system. Where a function for one module is routed to another module is also indicated (i.e., D/T voice for all cluster modules is down-linked via the AM).

Table B-4 presents a summary of tape recorder characteristics for each cluster data system, EREP and MI33. This information will be used as a baseline for determining recorder utilization to be scheduled in the detailed timeline.

e) Airlock Module Data System

The AM Data Recorders will be utilized as follows:

1. Continuously for the first 7 days.
2. Approximately 10 hours per day, as required, for Experiment Support
3. Approximately 8 hours per day for Operational Systems Support (may be satisfied by Experiment Support recording requirement).

The data recorder will normally be operated by ground command with crew as backup - as will the transmitter operations. The two experiment data recorders will be operated in the record mode by the crew. Dump of these recorders will be by ground command with crew backup.

The AM tape recorders are replaceable in flight.

Subframe 4 recording will be required continuously for the first 4 days and approximately 3 hours/day thereafter.

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FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

The AM Data Recorder is utilized for Radiation Monitoring as required by the MDA Spectrometer and the Van Allen Belt Dosimeter.

AM recording should be limited to two hours to allow dump within a nominal site contact.

The data recorder is prime for voice recording of operational and experiment voice data and is under crew control for voice recording. Voice recording requiring time tags necessitates the simultaneous dump of the PCM track and the voice track to allow time correlation.

Antenna selection is normally made by ground command with crew backup.

f) ATM Data System

ATM recorders may not record or dump simultaneously, however, one recorder may dump while the other records.

The normal operation is for one ATM recorder to be used as the prime recorder, with the second one used one rev per day. The ATM data will be recorded continuously throughout the manned periods.

All ATM recorder dumps, regardless of length of data recorded, will require 5 minutes.

The ATM recorder record and dump functions are normally controlled by ground command, but may be controlled by the crew. If no record or stop command is sent, the recorder will automatically return to the record mode 6 minutes following the dump command.

As no ATM voice recording capability exists, when ATM operations require voice recording, the AM tape recorder must be used.

Cluster operations requiring recording of attitude information necessitates ATM recording.

g) Television

Color TV from the cluster or ATM black and white TV will be transmitted via the CSM FM transmitter. Six portable color camera TV Input Stations are located throughout the cluster as follows:

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FLIGHT PLAN NOTES
COMMUNICATION AND INSTRUMENTATION

MDA, AM, OWS forward dome, OWS forward compartment, OWS experiment compartment, and CSM. There are 13 TV camera locations in the OWS crew quarters are, seven in the OWS forward area, and three in the MDA.

EVA coverage is via the color camera mounted on the S073/T027 extension boom.

Video recording capability exists onboard the vehicle to record up to 30 minutes of color camera or ATM TV. The recorder has a 1 to 1 record/dump ratio with the dump capability only under ground control commands.

TV transmission will nominally be initiated and terminated by ground command.

The flight crew is responsible for ensuring the correct on-board configuration for a TV downlink. This includes the setup of the color camera, selection of the type of video to be downlinked (PORT, ATM MON 1, ATM MON 2), light settings, etc.

The flight crew is prime for initiating and terminating recordings on the SL video tape recorder (VTR). During site AOS periods, however, the crew (at their option), may request that the ground start or stop the VTR via command. A tape rewind is required between VTR record and dump controllable by either the crew or ground command. Rewind/record ratio is 4:1.

TV coverage of rendezvous and docking, formation flight, undocking, experiment operations, workshop tour, housekeeping, EVA, and ATM operations is planned. Additionally, educational TV programs are scheduled.

There are 5 STDN sites with a R/T TV remoting capability, GDS, MIL, TEX, MAD and HSK. Of these 5, only GDS and MIL, and possible TEX for certain special occasions, are planned to be used routinely for R/T TV coverage. Downlinking TV at these sites allows the quickest retrieval times.

The capability exists to record downlinked TV at all STDN sites except NFL.

ATM TV (R/T or VTR) will be remoted to the MCC daily.

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FLIGHT PLAN NOTES
COMMUNICATION AND INSTRUMENTATION

During other than R/T remoted TV ATM data taking passes over the Continental US, ATM will be downlinked to either GDS or MIL for subsequent play back to the MCC.

Should ATM data taking periods not occur over GDS or MIL, the desired video to be downlinked should be recorded on the VTR and dumped at GDS or MIL for playback to MCC.

For scheduling purposes should the VTR be recording at GDS or MIL AOS, the ground will initiate a R/T TV downlink and the recorder may (at the ground's option) be stopped until just prior to LOS, when it will be started again. This procedure will be used to increase the total possible TV coverage time while keeping the amount of VTR dump time to a minimum. VTR recording will not be interrupted in this manner during any other site AOS periods. The VTR requires a 7-1/2 minute (maximum) rewind between record and dump.

Voice recording made on the VTR will be done on audio channel A.

The AM data recorder must be run during VTR operations.

- h) The ground rules that will be used for scheduling ATM and AM recorder utilization are as follows:

The ATM recorder should be dumped every revolution or as required and not exceed 90 minutes of recording time as recorder capability is limited to 90 minutes.

The AM data recorder should be dumped every revolution and not exceed two hours of recording time in order that nominal site contact time is not exceeded.

A minimum acceptable site pass for ATM data dump is considered to be 6 minutes above 3 degrees elevation, because the ATM recorder requires 5 minutes for dump and 1 minute for configuration.

An additional one minute above AM recorder dump time is required at each site pass for configuration & reconfiguration of the AM recorders.

The ATM recorder and AM data recorder are normally under ground command for both record and dump.

The AM experiment recorders are normally under crew control for recording and ground command for dump.

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FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

- i) EREP sensor data will be recorded on the EREP tape recorder. All recording will be 7-1/2 ips except when S192 is required - then recording will be at 60 ips. All EREP recorder utilization is by crew control. Further EREP tape recorder utilization ground rules are TBD.

Voice recording in support of EREP is by utilization of the AM recorders. Attitude data recording requires the ATM recorder.

EREP sensor data are recorded for return of EREP data tapes at the end of each mission.

- j) M133 data are recorded on one of two available recorders reserved for M133 (one parameter requires AM recorder support). Tapes will be returned for post-mission evaluation.

- k) Clocks located within the orbital assembly module are as follows:

Accutron Timer - ATM C&D

DDU - STS

DDU - OWS experiment compartment (ceiling)

GMT Clock - MDA

Digital Clock (elapsed time or time remaining) - STS

4 Portable Timers (time remaining)

GMT clocks are resettable to zero by DCS command or manually by crew. Day count reset is manual by crew only.

SYSTEM/FUNCTION	COMMAND SYSTEM			PRIMARY CONTROL FOR ORBITAL OPS	
	CSM	AM	ATM	CREW	GROUND
CSM					
Antenna Select	X	X (CSM OMNI)			X
Xmitter Operation	X				X
Dump exp. data (S071, S072)	X				X
DSE record & dump	X				X
EPS				X	
ECS				X	
G&N				X	
AM, MDA, OWS					
Antenna Select		X			X
Xmitter Operation		X			X
Data RCDR, record and dump		X			X
Exp tape RCDR 1 & 2, record				X	
Exp tape RCDR 1 & 2, dump					X
Video recorder		X		X	X
Exp S149		X		X	X
EPS		X		X	X
ECS		X		X	X
Voice Record				X	X
Teleprinter		X			X
Refrigeration on/off		X			X
ATM					
Antenna Select		X	X		X
Xmitter Operation		X	X		X
Tape RCDR 1 & 2, record & dump		X	X		X
EPS			X		X
APCS		X (TACS)	X	X	X
Thermal Control System			X	X	X
Experiments				X	X

Table B-2. Ground Command Summary

1-30

FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

Experiment	Date Recorder	Exp 1 Recorder	Exp 2 Recorder	ATM Recorder
M092	D+V	D+(V)	D	D
M093	D+V	D+(V)	D	D
M131	D+V	D+(V)		D
M133*	D			
M171	D+V	D+(V)	D	D
M479	D+V			D
M509	D+V	D+(V)		D
M509 (Suited)	D+V	D+(V)	D	D
M512	D+V			D
S009	D+V			D
S020	D+V			D
S019	D+V			D
S063	D+V			D
S073/T027	D+V	D+(V)	D	D
S149	D+V	D+(V)		D
S183	D+V	D+(V)		D
T002	D+V			D
T013	D+V	D+(V)		D (RT)
T020	D+V			D
T025	D+V			D
T027 (Sample Array)	D			
ATM***	D+V	D+(V)		D
EREPE**	D+V			D
OBS (For EVA)	D+V	D+(V)	D	

D = Data Record V = Voice Record (V) = Backup Voice
 * M133 has own recorder for detailed data.
 ** EREP has own scientific data recorder.
 *** Onboard TV recorder capability exists for recording of ATM or operational video.
 Other experiments not listed may require either log entries or voice annotation requiring data recorder.

Table B-1. Experiment Recording Requirements

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RECORDER CHARACTERISTIC	DATA SYSTEM			TV	EREP	M133	
	CSM		AM				ATM
No. of Recorders	1		3/4 *	2	1/1 *	2	
No of Channels/Recorder	5-PCM/1-VX/8-Spare		1-PCM/1-VX	1-PCM	1	7	
Record Speed (ips)	LBR (1) 3.75	HBR (2) 15	1-7/8	4	12	-	
Dump Speed (ips)	120	15	41-1/4	72	12	7.5/60(4)	
Dump Ratio	32:1	1:1	22:1	18:1	1:1	N/A	
Record Data Rate (KBPS)	1.6	51:2	5.12(3)	4	--	N/A	
Dump Data Rate (KBPS)	51.2	51.2	112.64(3)	72	--	N/A	
Maximum Record Time	120 min.	30 min.	3 hours	90 min.	30	192 min/ 24 min	
Maximum Dump Time	3.75 min.	30 min.	8.2 min.	5 min.	30	N/A	
Data Content	Operational & Exp D008 TM and CSM voice, if required CSM Spectrometer		MDA/AM/OVS Opr. TM, Exp. TM and Cluster VX MDA Spectrometer Van Allen Belt Dosimeter	ATM Opr. and Exp. TM (Including Cluster Pointing)	TV PLUS TV RE- LATED RECORDED VOICE	EREP Sensor scientific & support data	M133 Sensor Data

* Spares
 (1) Low Bit Rate
 (2) High Bit Rate
 (3) Experiments M509, T013 require record and dump data rates of 5.76 and 126.72 KBPS, respectively.
 (4) All EREP recording is at 7.5 ips except when S192 is used-then 60 ips speed is required.
 (5) Rewind required between record and dump; ratio 4:1.

Table B-4. Skylab Recorder Characteristic Summary

FLIGHT PLAN NOTES
COMMUNICATIONS AND INSTRUMENTATION

DATA SYSTEM	DOWNLINK	UPLINK	FREQUENCY (MHZ)
CSM (USB)	R/T TM R/T VX		2287.5 (All cluster R/T VX via CSM)
	D/T TM D/T VX R/T TV D/T TV		2272.5 (Primary D/T VX via AM)
		CMD VX	2106.4 (All cluster R/T VX via CSM)
CSM (VHF)	VX	VX	296.8/259.7
AM (UHF)		CMD (Including Teletypewriter)	450
AM (VHF)	R/T TM D/T TM D/T VX (Emergency VX)		230.4 and 235.0 and 246.3 (All cluster D/T VX normally via AM)
ATM (UHF)		CMD	450
ATM (VHF)	R/T TM D/T TM		231.9 and 237.0 231.9 and/or 237.0

Table B-3. Skylab Data Link Summary

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FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL

C. Guidance, Navigation, and Control

1. CSM

- a) CSM G&N status during docked mode consists of the inertial and optics subsystem powered down and the CMC in standby.
- b) IMU is not aligned periodically during SKYLAB quiescent mode unless operationally required.
- c) Scheduled IMU alignments are shown in Table C-1.
- d) Prior to TPI the SWS lights shall be tracked by COAS. The ground will turn acquisition lights off shortly after sunrise or set the AM timer to shut them off to prevent crew observation of the intense light at short range.

2. Orbital Assembly APCS

- a) APCS Control Modes
 - Standby Mode
 - Solar Inertial Mode
 - Solar Inertial (Experiment Pointing) Mode
 - Z-Local Vertical Mode
 - Attitude Hold (CMG) Mode
- b) The ATMDC is scheduled for navigation and timing update daily, and prior to Z-LV maneuvers.
- c) TACS will be used for momentum management when necessary.
- d) CMG desaturation maneuvers will be inhibited for certain experiments and operations as required based on real time telemetry of vehicle rates.
- e) Figure C-1 illustrates the Skylab dynamic body axis system and CSM docking attitude.

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FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL

- f) Control system gain changes are scheduled at CSM docking to configure the APCS for the docked mode and prior to CSM undocking to reconfigure the APCS for the unmanned mode. These changes are effected by ground command to the ATMDC.
- g) A reference star will be tracked continuously or partly through the orbit on all manned orbits for which ATM and other selected experiments are scheduled. The three specified target stars are Canopus, Archnar, and Alpha Crux. There are no requirements to operate the star tracker during the unmanned portions of the Skylab mission.

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FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL

RENDEZVOUS/ACTIVATION SEQUENCE		
APPROXIMATE GET (HRS)	ALIGNMENT TYPE	PURPOSE/NOTES
0.6	P52 OPT 3	CHECK G-SENSITIVE LAUNCH DRIFTS
IMMEDIATELY FOLLOWING FIRST ALIGNMENT	P52 OPT 2 (TALIGN) USE NORMAL COARSE ALIGN FOLLOWED BY SIGHTING ON TWO STARS	ESTABLISHES RENDEZVOUS REFSMMAT (LVLH AT TPI)
2.3		NC1
2.5	P52 OPT 3	DRIFT CHECK
3.5	P52 OPT 3	DRIFT CHECK AND ALIGNMENT
4.6		NC2
7.7		DOCKING
8.2	P52 OPT 3 TWO STARS	PROVIDES ACCURATE IMU FOR THE ESTABLISHMENT OF THE IMU/ATM MATRIX IN P50 + ANOTHER DRIFT CHECK
8.7	P50 OPT 1 PARTIAL UPDATE USING SUN SENSOR INFORMATION	P50 SHOULD BE PERFORMED WITH VEHICLE UNDER SUN SENSOR CONTROL (I.E., NOT DURING CG DUMP OR IN DARKNESS) - GROUND WILL PROVIDE A TIME TO START IN THIS CASE - RELAY N23 TO GROUND
22.0	P52 OPT 3 TWO STARS	AGAIN PROVIDES AN ACCURATE IMU FOR P50 + DRIFT CHECK AND FOR +X RCS BURNS (IF REQUIRED)
22.4		RCS TRIM PM1 (IF REQUIRED)

Table C-1 - IMU Alignments
(Sheet 1 of 4 Sheets)

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FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL

RENDEZVOUS/ACTIVATION SEQUENCE		
APPROXIMATE GET (HRS)	ALIGNMENT TYPE	PURPOSE/NOTES
22.7	P50 OPT 2 TOTAL UPDATE USING SUN SENSOR + STAR TRACKER DATA	SUN SENSOR CONTROL RQD-- C&D PANEL MUST BE ACTIVATED TO PROVIDE STAR TRACKER DATA (2 CMN RQD) RELAY N23 TO GROUND
22.8	P52 OPT 3 (ATM SUN SENSOR & STAR TRACKER)	SAME RESTRICTIONS AS P52 OPT 2. THIS ALIGNMENT IS PERFORMED AS A FINAL VERIFICATION OF DOCKED ALIGNMENT CAPABILITY. (2 CMN REQ'D) N93 TORQUE ANGLES SHOULD BE APPROXIMATELY ZERO
23.3		RCS TRIM RN1
23.4	G&N PWR-DOWN	

Table C-1 - IMU Alignments
(Sheet 2 of 4 Sheets)

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FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL

PRE-DEORBIT SYSTEMS CHECKS		
GMT	ALIGNMENT TYPE	PURPOSE/NOTES
13:10 14:45	G&N SCS PWR-UP P51 (ATM SUN SENSOR AND STAR TRACKER)	REQUIRES SUN SENSOR CONTROL AND C&D PANEL DATA
NOTE: IF G&N IS POWERED UP LATE (IN DARKNESS) CREW CAN DO P51 (TWO STARS).		
14:55	P52 OPT 1 (SXT) USE NORMAL COARSE ALIGN FOLLOWED BY SIGHTING ON TWO STARS	ALIGNMENT IS TO A PRELIMINARY ENTRY REFSMMAT - 0-180- AT DEORBIT TIG
14:32	P52 OPT 2 (ATM SUN SENSOR AND STAR TRACKER)	REAFFIRM ATM/NB ALIGNMENT
15:25	P52 OPT 3 (SXT)	DRIFT CHECK
16:30	G&N/SCS PWR-DOWN	
CSM QUIESCENT MODE TERMINATE THRU DEORBIT		
APPROX MINUS PET HOURS TO DEORBIT	ALIGNMENT TYPE	PURPOSE/NOTES
10:21	P51 (SXT)	TO DETERMINE THE INERTIAL ORIENTATION OF THE IMU
10:37	P52 OPT 1 NORMAL COARSE ALIGN FOLLOWED BY SIGHTINGS ON TWO STARS	ESTABLISHES FINAL ENTRY ORIENTATION: 0-180-0 AT DEORBIT TIG
15:05	P52 OPT 3	IMU ALIGN
15:44	UNDOCKING	
16:30	RCS SEPARATION	

Table C-1 - IMU Alignments
(Sheet 3 of 4 Sheets)

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FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL
PRE-DEORBIT SYSTEMS CHECKS

GMT	ALIGNMENT TYPE	PURPOSE/NOTES
16:40	IMU CHECK	
16:58	SPS 1 SHAPING	ORBIT SHAPING
18:05	P52 OPT 3	IMU CHECK
18:05	P52 OPT 3	FINAL DEORBIT/ENTRY ALIGNMENT
19:50	IMU CHECK	
20:00	SPS 2 DEORBIT	

Table C-1 - IMU Alignments
(Sheet 4 of 4 Sheets)

FLIGHT PLAN NOTES
ENVIRONMENTAL CONTROL & ELECTRICAL POWER

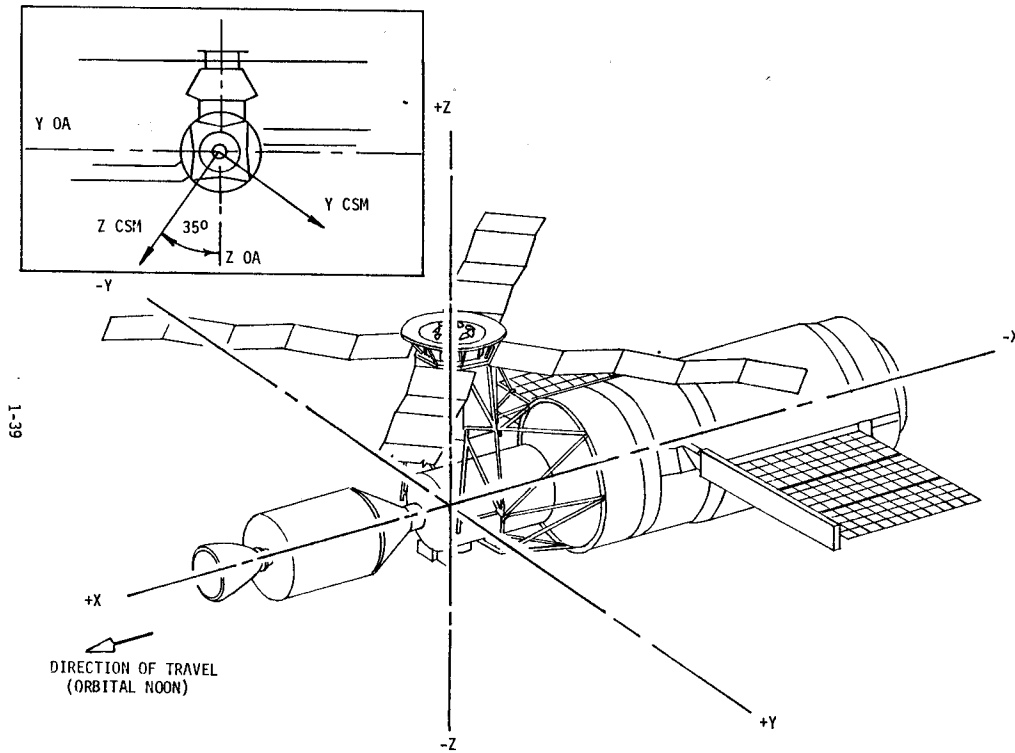
D. Environmental Control & Electrical Power

1. CSM

- a) LiOH canister units are changed after approximately 12 hours of use or if CM CO₂ partial pressure exceeds 5.5mm Hg. Replacements are stored in the MDA and used in the CM. The LiOH system is operated during CM use. There are 10 units launched aboard the MDA, 10 launched with each of the SL-2 and SL-3 CSMs, and 6 launched with the SL-4 CSM. LiOH canister change schedule is as follows:

MISSION	DOY	GMT	COMMENTS
2	136	1450	Remove both canisters
	163	0805	Install both canisters
3	221	1545	Remove both canisters
	276	1035	Install both canisters
4	TBD	TBD	Remove both canisters
	TBD	TBD	Install both canisters

- b) Charging of the CSM entry and post landing batteries A and B will begin at docking. Each battery will require approximately 10 hours of charging, for a total of 20 hours. Additional charging is TBD.
- c) The Fuel cells will operate until H₂ Cryo is depleted to a zero quantity indication or a pressure decrease is noted. Cryo depletion is after approximately 14.8 days at which time the CSM EPS will be paralleled with the AM/ATM EPS. Residual H₂ will be vented to space and excess O₂ will be vented into the cluster atmosphere or overboard.
- d) Purging frequency is every other day for O₂ and every fourth day for H₂ until fuel cell shutdown. The H₂ Purge Line Heater (PN3) must be turned on twenty minutes prior to, during and 10 minutes after a fuel cell purge.
- e) Cryogenic O₂ and H₂ will normally be consumed by fuel cell operation, however, in the event that normal usage cannot prevent tank overpressurization, controlled venting of the tanks will be performed through:



FLIGHT PLAN NOTES
GUIDANCE, NAVIGATION AND CONTROL

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FLIGHT PLAN NOTES
ENVIRONMENTAL CONTROL & ELECTRICAL POWER

- 1) H₂ NPV system
- 2) O₂ Polychoke assembly into SWS
- 3) CSM Side hatch O₂ NPV
- 4) Fuel cell purging.

2. SWS

- a) Molecular sieve A is baked out upon activation of the SWS and is used throughout SL-2. It will be baked out again based on the PPCO₂ level. Bakeout is expected to be required after 28 days of use. Molecular Sieve B is used only upon failure of Mole Sieve A.
- b) STDN coverage is required during the following:
 - 1) Transfer of the AM Coolant Loop Inverters from manual control to Ground Command. STDN coverage is required to reactivate the necessary pumps for coolant loop operation since they will be shut off by switching the inverters to command.
 - 2) Transfer of the O₂ Supply and N₂ Supply Valves from manual control to Ground Command. STDN coverage is required to reopen O₂ and N₂ Supply Valves since they will be closed by switching from Manual Control to Command.
 - 3) Transfer of the OWS Radiant Heaters from manual control to Ground Control. STDN coverage is required to reactivate OWS Radiant Heaters since they will be shut-off by switching from Manual Control to Command.
- c) Ground will normally command all functions of the AM/ATM electrical power system except for CSM-SWS power transfer initiation and termination.

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FLIGHT PLAN NOTES
ENVIRONMENTAL CONTROL & ELECTRICAL POWER

- d) Switching of the RSS pump is accomplished by the crewmen. Switching is normally done when the active pump is used for 2250 hours.
- e) The scheduled time for transfer of CSM loads to AM/ATM electrical power system (actual time of fuel cell shut-down and transfer is dependent on CSM fuel cell H₂ depletion) and the transfer of CSM loads from AM/ATM electrical power system to CSM batteries is as follows:

MISSION	TO AM/ATM EPS		TO CSM BATTERIES	
	DOY	GMT	DOY	GMT
SL-2	148	1400	163	0645
SL-3	234	1800	276	0930
SL-4	333	0015	4	1330

HK TASK I.D	TASKS	CMN SPECIALTY	ESTIMATED CREW TIME (MIN)	CREW STATION AND LOCATION	REMARKS
1A	Trash Collection (Wet)	ANY	10	H,W	Nominally an evening TAL dump part of pre-sleep
CM-2	CSM 2 Day Checks O2 Fuel Cell Purge S015 Lamp Check (SL-2)	CDR	10	CM	Part of pre-sleep only until 60A
3A	Dump Squeezer Bag	PLT	25	H	Part of pre-sleep req 15 min heater warmup
3B-1	Food Chiller Moisture Removal	ANY	15	W	
CM-4	H2 Fuel Cell Purge	CDR	5	CM	Perform with CM-2 only until 60A
5A	Feces/Vomit Bag Transfer	ANY	10	H,F	
6A	Towel Module Resupply	ANY	5	W,H	
CM-7	CSM Weekly Checks: EPS Quiescent Checks CM RCS Injector V/V Temp Check S015 Light Check SL-2 Prim/Sec Glycol Loop Circulation Top Off CM O2 Supply Inspect CM and Dry Accumulated Moisture	CDR	35	CM	Req 20 Min crew time, 1 hr off station, then 15 min crew time to finish Req 1 hr run of sec cool Pump
7A-1	Water Clean Waste Proc Exterior	ANY	10	H	
7B-1	Biocide Clean TAL Int	ANY	30	E	If any 7B task is done alone, allow 30 min per task, otherwise 1 hr 30 min total for all 7B
-2	Biocide Clean Fecal Collector Seat		15	E	
-3	Biocide Clean Towel Holders		15	W,H	
-4	Biocide Clean Urine Receptacle and Urine Receiver Cover Areas		30	H	

Table E-1 Housekeeping Functions

FLIGHT PLAN NOTES
HOUSEKEEPING

E. Housekeeping

Periodic SMS and CSM HK functions scheduled in the timeline are delineated in Table E-1. The functions are grouped into tasks which are common by function or frequency of performance. HK task identifiers are assigned to each task with the first number indicating frequency of task performance in days.

Task identifiers in the 60X series are tasks required where the frequency is dependent upon system performance or consumable use that is not predictable.

HK TASK I.D	TASKS	CMN SPECIALTY	ESTIMATED CREW TIME (MIN)	CREW STATION AND LOCATION	REMARKS
7C	Trash Collection (Dry)	ANY	15	F,E,S,W	
7D	Water Reservoir Check	PLT	10	A	
7E-1	Vac Clean MDA Fan Inlet Screen	PLT	5	M	
-2	Vac Clean AM Circ Fans Inlet Screen		5	ST	
-3	Vac Clean OWS HX Fans Inlet Screen		5	A	
-4 or PHOTO	Vac Clean OWS Air Mix Chamber Screen		5	D	
			15		Same as M487-4E. Schedule early and late SL-2.
7F	WMC Debris Fine/Coarse Filter Maint	PLT	15	H	Schedule with 7E.
7G	Vacuum Cleaner Bag Replacement	PLT	5	E	Schedule with 7E.
7H	Zipper Lubrication	ANY	20	E	Lube M092 zippers. Do not schedule.
7J	Shower Activities	ALL	180	E,H	50 min per man (PREP and POST) 30 min drying (50+50+30=180)
7K	CO Monitor	ANY	10	S	
8A	Urine Bag Module Resupply	ANY	20	H	
10A	SUS H2O Pump Cycling	PLT	10	ST	Req 2 45 min off station
10B-1	Rapid Δ P System Verif	ALL	5/MAN	ALL	Requires 2 crewmen
-2	Fire Sensors Verif	ALL	15/MAN	ALL	Requires 2 crewmen
10C-1	MDA Status Lights Test	PLT	2.5	M	
-2	STS Status Lights Test		2.5	ST	
-3	OWS FHD Compt Status Lights Test		2.5	F	
-4	EXP Compt Status Lights Test		2.5	E	
-5	Wardroom Status Lights Test		2.5	W	
-6	WMC Status Lights Test		2.5	H	

Table E-1 Housekeeping Functions

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HK TASK I.D	TASKS	CMN SPECIALTY	ESTIMATED CREW TIME (MIN)	CREW STATION AND LOCATION	REMARKS
10D	OWS EMG Lighting Verif	PLT	5	E,W,D	
11A	Solids Trap Replacement	PLT	20	ST	
11B	WMC Wipe Resupply	ANY	5	H	
14A-1	Water Clean Trash Bag Doors	ANY	5	E	Schedule with 7C
14B-1	Biocide Clean Trash Bag Doors	ANY	15	H,W	Schedule with 7B (Allow 30 min per task if done separately)
-2	Biocide Clean Food Chiller		10	W	
-3	Biocide Clean Urine Drawers		50	H	Schedule with 7B-4
14C-1	Dry Food Table Interior	ANY	5	W	
-2	Dry Towel Holders, Port		10	F,E,W,S Portable	
14D	Washcloth Resupply	ANY	5	H	
14E	Replace Top Blntk and Headrest Cover	ALL	15/MAN	S	Each crewman to do his own
14F	Fecal Bag Resupply	ANY	10	H	
14G	H2O Purification	PLT	15	W	10 min only if iodine not required.
14H	Inlet CO2 Cartridges Replacement	PLT	10	ST	
24A	Towel Module Reloading	ANY	40	W	Coordinate with 6A
28A-1	Water Clean Trash Bag Doors	ANY	10	F,S	
28B-1	Biocide Clean M092 Waist Seal	ANY	15	E	Allow 30 min per task if done separately
-2	Inner Walls		15	E	
-3	Seat		5	E	
-4	Leg Straps		5	E	
-6	Biocide Clean M171 Chest Board		10	E	

Table E-1 Housekeeping Functions

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FLIGHT PLAN NOTES
HOUSEKEEPING

HK TASK I.D	TASKS	CMN SPECIALTY	ESTIMATED CREW TIME (MIN)	CREW STATION AND LOCATION	REMARKS
28C	WMC Vent Filter Replacement	PLT	30	F	
28D	Fecal Collector Filtr Replacement	PLT	15	H	
28F	Biocide Wipe Resupply	ANY	5	H	As required
28G	Wet Wipe Resupply	ANY	5	W	As required
28H	Mo1 Sieve Charcoal Canister Replacement	PLT	45	ST	
28J	Wardroom Wipe Resupply	ANY	5	W	
28K	Replace Bottom Sleep Restraint Blanket and Straps	ALL	15/MAN	S	SL 3&4 only. Each crewman to do his own. Schedule with 14E.
28L	Consumables Inventory	ANY	30	E,H,S,W	
28M	Outlet CO2 Filter Repl	PLT	10	ST	
60A	CSM PWR Source Transfer to External	CDR/PLT	30/MAN	CM	Nominally at day 14 two crewmen required
60B-1	Con Hold Tank Dump Init	PLT	40	D	Nominally every 15 days
-2	Con Hold Tank Dump Ck		5	D	Nominally 3 checks per dump
-3	Con Hold Tank Dump Term		30	D	Nominally 4 hrs from start to finish
60C-1	BED 1 Bakeout Init	PLT	25	ST	Nominally every 28 days
-2	BED 2 Bakeout Init		MIN		Bakeout minimum of 5 Hr/BED
-3	Bakeout Term		TOTAL		15 min cool down wait after term.
-4	Configure For BED Normal Operation				6 hrs after bakeout.
-5	C/W PPCO2 Enable				
60D	Water Source Selection	PLT	10	F	As required
60E or PHOTO	Ambient Food Transfer	ANY	60 70	F,W	Nominally every 6 days mid & late of SL-2

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Table E-1 Housekeeping Functions

HK TASK I.D	TASKS	CMN SPECIALTY	ESTIMATED CREW TIME (MIN)	CREW STATION AND LOCATION	REMARKS
60F	Frozen Food Transfer	ANY	15	W	SL-3&4 only (Day 28)
60G	Crew Alert Warning Test	PLT	10/MAN	ST	Two crewmen required
60H	Teleprinter Paper Cartridge Replacement	PLT	5	ST	As required
60K	LSU/PCU (3) Servicing (SL-3)	ANY	120	ST	SL-3 (prior to 3rd EVA) 3 hr total time (90 min-on, 30 min-off, 1 min-on, 30 min-off, and 30 min-on)
60L	Tissue Dispenser Resupply	ANY	5	H	As required
60N	RSS Pump S/O	ANY	5	E	Nominally SL-2 Day 14, SL-3 ACT, and SL-3 DEACT
60P-1	Lubricate Sleep Restr Zippers	ANY	10/COMP	S	As required
-2	Lubricate SAL Tripod Bolts	ANY	10	F	As required
60R	H2O Purification	PLT	30	D	Check 2 tanks. If iodine required add 5 min per tank.
60S	EVA/IVA Coolant Gas Separator Replacement (SL-3)	PLT	10	ST	Prior to 3rd EVA

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FLIGHT PLAN NOTES
HOUSEKEEPING

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Table E-1 Housekeeping Functions

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FLIGHT PLAN NOTES
HABITABILITY

F. HABITABILITY

1. Unused food bags from the 12 man-day package in the CSM will be transferred to the OWS food pantry during activation. The bags will be used for days 1-5. The bags will be used for days 1-5 or disposed of when not used. A 3 man-day food supply will be left in the CSM for re-entry.
2. Approximately every 6 days, a crewman is scheduled to remove a 6 day food supply from one of the eleven food storage containers (CS-F) and transfer the supply to the wardroom food pantry (CS-W).
3. Leftovers in the pantry will be stored in the rear of the bottom respective galley tray. The leftovers will be returned to the food lockers when the bottom tray is filled or during any convenient time for the crewman.
4. After each meal, a crewman is scheduled to place the food to be heated for the next meal in the food trays and set the timers. Times for heating the ambient and frozen foods are printed on the individual food cans and are given on the menu cue cards. In general, frozen foods require 2.5 hours heating and ambient foods require 1.5 hours. Food tray timers can be set at 15 minute increments up to a maximum of 12 hours. The timer counts down to the time of activating the food cavity heaters.
5. The OWS trash airlock (CS-E) is scheduled for use 5 times per day. The trash airlock is operated once during the post sleep activities to dump the urine bags, and as many as 4 times during the pre sleep activities to dump the trash. Those items deposited in the trash airlock are either voice recorded, logged, or both voice recorded and logged. Trash dumps are part of normal housekeeping.
6. Visible moisture should be dried at any time, from any area or system, when noticed. Utility wipes may be used for the purpose of spot drying. Additional housekeeping functions are in table E-1.
7. The first and last "eat" periods in the OWS are scheduled as follows:

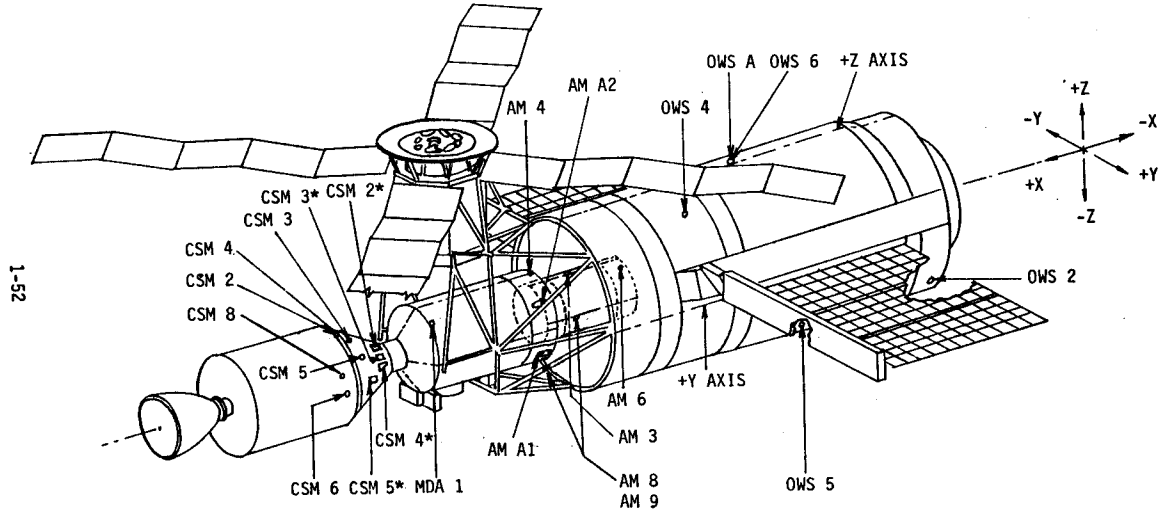
MISSION	FIRST EAT (DOY, GMT)	LAST EAT (DOY, GMT)
SL-2	136, 2300	163, 0430
SL-3	220, 2100	277, 0750
SL-4	TBS	TBS

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FLIGHT PLAN NOTES
VENTING

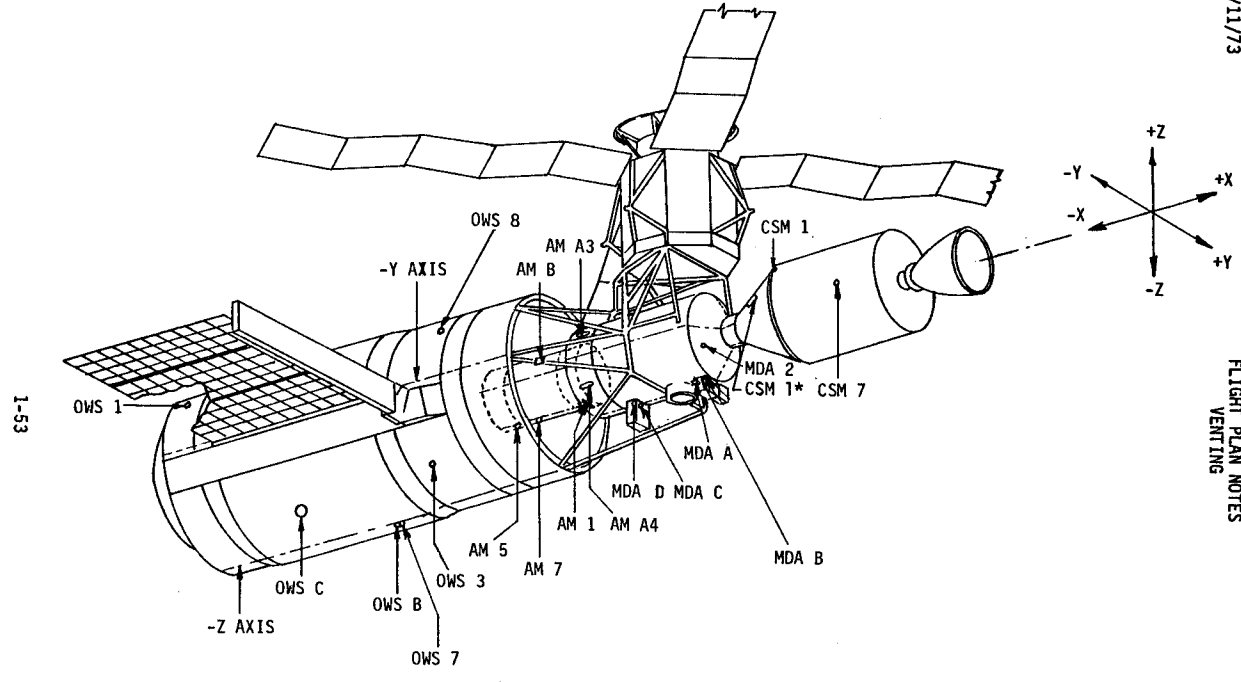
G. Venting

1. Figure G-1 shows cluster axes, window locations, and vent locations.
2. Table G-1 lists the windows shown in figure G-1 and gives angular locations for these windows. This gives a reference as to which windows may be affected by venting.
3. Table G-2 lists the vents shown in figure G-1. The corresponding panel numbers define where the venting operations are performed.
4. Ground rules for venting are as follows:
 - No direct urine dumps into the waste tank.
 - Normal trash dumps are made during the presleep activities.
 - Selective trash dumps containing bacterial growth potential are made when required.
 - Soapy water from wash rag squeezer bag will normally be vented into waste tank.
 - Condensate Holding Tank will be normally vented into the waste tank.
 - No simultaneous liquid dumps into waste tank.
5. Operational vent/experiment constraints for SAL experiments, EREP and ATM, controlled venting, dumping or RCS firings and STS window covers are noted in Table G-3.



*Window

Figure G-1. OA Window and Vent Location
(Sheet 1 of 2 Sheets)



*Window

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FLIGHT PLAN NOTES
VENTING

MODULE AND WINDOW NAME	WINDOW LOCATION
	ANGULAR (DYNAMIC AXIS)
<u>CSM</u>	
1. LEFT SIDE VIEWING	25.5° OFF +Z TOWARD -Y
2. LEFT RENDEZVOUS (DOCKING)	3.3° OFF +Z TOWARD +Y
3. CENTER HATCH	35° OFF +Z TOWARD +Y
4. RIGHT RENDEZVOUS (DOCKING)	23.3° OFF +Y TOWARD +Z
5. RIGHT SIDE VIEWING	5.5° OFF +Y TOWARD -Z
<u>MDA</u>	
A. S190 EXPERIMENT WINDOW	ON -Z AXIS
B. S191 VIEWFINDER/TRACKING PORT	12.7° OFF -Z TOWARD -Y
C. S192 SHORT WAVELENGTH PORT	0.3° OFF -Z TOWARD -Y
D. S192 THERMAL PORT	5.3° OFF -Z TOWARD -Y
<u>AM</u>	
A. STS VIEWING PORTS	
1)	37.87 OFF -Z TOWARD +Y
2)	37.87 OFF +Y TOWARD +Z
3)	37.87 OFF +Z TOWARD -Y
4)	37.87 OFF -Y TOWARD -Z
B. EVA HATCH WINDOW	45° OFF +Z TOWARD -Y
<u>OWS</u>	
A. SOLAR SCIENTIFIC AIRLOCK	0.15° OFF +Z TOWARD -Y
B. ANTI-SOLAR SCIENTIFIC AIRLOCK	1.88° OFF -Z TOWARD +Y
C. WARDROOM WINDOW	25.9° OFF -Z TOWARD -Y

Table G-1. OA WINDOW LOCATIONS

FLIGHT PLAN NOTES
VENTING

MODULE	PANEL	VENT NAME
<u>CSM</u>		
1	2	STEAM VENT DUCT
2	251	URINE DUMP NOZZLE
2	252	WASTE STOWAGE VENT
3	603	CM O ₂ HATCH NPV
4	352	WASTE WATER DUMP NOZZLE
4	252	BATTERY VENT
5	SIDE HATCH	CABIN DUMP
6	3	FUEL CELL H ₂ PURGE
7	3	FUEL CELL O ₂ PURGE
8	3	H ₂ VENT
<u>MDA</u>		
1	103	VENT VALVES
2	113, 114	EXPERIMENT
<u>AM</u>		
1	218	MOLECULAR SIEVE VENT
2 (CONTINGENCY ONLY)	216	CONDENSATE DUMP VENT
3	318	LOCK COMPARTMENT DEPRESSURIZATION
4	N/A	NITROGEN OVERBOARD RELIEF
5	391	AFT COMPARTMENT PRESSURE RELIEF
6	313	LOCK COMPARTMENT PRESSURE RELIEF
7	300	FORWARD COMPARTMENT PRESSURE RELIEF
8	N/A	AM BATTERY MODULE I
9	N/A	AM BATTERY MODULE II
<u>OWS</u>		
1	N/A	WASTE TANK
2	N/A	WASTE TANK
3	403	SOLENOID VENT
4	405	PNEUMATIC VENT
5	625	M171/M092 LBPN VACUUM
6	517	SOLAR SCIENTIFIC AIRLOCK
7	543	ANTI-SOLAR SCIENTIFIC AIRLOCK
8	N/A	IU SUBLIMATOR VENT

Table G-2. VENT LOCATIONS

FLIGHT PLAN NOTES
EXPERIMENTS

H. EXPERIMENTS

1. General

- a) Table H-1 is an experiment accomplishment matrix. Functional objective completion is shown. Experiments are arranged by Flight Scheduling Precedence numbers.
- b) Each experiment (except Medical, ATM and EREP) is assigned a Flight Scheduling Precedence number (90 to 500). The precedence number is a measure of an experiment's value to the program on a given mission. The criteria for using the precedence number in scheduling experiments are as follows:

- Medical experiments, ATM and EREP take precedence above individual experiments and are considered first for Flight scheduling. With available time remaining, experiments are scheduled in order of preference.
- If a unique experiment requirement exists (e.g., Beta angle, new moon, etc.), the experiment is scheduled when that requirement is met.
- If a constraint does not permit an experiment to be scheduled (e.g. SAL availability), move through preferences until an experiment fits the available time block.
- Fulfill requirements as presented in the MISSION REQUIREMENTS document, I-MRD-001F, Volume 1, February 1, 1973.

- c) Table H-2 is a man hour/mission hour utilization summary. ATM data taking time indicates daylight time between the 400km atmospheric constraint, but does not take into account time required for SO 20 align and TO 25 attitude hold.
- d) Figure H-1 is a man hour utilization chart showing man hours per day per discipline.
- e) Figure H-2 shows Scientific Airlock utilization. Guidelines for scheduling SAL experiments are as follows:

Schedule experiment objectives within viewing opportunities of desired mission.

TABLE G-3 OPERATIONAL VENT/EXPERIMENT CONSTRAINTS

	EXPERIMENT/WINDOW				
	ATM	COROLLARY		EREP	STS
VENT					
HABITATION SOLENOID VENT VALVE (ONS FINAL BLOODING)	1	1	1	1	1
LOCK DEPRESS VALVE (EVA)	1	1	1	1	1
CSM RCS	1	1	1	1	1
FUEL CELL PURGES	1	1	1	1	1
WATER DUMP (UNBAGGED) INTO WASTE TANK	1	1	1	1	1
CONTINGENCY VENTS CONDENSATE CSM WASTE*	1	1	1	1	1
MMA EXP VENT M551, M552, M553	1	1	1	1	1
OMS EXP VACUUM VENT M171	1	1	1	1	1
CONDENSATE HOLDING TANK VENT- GAS SIDE (-2 SAL)	1	1	1	1	1
HABITATION SOLENOID VENT VALVE (CABIN ATMOSPHERE VENTS)	1	1	1	1	1

NOTES: 1. COMPLETE VENT 15 MIN PRIOR TO EXPERIMENT EXPOSURE
2. COMPLETE VENT 30 MIN PRIOR TO EXPERIMENT EXPOSURE
3. CASSETTE COVERS WILL BE CLOSED DURING AND FOR 15 MIN AFTER COMPLETION OF VENT
4. COMPLETE VENT 15 MIN PRIOR TO INSTALLATION OF EXPERIMENT IN -2 SAL
5. WAIT 12 HOURS AFTER COMPLETION OF VENT BEFORE OPENING CASSETTES

* Includes steam vent, urine dump, and contingency waste water dump.
** T025 runs 2 & 4 and S073/T027 modes 1c and 3d require coordination with contamination events.
S073/T027 modes other than 1a, 1d, 1e, 2a, 3a, 4b, and 5b are not affected by vents.

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FLIGHT PLAN NOTES
EXPERIMENTS

- Schedule experiment using Flight Scheduling Precedence logic.
 - Minimize SAL operational (set up and stow) repetitions to conserve crew time.
 - Meet requirements per MRD.
- f) Figure H-3 shows the boundary for the South Atlantic Anomaly. The SAA is defined by an area of trapped protons with energy ≥ 10 mev. bounded by a flux contour of 10 particles per $\text{cm}^2\text{-sec}$.
- g) Scheduling criteria for the SAA as follows:
- EVA exposure is minimized.
 - The X-Ray Event Analyzer of S056 cannot operate in the SAA.
 - The Flare Auto Switch of S054 should be inhibited when passing through the SAA.
 - Film exposure to the SAA should be minimized.
 - S020 and S063 performances should be minimized.
 - D008 must operate in the SAA.
 - Radiation DTO requires operation in the SAA.
- h) Due to size limitations on the summary timeline, time blocks less than 10 minutes cannot be plotted in the crewman columns. Affected experiment tasks are noted in the NOTES column.
- i) The following table shows the times for a full moon for SL-2, SL-3, and SL-4:

YEAR	MONTH	DAY	HOURL (GMT)
1973	05	17	0458
1973	06	15	2035
1973	07	15	1156
1973	08	14	0217
1973	09	12	1516
1973	10	12	0309
1973	11	10	1427
1973	12	10	0134
1974	01	08	1236

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FLIGHT PLAN NOTES
EXPERIMENTS

2. Medical

- a) Biomed (M092/M093, M092/M171, and M131) days selected per schedule supplied by MSC LSD personnel.
- b) Criteria for meeting the 24-hour urine freezing requirement after launch are as follows:
- Samples from individual urine collections will be frozen within 24 hours after urination. This 24-hour period is assumed to start at lift-off.
 - Urine may be processed only after WMC activation.
 - One crewman will transfer all individual urine collections from the CM to OWS, identify samples, and store samples in the freezer.

Rendezvous of M=5 through M=8 are acceptable operationally; however, any delay past M=5 or delay in OWS entry will impact crew procedures, but the 24-hour requirement will not be violated. On SL-2, urine is placed in the freezer at approximately 22:41 GET, SL-3 at 12:31 GET.

3. ATM

- a) Since specific solar behavior cannot be predicted prior to flight, blocks of time have been allocated throughout the timeline to meet anticipated ATM requirements, considering all other demands on the flight.
- b) No less than 15 minutes of ATM viewing time is scheduled in any one time block (viewing time is time above 400 km). At least 10 minutes set up is required at the start of an ATM time block; 6 minutes of post-OPS.
- c) The crewman performing ATM should be at the ATM console 75 percent of the ATM night cycles. Other operations performed during the night cycle should be of such nature as to allow the crewmen to return to the console at any time (e.g. PH, HK, S073 extend, retract, M509 B, C, D, E, etc.)
- d) ATM shift changes during daylight or ATM setup require 15 minutes overlap on crewmen. ATM changes during night cycle do not require overlap. However, the crewman coming on should make an attempt to stop by the ATM console during the last day cycle of the first shift, to observe solar behavior.
- e) An NRL and HCO rocket will be launched from White Sands for calibration purposes and must be correlated with ATM observation.

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FLIGHT PLAN NOTES
EXPERIMENTS

- f) Launch windows for calibration rocket are:
for SL-2
NRL May 21, 1973 (DOY 141) 12:00-14:00 CDT
HCO May 29, 1973 (DOY 149) 12:00-14:00 CDT
for SL-3
TBD
for SL-4
TBD
- g) The target and weather should be verified two revolutions prior to rocket launch.
- h) NRL needs last four complete consecutive day passes for JOP 12; ATM TV data cycles should be performed as soon as possible during calibration sequence.
- i) HCO needs three consecutive day passes beginning with day cycle of rocket launch for JOP 12.
- j) GO/NO GO for JOP 12 is one revolution prior to start of JOP 12.
- k) ATM requires an equivalent of 5 daylight passes for checkout for SL-2.
- l) ATM JOP 10 desires observation of Lagrangian points (libration points) L4 and L5. Table H-4 shows approximate viewing opportunities during Skylab.
- m) ATM operations will require realtime re-scheduling during the mission to accommodate actual solar activity as it occurs.
- n) In realtime scheduling, reasonable adjustments to the crew schedule (for all activities except sleep periods) may be made to accommodate realtime flare occurrences.
- o) During EVA, canister TCS and experiment TCS will be on - experiments themselves will be off. Reactivation of experiments will, in some cases, result in transient temperatures. Therefore, caution must be exercised for data taking shortly after EVA's.
4. EREP
- a) EREP sensors (S190, S191, S192, S193, S194) are scheduled collectively as EREP, assuming they all can operate at some time during an EREP pass.

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FLIGHT PLAN NOTES
EXPERIMENTS

- b) EREP selection logic for scheduling is as follows:
- For Solar Inertial passes, $-10^\circ \leq \beta \leq +10^\circ$.
 - For up to 160 Z-LV passes, $-65^\circ \leq \beta \leq +65^\circ$.
 - EREP task/sites generally require EREP passes with the sun more than 20° above the horizon.
 - The calibration must be performed 4 days after or before the full moon, within $\pm 3/4$ day of exactly 4 days.
 - "Eat" period may be moved to accommodate a pass.
 - Weather probability not taken into account.
 - 14 Z-LV passes are scheduled for SL-2, 26 for SL-3, 20 for SL-4.
 - Five solar inertial EREP passes may be scheduled in the Skylab Program. One calibration pass is scheduled for SL-2, SL-3 and SL-4. One SI pass of EREP sites may be scheduled on both SL-3 and SL-4 to complete the five SI passes.
 - A maximum of two Z-LV passes may be planned in one crew day. These passes may occur on consecutive orbits.
 - Two Z-LV passes per day may be planned on two consecutive days, provided these days are preceded and followed by at least one day during which no more than one EREP pass is planned.
 - Any EREP pass requiring in excess of 6 1/2 hours of total crew time will be charged as two passes.
 - Passes are selected from a shopping list supplied for each mission by MSC MPAD personnel.
- c) Due to activation, the earliest that EREP may be scheduled for SL-2 is day 138. Due to deactivation, the latest that EREP may be scheduled for SL-2 is day 161.

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FLIGHT PLAN NOTES
EXPERIMENTS

d) Maneuvers to and from Z-LV for EREP should meet the following criteria:

- Rate less than 0.085 deg/sec about each vehicle axis to stay on rate gyro fine scale while maneuvering to Z-LV. Rates can exceed 0.085 deg/sec when maneuvering back to SI.
- The OA must be in Z-LV for 3 minutes prior to data take.
- Z-LV must be maintained for one minute after data take.
- Provide X-Y strapdown update with acquisition sun sensor prior to maneuver to Z-LV.
- Provide γ_Z update with star tracker prior to maneuver to Z-LV.
- INHIBIT momentum dump if any portion of a maneuver on Z-LV mode is during a normal momentum dump.

e) Figure H-4 shows a typical EREP pointing sequence.

f) Table H-5 shows parameters for those passes scheduled. Backup passes may occur every 71 revolutions (approximately 5 days).

g) Figure H-5 shows a pictorial representation of the EREP passes. Traces are when data taking begins and ends.

5. Individual

a) S071/S072 require a crewmember only to remove electrical power from the experiments upon completion. Any other operations would be as a backup to ground commands. The ground schedules data dumps and commands the experiments during operation.

b) S149 will be set up and stowed by the crew (two men), but will be commanded by the ground during operation. The crew will perform post-operation tasks and will be the backup for onboard activation. The crew must advise the ground when the experiment is ready for activation.

c) Radiation DTO should be scheduled 1 to 2 days after a realtime flare.

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FLIGHT PLAN NOTES
EXPERIMENTS

d) S063-2 desires coordination with high altitude flights.

e) D008-2 should be scheduled 1 to 3 days after a realtime flare.

f) S020 doors must be closed during orbital night in periods of contamination.

g) All experiment film should be in the film vault at the end of each day. See Section 4 of this document for other film constraints.

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FLIGHT PLAN NOTES
EXPERIMENTS

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Experiment	Experiment Title	Order of Preference	Functional Objectives Completed	Functional Objectives Not Completed	Remarks
M071	Mineral Balance	N/A	1-5	--	
M073	Bioassay of Body Fluids	N/A	1	--	
M074	Specimen Mass Measurement	N/A	1-3	--	
M092	Inflight LBNP	N/A	1-8	--	
M093	Vectorcardiogram	N/A	1-8	--	
M171	Metabolic Activity	N/A	1-5	--	
M110	Inflight Blood Sampling	N/A	1-4	--	
M131	Human Vestibular Function	N/A	1-5 7-9	6	6 not mandatory
M133	Sleep Monitoring	N/A	1-15	--	
M172	Body Mass Measurement	N/A	1-3	--	
ATM	---	N/A	--	SEE REMARKS	101:29 of 105 hrs minimum
EREP	---	N/A	14 passes	--	Plus 1 CAL pass
ETC	Earth Terrain Camera	N/A	10 passes	--	Plus 1 CAL pass
S019	UV Stellar Astronomy	500	1-8	9-12	9-12 not mandatory
S183	UV Panorama	490	1-8	9-12	9-12 not mandatory
M487	Habitability/Crew Quarters	470	4,6,7,10,11, 12,13,14,15, 17,19	1,2,3,5,8,9, 16,18,20	20 real time 1,2,3,5,8,9,16,18 not mandatory
T003	Inflight Aerosol Analysis	460	1-6	7	7 real time
S149	Particle Collection	450	1	--	
M151	Time and Motion Study	420	1-25 except 12	12	No other opportunities
S073/T027	Gegenschein/Zodiacal Light/Contamination Measurement	410	1,2,5,6,9,11, 12,15,16,22, 23	3,4,7,8,10, 13,14,17,18, 19,20,21	3,4,7,8,10,13,14,18 not mandatory 17,19,20,21 no crew time
M516	Crew Activity/Maintenance Study	380	1,3,4,5	2,6	6 not mandatory 2 no opportunity
T025	Coronagraph Contamination	370	2 runs (FO 4,5)	3 runs (FO 1-3)	2 of 5 runs not mandatory No crew time for 3rd run

TABLE H-1. Experiment Scheduling Accomplishment
(Sheet 1 of 3 sheets)

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FLIGHT PLAN NOTES
EXPERIMENTS

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Experiment	Experiment Title	Order of Preference	Functional Objectives Completed	Functional Objectives Not Completed	Remarks
M509	Astronaut Maneuvering Equipment	300	--	1-4	1-4 not mandatory
S020	X-Ray/UV Solar Photography	290	1,2	--	
S015	Zero Gravity Single Human Cells	280	--	--	
S228	Trans-Uranic Cosmic Rays	275	1	--	
D024	Thermal Control Coatings	230	1	--	Passive
D008	Radiation in Spacecraft	220	1	2-5	2,4 not mandatory 5 real time 3 no crew time
M555	Gallium Arsenide Crystal Growth	200	1	--	
M551	Metals Melting	190	1-3	--	
S009	Nuclear Emulsion	180	1	--	
T027	Contamination Measurement	170	1	--	
M553	Sphere Forming	160	1	2	No crew time
M552	Exothermic Brazing	150	1-4	--	
ED11	Atmospheric Absorption of Heat	90	1-3	--	Included in EREP
ED12	Volcanic Study	90	1	--	Included in EREP
ED22	Objects within Mercury's Orbit	90	1	--	Included in ATM
ED23	UV from Quasars	90	1	--	
ED26	UV from Pulsars	90	1	--	
ED31	Bacteria and Spores	90	1,2	--	
ED76	Neutron Analysis	90	1,2	--	
M415	Thermal Control Coatings	N/A	1-4	--	
20.10	Environmental Microbiology	N/A	1-4	--	
20.11	Operational Radiation Measurements	N/A	1-38 except 9	9	9 not mandatory
20.13	Portable CO2/Dewpoint Monitor	N/A	1,2	3	3 not mandatory

TABLE H-1. Experiment Scheduling Accomplishment
(Sheet 2 of 3 sheets)

Experiment	Experiment Title	Order of Preference	Functional Objectives Completed	Functional Objectives Not Completed	Remarks
20.14	OA Contamination Assessment	N/A	1,3,4,5,7,9,10	1-4,6,8	9,10 real time Observations scheduled of squeezer bag dump mole sieves wardroom and STS 1 and 2 windows
20.15	Internal OMS Temp. Measurements	N/A	--	1-6	Not mandatory
20.16	Water Sample	N/A	1	--	Included in deactivation

TABLE H-1. Experiment Scheduling Accomplishment
(Sheet 3 of 3 sheets)

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FLIGHT PLAN NOTES
EXPERIMENTS

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SL-2 MANHOURS UTILIZATION RECORD															
OPERATIONAL															
MANHOURS (ACCOUNTING FROM 00:00 to 24:00 GMT)															
DAY	135/136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
ACT/DEACT-SYST	23:45	18:45													
EREP			5:29												
ATM	2:10		7:18												
COR		1:00													
MED	0:30	2:30			0:15										
TRANSFER									0:45						
SLEEP/REST	24:00	24:00	24:00	24:00	24:00	24:00	24:00	24:00	24:00	23:40	24:00	22:45	24:00	24:00	24:00
EAT (LUNCH)	9:00	2:50	2:20	2:29	2:43	3:01	3:00	3:00	2:25	2:25	2:39	2:20	2:25	2:47	3:00
PH	2:15	0:45	1:14	1:30	1:30	1:30	1:15	1:27	1:30	1:28	1:30	1:48	1:25	1:30	1:15
POST SLEEP	4:30	6:00	5:50	5:50	5:30	6:00	5:50	6:08	5:50	6:00	5:50	7:16	5:10	6:00	5:50
PRE SLEEP	4:03	7:00	10:06	10:09	9:05	8:17	5:38	11:01	9:28	9:03	9:48	9:02	9:58	9:52	6:13
S/HK		:30	2:38	1:52	1:30	1:21	3:12	3:24	1:55	1:48	2:10	2:02	2:40	2:12	6:40
PT			0:30	1:00	1:00	0:30	2:30	1:30	1:30	1:00	1:00	1:00	1:30	:30	2:30
OFF DUTY							22:38								19:05
EVA/SUIT DRY															
DTO'S-CONT.				0:10			0:05	0:09				0:05			
RAO				0:07			0:05	0:20				0:07			
IMSS													1:45	0:45	
CO2					1:18										
TEMP															
ED 11, 12 & 22															
ED 23 (SO19)															
ED 26 (SO19)															
ED 31															
ED 76				0:16											
ENTRY - 7															
TRIM BURNS		0:55						0:23							
TV			0:39	0:58	0:37	0:37	0:30	0:49	1:33	1:08	0:58	0:10	2:40	1:01	
ZLV ASSIST				0:55	0:51										
OPEN													0:06	0:05	
FIREDRILL				1:30											
DAY TOTAL	70:13	64:15	60:04	50:46	48:19	45:24	68:58	51:51	49:56	46:32	47:55	46:35	51:39	48:42	68:33
MISSION CUMULATIVE	70:13	134:28	194:32	245:18	293:37	339:01	407:59	459:50	509:46	556:18	604:13	650:48	702:27	751:09	819:42

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SL-2 MANHOURS UTILIZATION RECORD

OPERATIONAL

MANHOURS (ACCOUNTING FROM 00:00 to 24:00 GMT)

DAY	151	152	153	154	155	156	157	158	159	160	161	162	163	MISSION TOTAL
DEACT-SYST											2:15	23:45	20:21	88:51
- EREP														5:29
- ATM														9:28
- COR														1:00
- MED											1:02			4:17
TRANSFER						0:56			0:45		5:35			8:01
SLEEP/REST	24:00	24:00	24:00	24:00	24:00	24:00	24:00	24:00	24:00	24:00	24:00	25:30	15:00	662:55
EAT (LUNCH)	2:20	2:25	2:44	2:26	2:25	3:00	2:35	2:40	2:00	3:00	3:00	6:00		80:59
PH	1:30	1:30	1:24	1:30	1:30	1:30	0:45	1:28	1:30		1:30			35:59
POST SLEEP	6:00	5:48	6:00	5:50	6:00	5:50	6:00	5:44	5:50	5:50	5:35	5:30	4:30	162:01
PRE SLEEP	11:15	8:53	9:57	8:58	10:00	8:56	6:49	10:53	8:08	5:58	10:28	11:00		239:58
S/HK	4:20	1:47	1:47	1:35	1:28	1:50	6:09	3:23	1:20	1:25	3:16			62:14
PT	1:00	1:00	1:00	1:30	1:30	1:30	1:00	1:00	0:30					26:00
OFF DUTY							4:34							46:17
EVA/SUIT ACTIVITY										29:55				29:55
DTO'S-CONT.						0:05		0:10		0:05				0:49
RAD	(PRD Readings in Pre and Post Sleep Activity)								0:06					0:45
IMSS											1:30			4:00
CO2														1:18
TEMP														0:00
ED 11, 12 & 22	Included in EREP and ATM													
ED 23 (SO19)	0:56													0:56
ED 26 (SO19)	0:51													0:51
ED 31					0:26	0:32	0:39							1:37
ED 76											0:15			0:31
ENTRY SIM & E-7						3:35	15:55							19:30
TRIM BURNS									0:23					1:41
TV	1:36	0:29	1:16	0:30	0:54	0:10		2:55	1:08	1:25				22:03
ZLV ASSIST														1:46
OPEN	0:05	0:03	0:10	0:05	0:08				0:05					0:47
FIRE DRILL														1:30
DAY TOTAL	53:53	45:55	48:18	46:24	48:21	51:54	68:36	52:13	45:45	71:38	58:26	71:45	38:21	1521:01
MISSION														
CUMULATIVE	873:35	919:30	967:48	1014:12	1062:33	1114:27	1182:53	1235:06	1280:51	1352:29	1410:55	1482:40	1521:01	

Table H-2. Experiment/Crew Utilization Summary (Operational)
(Sheet 2 of 2 sheets)

SL-2 MANHOURS UTILIZATION RECORD

MEDICAL

MANHOURS (ACCOUNTING FROM 00:00 to 24:00 GMT)

DAY	135/136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
MO71/MO73															
MO74	:20	1:00													
MO92/MO93						3:30		3:30	3:30				1:00		
MO92/M171		4:00	9:08	4:34	4:34					4:34	4:34	4:34	3:30	7:00	
M110		1:30		1:30						1:30					
M131-1						5:00				5:00					5:00
M131-2					4:30										
M133			0:22	0:22	0:22		0:22		0:22		4:30				
M151			0:10		:09	0:05			0:16	0:05			0:20		
M172		1:15												1:15	
DAY TOTAL	0:20	7:45	9:40	6:26	9:35	8:35	0:22	3:30	4:08	11:09	9:26	4:54	6:07	12:00	0:22
MISSION															
CUMULATIVE	0:20	8:05	17:45	24:11	33:46	42:21	42:43	46:13	50:21	61:30	70:56	75:50	81:57	93:57	94:19

ATM

FULL PASS			1	5	6	7	1	5	7	3	6	6	6	7	1
PARTIAL PASS			1	1	1	0	0	0	1	4	1	1	0	1	1
SCHEDULED DATA ABOVE 400 KM		1:20	4:56	5:40	5:50	0:50	4:10	6:17	5:17	5:15	5:25	5:00	6:33	1:12	
MISSION CUMULATIVE (400K)		1:20	6:16	11:56	17:46	18:36	22:46	29:03	34:20	39:35	45:00	50:00	56:33	57:45	
MANHOURS		1:41	7:21	8:54	9:26	2:00	6:16	9:35	7:24	7:59	8:38	7:47	10:03	1:45	
MISSION CUMULATIVE (MANHRS)		1:41	9:02	17:56	27:22	29:22	35:38	45:13	52:37	60:36	69:14	77:01	87:04	88:49	

EREP

PASS NUMBER			1	2	3+CAL	4	5	6	7	8					
ETC PASS					1+CAL	2	3	4	5						
DATA TAKE			0:25	0:25	0:43	0:25	0:25	0:25	0:31	0:27					
MISSION CUMULATIVE DATA TAKE			0:25	0:50	1:33	1:58	2:23	2:48	3:19	3:46					
MANHOURS			4:40	5:00	8:20	0:35	6:10	6:50	6:22	5:57	5:19				
MISSION CUMULATIVE (MANHRS)			4:40	9:40	18:00	18:35	24:45	31:35	37:57	43:54	49:13				

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FLIGHT PLAN NOTES
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SL-2 MANHOURS UTILIZATION RECORD														
MEDICAL														
MANHOURS (ACCOUNTING FROM 00:00 to 24:00 GMT)														
DAY	151	152	153	154	155	156	157	158	159	160	161	162	163	MISSION TOTAL
MO71/MO73														
MO74					1:00									3:20
MO92/MO93				3:30	3:30									31:30
MO92/M171	4:34	4:34	4:34					4:34	8:30		4:34			67:18
M110											1:30			6:00
M131-1				5:00				5:00						25:00
M131-2						4:30								13:30
M133		0:22		0:22		0:22		0:22	0:22	0:22	0:22			5:30
M151		0:10		0:05					0:10					1:30
M172					1:15									3:45
DAY TOTAL	4:34	5:06	4:34	8:57	5:45	8:22		9:56	9:02	0:22	6:26			157:23
MISSION CUMULATIVE	98:53	103:59	108:33	117:30	123:15	131:37		141:33	150:35	150:57	157:23			
ATM														
FULL PASS	5	6	5	6	6	7	1	4	4					105
PARTIAL PASS	1	2	1	3	0	2	0	2	2					25
SCHEDULED DATA ABOVE 400 KM	4:45	5:49	4:34	6:41	5:00	6:48	0:50	4:50	4:27					101:29
MISSION CUMULATIVE (400K)	62:30	68:19	72:53	79:34	84:34	91:22	92:12	97:02	101:29					
MANHOURS	7:34	9:25	7:25	10:12	7:51	9:42	1:05	6:49	8:05		0:30			157:27
MISSION CUMULATIVE (MANHRS)	96:23	105:48	113:13	123:25	131:16	146:58	142:03	148:52	156:57		157:27			
EREP														
PASS NUMBER	9	10	11&12		13				14					14
ETC PASS		6	7&8		9				10					10
DATA TAKE	0:25	0:25	0:54	0:26					0:28					6:24
MISSION CUMULATIVE DATA TAKE	4:11	4:36	5:30		5:56				6:24					
MANHOURS	4:40	7:02	10:36	0:35	6:28				7:29		1:51			87:54
MISSION CUMULATIVE (MANHRS)	53:53	60:55	71:31	72:06	78:34				86:03		87:54			

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Table H-2. Experiment/Crew Utilization Summary (Medical, ATM, EREP)
(Sheet 2 of 2 sheets)

SL-2 MANHOURS UTILIZATION RECORD																	
COROLLARY																	
MANHOURS (ACCOUNTING FROM 00:00 to 24:00 GMT)																	
DAY	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	
DO08																	
DO24																	
M415																	
M487				1:36			0:10		0:10								
M509																	
M512				0:10					0:10								
M516										0:10							
M551				0:25	0:06												
M552																	
M553									1:03								
M555																	
S009				0:16	0:06	0:05	0:05	0:05	0:05	0:05			0:09		0:10	0:05	
S015																	
S019														3:37	1:08	1:05	1:15
S020										2:10							
S073/T027									1:45	2:51			2:10				
S149																	
S183																	
S228				0:20													
T003												0:18					
T025										3:05							
T027			0:35						1:00								
DAY TOTAL				0:35	2:47	0:12	0:15	0:05	4:13	8:21	0:05	0:18	5:56	1:08	1:15	1:20	
MISSION CUMULATIVE				0:35	3:22	3:34	3:49	3:54	8:07	16:28	16:33	16:51	22:47	23:55	25:10	26:30	

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Lagrangian Point	GMT START ¹	GMT STOP ¹	ΔT
	DOY HR MIN	DOY HR MIN	
L4	147 19 30	147 04 32	2:44
L5	156 07 00	157 04 21	7:33
L4	176 22 00	176 21 59	9:47
L5	185 15 00	186 20 56	9:31

¹ - Start and Stop Times, as well as points available, are approximate and depend on Trajectory uncertainty (parallax) and experiment occulting.

Table H-4. Lagrangian Points L4 and L5 Opportunities

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EXPERIMENTS

Boundaries are flux contours of 10 particles per cm²-sec

Altitude = 240 Nautical Miles

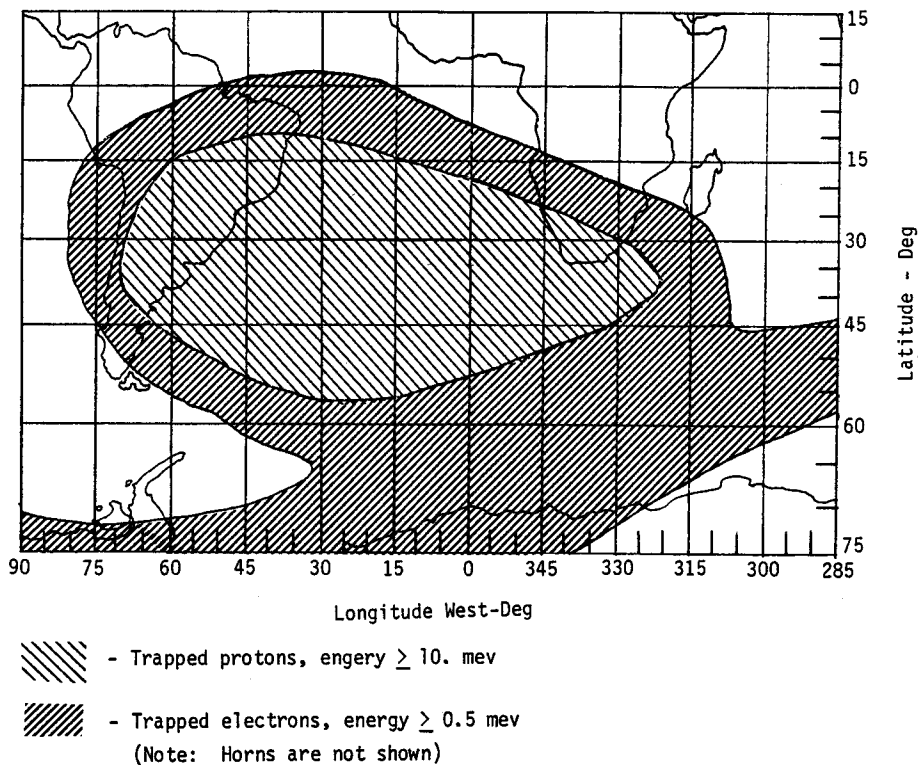
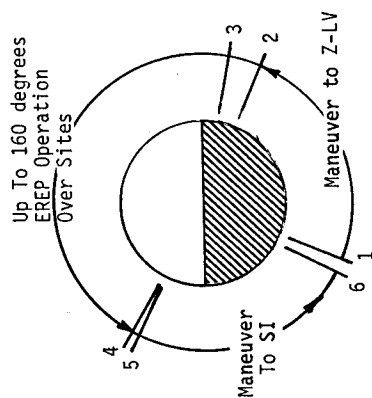


Figure H-3. SAA Boundary

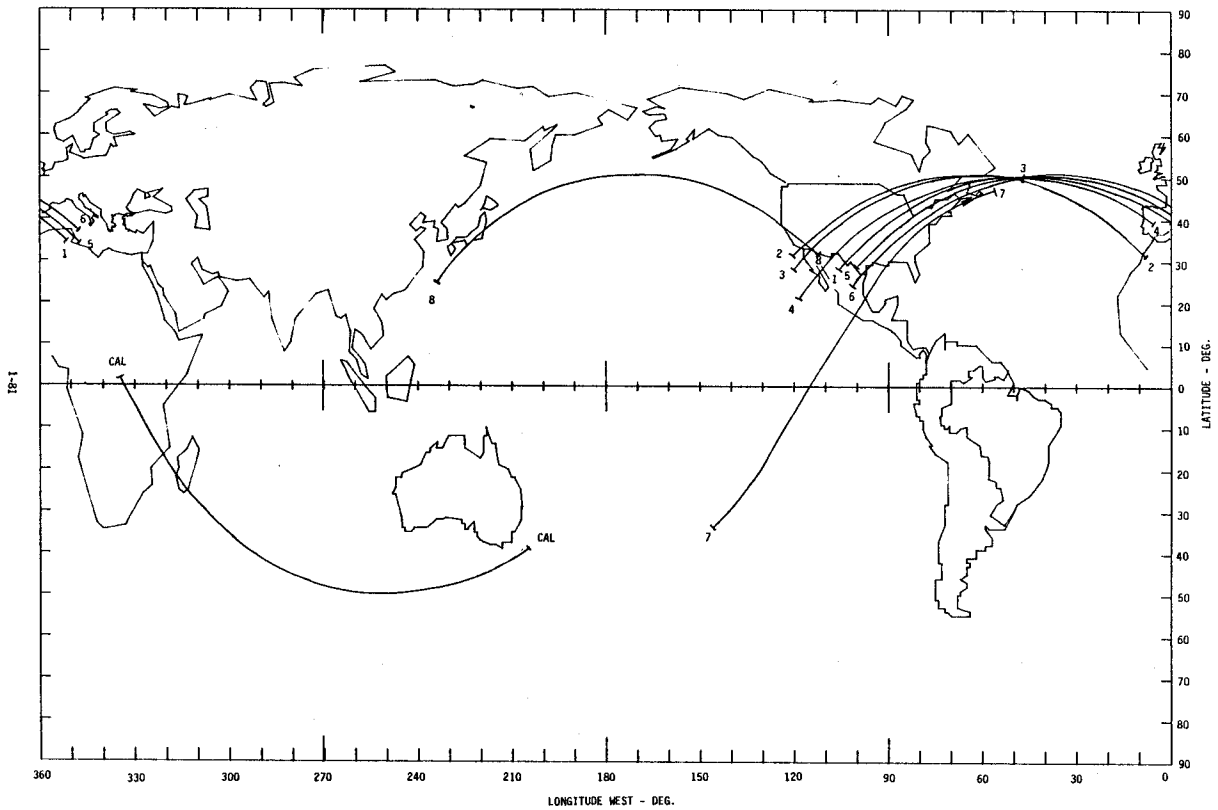
PASS	REV NUMBER		TIME OF AOS (GMT)				DURATION OF PASS (MINUTES)	GROUND TRACK
	PRIME	BACK-UPS	MO	DAY	HR	MIN		
1	72	143	5	19	17	09	25	Mexico to Algeria
2	87	158	5	20	18	00	25	California to Morocco
3	101	172	5	21	17	17	16	Baja to Canada
CALIBRATION	102		5	21	17	53	33	Lunar Calibration
4	129	200	5	23	15	49	25	Baja to Spain
5	157	NONE	5	25	14	27	25	Texas to Tunisia
6	171	NONE	5	26	13	42	25	Mexico to France
7	185	NONE	5	27	12	39	31	Mexico to Nova Scotia
8	205	276,347	5	28	21	37	27	Japan to Mexico
9	247	318	5	31	19	49	25	Oregon to Brazil
10	261	332	6	01	19	06	25	Washington State to Brazil
11	274	345	6	02	16	33	25	British Columbia to Delaware
12	275	346	6	02	18	22	29	Washington State to Brazil
13	303	374 (EVA Day)	6	04	16	58	26	Montana to Brazil
14	361	NONE	6	08	17	17	28	California to Uruguay

TABLE H-5. EREP Passes (SL-2)



1. START MANEUVER TO Z-LOCAL VERTICAL (Z-LV) ATTITUDE, MOMENTUM DUMP INHIBITED IF NECESSARY. (40 TO 100 ORBITAL DEGREES TYPICAL)
2. REACH ZLV AT LEAST 3 MIN (12 ORBITAL DEGREES) PRIOR TO START OF DATA TAKE.
3. START DATA TAKE FOR FIRST SITE. UP TO 160 DEGREES IN ZLV MODE FOR EREP DATA TAKE OPERATIONS.
4. REMAIN IN ZLV ATTITUDE AT LEAST 1 MINUTE AFTER COMPLETION OF LAST DATA TAKE (4 ORBITAL DEGREES).
5. START MANEUVER TO SOLAR INERTIAL (SI). (40 TO 110 ORBITAL DEGREES TYPICAL).
6. RETURN TO SI MODE.

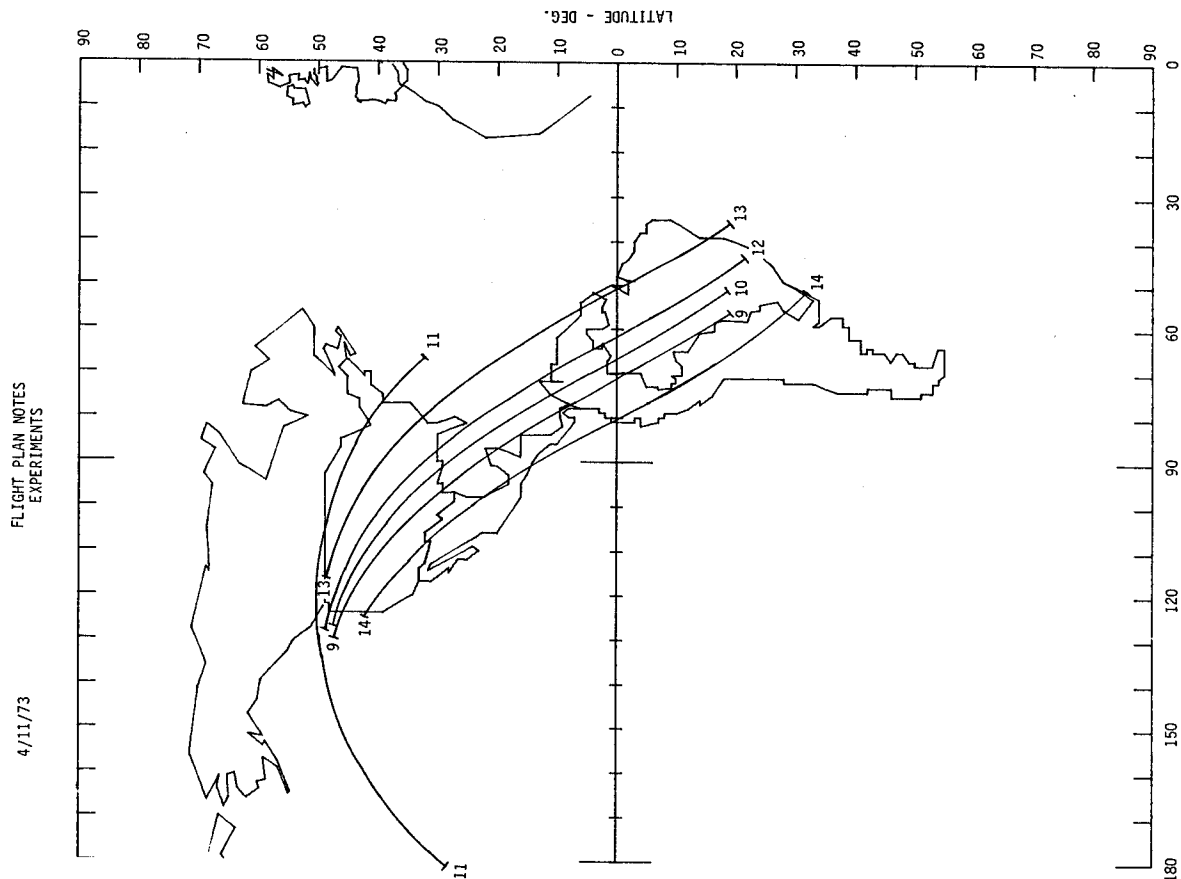
Figure H-4. Typical EREP Pointing Sequence.



4/11/73

FLIGHT PLAN NOTES
EXPERIMENTS

Figure H-5. Prime EREP Passes
(Sheet 1 of 2)



4/11/73

FLIGHT PLAN NOTES
EXPERIMENTS

Figure H-5. Prime EREP Passes
(Sheet 2 of 2)

1-82

4/11/73

FLIGHT PLAN NOTES
STOWAGE

I. Stowage

1. Major stowage transfers are scheduled in the Flight Plan. Details for all transfers are in the Flight Data File Stowage Book. Stowage transfers are updated by uplink PAD's.
2. Ground rules for transfer and stowage of items are:
 - Experiment return data will be transferred to the CSM as soon as practical after completion of that experiment.
 - Any item, when not in use or not transferred to another module, will be restowed in its original launch stowage location.
 - Log Books and other Flight Data File items will generally not be returned as the information will be voice recorded on Channel B.
 - Any photographic film, when not in use, will be stowed in the SWS film vault, until transferred to the CSM for return.
 - Any deviations from planned transfers or stowage, including lost or broken items, should be reported by the crew in order to maintain accurate stowage knowledge and C.G. definition in the OWS.
3. The trash airlock is used only for those disposable items which may contribute to microbial growth or contamination and limited life drugs. All other disposable items are stowed in bags in the plenum area.
4. Stowage bags in the plenum area are stored in such a manner to assure that adequate ventilation is provided around the bags to prevent collection of condensate.

4/11/73

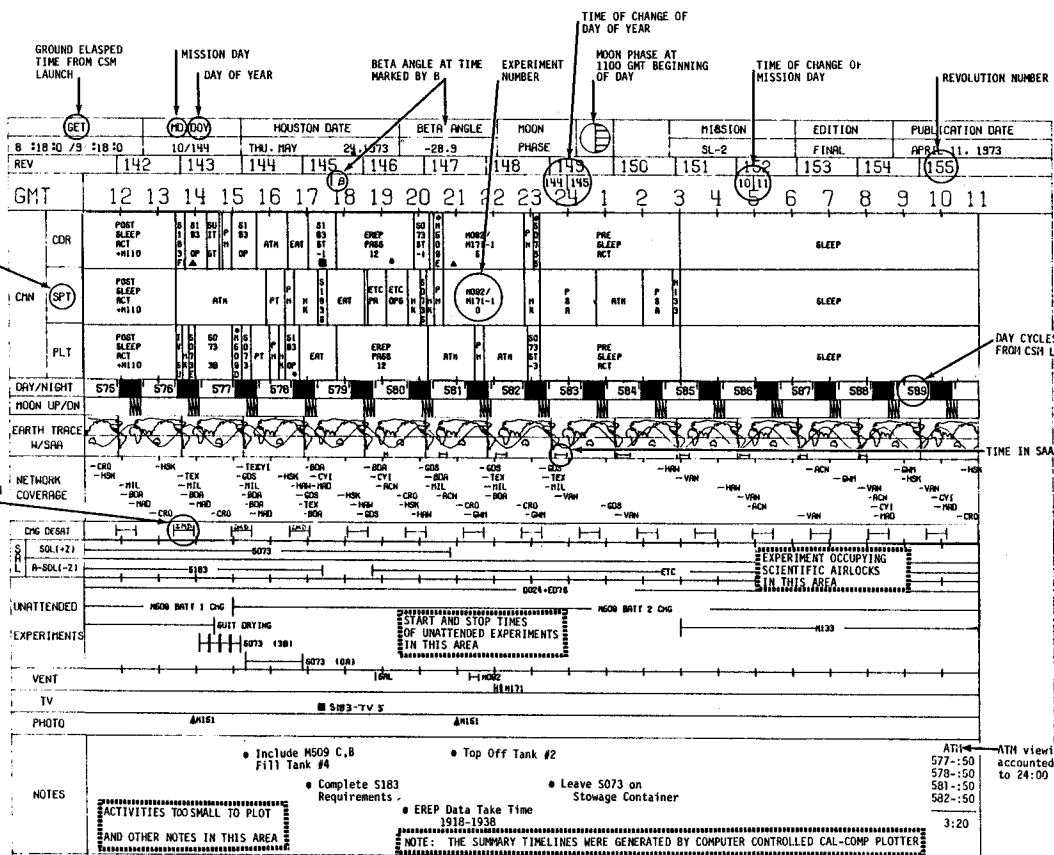
FLIGHT PLAN NOTES
PHOTOGRAPHY & UPDATES

J. Photography

1. Details on experiment objectives and operations requiring cameras and film utilization are contained in the "Photographic Plan" for SL-2, SL-3, and SL-4, February 14, 1973.
2. An update PAD (teleprinter message) is uplinked to the crew giving inflight photographic information necessary to meet Experiment objectives. The format of this message is presented in the Skylab Flight Plan Update Message document.

K. Updates

1. Specific PAD formats and related information are found in the SWS Updates Book (Final Change A) dated March 9, 1973.



ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
ACN	ASCENSION	IMSS	INFLIGHT MEDICAL SUPPORT SYSTEM
A-SOL	ANTI-SOLAR	IRV	INVENTORY
BOA	BERMUDA	JOP	JOINT OBSERVING PROGRAM
CDR	COMMANDER	MED	MEDICAL
CNG DESAT	CONTROL MOMENT GYRO DESATURATION	MON	MONITOR
CWN	CREWMAN	MOB	MAGAZINE LOAD
CRO	CARNAVON	OP	OPERATION
CYI	GRAND CANNARY ISLAND	OPS,OP,0	OPERATION
GDS	GOLDSTONE	PR,P	PREPARATION
GRT	GREENWICH MEAN TIME	PH	PERSONAL HYGIENE
GUAM	GUAM	PH	PERSONAL HYGIENE
HAWAII	HAWAII	PSA	POST-SLEEP ACTIVITIES
HSK	HONEYUCKLE CREEK	PSA	POST-SLEEP ACTIVITIES
INH	INHIBIT MOMENTUM DUMP	ST,S	STOW
ISLAND	ISLAND	ST,S	STOW
MADRID	MADRID	SU	SUIT UP
MERRITT ISLAND	MERRITT ISLAND	SU	SUIT UP
MISSION DAY	MISSION DAY	SMS	SHOWER
PILLOT	PILLOT	SYS	SYSTEMS
SOUTH ATLANTIC ANOMALY	SOUTH ATLANTIC ANOMALY	T	TEMPERATURE
SCIENTIFIC AIRLOCK	SCIENTIFIC AIRLOCK	TV	TELEVISION
SOLAR	SOLAR	UV	ULTRA VIOLET
SYSTEM	SYSTEM	V	VERIFICATION
TEXAS	TEXAS	VIS	VISIBILITY
VANGUARD	VANGUARD	W	WARRIORM
ACT, A	ACTIVITIES	XFER	TRANSFER
BLOHED	ACTIVATION	Z-LV	Z-LOCAL VERTICAL
CAL	BIOMEDICAL		
CO,C/O,C	CALIBRATION		
CO2	CHECKOUT		
CUN	CO2, DEHPPOINT DTO		
CST,CH	CONTAMINATION		
D	COMMAND SERVICE MODULE, COMMAND MODULE		
E	DEACT, D		
E-7 CK	DEACTIVATION		
EREP TAPE	EXTEND		
EVA	ENTRY MINUS 7 DAY CHECK		
EXP	TAPE CHANGE		
FL	EARTH TERRAIN CAMERA		
FS, F	EXPERIMENT		
F/C	EXTRAVEHICULAR ACTIVITY		
H	FILM INSTALL		
HK	FILM FLARE		
	FILM STON		
	FUEL CELL		
	HEAD		
	HOUSEKEEPING		

SUMMARY TIMELINE ABBREVIATIONS

GET	MD/DOY	HOUSTON DATE	BETA ANGLE	MOON PHASE	MISSION	EDITION	PUBLICATION DATE																		
3 18 20 / 4 18 20	5 / 139	SAT. MAY 19. 1973	-21.6		SL-2	FINAL	APRIL 11. 1973																		
REV 70	71	72	73	74	75	76	77	78	79	80	81	82	83												
GMT	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	
CDR	POST SLEEP ACT-1 -M110	ATH	ATH	PT	EREPI	EAT	F D I R I E L L	ATH	ATH	ATH	PRE SLEEP ACT-1	ATH	PRE SLEEP ACT-1	ATH	PRE SLEEP ACT-1	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH
CHN SPT	POST SLEEP ACT-2 +M110	ATH	ATH	ATH	Z-LV HEAT ASSIST	ATH	F D I R I E L L	ATH	ATH	M032/ M171-1 0	ATH	PRE SLEEP ACT-3	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	
PLT	POST SLEEP ACT-3 +M110	ATH	ATH	ATH	EREPI	EAT	F D I R I E L L	ATH	ATH	M032/ M171-1 S	ATH	PRE SLEEP ACT-2	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	
DAY/NIGHT	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	
MOON UP/DN																									
EARTH TRACE W/SAR																									
NETWORK COVERAGE	-GMI -HSK	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO	-HIL -BOR -MRO
CMG DESAT	SOL1+21 A-SOL1-21																								
UNATTENDED EXPERIMENTS	M551 COOLING S228 ED76																								
VENT	M551 M551 M551 M551																								
TV	M551-TV24 M551-TV24 ED76-TV22 EARTING-TV3																								
PHOTO	M551 M551 M551 M551																								
NOTES	<p>•TV 24 SU ••S009 INITIATE AT 1429 ••••CON 1S1 ••••PRD RELOCATE</p> <p>•M551 TERM ••TURN DOWN VENTILATORS FOR CO2 2 ON DAY 6 •••MEDICAL CONF - 0137</p> <p>HK REQUIRED - 0:10, 1A, 5A HK SCHEDULED - 1:40</p> <p>EREPI VTS TK 1A - PLT EREPI DATA TAKE 17:08:57 - 17:33:57</p> <p>EVENING STATUS REPORT - 0113</p>																								

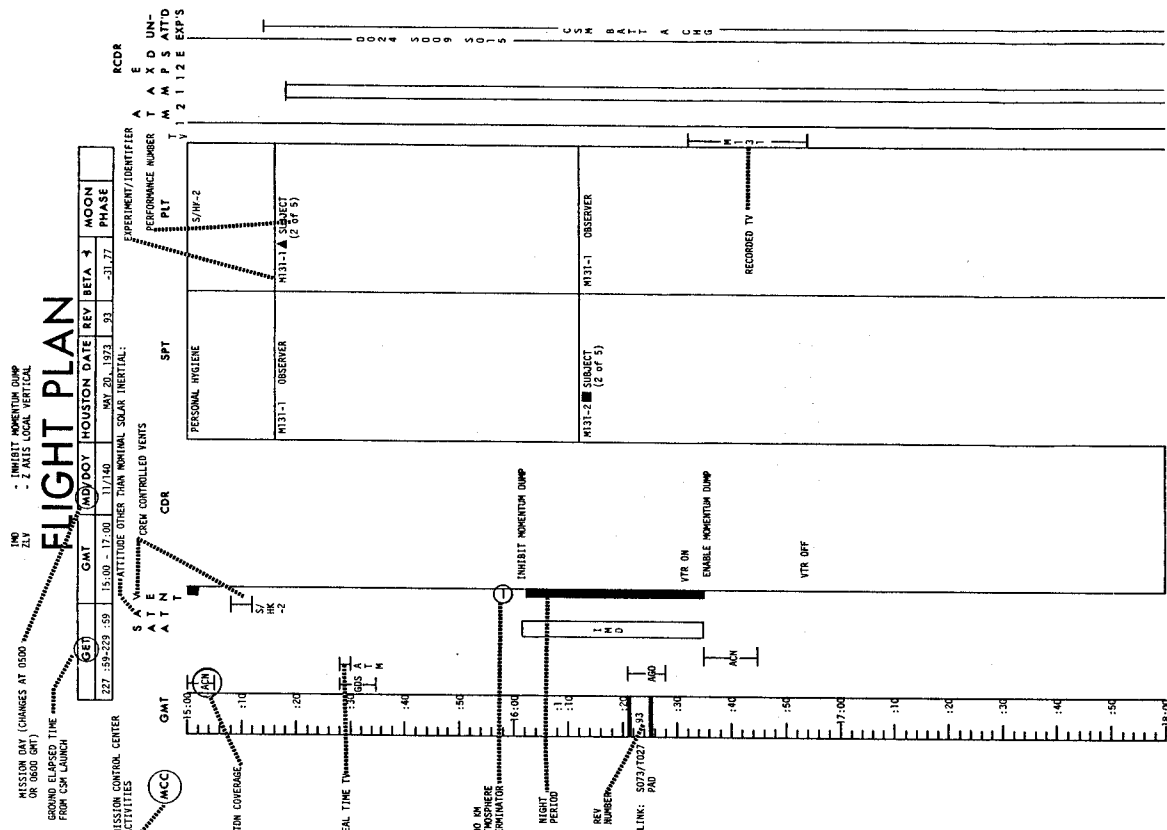
GET	MD/DOY	HOUSTON DATE	BETA ANGLE	MOON PHASE	MISSION	EDITION	PUBLICATION DATE																		
4 18 20 / 5 18 20	6 / 140	SUN. MAY 20. 1973	-23.9		SL-2	FINAL	APRIL 11. 1973																		
REV 84	85	86	87	88	89	90	91	92	93	94	95	96	97	98											
GMT	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	
CDR	POST SLEEP ACT-2	ATH	ATH	EAT	EREPI	EAT	M131-2 S	PT	ATH	M032/ M171-1 0	ATH	PRE SLEEP ACT-1	ATH	PRE SLEEP ACT-1	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	
CHN SPT	POST SLEEP ACT-3	ATH	ATH	ATH	Z-LV HEAT ASSIST	ATH	M131-2 S	PT	ATH	M032/ M171-1 S	ATH	PRE SLEEP ACT-2	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	
PLT	POST SLEEP ACT-1	ATH	ATH	ATH	EAT	EREPI	ATH	ATH	ATH	ATH	ATH	PRE SLEEP ACT-3	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	ATH	
DAY/NIGHT	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	
MOON UP/DN																									
EARTH TRACE W/SAR																									
NETWORK COVERAGE	-VAN -CYI -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO	-BOR -MRO
CMG DESAT	SOL1+21 A-SOL1-21																								
UNATTENDED EXPERIMENTS	S228 T027 M032 ED76-S009-S015																								
VENT	M131 M131 M131																								
TV	M131 M131 M131																								
PHOTO	M131 M131-1 M131-1B																								
NOTES	<p>•CO2 2</p> <p>•INSTALL S192 ATTENUATOR</p> <p>•S009 SET AT 2306</p> <p>•M1487-4B SU</p> <p>•MEDICAL CONF - 0055</p> <p>HK REQUIRED - 0, 1A, CM2</p> <p>EREPI VTS TK 16A - CDR</p>																								

GET	MD/DOY	HOUSTON DATE	BETA ANGLE	MOON PHASE	MISSION	EDITION	PUBLICATION DATE																		
24:18:30 / 25:18:30	26/160	SAT. JUNE 9, 1973	16.5	☾	SL-2	FINAL	APRIL 11, 1973																		
REV	373	374	375	376	377	378	379	380	381	382	383	384	385	386											
GMT	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	
CDR	POST SLEEP ACT-2		EVA PREP		EVA		POST EVA	EAT		POST EVA		T V S T		PRE SLEEP ACT-1											SLEEP DUTY
CHN SPT	POST SLEEP ACT-3		EVA PREP		EVA		POST EVA	EAT		POST EVA		H K 2 A S T		PRE SLEEP ACT-3	ATM										SLEEP
PLT	POST SLEEP ACT-1		EVA PREP		EVA MON		POST EVA	EAT	1003					PRE SLEEP ACT-2											SLEEP
DAY/NIGHT	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398										
MOON UP/DN																									
EARTH TRACE W/SAR																									
NETWORK COVERAGE	-HSK -CRD -ACN -BDR -VRN -GOS -HWA -VRN -ACN -CYI -CRO -CRO -GOS -HWA -GOS -BDR -HWA -GOS -GOS -GOS -GOS -VRN -VRN -ACN -GHI -HWA -HWA -HWA -HWA -HWA -HWA -CYI -ACN -HIL																								
CHG DESAT	SOL(+Z1) TV																								
UNATTENDED	SOL(-Z1) D024+D076+S003+S015																								
EXPERIMENTS	D024 H133																								
VENT	TAL EVA HWA																								
TV	EVA																								
PHOTO	M151 EVA M151 M156																								
NOTES	*S009 SET AT 0200 ... JOP 12 FILM CALIBRATION ... ATM PANEL PRE SLEEP CONFIGURATION PER DEACT C/L PG. 1-69 ... MEDICAL CONF AT 0122 HSK REQUIRED - 1:00, 1A, 8A, 24A HSK SCHEDULED - 1:00 EVENING STATUS REPORT - 0105																								

GET	MD/DOY	HOUSTON DATE	BETA ANGLE	MOON PHASE	MISSION	EDITION	PUBLICATION DATE																		
23:18:30 / 24:18:30	25/159	FRI. JUNE 8, 1973	12.0	☾	SL-2	FINAL	APRIL 11, 1973																		
REV	359	360	361	362	363	364	365	366	367	368	369	370	371	372											
GMT	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	
CDR	POST SLEEP ACT-1	DRY 25 REFER	T V P H	ERE P 14	EAT		M032/ M171-2			M032/ M171-3				PRE SLEEP ACT-1	EVA PRE PREP										SLEEP
CHN SPT	POST SLEEP ACT-3	ATH JOP-13	ATH	ETC PR	ATH	ETC OPS	M032/ M171-2			ATH				PRE SLEEP ACT-3	EVA PRE PREP										SLEEP
PLT	POST SLEEP ACT-2	S1 B3 ST -1	T V P H	ERE P 14			M032/ M171-3			ATH				PRE SLEEP ACT-2	EVA PRE PREP										SLEEP DUTY
DAY/NIGHT	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382										
MOON UP/DN																									
EARTH TRACE W/SAR																									
NETWORK COVERAGE	-CYI -ACN -HIL -BDR -VRN -GOS -HWA -VRN -ACN -GHI -HWA																								
CHG DESAT	SOL(+Z1) TV																								
UNATTENDED	SOL(-Z1) S183 ETC D024+D076+S003+S016																								
EXPERIMENTS	M555 M555 COOLING H133																								
VENT	TAL ETC H1M032 H1M032 H1M032 H1M032																								
TV	PH-TV16																								
PHOTO	M151 M151																								
NOTES	* TRIM PM - 1202 or ** TRIM RN-1248 * TV16 SU ** S009 SET AT 1418 ... PRD1 ... M555 RCD (6 PLACES) * PLT DOES VTS POST OP AND CDR DOES C & D POST OP * INCLUDES S190 FILTER REMOVAL, DESICCANT REPLACE AND S192 ATTENUATOR REMOVAL * CON 2 ** MEDICAL CONF AT 0205 EVENING STATUS REPORT - 0148 ATH 361-:22 362-:50 370-:50 371-:50 374-:45																								

GET	MO/DOY	HOUSTON DATE					BETA ANGLE	MOON PHASE	MISSION	EDITION	PUBLICATION DATE														
27:18:40 / 28:18:40	29/163	TUE	JUNE	12	1973	30.4		SL-2	FINAL	APRIL 11, 1973															
REV	416	417	418	419	420																				
GMT	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	
CDR	UNDOCK PREP																								
SPT	UNDOCK PREP	UNDOCKING	SEPARATION																						
PLT	UNDOCK PREP																								
DRY/NIGHT																									
MOON UP/DN																									
EARTH TRACE W/SAR																									
NETWORK COVERAGE																									
CHG DESA?																									
SOL 1-21																									
A-SOL 1-21																									
UNATTENDED																									
EXPERIMENTS																									
VENT	UNDOCKING																								
TV	FLY AROUND																								
PHOTO	FLY AROUND																								
NOTES	UNDOCKING - 12:46:55 SEPARATION - 13:33:37 SPS1 - 14:01:22 SPS 2 - 17:03:00 SPLASHDOWN - 17:45:00																								

2-28



SOL A-SOL
SL-2
APRIL 11, 1973

MISSION: SL-2
EDITION: FINAL
PUBLICATION DATE: APRIL 11, 1973

FLIGHT PLANNING BRANCH

- NOTES:
1. CDR ACTIVITIES FROM FROM SECTION 4.
 2. ADDITIONAL ABBREVIATIONS AND DESCRIPTIONS ON PAGE 2-1.
 3. TRAJECTORY PARAMETERS GENERATED BY COMPUTER CONTROLLED CAL-DMP PLOTTER.

INTRODUCTION

This section of the Flight Plan contains detailed timelines of the following mission phases:

Skylab I Launch through the first 24-hours, Skylab II Launch, Rendezvous, Docking, OWS Activation, EVA, E-7 Entry Simulation, E-7 Pre-Deorbit Systems Checks, OWS Deactivate and Entry.

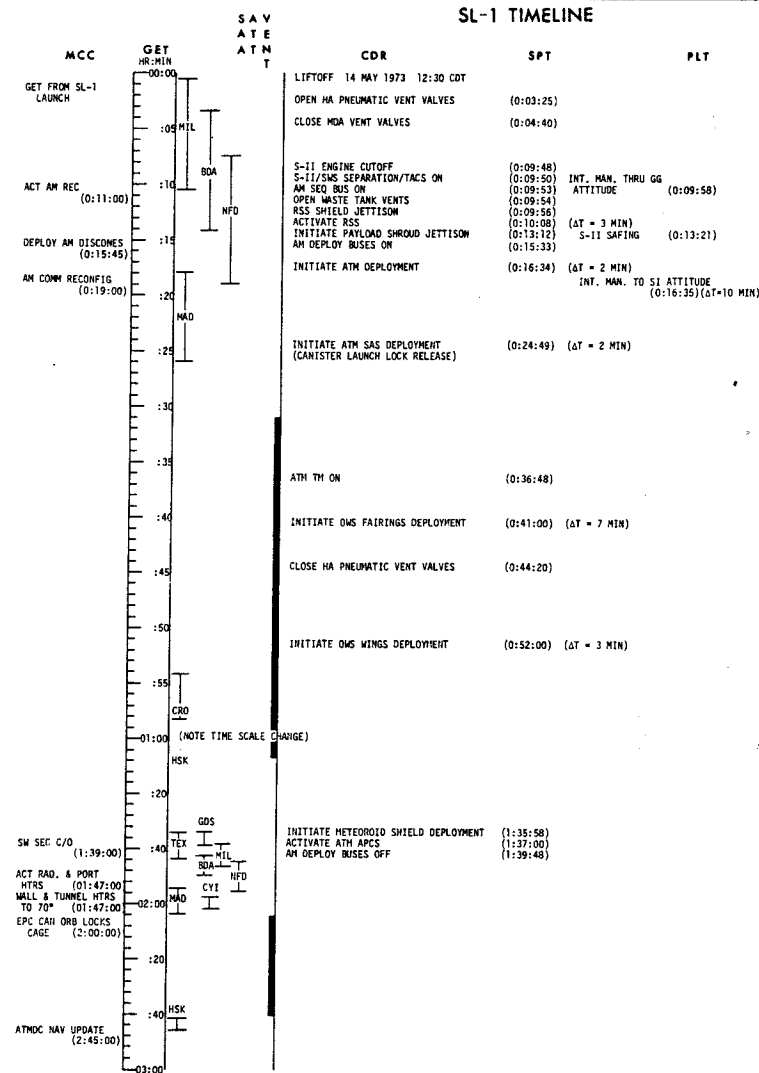
These timelines will be located in the Flight Data File as follows:

1. Page 3-2 SL-1 Launch - Not on-board
2. Page 3-6 SL-2 Launch/Rendezvous - Not on-board
3. Page 3-9 Docking/Activation - SWS Activation Checklist
4. Page 3-26 E-7 Pre-Deorbit Systems Checks - Entry Checklist
5. Page 3-28 E-7 Entry Simulation - Entry Checklist
6. Page 3-31 EVA - EVA Checklist
7. Page 3-36 SWS Deactivation - SWS Deactivation Checklist
8. Page 3-42 CSM Quiescent Mode Terminate - SWS Deactivation Checklist
9. Page 3-43 Preparation for Undocking - SWS Deactivation Checklist
10. Page 3-44 Undocking Through Entry - Entry Checklist

The β angles on these pages are correct for 17:40 GMT of the respective mission days and will vary slightly for other hours during the day.

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
00:00 - 03:00	17:30 - 20:30	-1/134	MAY 14, 1973	2		



RCDR
A
E
T A X D UN.
M M P S ATT'D
1 2 1 1 2 E EXPS

MISSION	EDITION	PUBLICATION DATE
SL-1	FINAL	11 APRIL, 1973

FLIGHT PLANNING BRANCH

3-2

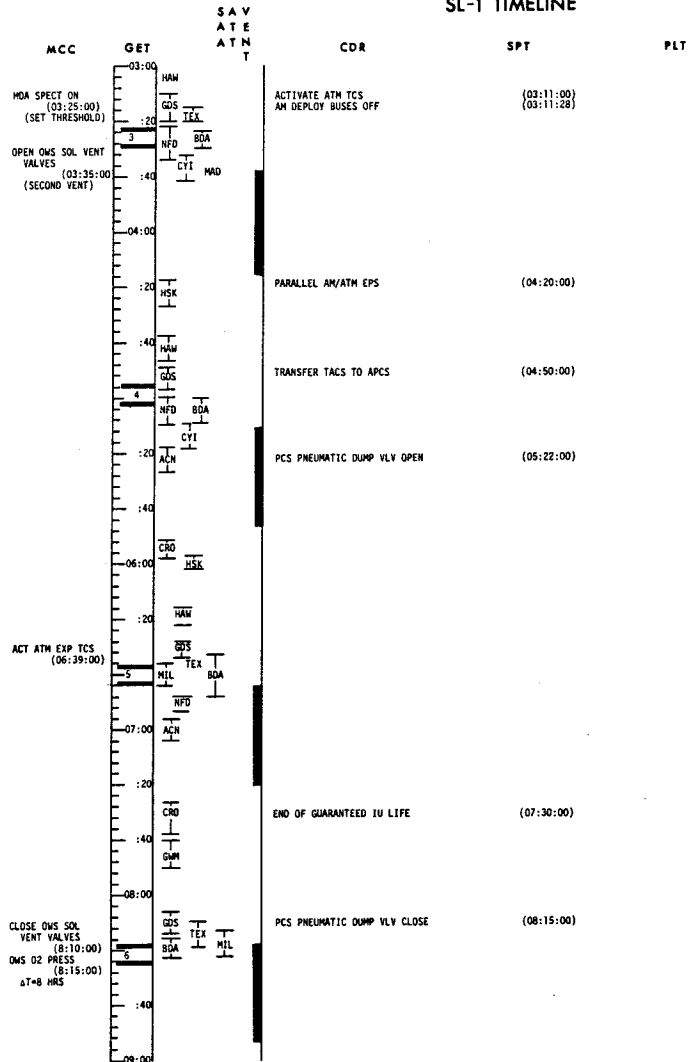
S
A
L
SOL A.SOL

63

FLIGHT PLAN

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
03:00 - 09:00	20:30 - 02:30	-1/134	MAY 14, 1973	3		

SL-1 TIMELINE



MISSION	EDITION	PUBLICATION DATE
SL-1	FINAL	11 APRIL 1973

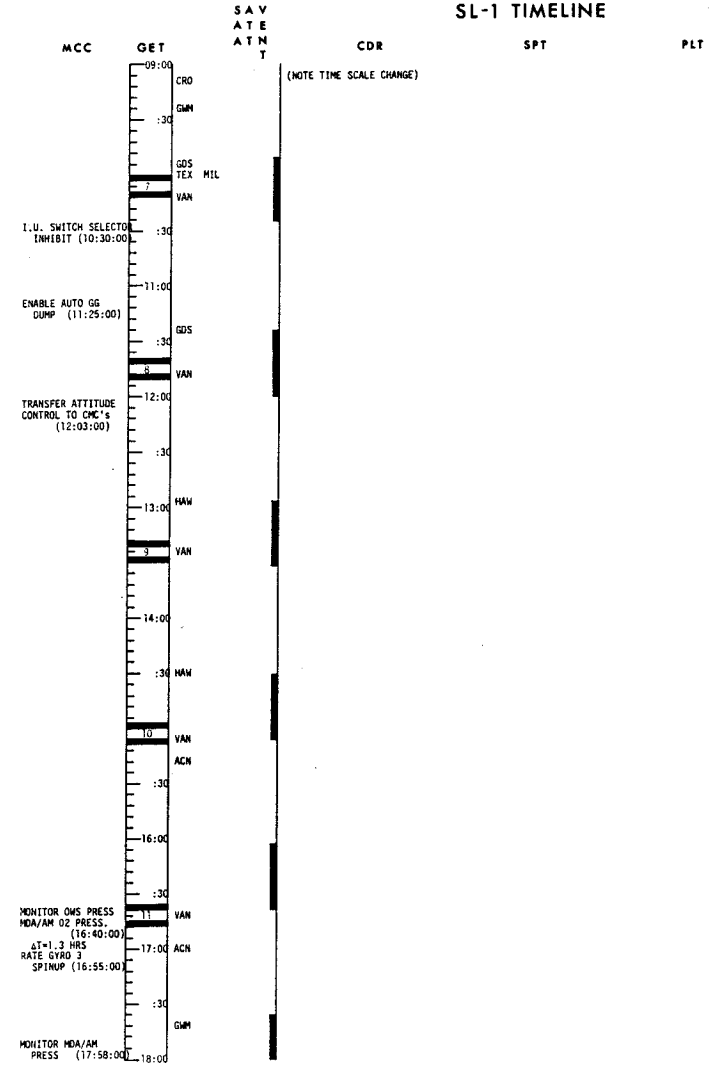
RCDR
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T A X D UN.
M M P S ATT'D
1 2 1 1 2 E EXPS

SOL A-SOL

FLIGHT PLAN

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
09:00 - 18:00	02:30 - 11:30	-1/135	MAY 14, 1973	7		

SL-1 TIMELINE



MISSION	EDITION	PUBLICATION DATE
SL-1	FINAL	11 APRIL 1973

FLIGHT PLANNING BRANCH

3-4

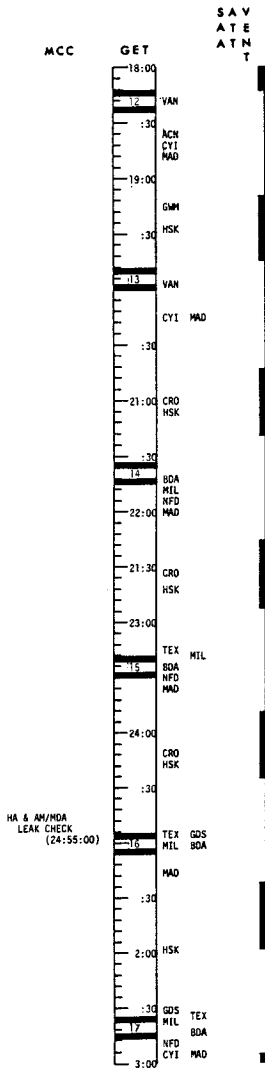
RCDR
E
T A X D UN.
M M P S ATT'D
1 2 1 1 2 E EXPS

SOL A-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
u:18:00 - 1:03:00	11:30 - 20:30	1/135	MAY 15, 1973	12		

SL-1 TIMELINE



MISSION	EDITION	PUBLICATION DATE	
SL-1	FINAL	11 APRIL 1973	3-5

FLIGHT PLANNING BRANCH

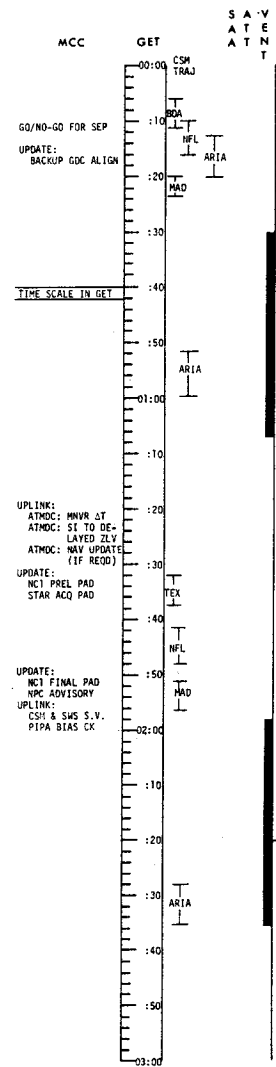
RCDR
A
E
T A X D UN.
M M P S ATT'D
1 2 1 1 2 E EXP5

S
A
L SOL A.SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
00:00 - 03:00	17:00 - 20:00	1/135	MAY 15, 1973	16	-8.89	

SL-2 LIFTOFF/RENDEZVOUS



LIFTOFF 16:59:36 GMT MAY 15, 1973 SKYLAB LAUNCH CHECKLIST

INSERTION
SEPARATION PREP [L/2-10] TIG: 00:16:00
BT: 7.4 SEC
AV: 3.0 FPS

SEPARATION

V49 MNVR TO NCI ATT. OBSERVE SLA PANELS
DOFF HELMETS AND GLOVES SYSTEM CKS [L/3-1]

SKYLAB RENDEZVOUS CHECKLIST

RECORD PAD [1-1]
JETISSON OPTICS DUST COVERS
V49 - MNVR TO P52 ATTITUDE (IF REQ'D)
P52 OPTION 3 (LAUNCH ORIENT)

P52 OPTION 2 (T ALIGN)
(RENDEZ. ORIENT)

BMAG 2 DRIFT CHECK [1-2]
GDC ALIGN
CONS LOS DETERMINATION
(BORESIGHT STAR 45, FOMALHAUT)

EMS AV TEST & NULL BIAS CK. [1-3]
WASTE WATER DUMP TO 15%
P31 NCI TARGETING FINAL COMP

* IF BMAG 2 >10"/HR/AXIS *
* START BMAG 1 DRIFT CHECK *

P20 OPTION 5 (TRACK EARTH)
DOFF PGA'S

RECORD: NCI PRELIMINARY PAD
STAR ACQ PAD
REPORT GYRO TORQUE ANGLE AND GET

RECORD NCI FINAL PAD

V49 MNVR TO PAD BURN ATT.

P31 NCI TARGETING FINAL COMP

P40 - SPS THRUST
[NCI] TIG: 02:20:12
BT: 9.6 SEC
AV: 218.9 FPS

P52 OPTION 3
(RENDEZ. ORIENT)
H₂ PURGE LINE HTR - ON

O₂ & H₂ FUEL CELL PURGE

H₂ PURGE LINE HTR - OFF

MISSION	EDITION	PUBLICATION DATE	
SL-2	FINAL	APRIL 11, 1973	3-6

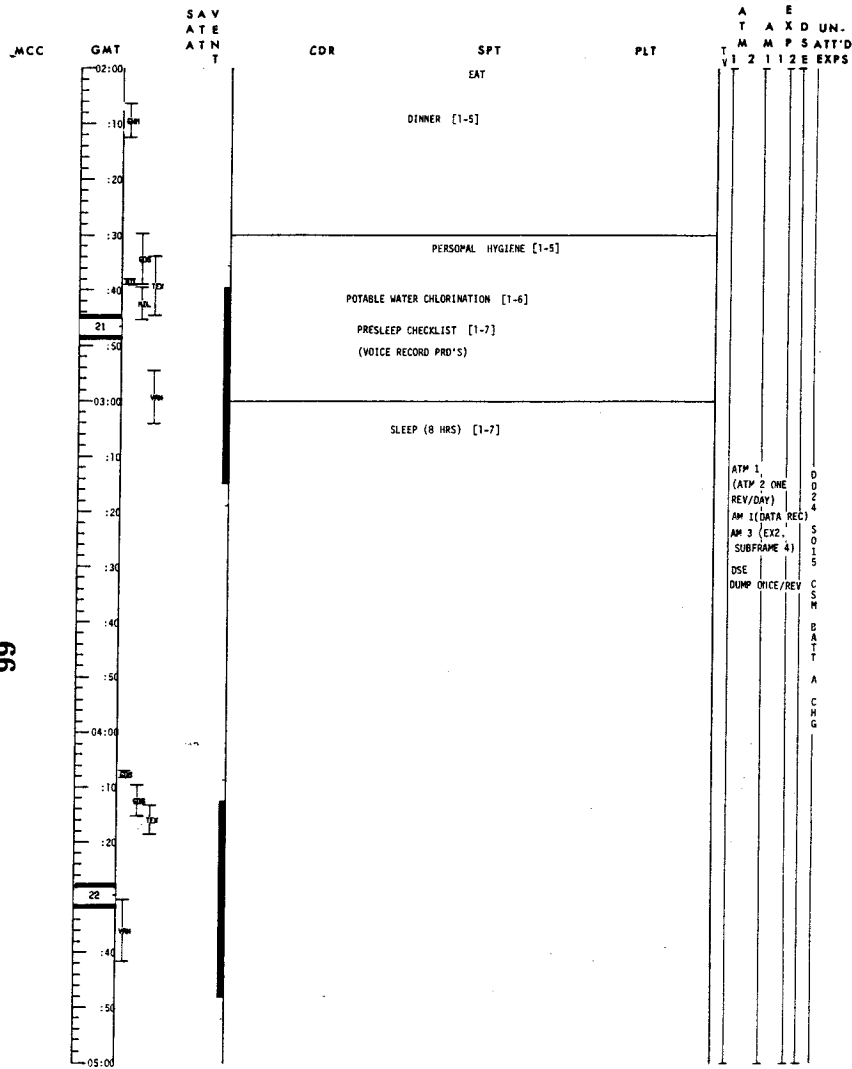
FLIGHT PLANNING BRANCH

RCDR
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T A X D UN.
M M P S ATT'D
1 2 1 1 2 E EXP5

S
A
L SOL A.SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
09:00 - 12:00	02:00 - 05:00	1/136	MAY 15, 1973	21	-8.5	



MISSION	EDITION	PUBLICATION DATE
SL 2	FINAL	APRIL 11, 1973

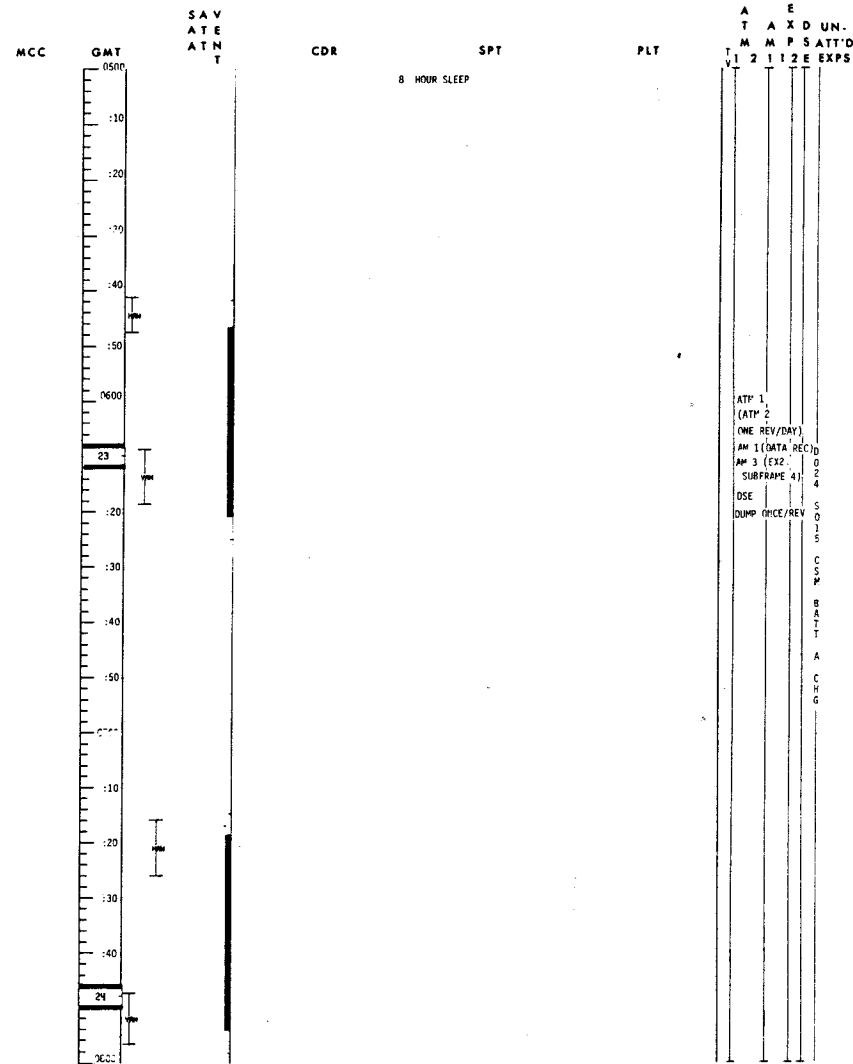
FLIGHT PLANNING BRANCH

3-9

SOL A-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
0:17:01/0:15:01	0500 - 0800	2/136	MAY 16, 1973	23	-8.8	



MISSION	EDITION	PUBLICATION DATE
SL 2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

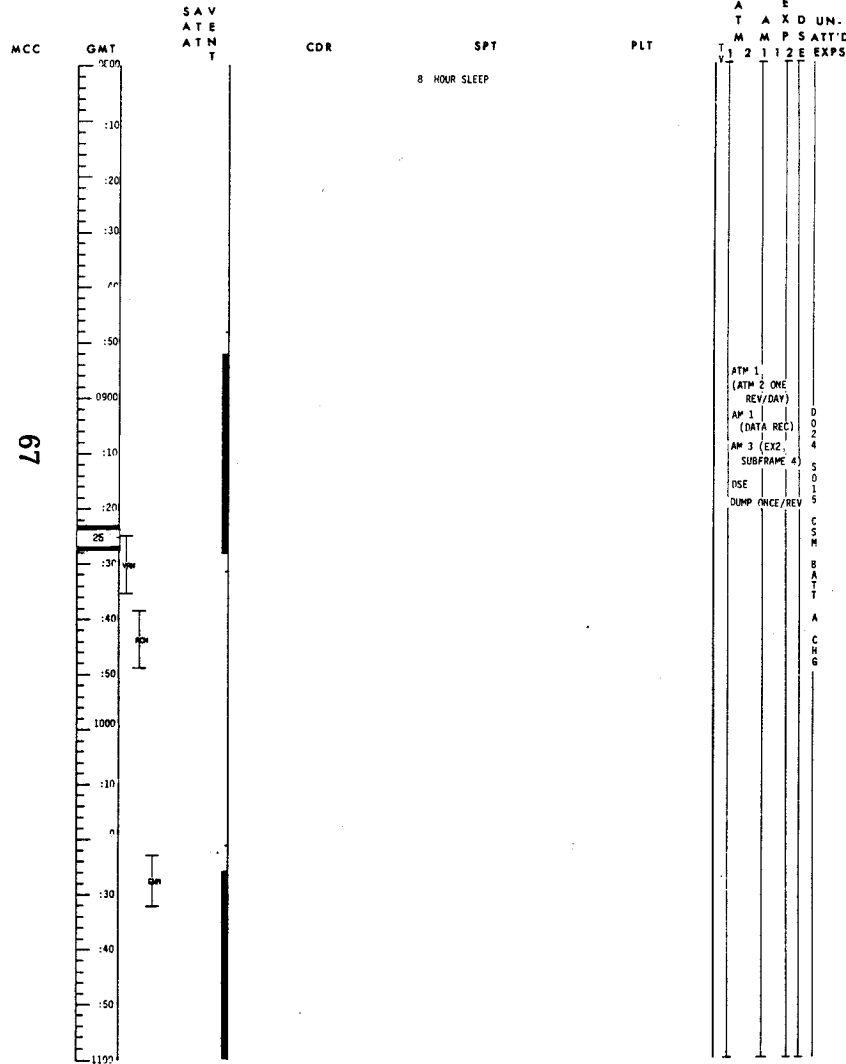
3-10

SOL A-SOL

99

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
0:15:01/0:18:01	0800-1100	2/136	JULY 16, 1973	75	-8.3	



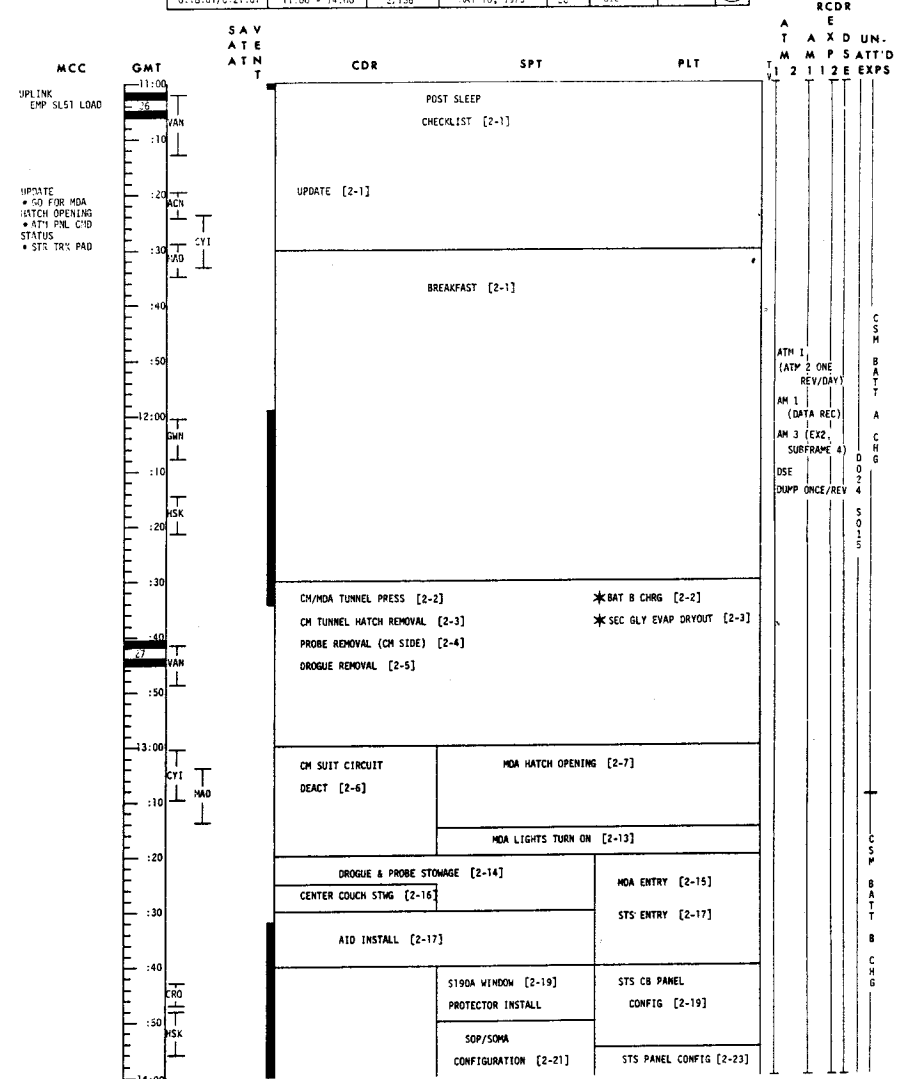
MISSION	EDITION	PUBLICATION DATE
SL 2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-11

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
0:18:01/0:21:01	11:00 - 14:00	2:136	MAY 16, 1973	26	-8.2	

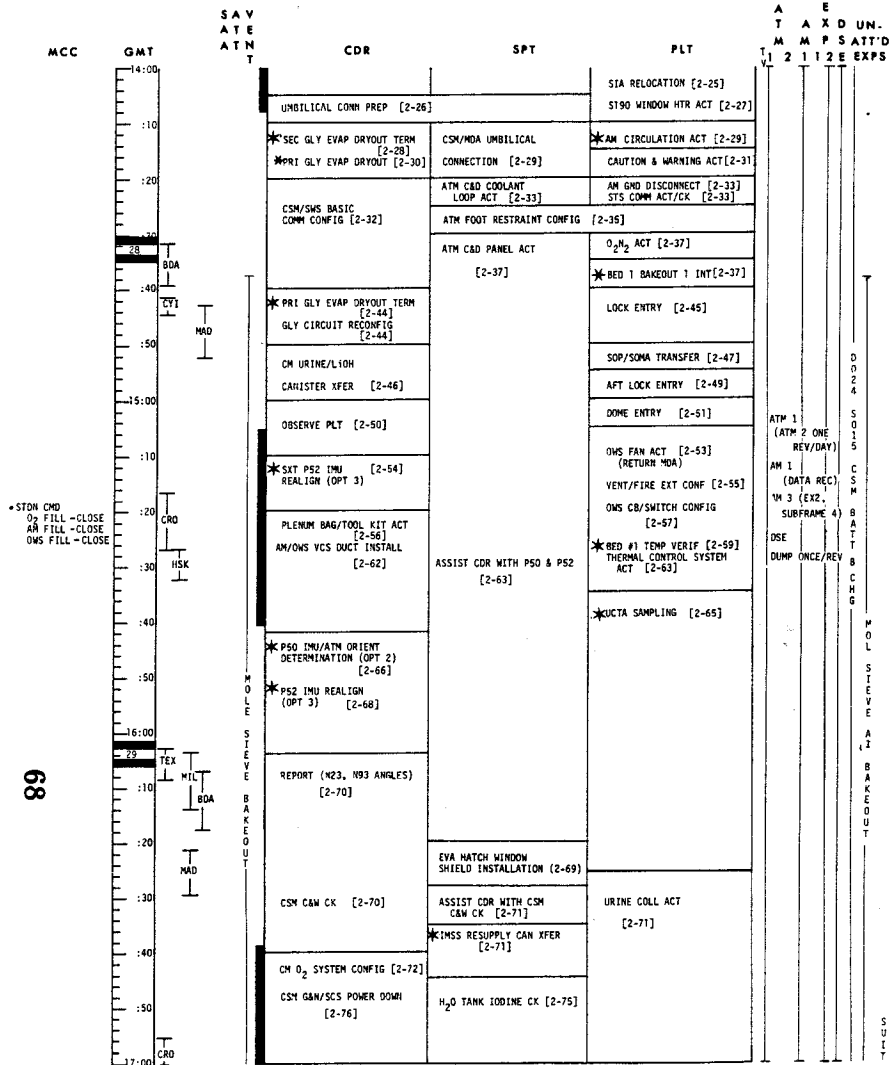


MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-12

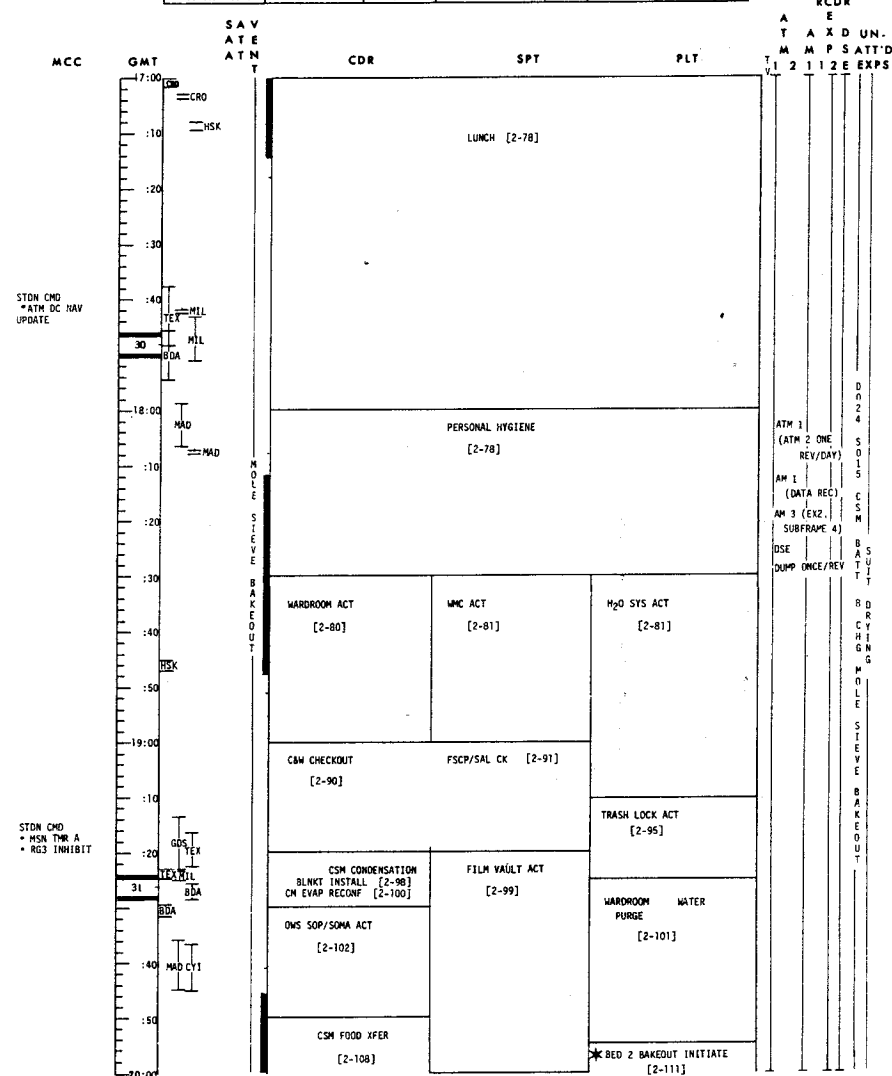
FLIGHT PLAN

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
0:23:01/1:00:01	14:00 - 17:00	2/136	MAY 16, 1973	28	-8.8	



FLIGHT PLAN

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
1:00:01/1:03:01	17:00 - 20:00	2/136	MAY 16, 1973	30	-12.4	

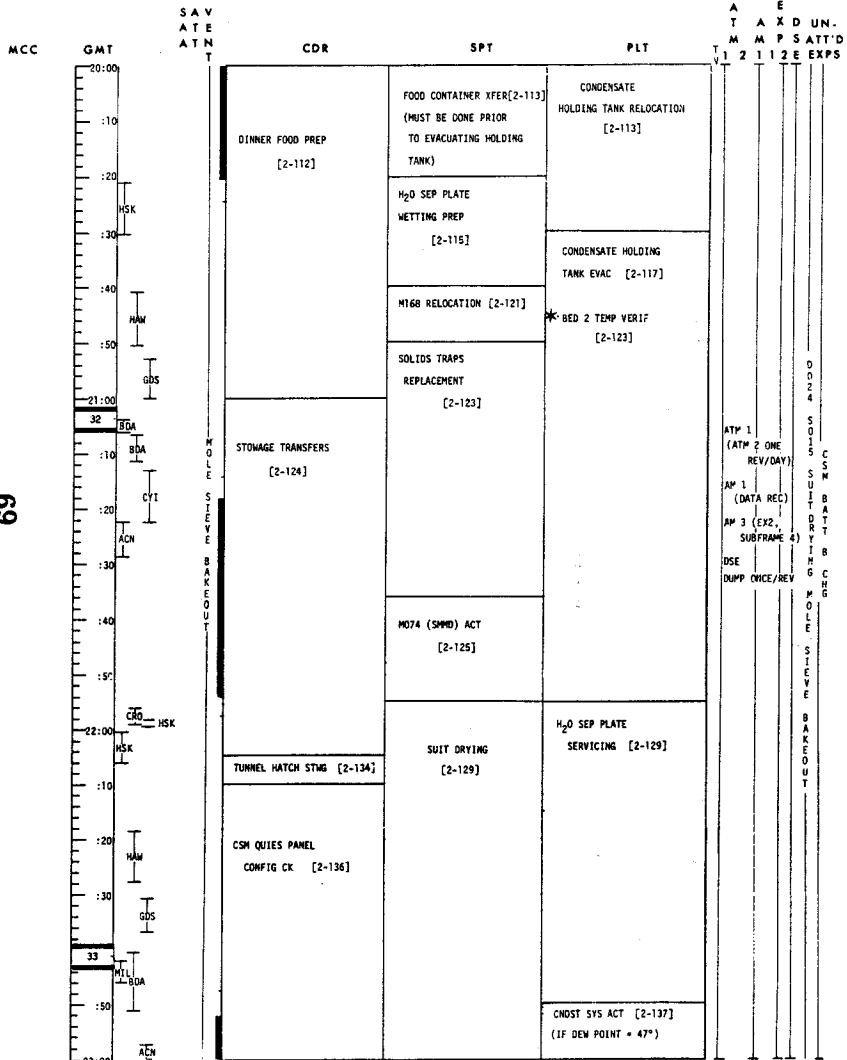


89

3-14

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
1:03:01/1:06:01	20:00 - 23:00	2/136	MAY 16, 1973	32	-12.4	



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-15

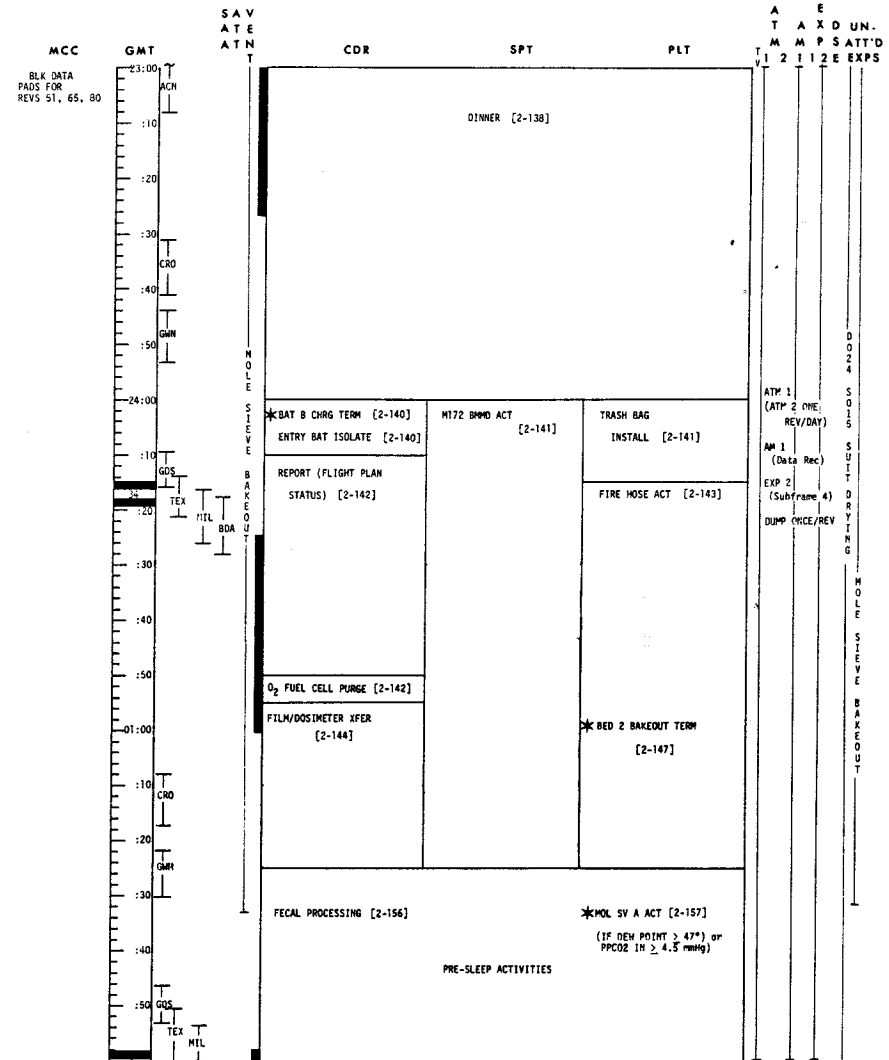
FLIGHT PLANNING BRANCH

SOL A-SOL

69

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
1:06:01/1:09:01	23:00 - 02:00	2/136	MAY 16, 1973	34	-12.4	



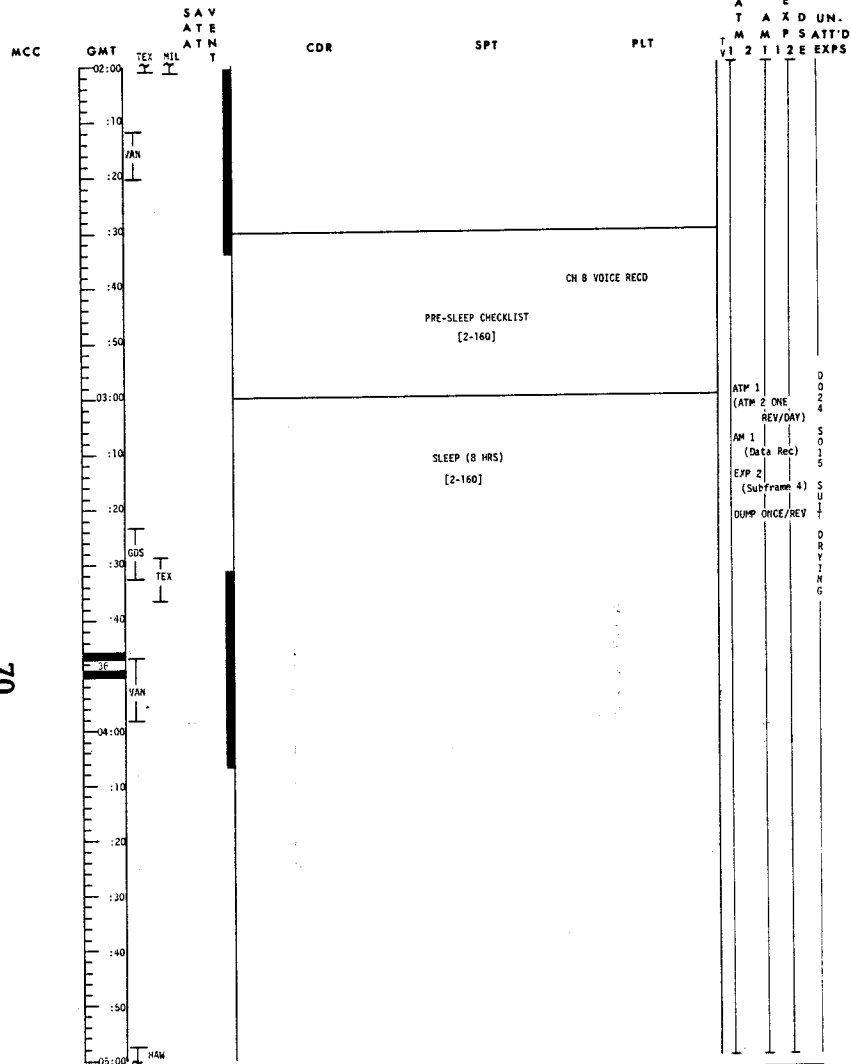
MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-16

SOL A-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
1:09:01/1:12:12:01	02:00 - 05:00	2/137	MAY 16, 1973	35	-12.4	



MISSION	EDITION	PUBLICATION DATE
SL 2	FINAL	APRIL 11, 1973

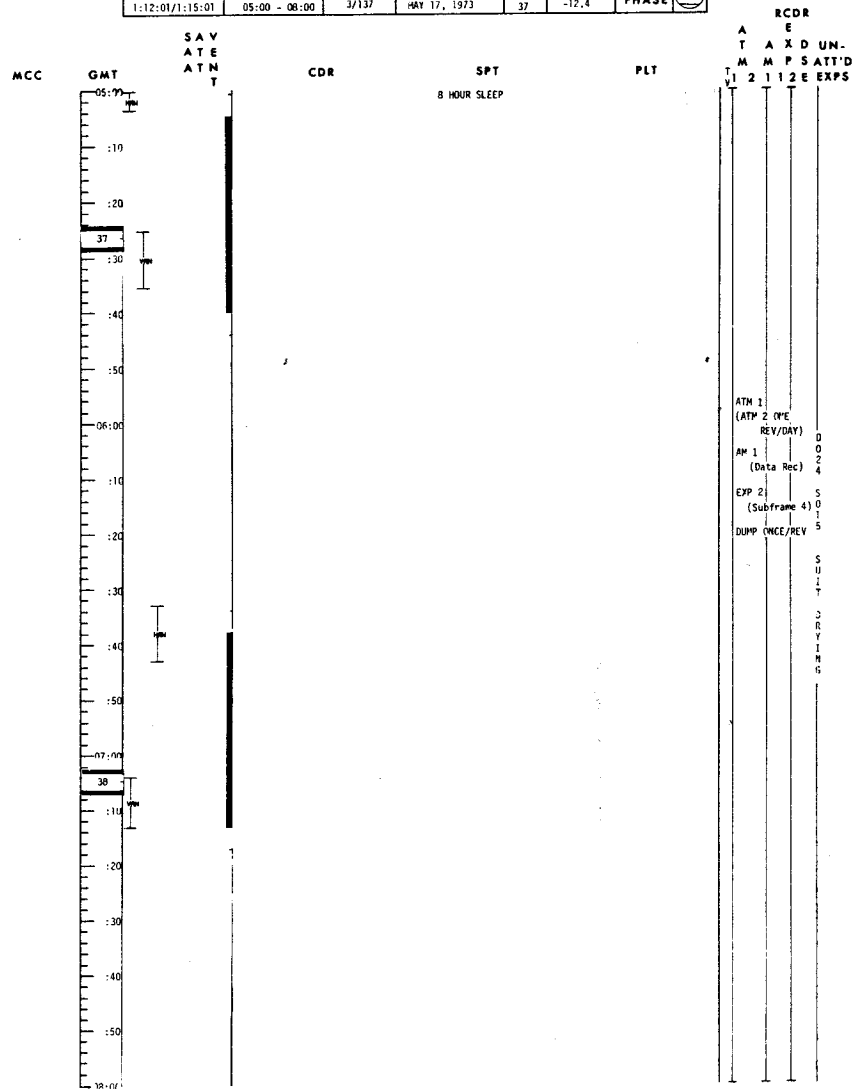
FLIGHT PLANNING BRANCH

3-17

SOL A-SOL
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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
1:12:01/1:15:01	05:00 - 08:00	3/137	MAY 17, 1973	37	-12.4	



MISSION	EDITION	PUBLICATION DATE
SL 2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

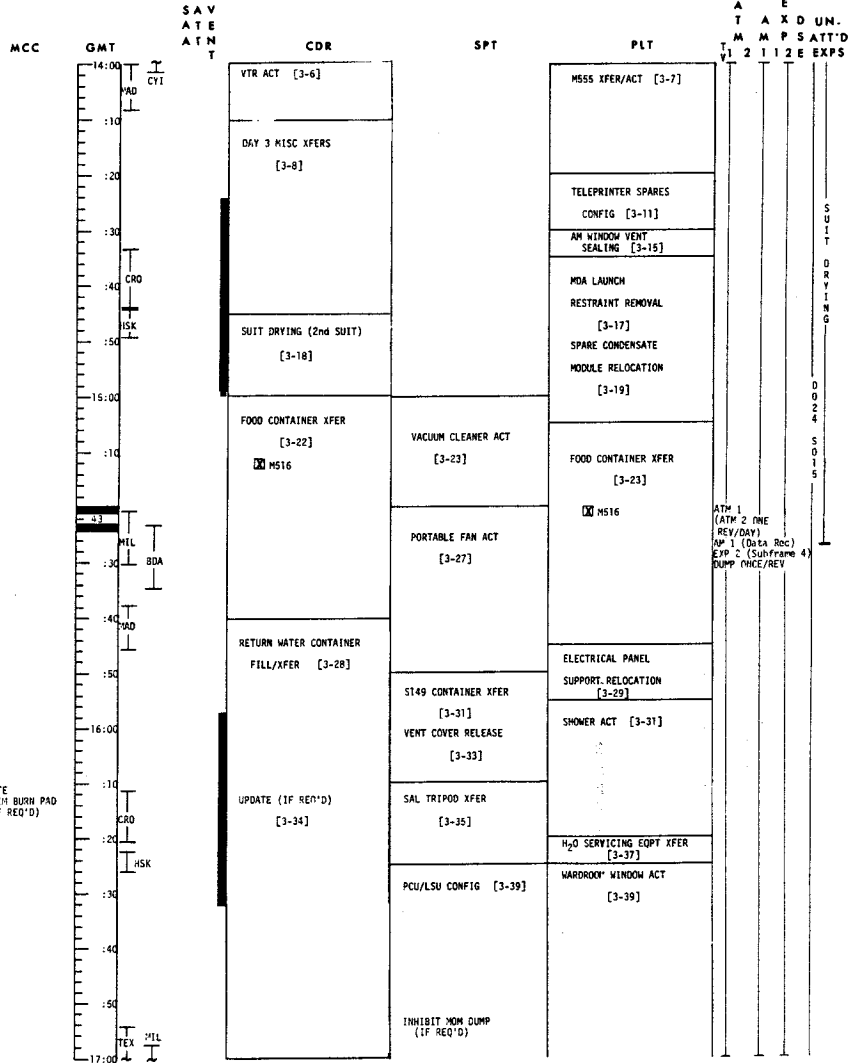
3-18

SOL A-SOL
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70

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
1:21:01/2:00:01	14:00 - 17:00	3/137	MAY 17, 1973	43	-12.4	



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

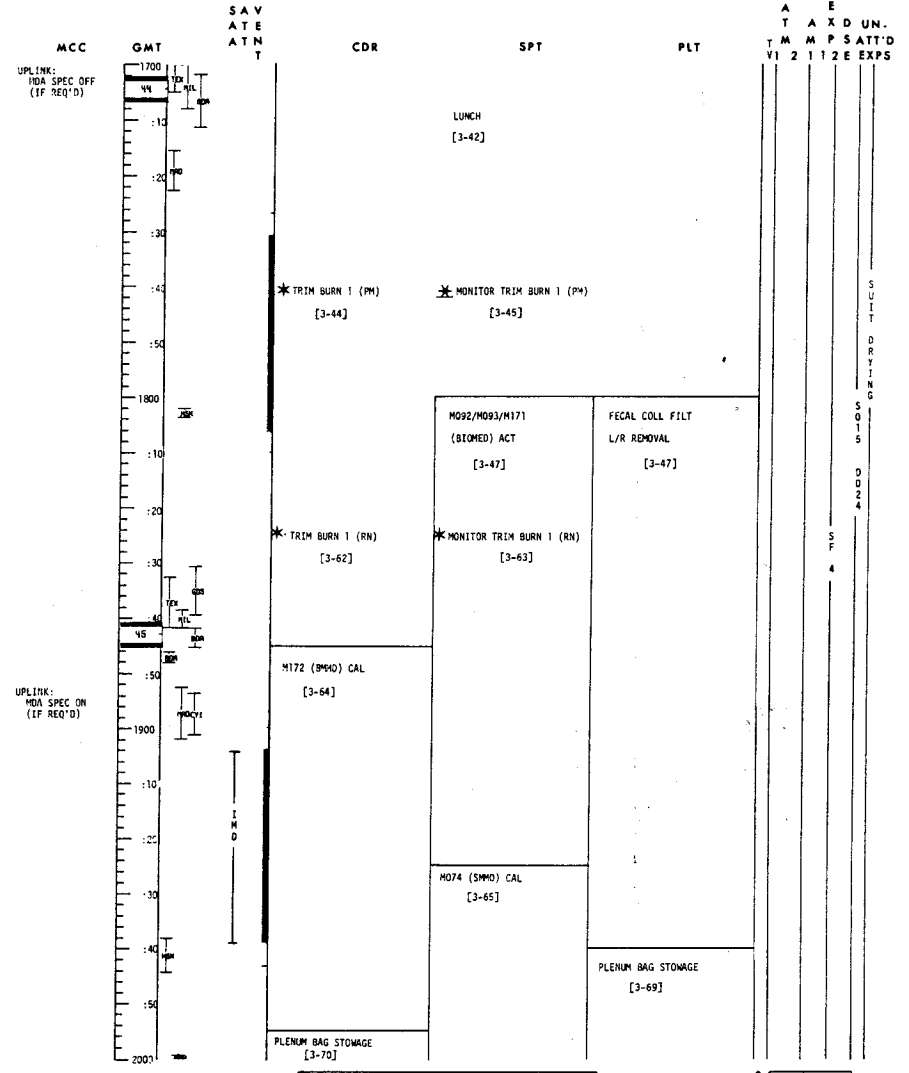
3-21

FLIGHT PLANNING BRANCH

SOLA-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
2:00:01/2:03:01	1700 - 2000	3/137	MAY 17, 1973	44	-15.1	



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

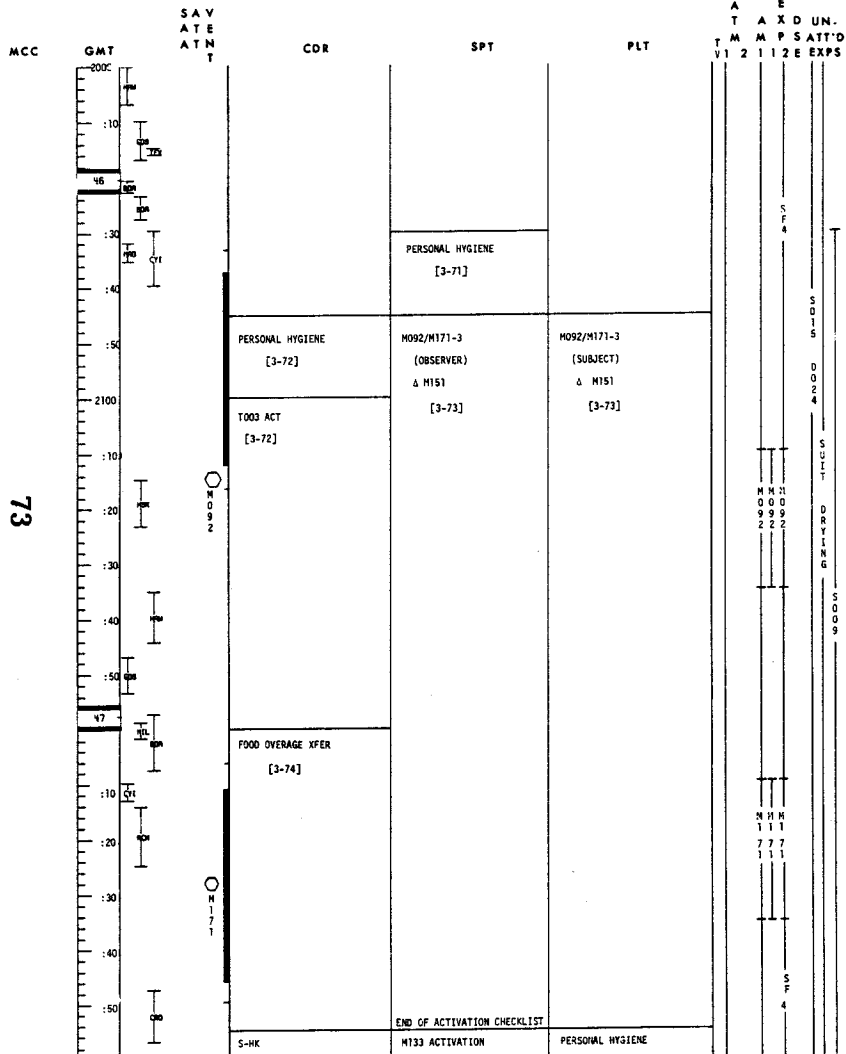
3-22

FLIGHT PLANNING BRANCH

SOLA-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
2:03:01/2:06:01	2000 - 2300	3/137	MAY 17, 1973	46	-15.8	

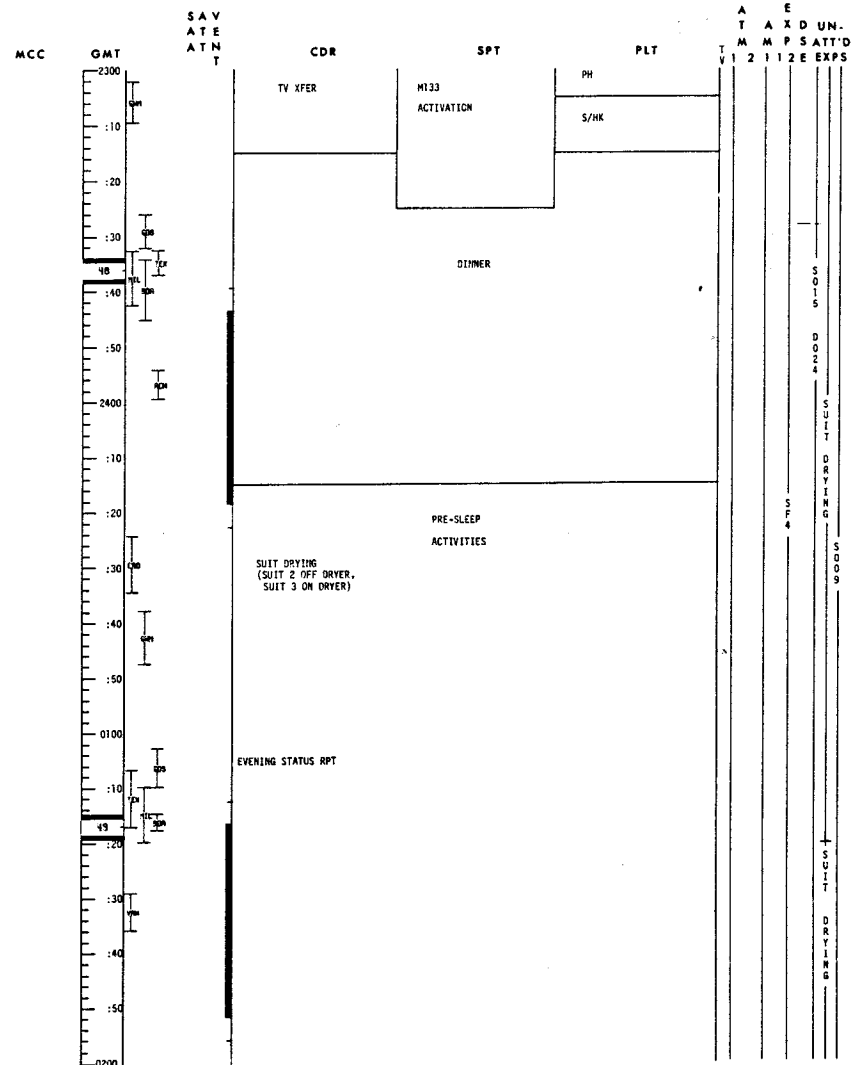


MISSION: SL-2, EDITION: FINAL, PUBLICATION DATE: APRIL 11, 1973, 3-23
 FLIGHT PLANNING BRANCH

SOLA.SOL
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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
2:06:01/2:09:01	2300 - 0200	3/137	MAY 17, 1973	48	-15.8	



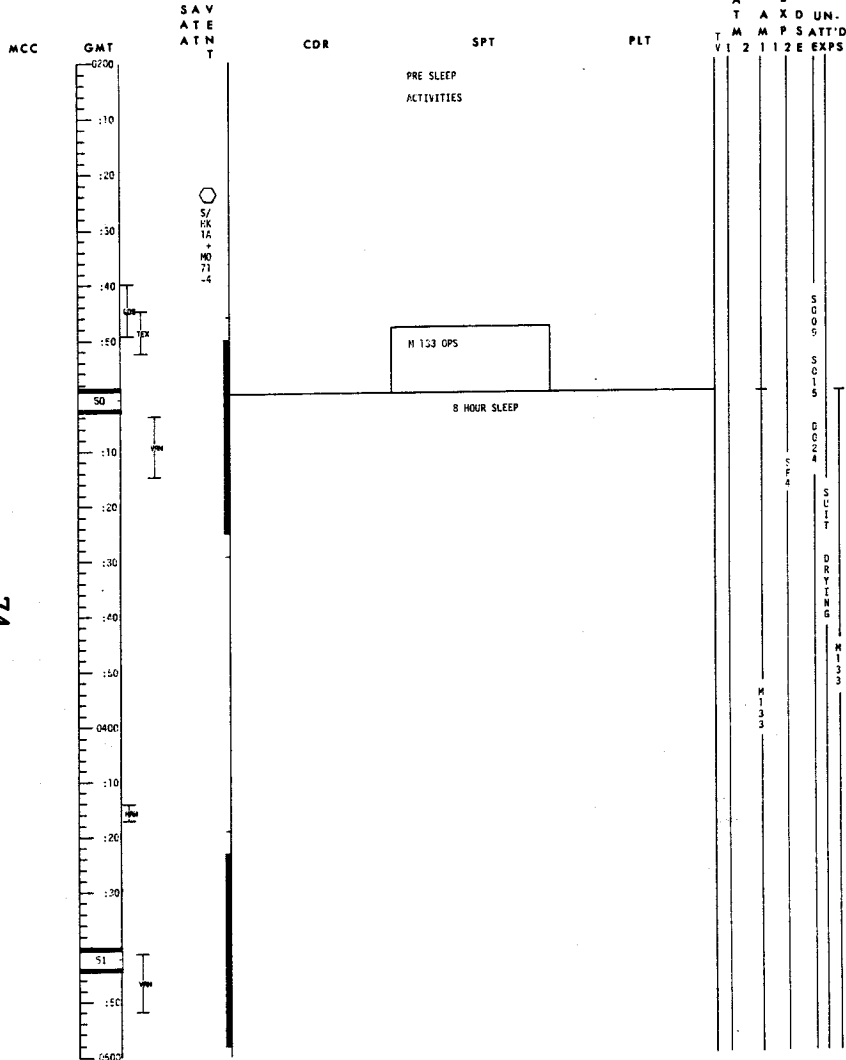
MISSION: SL-2, EDITION: FINAL, PUBLICATION DATE: APRIL 11, 1973, 3-24
 FLIGHT PLANNING BRANCH

SOLA.SOL
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73

FLIGHT PLAN

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
2:09-01/2:12-01	0200-0500	3/138	JAY 17, 1973	50	-15.8	



MISSION	EDITION	PUBLICATION DATE
SL 2	FINAL	APRIL 11, 1973

3-25

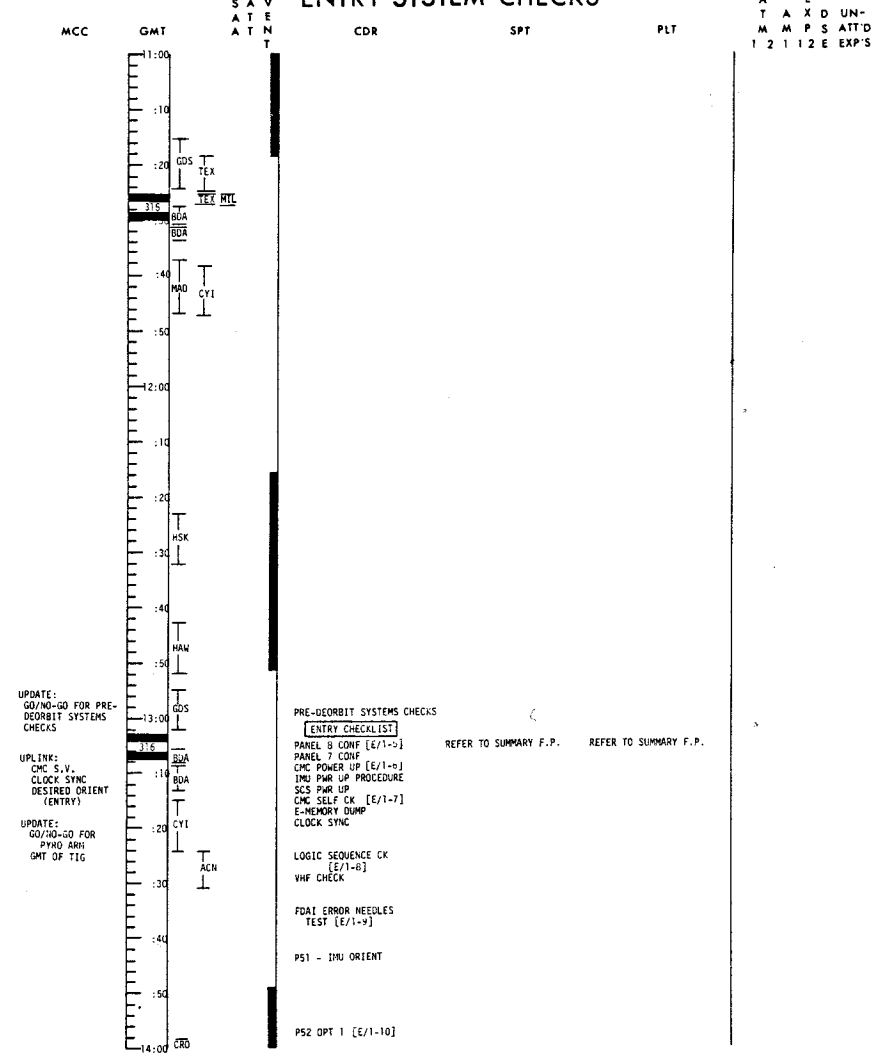
FLIGHT PLANNING BRANCH

SOL	A-SOL
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FLIGHT PLAN

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
20:18-01/20:24-01	11:00 - 14:00	22/156	JUNE 9, 1973	315	-1.86	

ENTRY SYSTEM CHECKS



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-26

FLIGHT PLANNING BRANCH

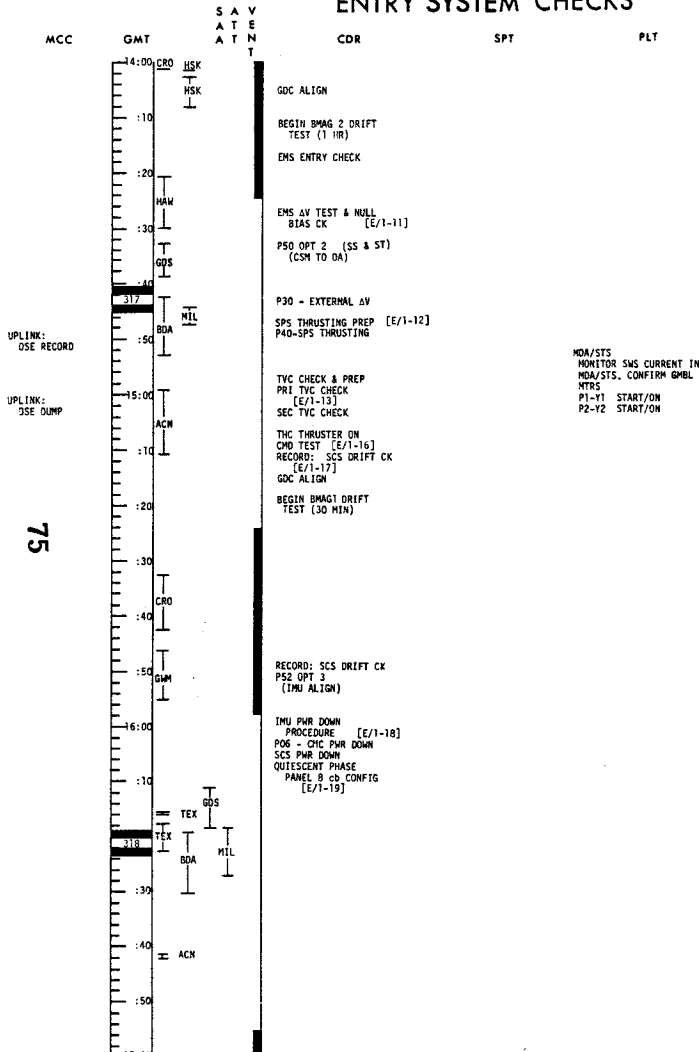
SOL	A-SOL
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74

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
20:21:01/20:00:01	14:00 - 17:00	22/156	JUNE 5, 1973	317	-86	

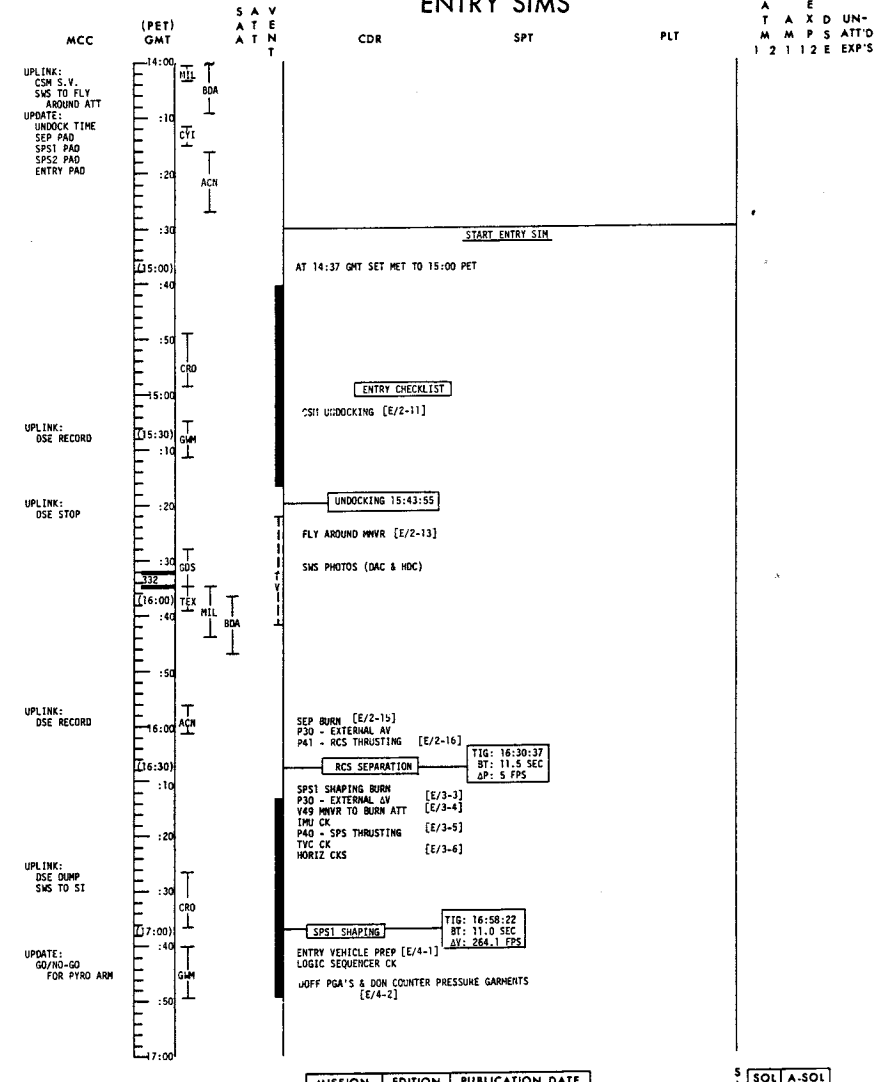
ENTRY SYSTEM CHECKS



FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
21:21:01/22:00:01	14:00 - 17:00	23/157	JUNE 6, 1973	332	3.30	

ENTRY SIMS



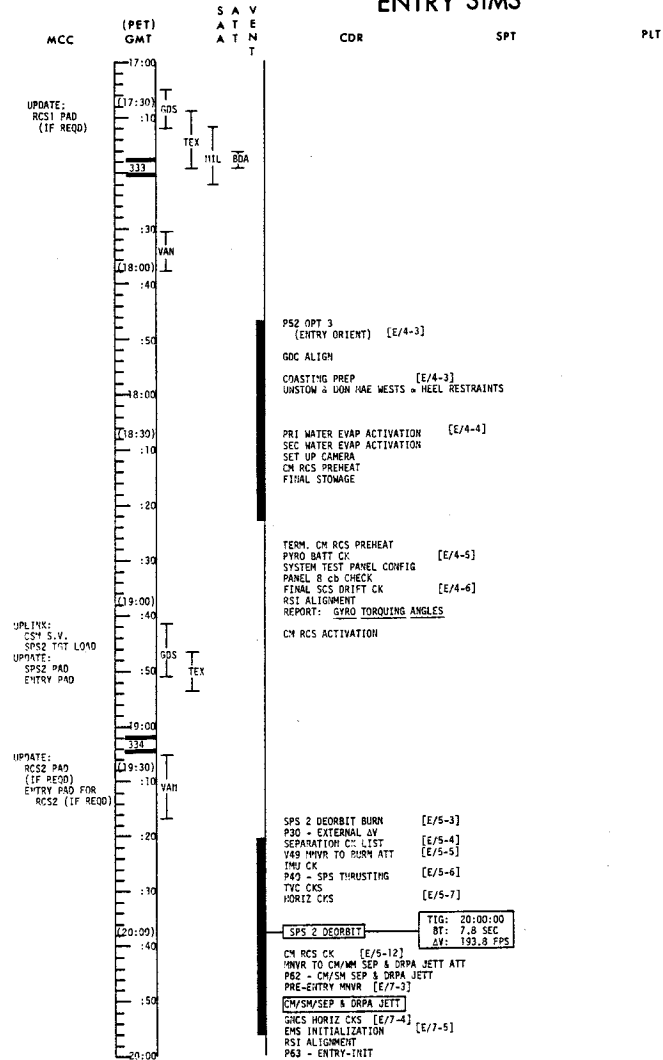
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75

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
22:00:01/22:03:01	17:00 - 20:00	23/157	JUNE 6, 1973	333	3.30	

ENTRY SIMS



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

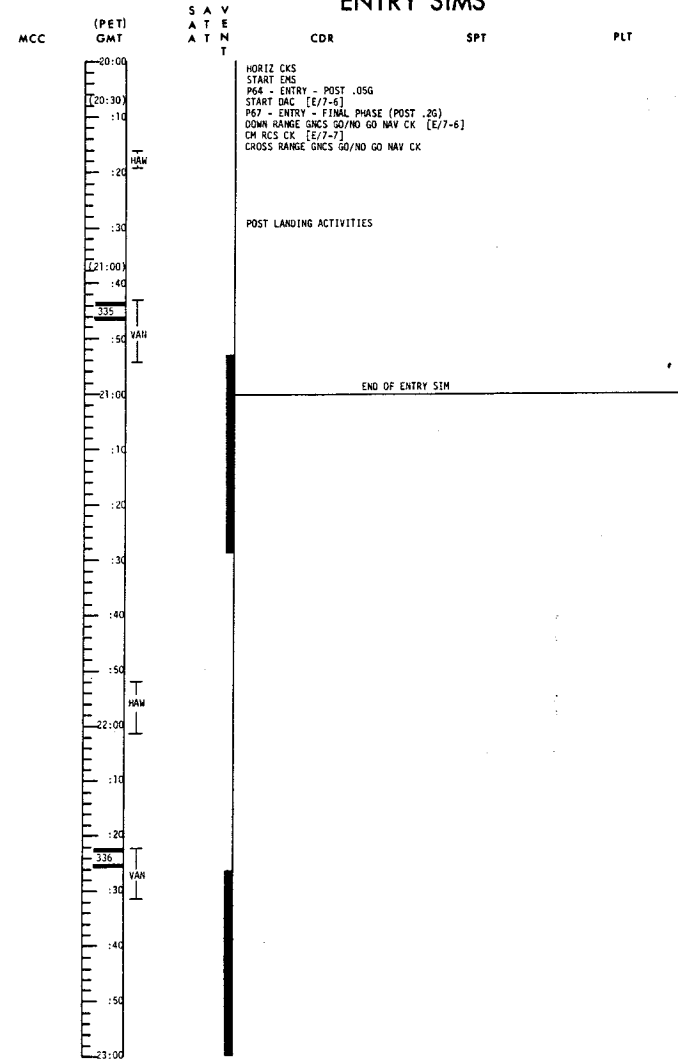
3-29

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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
22:03:01/22:06:01	20:00 - 23:00	23/157	JUNE 6, 1973	335	3.30	

ENTRY SIMS



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-30

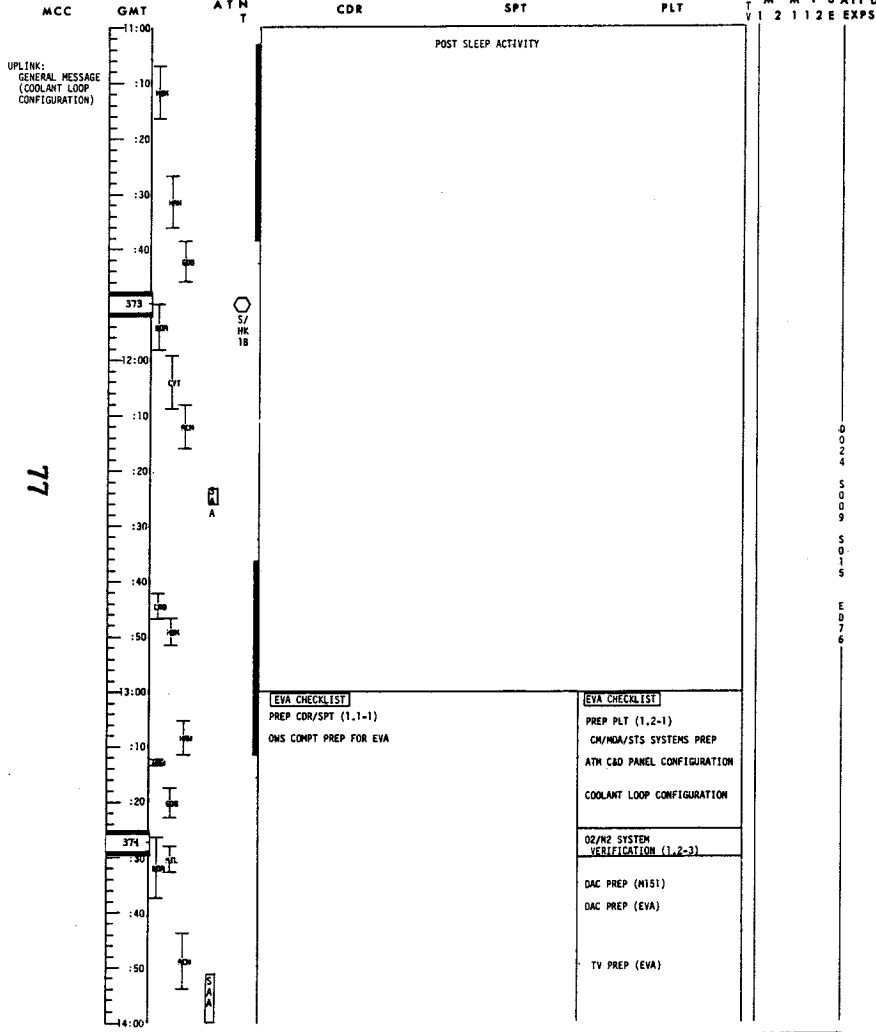
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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
24:18:01/24:21:01	11:00 - 14:00	26/160	JUNE 9, 1973	373	16.50	

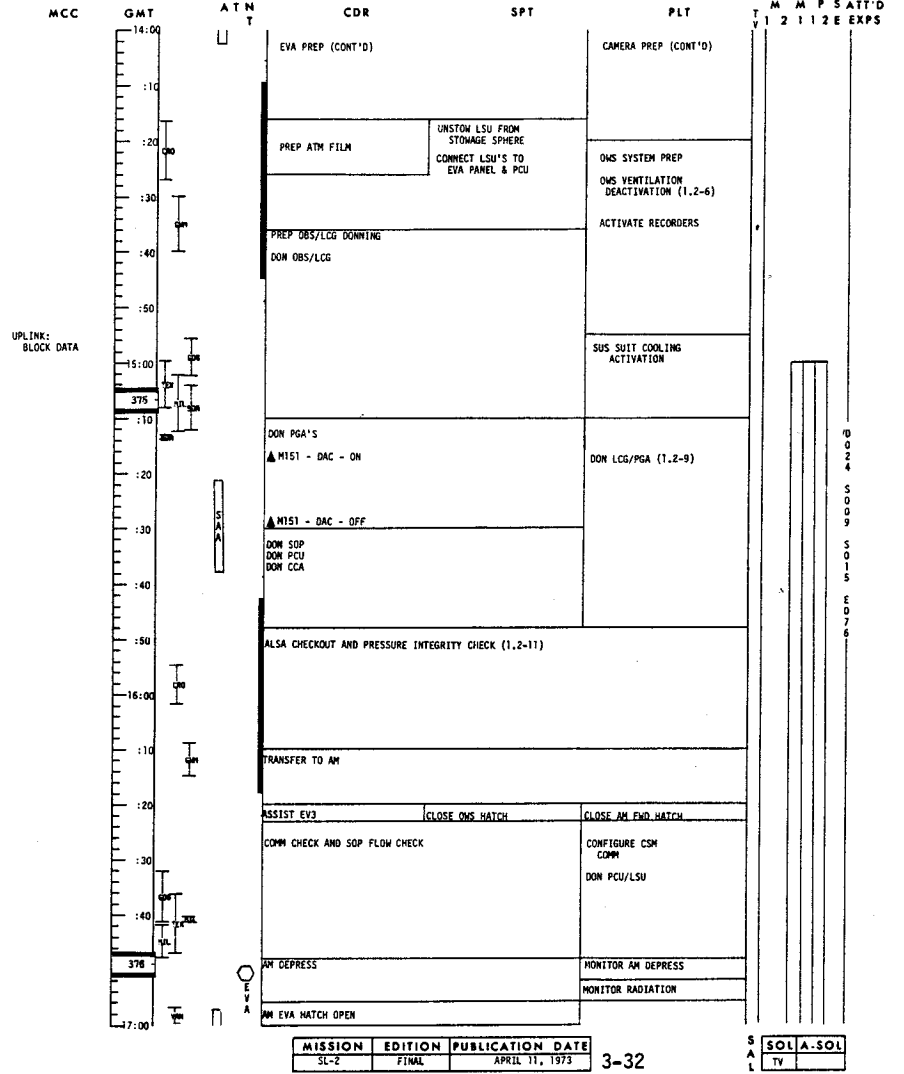
SL-2 EVA



FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
24:21:01/25:00:01	14:00 - 17:00	26/160	JUNE 9, 1973	375	16.50	

SL-2 EVA



FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
25:00:01/25:03:01	17:00 - 20:00	26/160	JUNE 9, 1973	377	16.50	

SL-2 EVA

MCC	GMT	SAV ATE ATN T	CDR	SPT	PLT	RCDR E A T A X D U N - M P S A T T D 1 2 1 2 E X P S
	17:00		EV-1 EGRESS AM INGRESS VF	EV-2	EV-3 MONITOR EVA OPERATIONS AND CHECKLIST PROCEDURES FOR EV1 AND EV2	
	:10		VERIFY BOOMS (2) OPERATIONAL INSTALL HOOKS ON BOOM STOW TREES INSTALL DAC AND CONFIG FOR NIGHT PHOTOS	UNSTOW VS AND VC TREE UNSTOW DAC EGRESS AM		
	:20		▲ DAC ON UNSTOW AND TRANSFER S054 TO EV2 STOW USED S054 ON VC TREE	TRANSLATE TO VC INGRESS VC REMOVE USED S054 TRANSFER TO EV1 INSTALL S054		
	:30		STOW USED S056 ON VC TREE	ROTATE CANISTER REMOVE USED S056 TRANSFER TO EV1		
	:40		UNSTOW AND TRANSFER S052 TO EV2 STOW USED S052 ON VC TREE RECONFIG DAC FOR DAY PHOTOS	ROTATE CANISTER REMOVE USED S052 TRANSFER TO EV1 INSTALL S052		
	:50		STOW USED H41 ON VC TREE	ROTATE CANISTER REMOVE USED H41 TRANSFER TO EV1		
	:10		▲ DAC OFF	ROTATE CANISTER TO ALIGN SUN END OPEN S082 DOORS		
	:20		REMOVE DAC AND REPOSITION DAC ON TRANSFER VS TREE TO EV2	VERIFY ATM OPERATIONAL (PNL 130)		0 0 2 4
	:30		▲ DAC OFF	TRANSLATE TO VT STOW VS TREE ON SOLAR SHIELD		5 0 0 9
	:40		RECONFIG DAC FOR NIGHT PHOTOS	TRANSLATE TO VS REMOVE USED S082A AND S082B AND STOW IN VS TREE		5 0 1 5
	:50		▲ DAC ON	ADVISE EV3 READY FOR DOOR CLOSURE	CLOSE APERTURE DOORS (PNL 130)	E D 7 6
	:19:00		STOW VS TREE IN VF	TRANSLATE TO VT UNSTOW AND TRANSFER VS TREE TO EV1		
	:10		STOW D024 SAMPLES ON VF TEMP STOW HOOK	TRANSLATE TO D024 AREA RETRIEVE D024 SAMPLES AND PASS TO EV1		
	:20		▲ DAC OFF PASS DAC, VC TREE, VS TREE AND D024 TO EV2	TRANSLATE TO AND INGRESS AM STOW DAC, VC, AND VS TREE AND D024 ASSIST EV1		
	:30		INGRESS AM		POST EVA	
	:40		POST EVA CLOSE AM HATCH REPRESS AIRLOCK			
	:50		OPEN AM FWD HATCH	OPEN OWS HATCH	ASSIST EV1	
	:15:00		TRANSFER TO OWS AND DEACTIVATE ALSA		DEACTIVATE SUS, O2, AND COMH	
	:20:00		DOFF PCU AND SOP		DOFF PCU	

MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-33

S A L	SOLA-SOL
	TV

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
25:03:01/25:06:01	20:00 - 23:00	26/160	JUNE 9, 1973	378	16.50	

SL-2 EVA

MCC	GMT	SAV ATE ATN T	CDR	SPT	PLT	RCDR E A T A X D U N - M P S A T T D 1 2 1 2 E X P S
	20:00		DOFF PGA'S		▲ M151 - DAC - ON	
	:10		▲ M151 - DAC - OFF			
	:20		DOFF OBS/CGG		DEACTIVATE TV	
	:30		EAT	EAT	ACTIVATE OWS VENT SYSTEMS	
	:40				RECONFIGURE CM/HOA/STS SYSTEMS TERMINATE RECORDING	
	:50				EAT	
	:10		RECONFIGURE ATM	DISCONNECT LSU FROM EVA/EVA PANELS AND STOW		
	:20		FILM (M151)	RECONFIGURE PGA AND SUIT DRYING ACTION		
	:30				T027 EQUIP RETRACT	
	:40		ASSIST SPT	EMU STORAGE	RECONFIGURE DAC'S	
	:50		TV STOW	HK	DRAIN UTCA	
	:15:00				ASSIST CDR WITH TV STOW	
	:20:00				HK	

MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

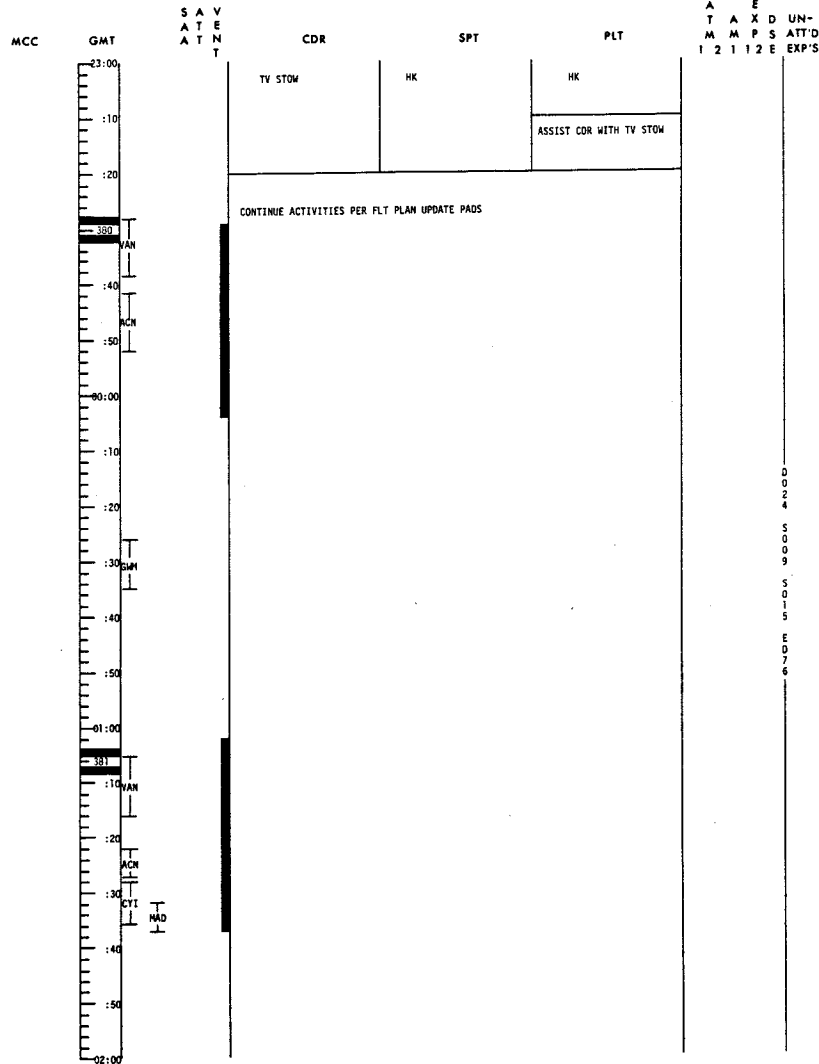
FLIGHT PLANNING BRANCH

3-34

S A L	SOLA-SOL
	TV

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
25:06:01/25:09:01	23:00 - 02:00	26/160	JUNE 9, 1973	379	16.50	



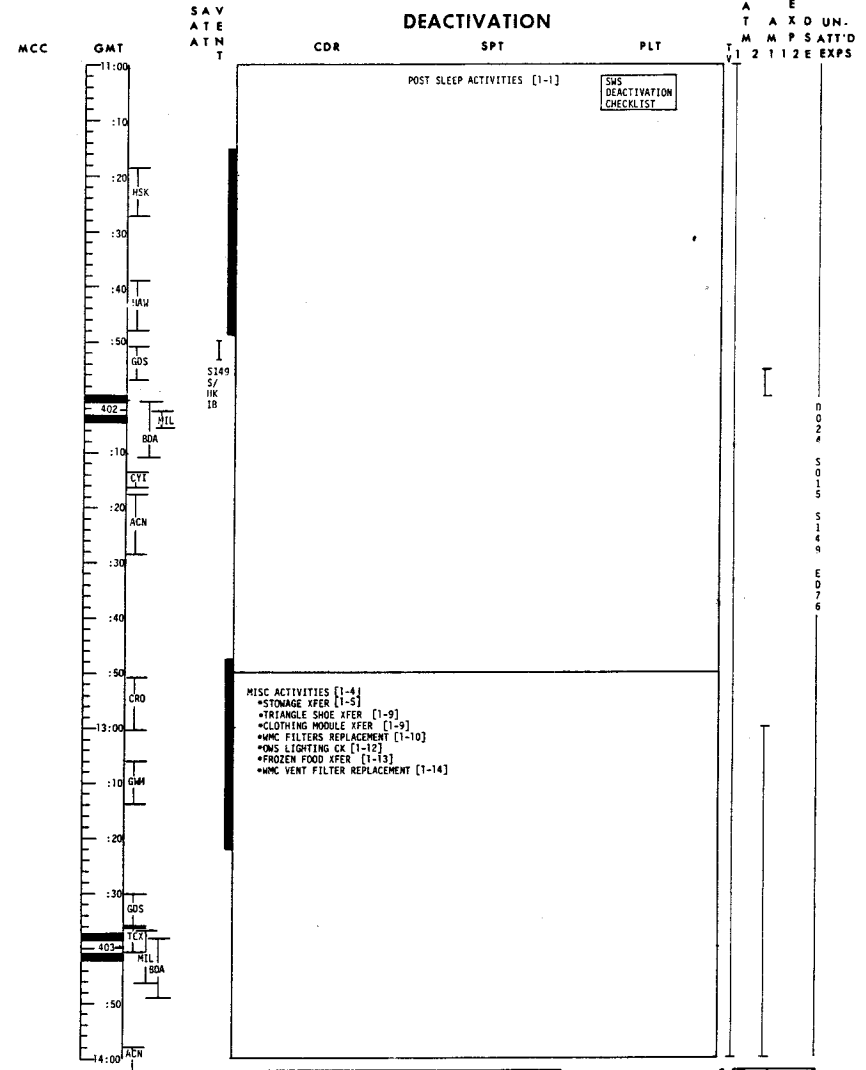
MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-35

S A SOL A-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
26:18:01/26:21:01	11:00 - 14:00	28/162	JUNE 11, 1973	402	25.78	



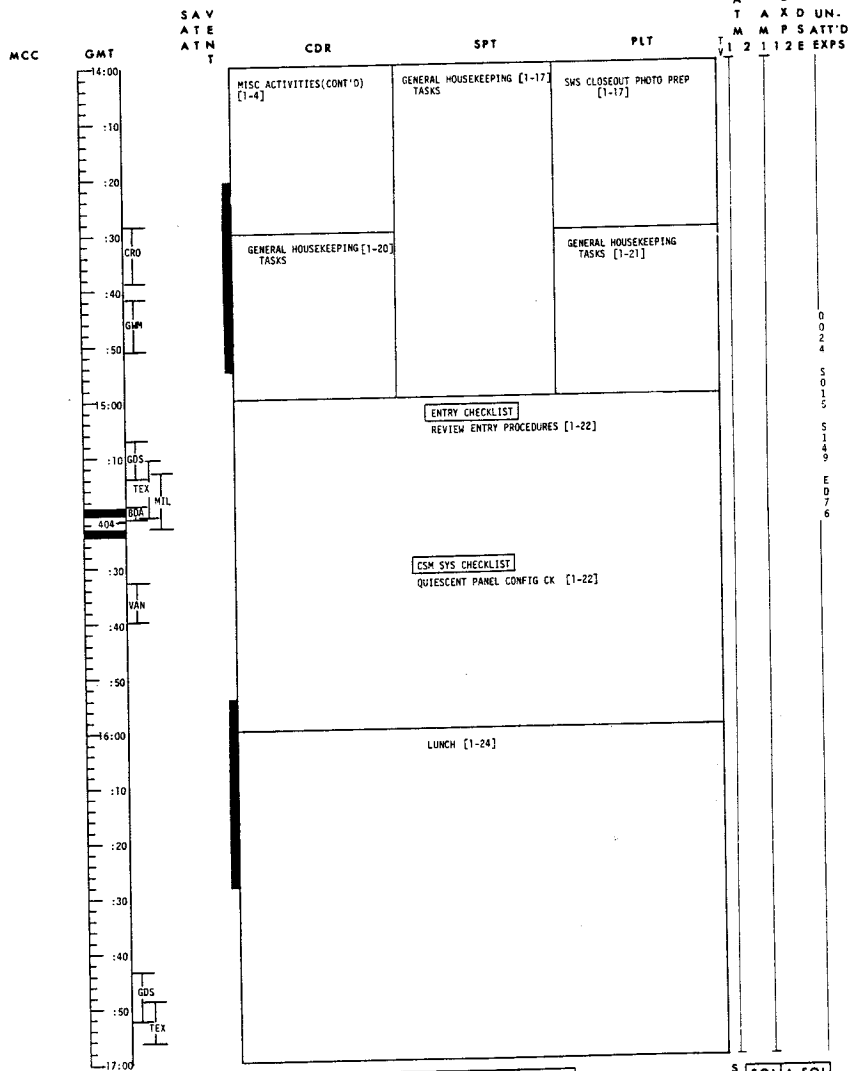
MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-36

S A SOL A-SOL

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
26:21:01/27:00:01	14:00 - 17:00	28/162	JUNE 11, 1973	404	25.78	



MISSION	EDITION	PUBLICATION DATE	3-37
SL-2	FINAL	APRIL 11, 1973	

FLIGHT PLANNING BRANCH

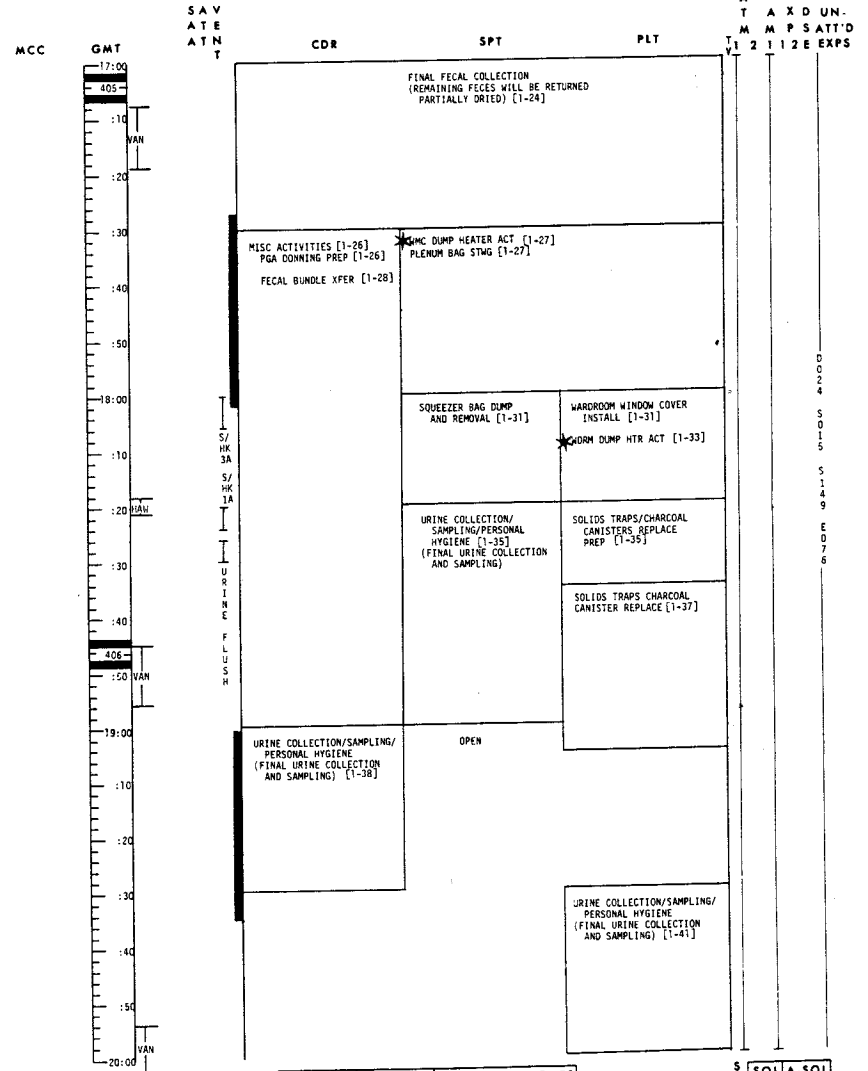
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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
27:00:01/27:03:01	17:00 - 20:00	28/162	JUNE 11, 1973	405	25.78	



MISSION	EDITION	PUBLICATION DATE	3-38
SL-2	FINAL	APRIL 11, 1973	

FLIGHT PLANNING BRANCH

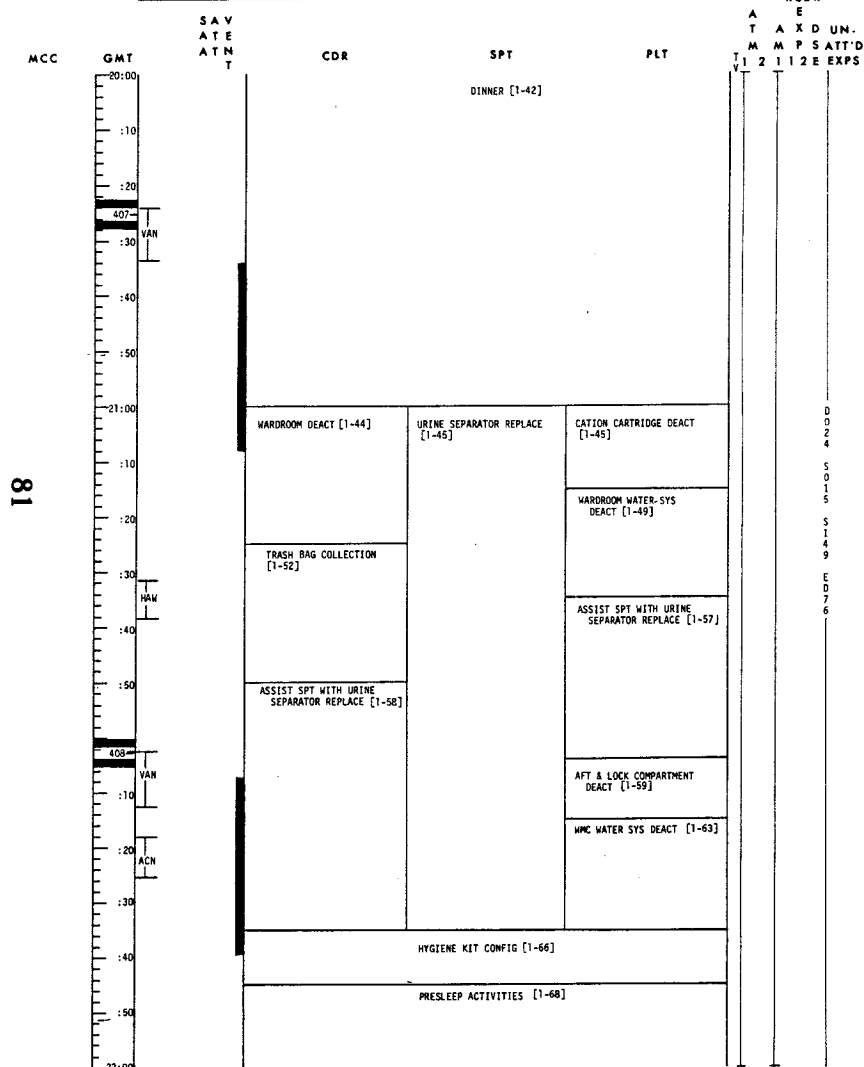
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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
27:03:01/27:08:01	20:00 - 23:00	28/162	JUNE 11, 1973	407	25.78	



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

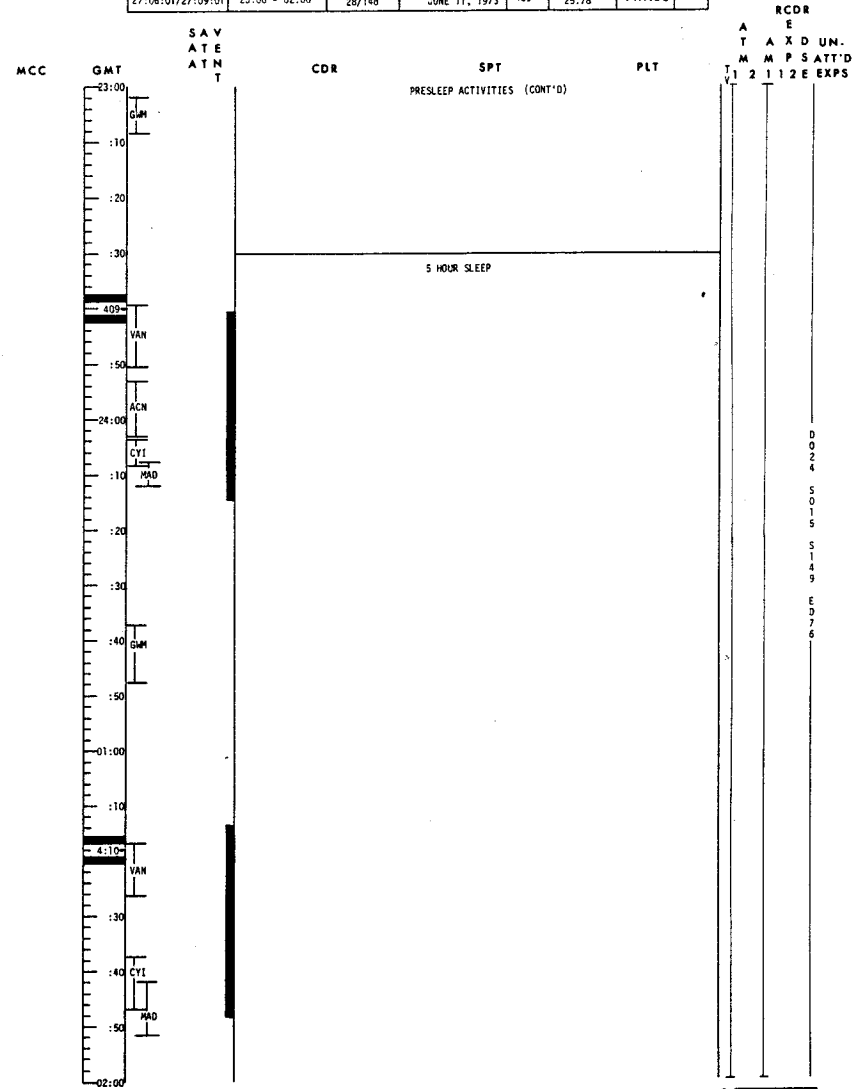
3-39

FLIGHT PLANNING BRANCH

S	A	L	SOLA-SOL
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FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
27:06:01/27:09:01	23:00 - 02:00	28/148	JUNE 11, 1973	409	25.78	



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

3-40

FLIGHT PLANNING BRANCH

S	A	L	SOLA-SOL
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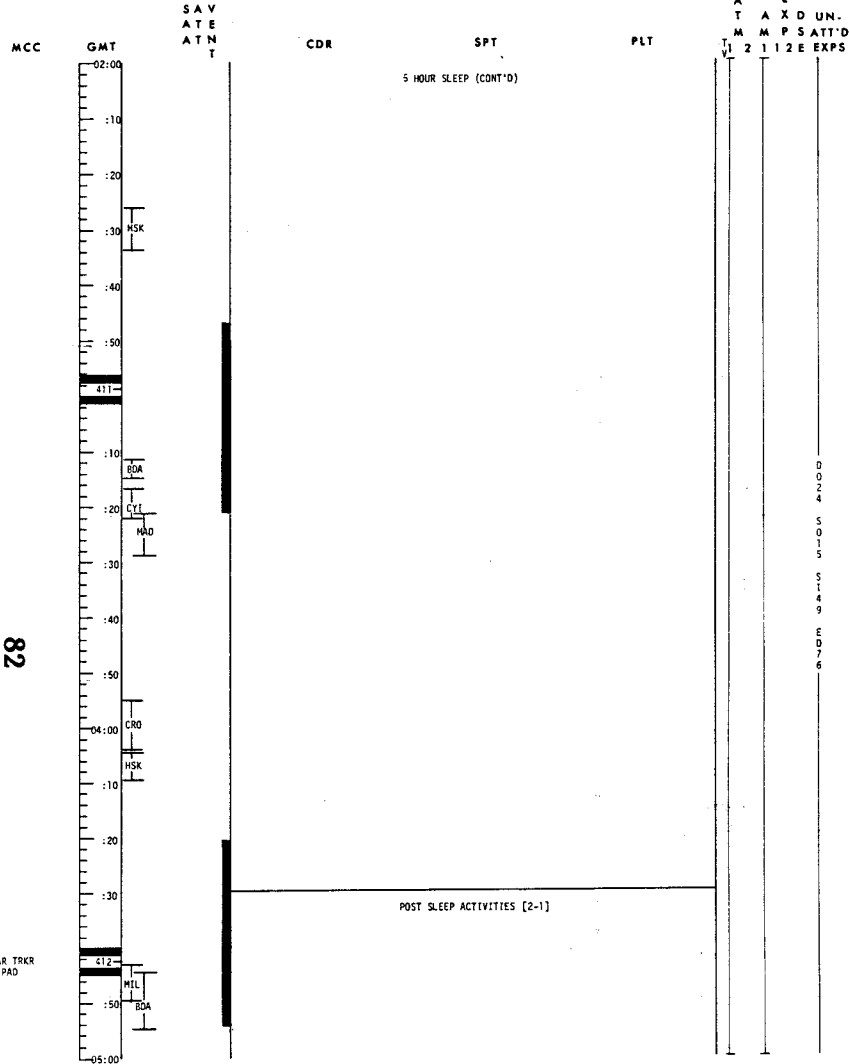
FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
27:09:01/27:12:01	02:00 - 05:00	28/149	JUNE 11, 1973	411	25.78	

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON PHASE
27:12:01/27:15:01	05:00 - 08:00	29/163	JUNE 12, 1973	413	30.47	

CSM QUIESCENT MODE TERMINATE

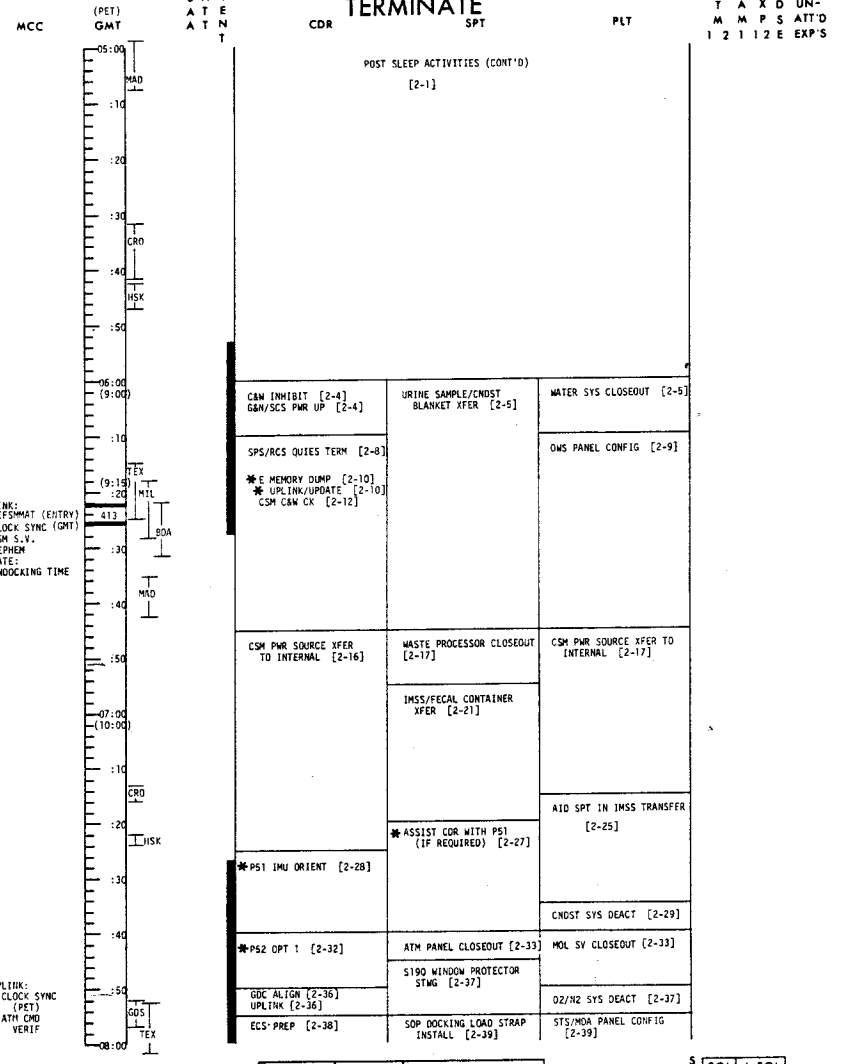


MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-41

SOL	A-SOL
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MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-42

SOL	A-SOL
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82

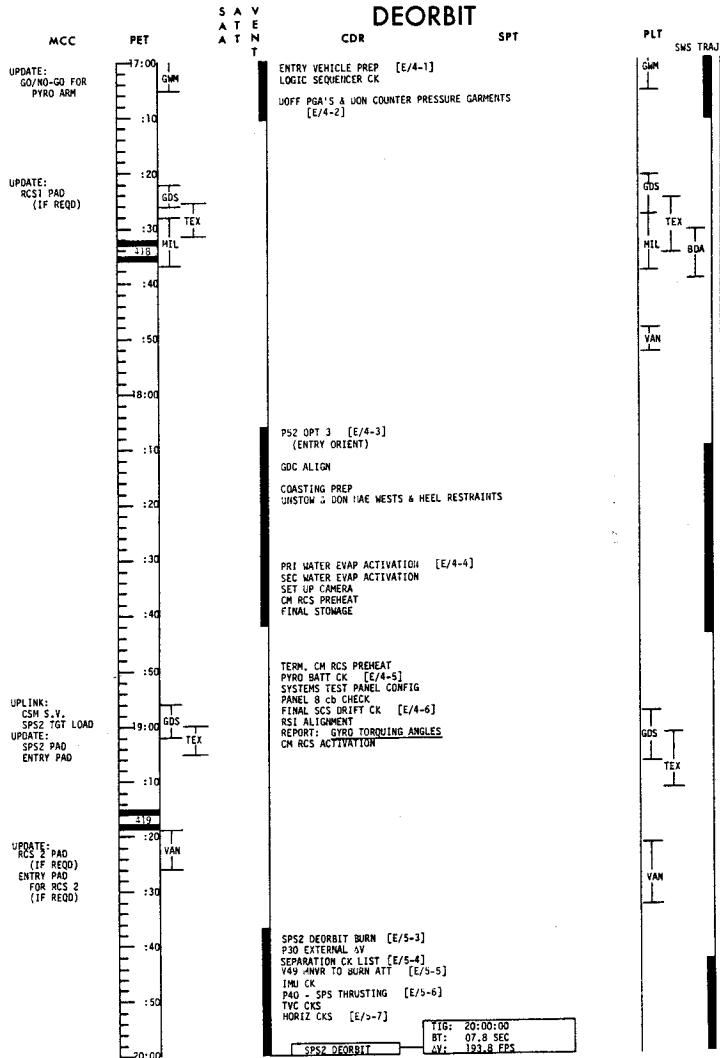
STAR TRK PAD

FLIGHT PLAN

PET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON
17:00 - 20:00		29/163	JUNE 12, 1973	41R	30.47	PHASE

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MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-45

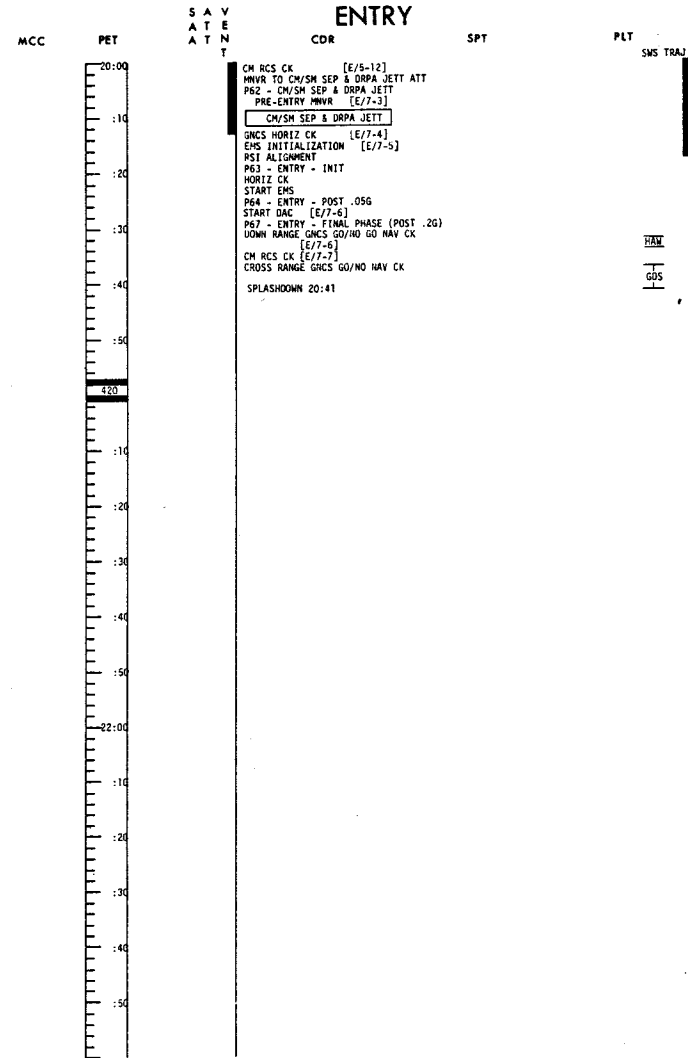
SOL	A-SOL

FLIGHT PLAN

PET	GMT	MD/DOY	HOUSTON DATE	REV	BETA	MOON
20:00 - 21:00		29/163	JUNE 12, 1973	420	30.47	PHASE

ENTRY

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T A M P S ATT'D
1 2 1 1 2 E EXP'S



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

3-46

SOL	A-SOL

4/11/73

SECTION 4 EXPERIMENT DATA SHEETS, SL-2

A. Forward

The experiment data sheets on the following pages summarize the crew tasks for each experiment as stated in the crew checklists. In addition, scheduling data from the Mission Requirements Document are summarized. The experiment data sheet format is explained on Page 4-2.

The purpose of the experiment data sheets is to assist the flight planning personnel in generating Section 3 of the Flight Plan.

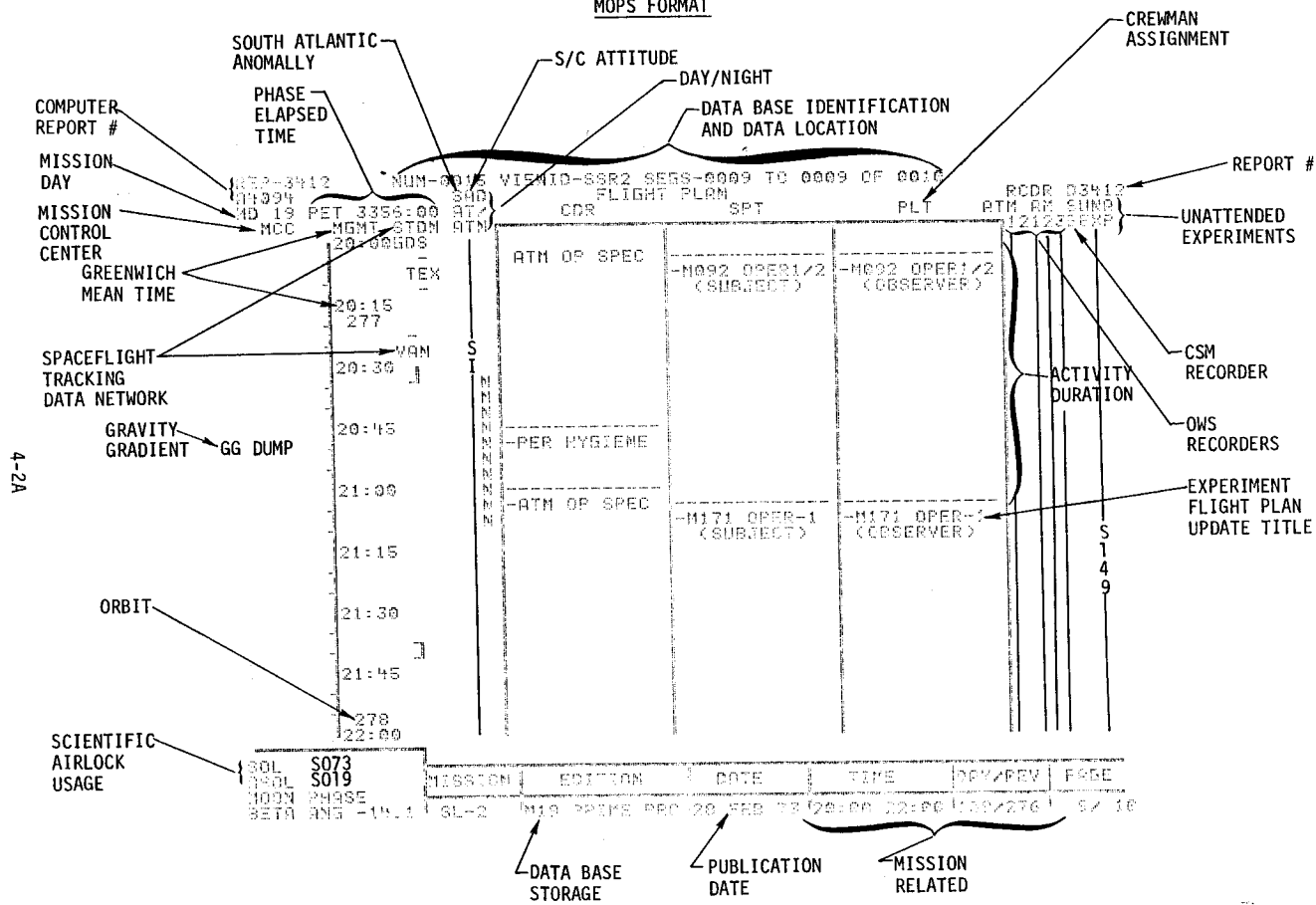
DATA SHEET FORMAT

ET	PLT	CDR or SPT	FUNCTIONAL OBJECTIVES:
	S149-1 PREP	S149-1 PREP	FO-1 Deploy, expose, retrieve & return one cassette set. FO-2 Deploy one cassette set & end of mission for exposure during unannounced storage period of SL-3.
0:00	FO-1 & FO-2 S149 PREPARATION REMOVE PHOTO METER & CASSETTE FROM STORAGE REMOVE PHOTOMETER FROM USM (UNIVERSAL EXT. MECHANISM) ATTACH S149 HEAD TO USM INSTALL ASSEMBLY INTO -2 SAL WITH TRIPOD ASSY	FO-1 & FO-2 ASSIST WITH INSTALLATION OF THE S149 ASSEMBLY INTO THE -2 SAL	PERFORMANCE REQUIREMENTS: Baseline - Expose first set for 72 hours, deploy second set prior to departure. Minimum - TBD Redline - TBD
0:50	S149 OPS		SCHEDULING DATA: 1. Deploy Motor Drive/Cassette Support Unit (MD/CSU) containing the detection cassettes from the -2 SAL. (FO-1 & FO-2) 2. Detection cassette operation will be controlled by the ground. Crew control is available if required. (FO-1) 3. The experiment must not be operated during periods of high contamination. Exposure schedules will be maintained by the ground. (FO-1 & FO-2) 4. The experiment will be scheduled during solar inertial attitude (1-10P/22) only. Vehicle attitude recording (ATH 1 or 2) are required when the vehicle attitude varies by more than 15 degrees from nominal about any axis. (FO-1) 5. Experiment M509 must not be operated while S149 is installed in the -2 SAL. (FO-1) 6. The second cassette unit will be deployed just prior to CSU separation. The crew will verify proper operation prior to departure. (FO-2) 7. Do not schedule concurrently with S019, S073, S183, or S1909. (FO-1)
0:00	FO-1 S149 OPERATION EXP RECORDER ON NOTIFY GROUND EXP. IS READY FOR ACTIVATION VERIFY PROPER OPERATION WITH GROUND CONTROL		NOTES: 1. SAL use is under consideration. 2. If necessary, the cassettes can be retracted through the SAL fully open.
0:15	S149 STOW		
0:00	FO-1 EXPERIMENT STORAGE VERIFY CASSETTE CLOSURE DON GLOVES & RETRACT CASSETTE INTO SAL CLOSE SAL OUTER DOOR REMOVE STOW PW/INST CABLE REMOVE ASSEMBLY FROM SAL	S149 STOW ASSIST WITH STAR ASSEMBLY REMOVAL FROM SAL	

FLIGHT PLAN CORRELATION MATRIX

The purpose of this table is to provide the reader with a method of correlating computer stored, manually generated flight plan activity and crew procedure checklist information. The data sources indicated on the attached annotated copy are documents and computing machine storage devices. This table is designed to be accessed in the MOPS through the Document Processor Subsystem as a dual screen display titled, "Flight Plan Correlation Matrix (FPCM)". The dynamic nature of this information results in daily review and update; therefore,

MOPS FORMAT



(SAMPLE PAGE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE	
				TITLE*	REMARKS**		
EREP S190 S191 S192 S193 S194	EREP PAD UP 07.01.06-00		EREP - XX PAD UPDATE	EREP - XX	(XX=EREP PASS NO.) BACK TP BACK PASSES REQUIRE 1:15 MINUTES BETWEEN DATA TAKES (EXCL CAL) NO EREP TAPE MAG BETWEEN BACK TO BACK PASSES UNLESS FULL ORBIT SEPARATES PASSES	PREP, OPERATE, POST OPERATE (EREP C/L)	
	EREP PREP D 07.01.02-01	0:40	EREP PREP D OR				
	EREP PREP B 07.01.02-02	0:40	EREP PREP B OR				
	EREP PREP C 07.01.02-03	1:00	EREP PREP C OR				
	EREP PREP AC 07.01.02-04C	1:30	EREP PREP A				
	EREP OPER B 07.01.04-01	0:02	EREP OPER B OR				
	EREP OPER AA 07.01.04-02A	0:42	EREP OPER A OR				
	EREP SI OP 07.01.04-03		EREP SI OP				
	MRD DATA SOURCE	ASP DATA BASE	CHECKLIST AND *KEY COLUMN (SEE NOTE)	CHECKLIST CORRELATION TABLE			

NOTE: ALL DATA IN THIS TABLE ARE REFERENCED TO THE "FLIGHT PLAN UPDATE TITLE" IN ALPHA-NUMERIC ORDER. THIS MAY RESULT IN RELATED ACTIVITIES APPEARING ON DIFFERENT PAGES AND IN NON-TIMELINE SEQUENCE (ie OPS, PREP, STOW).

**These remarks are not part of the Flight Plan Update Pad.

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
4-38	ATH ACT A 03.02.06-00A	0:43	ATH ACT	ATH		SWS ACTIVATION C/L
	ATH DAY C/O 04.07.02-00	0:50	ATH DAY C/O	TBD		
	ATH C/O B 04.07.01-00B	0:30 TO 0:20	ATH C/O	ATH C/O		INTEGRATED EXPERIMENT POWER UP AND CHECKOUT (ATH EXP C/L)
	SOLAR ACTIV 12.05.01-00 ATH SCHEDUL 12.05.02-00		SOLAR ACTIVITY PAD ATH SCHEDULE PAD	TBD		
	ATH OP NORM 12.05.03-00	0:50	ATH OPER NORM			JOP SUMMARY BOOKS
	ATH OP SPECA 12.05.04-00A	0:06 TO 0:30	ATH OPER SPEC			
	MED ACT B 04.05.01-00B	1:00	BIOMED ACT	BIOMED ACT	M092, M093, M171	(ACTIVATION C/L)
20:13 1&3	CO2/DEW PRE 09.06.01-00	0:03 TO 0:05	CO2/DEW PRE	CO2-2	4 MEASUREMENTS	CO2 DEWPOINT MEAS. (M,S) (SWS SYSTEMS C/L)
	CO2-2 B 09.06.02-00B	0:20	CO2-2			
	CO2/DEW STO 09.06.04-00	0:05	CO2 STON			

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
20.13 2	CO2/DEW PRE 09.06.01-00	0:03 TO 0:05	CO2/DEW PREP	CO2-1	12 MEASUREMENTS	CO2/DEWPOINT MEAS. (M,CM,F,E,W,H) SWS SYSTEMS C/L
	CO2-1 A 09.06.03-00A	1:00	CO2-1			
	CO2/DEW STO 09.06.04-00	0:05	CO2/DEW STOW			
4-3C	CON-1 OBS B 09.07.01-00B	0:05 TO 1:00	CON-1 OBS HATCH WIN			WAITING NEW C/L SWS SYSTEMS C/L
			CON-1 A EVA HATCH	CON-1 A	OBSERVE EVA HATCH WINDOW	
			CON-1 CX 1-5 CM WIND	CON-1 CX	OBSERVE (X=1-5 CM WINDOWS)	
			CON-1 M MDA WINDOWS	CON-1 M	OBSERVE MDA WINDOWS	
			CON-1 SX 1-4 STS WIND	CON-1 SX	OBSERVE (X=1-4) 4 STS WINDOWS	
			CON-1 W WRDRM WIND	CON-1 W	OBSERVE WARDROOM WINDOWS	
	CON-1 PHOTOB 09.07.02-00B	0:15 TO 0:30	CON-1 PHOTO WINDOW PHOTO	CON-1 PH	PHOTOGRAPH WINDOWS	

*KEY COLUMN

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	CON-2 OBS B 09.07.03-00B	0:05	CON-2 OBS SQZ BAG DUMP	CON-2 OBS	SQUEEZER BAG DUMP OBS	(SWS SYSTEMS C/L)
	CON-2 PHOTOA 09.07.04-00A	0:15	CON-2 PHOTO PHOTO DUMP	CON-2 PH	SQUEEZER BAG DUMP PHOTO	(SWS SYSTEMS C/L)
	CON-3 OBS B 09.07.05-00B	0:05	CON-3 OBS MOL SV VENT	CON-3 OBS	MOLE SIEVE VENT OBS	(SWS SYSTEMS C/L)
	CON-3 PHOTO 09.07.06-00	0:15	CON-3 PHOTO PHOTO VENT	CON-3 PH	MOLE SIEVE VENT PHOTO	(SWS SYSTEMS C/L)
				CSM F/C S/D		(CSM SYSTEMS C/L)
	D008 DSE ONA 11.01.04-00A	0:02	DSE-ON		MCC COMMAND	D008 EXP PREP AND PERF (EVAL EXP C/L) D008 1-MIN LOG CARD (CSM SYS C/L)
D008 1&2	D008-1 ONE B 11.01.01-01B	0:15 TO 0:25	D008-1 SAA FO 1&2	D008-1	GMT TO START SAA	
D008 3&4	D008-2 TWO B 11.01.01-02B	0:25 TO 0:33	D008-2 NLAT FO 3&4	D008-2	GMT TO START NORTHERN LATITUDE	D008 EXP PREP AND PERF (EVAL EXP C/L) D008 2-MIN LIG CARD (CSM SYS C/L)
D008	D008-2 TWO B 11.01.01-02B D008-1 ONE B 11.01.01-01B	0:25 TO 0:30 0:15 TO 0:25	D008-2 NLAT D008-1 SAA	D008-2/1	GMT TO START	

4-30

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	D008 DSE OFA 11.01.05-00A	0:02	DSE - OFF		MCC COMMAND	
M071 1	M071-1 FOODA 10.01.01-00A M071-1 H2O A 10.01.08-00A	0:08 0:02	M071-1 FOOD M071-1 H2O	EAT		M071/M073 GENERAL (BIOMED EXP C/L)
	EAT-1 A 15.01.04-00A	0:30 1:00	EAT (1CM)			
	EAT-3 A 15.01.05-00A	1:00	EAT (3 CM)			
	EAT-3 A 15.01.05-00A T003 MEAS 2A 10.07.01-02A	1:00 0:20	EAT T003 PREP 1 FO 2, 3, 4		EAT/T003	
ED23 TBS	ED23 OP A 08.10.01-00A	0:30 TO 0:55	ED23 OPS	ED23 OPS		
ED26 TBS	ED26 OP A 08.11.01-00A	0:30 TO 0:45	ED26 OPS	ED26 OPS		
ED31 1&2	ED31 OP 08.12.03-00	0:16	ED31 OPS	ED31 OPS	BACTERIA AND SPORES	ED31 OPS (STUDENT PROJ EXP C/L)
ED31	ED31 PREP 08.12.01-00	0:26	ED31 PREP	ED31 PREP		ED31 PREP (STUDENT PROJ EXP C/L)
	ED31 STOW 08.12.04-00	0:06	ED31 STOW	ED31 STOW		ED31 STOW (STUDENT PROJ EXP C/L)

4-3E

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
						ED31 TRAN (STUDENT PROJ EXP C/L)
ED76/1	ED76 DEPLOY 08.15.01-00	0:16	ED76 DEPLOY FO-1	ED76 DEPLOY		ED76 DEPLOY (STUD PROJ EXP C/L)
ED76				ED76 POST		ED76 POST OP (STUDENT PROJ EXP C/L)
ED76/2	ED76 RETRIEA 08.15.02-00A	0:15	ED76 RET 2 FO-2	ED76 RET 2		ED76 SL-2 RETRIEVE (STUD PROJ EXP C/L)
EREP	07.01.11-00	0:40	EREP CAL	EREP CAL	IF CAL FOLLOWS EREP PASS BEGIN SS-10 MIN	SPECIAL OPERATIONS (EREP CAL)
S190	EREP C/O 1B 04.02.04-02 OR EREP C/O 1A 04.02.04-01	1:00	EREP C/O 1 B OR	EREP C/O I		CHECKOUT I (EREP C/L)
		1:30 TO 1:21	EREP C/O 1 A			
S191						
S192						
S193	EREP C/O 2B 04.02.05-00B	1:45	EREP C/O 2	EREP C/O II		CKOUT II, EREP C/L
S194	EREP C/O 3 04.02.06-00	1:17	EREP C/O 3	EREP C/O III		CKOUT III, EREP C/L
	S190 MAG RE 07.01.07-00	1:00	EREP MAG RELOAD	EREP MAG		SPEC OPS EREP C/L S190 MAG RELOADING (EREP C/L)
	EREP TAPE RB 07.01.08-00B	0:35 TO 0:45	EREP TAPE RE-LOADING	EREP TAPE	TAPE CLEAN,XFER, UNLOAD	TAPE REC RELOADING (PREP C/L)

4-3F

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
EREP	EREP PAD UP 07.01.06-00		EREP - XX PAD UPDATE	EREP - XX	(XX=EREP PASS NO.) BACK TP BACK PASSES REQUIRE 1:15 MINUTES BETWEEN DATA TAKES (EXCL CAL) NO EREP TAPE MAG BETWEEN BACK TO BACK PASSES UNLESS FULL ORBIT SEPARATES PASSES	PREP, OPERATE, POST OPERATE (EREP C/L)
S190	EREP PREP D 07.01.02-01 EREP PREP B 07.01.02-02	0:40	EREP PREP D OR			
S191		0:40	EREP PREP B OR			
S192	EREP PREP C 07.01.02-03	1:00	EREP PREP C OR			
S193	EREP PREP AC 07.01.02-04C	1:30	EREP PREP A			
S194	EREP OPER B 07.01.04-01	0:02	EREP OPER B OR			
	EREP OPER AA 07.01.04-02A	0:42	EREP OPER A OR			
	EREP SI OP 07.01.04-03		EREP SI OP			
S190B 1-10	ETC ZLV 08.08.04-01 OR	0:17 TO 0:57	ETC OPS ZLV OR	ETC OPS	RECORD CLOCK ERROR SHOOT UP FILM UNEXPOSED FILM CANISTER X-XX EMPTY FILM CANISTER X-XX	ETC CAMERA OPS (SAL EXP C/L)
	S190B SI 08.08.04-02	0:17 TO 0:57	ETC OPS SI			
S190B	ETC PREP A 08.08.02-00A	0:30	ETC PREP	ETC PREP		ETC CAMERA PREP (SAL EXP C/L)
	ETC MAG LOAA 08.08.03-00A	0:10	ETC LOAD	ETC LOAD	APPROX EVERY 3 PASSES	ETC MAGS RELOADING (SAL EXP C/L)

4-3G

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M151 17-19	ETC STOW A 08.08.06-00A	0:20	ETC STOW	ETC STOW		ETC CAMERA STOWAGE (SAL EXP C/L)
EVA D024 1	EVA SL-2 13.01.02-00	2:30	EVA SL-2 (DETAIL)	EVA		EVA OPERATIONS,D024 SPL RETR (EVA C/L)
M151 20	EVA PREP 13.01.01-00	4:00	EVA PREP (BOO'1)	EVA PREP		PREP CDR/SPT,PREP PLT (EVA C/L)
	POST EVA 13.01.09-00	3:00	POST EVA	EVA POST		EVA POST (EVA C/L)
				FIRE & ΔP	3 CM	FIRE IN SWS & RAPID ΔP
	HK 1 A A 15.15.01-00A	0:20	HK 1 A COLL TRASH W,H	HK 1 A		COLLECT TRASH (W,H) (SWS SYSTEMS C/L)
	HK 3 A 15.15.02-00	0:25	HK 3 A SQ BAG DUMP	HK 3 A		SQUEEZER BAG DUMP
	HK 3 B A 15.15.03-00A	0:15	HK 3 B MOISTURE REM	HK 3 B		MOISTURE REMOVAL
	HK 3 B-1 15.16.01-00	0:15	HK 3 B-1 DRY FOOD CHIL	HK 3 B-1		DRY FOOD CHILLER
	HK 6 A A 15.15.04-00A	0:05	HK 6 A TOWEL RESUP	HK 6 A		TOWEL RESUPPLY
	HK 7 A A 15.15.05-00A	0:20	HK 7 A WATER CLEAN	HK 7 A		WATER CLEANER

*KEY COLUMN
(SEE NOTE)

4-3H

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 7 A-1 15.16.02-00	0:10	HK 7 A-1 WC WASTE PROC	HK 7 A-1		WATER CLEANING, WST PROCESSOR EXTERIOR
	HK 7 A-2 15.16.03-00	0:10	HK 7 A-2 WC M092 EP	HK 7 A-2		WATER CLEANING,M092 EAR PROBES
	HK 7 A-3 15.16.04-00	0:10	HK 7 A-3 WC M171 EP	HK 7 A-3		WATER CLEANING,M171 EAR PROBES
	HK 7 B A 15.15.06-00A	1:30	HK 7 B BWD	HK 7 B		BIOCIDE WIPES DISINFECTING (BWD)
	HK 7 B-1 15.16.05-00	0:30	HK 7 B-1 BWD TAL	HK 7 B-1		BWD TAL
	HK 7 B-2 15.16.06-00	0:30	HK 7 B-2 BWD SEAT	HK 7 B-2		BWD FECAL COLLECTOR SEAT
	HK 7 B-3 15.16.07-00	0:30	HK 7 B-3 BWD TOWEL H	HK 7 B-3		BWD TOWEL HOLDERS (W,H)
	HK 7 B-4 15.16.08-00	0:30	HK 7 B-4 BWD URINE REC	HK 7 B-4		BWD URINE REC & INLET DR AREAS
	HK 7 C A 15.15.07-00A	0:15	HK 7 C COLL TRASH FEWS	HK 7 C		COLLECT TRASH (F,E,W,S)
	HK 7 D A 15.15.08-00A	0:10	HK 7 D H2O RES CK	HK 7 D		WATER RESERVOIR CHECK
	HK 7 E A 15.15.09-00A	0:20	HK 7 E VAC CLEAN	HK 7 E		VACUUM CLEANING

*KEY COLUMN
(SEE NOTE)

4-3I

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 7E-1 15.16.09-00	0:05	HK 7 E-1 VC FAN IN SRN	HK 7 E-1		VC FAN INLET SCREEN
	HK 7E-2 15.16.10-00	0:05	HK 7 E-2 VC AM FAN IN	HK 7 E-2		VC AM CIRC FAN INLET SCREENS
	HK 7E-3 15.16.11-00	0:05	HK 7 E-3 VC OWS FAN IN	HK 7 E-3		VC OWS HX FANS INLET SCREEN
	HK 7E-4 15.16.12-00	0:05	HK 7 E-4 VC OWS CHAM	HK 7 E-4		VC OWS AIR MIX CHAM SCREEN
	HK 7F A 15.15.10-00A	0:15	HK 7 F WMC FILTER	HK 7 F		WMC DEBRIS FN/CSE FILTER MAINT
	HK 7 G A 15.15.11-00A	0:05	HK 7 G VAC CLN BAG	HK 7 G		VACUUM CLEANER BAG REPLACEMENT
	HK 7H 15.15.12-00		HK 7 H LUB M092 ZIP	HK 7 H		KRYTOX LUBE OF M092 ZIPPERS
	HK 7 J 15.15.13-00	0:00 TO 3:00	HK 7 J SHOWER	HK 7 J		SHOWER ACTIVITIES
	HK 8A A 15.15.15-00A	0:20	HK 8 A URINE BAG	HK 8 A		URINE BAG MODULE RESUPPLY
	HK 10 A A 15.15.16-00A	0:10	HK 10 A CO2 FIL REP	HK 10 A		INLET CO2 FILTER CART REPLACEMENT

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 10 B A 15.15.17-00A	0:20	HK 10 B EMER SYS	HK 10 B		EMERGENCY SYSTEM VERIFICATIONS
	HK 10 B-1 15.16.13-00	0:05	HK 10 B-1 RAPID ΔP	HK 10 B-1		RAPID SYSTEM ΔP VERIFICATION
	HK 10 B-2 15.16.14-00	0:15	HK 10 B-2 FIRE SENS	HK 10 B-2		FIRE SENSORS VERIFICATION
	HK 10 C A 15.15.18-00A	0:15	HK 10 C LIGHT SYS	HK 10 C		LIGHTING SYSTEM TESTS
	HK 10 C-1 15.16.15-00	0:02	HK 10 C-1 MDA STATUS LT	HK 10 C-1		MDA STATUS LIGHTS TEST
	HK 10 C-2 15.16.16-00	0:02	HK 10 C-2 STS STATUS LT	HK 10 C-2		STS STATUS LIGHTS TESTS
	HK 10 C-3 15.16.17-00	0:02	HK 10 C-3 OWS FC LT	HK 10 C-3		OWS FWD COMPT STATUS LIGHTS TEST
	HK 10 C-4 15.16.18-00	0:02	HK 10 C-4 EXP COMPT LT	HK 10 C-4		EXP COMPT STATUS LIGHTS TEST
	HK 10 C-5 15.16.19-00	0:02	HK 10 C-5 W STATUS LT	HK 10 C-5		WARDROOM STATUS LIGHTS TEST
	HK 10 C-6 15.16.20-00	0:02	HK 10 C-6 WMC STATUS LT	HK 10 C-6		WMC STATUS LIGHTS TEST
	HK 10 D A 15.15.19-00A	0:04	HK 10 D OWS EMER LT	HK 10 D		OWS EMERG LIGHTING VERIFICATION

*KEY COLUMN
(SEE NOTE)

4-3J

4-3K

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-3L

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 11 A 15.15.20-00	0:20	HK 11 A SOLIDS TRAP	HK 11 A		SOLIDS TRAP REPLAC
	HK 11 B 15.15.55-00	0:05	HK 11 B WMC WIPE RE	HK 11 B		WMC WIPE RESUPPLY
	HK 14 A A 15.15.21-00A	0:05	HK 14 A H2O CLEAN	HK 14 A		WATER CLEANING
	HK 14 A-1 15.16.22-00		HK 14 A-1 H2O CLEAN DRS	HK 14 A-1		WATER CLEAN TRASH BAG DOORS
	HK 14 B A 15.15.22-00A	1:15	HK 14 B BIO WIPE DIS	HK 14 B		WATER CLEANING TRASH BAG DOORS
	HK 14 B-1 15.16.22-00	0:30	HK 14 B-1 BIO TRASH DR	HK 14 B-1		BIOCIDE WIPE DISINFECTING
	HK 14 B-2 15.16.23-00	0:30	HK 14 B-2 BIO FOOD CHIL	HK 14 B-2		BIOCIDE CLEAN TRASH BAG DOORS (W,H)
	HK 14 B-3 15.16.24-00	0:45	HK 14 B-3 BIO URINE DR	HK 14 B-3		BIOCIDE CLEAN FOOD CHILLER
	HK 14 C A 15.15.23-00A	0:15	HK 14 C MOIST REM	HK 14 C		BIOCIDE CLEAN URINE DRAWERS
	HK 14 C-1 15.16.25-00	0:05	HK 14 C-1 DRY TABLE	HK 14 C-1		MOISTURE REMOVAL
	HK 14 C-2 15.16.26-00	0:10	HK 14 C-2 DRY TWL HLDR	HK 14 C-2		DRY FOOD TABLE INTERIOR
	HK 14 D A 15.15.24-00A	0:05	HK 14 D WASH CLOTH R	HK 14 D		DRY TOWEL HOLDERS (PORTABLE F,F,H,S)

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-3M

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 14 E A 15.15.25-00A	0:15	HK 14 E REP BLANKET	HK 14 E		REPLACE TOP BLANKET & HEADREST COVERS
	HK 14 F A 15.15.26-00A	0:10	HK 14 F FECAL BAG REP	HK 14 F		FECAL BAG RESUPPLY
	HK 14 G A 15.15.27-00A	0:10 TO 0:15	HK 14 G H2O PURIFY	HK 14 G		H2O PURIFICATION
	HK 24 A A 15.15.28-00A	0:40	HK 24 A TOWEL RELOAD	HK 24 A		TOWEL MODULE RELOADING
	HK 28 A A 15.15.29-00A	0:10	HK 28 A H2O CLEAN	HK 28 A		WATER CLEANING
	HK 28 A-1 15.16.27-00	0:10	HK 28 A-1 CLN TRASH DR	HK 28 A-1		WATER CLEAN TRASH BAG DOORS (F,S)
	HK 28 B A 15.15.30-00A	1:00	HK 28 B BIO WIPE DIS	HK 28 B		BIOCIDE WIPE DISINFECTING
	HK 28 B-1 15.16.28-00	0:30	HK 28 B-1 BIO M092 SEAL	HK 28 B-1		BIOCIDE CLEAN M092 SEAL
	HK 28 B-2 15.16.29-00	0:35	HK 28 B-2 BIO M092 WALL	HK 28 B-2		BIOCIDE CLEAN M092 INNER WALLS
	HK 28 B-3 15.16.30-00	0:30	HK 28 B-3 BIO M092 SEAT	HK 28 B-3		BIOCIDE CLEAN M092 SEAT

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 28 B-4 15.16.31-00	0:30	HK 28 B-4 BIO M092 STRP	HK 28 B-4		BIO CLEAN M092 LEG STRAPS
	HK 28 B-5 15.16.32-00	0:10 TO 0:15	HK 28 B-5 BIO M093 ELEC	HK 28 B-5		BIOCIDE CLEAN M093 ELECTRODES
	HK 28 B-6 15.16.33-00	0:30	HK 28 B-6 BIO M171 BRD	HK 28 B-6		BIOCIDE CLEAN M171 CHESTBOARD
	HK 28 C 15.15.31-00	0:30	HK 28 C WMC FILT REP	HK 28 C		WMC VENT FILTER REPLACEMENT
	HK 28 D A 15.15.32-00A	0:15	HK 28 D FC FILT REP	HK 28 D		FECAL COLLECTOR FILTER REPLACEMENT
	HK 28 E A 15.15.33-00A	0:20	HK 28 E US FILT REP	HK 28 E		URINE SEPARATOR FILTER REPLACEMENT
	HK 28 F A 15.15.34-00A	0:05	HK 28 F BIO WIPE RES	HK 28 F		BIOCIDE WIPE RESUPPLY
	HK 28 G A 15.15.35-00A	0:05	HK 28 G WET WIPE RES	HK 28 G		WET WIPE RESUPPLY
	HK 28 H 15.15.36-00	0:15	HK 28 H MOL SIEVE REP	HK 28 H		MOL SIEVE CHARCOAL CANISTER REPLAC
	HK 28 J 15.15.56-00	0:05	HK 28 J W WIPE RES	HK 28 J		WARDROOM WIPE RESUPPLY

*KEY COLUMN
(SEE NOTE)

4-3N

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 60 A 15.15.37-00	0:30	HK 60 A PWR XFER	HK 60 A		CSM POWER SOURCE XFER TO EXTERNAL
				HK 60 B		COND HOLDING TANK DUMP
	HK 60 B-1 15.15.58-00	0:40	HK 60 B-1 CNDST INIT	HK 60 B-1		COND HOLDING TANK DUMP INITIATION
	HK 60 B-2 15.15.59-00	0:05	HK 60 B-2 CNDST CHECK	HK 60 B-2		COND HOLDING TANK DUMP CHECK
	HK 60 B-2 15.15.60-00	0:30	HK 60 B-3 CNDST TERMIN	HK 60 B-3		COND HOLDING TANK DUMP TERMINATION
				HK 60 C		MOLECULAR SIEVE BAKEOUT (A OR B)
	HK 60 C-1 15.15.39-00	0:25	HK 60 C-1 BED 1 B/O	HK 60 C-1		INITIATE BED 1 BAKEOUT
	HK 60 C-2 15.15.40-00	0:25	HK 60 C-2 BED 2 B/O	HK 60 C-2		INITIATE BED 2 BAKEOUT
	HK 60 C-3 15.15.41-00	0:05	HK 60 C-3 TERM B/O	HK 60 C-3		TERMINATE BED 1 (2) BAKEOUT
	HK 60 C-4 15.15.42-00	0:05	HK 60 C-4 NORMAL OP	HK 60 C-4		CONFIG FOR NORMAL OPERATION
	HK 60 C-5 15.15.43-00	0:05	HK 60 C-5 C/W PPC02	HK 60 C-5		ENABLE C/W PPC02

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FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-3P

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 60 D A 15.15.44-00A	0:10	HK 60 D H2O SELECT	HK 60 D		WATER SOURCE SELECTION
	HK 60 E A 15.15.45-00A	0:15	HK 60 E AM FOOD XFER	HK 60 E		AMBIENT FOOD TRANSFER
	HK 60 F A 15.15.46-00A	0:15	HK 60 F FRZ FOOD XFER	HK 60 F		FROZEN FOOD TRANSFER
	HK 60 G A 15.15.47-00A	0:10	HK 60 G C/W TEST	HK 60 G		CREW ALERT WARNING TEST
	HK 60 H A 15.15.48-00A	0:05	HK 60 H TWX PAPER RE	HK 60 H		TELEPRINTER PAPER CARTRIDGE REPLAC
	HK 60 K 15.15.50-00	0:35	HK 60 K LSU/PCU	HK 60 K-0		LSU/PCU SERVICING (SL-3)
	HK 60 L A 15.15.51-00A	0:05	HK 60 L DISP RESUPPLY	HK 60 L-0		TISSUE DISPENSER RESUPPLY
				HK 60 M		LSU/PCU DESERVICING (SL-3)
	HK 60 N 15.15.66-00		HK 60 N RSS PUMP	HK 60 N		RSS RAMP S/D
	HK - OPEN A 15.15.54-00A	0:10 TO 1:00	HK - OPEN	HK		N/A

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-3Q

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	HK 5 A A 15.15.61-00A	0:10	HK 5 A	HK 5 A		FECES RETURN (NOT IN SWS C/L)
	IMSS-1 SITEB 09.04.01-00B	TBD	IMSS 1/2 SITE SWABS	IMSS 1/2 SITE SWABS		MB 18 ENVIRONMENTAL SAMPLING (IMSS C/L)
	IMSS-3 BODYB 09.04.02-00B	0:50	IMSS 3 BODY SWABS (SUBJECT)	IMSS 3	WITH POST SLEEP ONLY	MB 21/22 CREW SAMPLING (IMSS C/L)
	IMSS-4 AIR B 09.04.03-00B	TBD	IMSS AIR SAMPLES	IMSS AIR		MB 20 AIR SAMPLING (IMSS C/L)
M074	M074 ACT H B 04.05.06-02B	0:10	M074 ACT H	M074 ACT		ACTIVATION C/L
	M074 ACT W B 04.05.06-01B	0:10	M074 ACT W			
M074 1-3	M074 CAL-1HA 10.02.01-02A	0:30	M074 CAL H	M074 CAL H		M074 CALIBRATION M071/M073 GENERAL (BIOMED EXP C/L)
M071 4	M071-4 PROCA 10.01.06-00A	0:15	M071-4 PROC SAMPLE FO-4			
M074 1-3	M074 CAL-1WA 10.02.01-01A	0:30	M071 CAL W FO 1-3	M074 CAL W		M074 CAL, M071/M073 GEN. BIOMED EXP C/L

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M071 1	M071-1 FOODA 10.07.01-00A	0:08	M071-1 FOOD MEAS & LOG FO 1	M074 CAL W		M074 CAL, M073/M073 GEN. BIOMED EXP C/L
M092 1-8	M092OPER1/2B 10.03.01-01B	0:55	M092 OP1 FO 1-8 (SUBJECT)	M092/ M093 (M151)	SUBJECT AND OBSERVER	M092 OPERATION VCG DONNING (SUB) ELEC. PREP (OBS) M092 PREP BPMS CHECKOUT, M092 RUN, LBNPD EGRESS M093 OPERATION (BIOMED C/L)
M093 1-8	M093 OPER C 10.03.02-00C	0:50	M093 OPS FO 1-8			
M151 1-8	M151-M092 PA 10.05.04-00A	0:10	M151 PHOTO FO 1-8			
M092 1-8	M092OPER1/2B 10.03.01-01B	0:55	M092 FO 1-8	M092/ M171-1 (M151)	SUBJECT AND OBSERVER	M092 OPERATION M171 OPERATION (BIOMED C/L)
M171 1-5	M171 OPER-1B 10.03.03-01B	1:10	M171 OP 1 FO 1-8			
M151 1-8	M151-M171 PA 10.05.05-00A	0:10	M151 PHOTO FO 1-8			
M092 1-8	M092OPER1/2B 10.03.01-01B	0:55	M092 FO 1-8			
M171 1-5	M171 OPER-2B 10.03.03-02B	1:10	M171 OP 2, FO 1-8	M092/ M171-2 (M151)	SUBJECT AND OBSERVER	M092 OPERATION M171 OPERATION MOUNT ERGOMETER, SUB MA CAL CKOUT, OBS MA PRE-RUN CAL, OBS ESS PRE-RUN CAL M171 RUN POST OPERATION EQUIP CLEANUP (BIOMED EXP C/L)
M151 1-8	M151-M171 PA 10.05.05-00A	0:10	M151 PHOTO FO 1-8			

*KEY COLUMN (SEE NOTE)

4-3R

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M092 1-8	M092 OPER-3B 10.03.01-02B	0:55	M092 OP-2	M092/ M171-3 (151)	SUBJECT AND OBSERVER	M092 OP. VCG DON. SUB ELEC PREP, OBS, M092 PREP BPMS CKT, M092 RUN, LBNPD EGR, M171 OP. MOUNT ERGOM, SUB, MA PRN CAL, OBS, ESS PRN CAL, M171 RUN, POST OP EQP CLNUP MA OP TO SDBY, OBS, (BIOMED EXP C/L)
M171 1-5	M171 OPER-3B 10.03.03-03B	1:10	M171 OP-3 FP 1-5			
M151 1-8	M151-M171 PA 10.05.05-00A	0:10	M151 PHOTO FO 1-8			
M110 1-4	M110 SAMPLE B 10.10.01-00B	0:55	M110 SAMPLE FO 1-4	M110		M110 BLOOD SAMPLE (BIOMED EXP C/L)
M131	M131 ACT 04.05.04-00	0:10	M131 ACT	M131 ACT		
M131 1-6	M131A PHOBA 10.04.01-01A OR M131A PHOMSA 10.04.01-02A M131A MSPHOB 10.04.01-03B	1:15	M131-1 OGI WITH PHOTO, 2 SUBJECTS M131-1 OGI M131-1 MS SUBJECTS	M131-1 PHOTO	MOCK ROT, STOW OTG (LAST RUN), PHOTO MS ONLY SUBJECTS AND OBSERVER (1 OR 2 SUBJECTS)	M131 OGI MODE M131 MS MODE (BIOMED EXP C/L)
M131 7-9	M131B PHO/PA 10.04.02-01A OR M131B PHO/O 10.04.02-02 OR M131B PHO/I 10.04.02-03	0:45	M131-2 SL PHOTO SUBJ 1 FO 7-9 M131-2 SL PHOTO SUBJ 2	M131-2 PHOTO	SUBJECT AND OBSERVER	M131 SL MODE (BIOMED EXP C/L)

4-3S

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-31

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M133	M133 SL2 PRA 04.05.05-00A	0:30	M133 ACT	M133 ACT		M133 ACTIVATION (BIOMED EXP C/L)
M133 1-15	M133 SLEEP B 10.09.01-00B	6:30 TO 8:22	M133 SLEEP FO 1-15	M133 OPS	0:12 PRE SLEEP 0:10 POST SLEEP	M133 OPERATION (BIOMED EXP C/L)
M133	M133 SL2 POA 16.05.05-00A	0:30	M133 DEAC	M133 DEAC		M133 DEACTIVATION (BIOMED EXP C/L)
M151 22-25	M151 FOOD PA 10.05.06-00A	0:30	M151 PHOTO FO 22-25 FOOD PREP	M151-1	PHOTO SET-UP	M151 PHOTO OF FOOD PREP (EVALUATION EXP C/L)
M172	M172 ACT 04.05.07-00	0:30	M172 ACT	M172 ACT		(ACTIVATION C/L)
M172 1-3	M172 CALIBA 10.06.02-00A	1:15	M172 CAL	M172 CAL		M172 CALIBRATION (BIOMED EXP C/L)
M487 7	M487 SLM OPA 10.11.04-00A	0:45	M487-1 A FO-7, SLM OP	M487-1 A	USE IN XXX COMPT NEAR XXX OR MEASURE NOISE FROM XXX (LOCATION)	M487-1 A AND LVL MTR FREQ ANAL (EVALUATION EXP C/L)
M487 8	M487 VEL 10.11.05-00	0:20	M487-1 B FO-8, VEL OP	M487-1 B	USE IN XXX COMPT NEAR XXX OR MEASURE VELOCITY FROM XXX (LOCATION)	M487-1 B VELOMETER (EVALUATION EXP C/L)
	M487 TEMP 10.11.06-00	0:10	M487-1 C FO-8, TEMP	M487-1 C	MEASURE TEMP OF XXXX, (LOCATION) USE XXX (SENSOR)	M487-1 C TEMP SENSOR (EVALUATION EXP C/L)

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-30

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M172	M172 ACT 04.05.07-00	0:30	M172 ACT	M172 ACT		(ACTIVATION C/L)
M172 1-3	M172 CALIB 10.06.02-00	1:15	M172 CAL	M172 CAL		M172 CALIBRATION (BIOMED EXP C/L)
M487 7	M487 SLMOP 10.11.04-00	0:45	M487-1 A FO-7, SLM OP	M487-1 A	USE IN XXX COMPT NEAR XXX OR MEASURE NOISE FROM XXX (LOCATION)	M487-1 A SMD LVL MTR FREQ ANAL (EVALUATION EXP C/L)
M487 8	M487 VEL 10.11.05-00	0:20	M487-1 B FO-8, VEL OP	M487-1 B	USE IN XXX COMPT NEAR XXX OR MEASURE VELOCITY FROM XXX (LOCATION)	M487-1 B VELOMETER (EVALUATION EXP C/L)
	M487 TEMP 10.11.06-00	0:10	M487-1 C FO-8, TEMP	M487-1 C	MEASURE TEMP OF XXXX, (LOCATION) USE XXX (SENSOR)	M487-1 C TEMPERATURE SENSOR (EVALUATION EXP C/L)
	M487 FORCE 10.11.07-00	0:10	M487-1 D FO-8, FORCE	M487-1 D	MEASURE XXX (MEASUREMENT)	M487-1D FORCE GAUGE (EVALUATION EXP C/L)

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-3V

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M487 8	M487 LIGHT 10.11.08-00	0:15	M487-1 E FO-8, LIGHT	M487-1 E	MEASURE LIGHT IN XXX (LOCATION)	M487-1 E LIGHT INTENSITY (EVALUATION EXP C/L)
M487				M487-1 F		M487-1 F BATT REMOVAL AT END OF MISSION (EVALUATION EXP C/L)
M487 4,5,6	M487 CRW DEA 10.11.09-00A	0:20	M487-2 A FO-4, CREW DE	M487-2 A	EARLY MISSION	M487-2 A CREW DEBRIEFING (EVALUATION EXP C/L)
				M487-2 B	MIDDLE MISSION	M487-2 B CREW DEBRIEFING (EVALUATION EXP C/L)
				M487-2 C	LATE MISSION	M487-2 C CREW DEBRIEFING (EVALUATION EXP C/L)
M487 1	M487 SUBJ 1A 10.11.10-00A	0:20	M487 SUBJ EVALA	M487-3 A	EARLY MISSION	M487-3 SUBJECTIVE EVALUATION GUIDE 1 (EVALUATION EXP C/L)
M487 2	M487 SUBJ 2A 10.11.11-00A	0:15	M487 SUBJ EVAL 2	M487-3 B	MID-MISSION	M487-3 SUBJECTIVE EVALUATION GUIDE 2 (EVALUATION EXP C/L)
M487 3	M487 SUBJ 3 10.11.12-00	0:25	M487 SUBJ EVAL 3	M487-3 C	LATE MISSION	M487-3 SUBJECTIVE EVALUATION GUIDE 1&3 (EVALUATION EXP C/L)
M487 9&10	M487 FOTO AA 10.11.14-00A	0:20	M487 PHOTO A FO-9 & 10 EVENING MEAL	M487-4 A	M487-4 A PHOTO PAD 0:10 WITH PRE-SLEEP	M487-4 A EVENING MEAL (EVALUATION EXP C/L)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

4-3W

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M487 11&12	M487 FOTO BA 10.11.15-00A	0:10	M487 PHOTO B FO-11 & 12 DOFF CLOTHES	M487-4 B	M487-4 B PHOTO PAD 0:02 WITH PRE-SLEEP	M487-4 B DOFFING CLOTHING & INGRESS SLEEP RESTRAINT (EVALUATION EXP C/L)
M487 13&14	M487 FOTO CA 10.11.16-00A	0:15	M487 PHOTO C FO-13 & 14 DON CLOTHES	M487-4 C	M487-4 C PHOTO PAD 0:02 WITH POST SLEEP	M487-4 C EGRESS SLEEP RESTRAINT & DON CLOTHING (EVALUATION EXP C/L)
M487 15&16	M487 FOTO D 10.11.17-00	0:06	M487 PHOTO D FO-15 & 16 WMC DEMO	M487-4 D	M487-4 D PHOTO PAD 0:05 PHOTOS	M487-4 D WMC ACTIVITY DEMONSTRATION (EVALUATION EXP C/L)
M487 17&18	M487 FOTO EA 10.11.18-00A	0:20	M487 PHOTO E FO-17 & 18 CLEAN SCREEN	M487-4 E	M487-4 E PHOTO PAD 0:10 WITH HK-7E-4	M487-4 E CLEAN MIXING CHAMBER SCREEN (EVALUATION EXP C/L)
M487 19				M487-4 F	M487-4 F PHOTO PAD 0:03 WITH TAL OPS	M487-4 F TRASH AIRLOCK OPERATIONS (EVALUATION EXP C/L)
M487 20				M487-4 G	M487-4 G PHOTO PAD 0:15 PHOTOS	M487-4 G MISC OFF DUTY & HYGIENE ACTIVITIES (EVALUATION EXP C/L)
M509	M509 PSA UNA 04.01.02-00A	0:08	M509 A	M509 A	CHARGE	M509 UNSTOW PSS STOWAGE RACK
	M509 PSS REA 09.01.03-00A	0:15	M509 D PSS RE		PSS-X (2,3,4)	M509 PSS RECHARGE
	M509 BAT IN A 09.01.01-00A	0:02	M509 B BAT CH		BATT-X (1,2)	M509 INITIATE BATTERY CHARGE (MANEUVERING EXP C/L)
	M509 BAT INA 09.01.01-00A	0:02	M509 B BAT CH	M509 B	CHARGE	M509 INITIATE BAT-

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	M509 BAT TEA 09.01.02-00A	0:02	M509 C END CH	M509 C		M509 TERMINATE BATTERY CHARGE (MANEUVERING EXP C/L)
	M509 PSS REA 09.01.03-00A	0:15	M509 D PSS RE	M509 D	CHARGE PSS-X (2,3,4)	M509 PSS RECHARGE
	M509 PSSTD: A 09.01.04-00A	0:15	M509 E TOP OFF PSS	M509 E	CHARGE PSS-X (2,3,4)	M509 PSS TOP OFF (MANEUVERING EXP C/L)
	M509 ATMOSP 09.01.12-00	0:05 0:10	M509 F ATMOS MGMT	M509 F	FINAL PRESS X.XX 1A	M509 ATMOS MGMT OPT 1-INHIBIT AM CABIN PRESS RLF VLV (A) OPT 1-INHIBIT AM CABIN PRESS RLF VLV (B) OPT 2-VENT THROUGH DUMP VALVES OPT 3-VENT THROUGH DUMP VALVE (A) OPT 3-VENT THROUGH DUMP VALVE (B) OPT 4-SHUT-OFF CABIN PRESS REGS (A) OPT 4-SHUT-OFF CABIN PRESS REGS (B)
CAB PRESS X.XX 1B						
VENT TIME XX.XX FINAL PRESS X.XX 2						
FINAL PRESS X.XX 3A						
CAB PRESS X.XX 3B						
FINAL PRESS X.XX 4A						
CABIN PRESS X.XX 4B						

*KEY COLUMN
(SEE NOTE)

4-3X

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M509 (CONT)				M509F	5A	OPT 5-MANUAL O2 ADDITION (A) OPT 5-MANUAL O2 ADDITION (B) OPT 6-SHUT-OFF N2 MAKEUP (A) OPT 6-SHUT-OFF N2 MAKEUP (B) (MANEUVERING EXP C/L)
					5B	
				6A		
				6B		
	M509 ACT A 09.01.05-00A M509 PSS RE 09.01.03-00	1:00 0:15	M509 ACT M509 D PSS RE	M509 ACT	CHARGE PSS-X (2,3,4)	M509 ACT M509 PSS RECHARGE (MANEUVERING EXP C/L)
M509 3	EMU DONNINGA 09.01.14-00A	1:25 1:40	DON EMU	M509-1 (M151)	USE BATT-X (1,2) USE PSS-X (2,3,4)	EMU DONNING FOR M509/ TO20 (EVA C/L) M509 PREP (SUITED)
	M509 HS PREA 09.01.16-00A	1:28	M509 PREP SUITED			
M151 20 17	M509 HS C/OA 09.01.17-00A	0:28	M509 DON SUIT & CHECKOUT			M509 DONNING & CHECKOUT (SUITED)
	M509-1 SEQ 09.01.09-00	1:28 1:40	M509 RUN 1 SUITED, FO-3			M509 RUN 1 (SUITED) M509 BATT CHANGE DURING RUN M509 PSS CHANGE DURING RUN
M151 21 17	M509 HS C/OA 09.01.18-00A	0:06	M509 SHUTDOWN			M509 SHUTDOWN (SUITED)
	EMU DOFFINGA 09.01.15-00A	0:47	DOFF EMU			EMU DOFFING FOR M509/TO20 (EVA C/L)
M151 21 19	M509 STOW A 09.01.19-00A	0:36	M509 STOW W SUIT			M509 STOWAGE (SUITED)

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FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M509 2 M151 17-19	M509 SS C/OA 09.01.06-00A	0:50	M509 C/O UNSUITED	M509-2 (M151)	USE BATT-x (1,2) USE PSS-x (2,3,4)	M509 PREP & CHECK- OUT (UNSUITED) M509 RUN 2 M509 BATT CHANGE DURING RUN M509 PSS CHANGE DURING RUN M509 SHUTDOWN & STOWAGE (UN- SUITED) (MANEUVERING EXP C/L)
	M509-2 SEQ 09.01.07-00	1:05 1:35	M509 RUN 2 UNSUITED,F0-2			
	M509 SS S/DA 09.01.11-00A	0:35	M509 S/D & STOW			
M509 3 M151 17-19	M509 SS C/OA 09.01.06-00A	0:50	M509 C/O UNSUITED	M509-3 (M151)	USE BATT-x (1,2) USE PSS-x (2,3,4)	M509 PREP & CHECK- OUT (UNSUITED) M509 RUN 3 M509 BATT CHANGE DURING RUN M509 PSS CHANGE DURING RUN M509 SHUTDOWN & STOWAGE (UN- SUITED) (MANEUVERING EXP C/L)
	M509-3 SEQ 09.01.08-00	1:30 1:35	M509 RUN 3 UNSUITED,F0-3			
	M509 SS S/DA 09.01.11-00A	0:35	M509 S/D & STOW			
	M512 VERIFYA 11.09.01-00A	0:10	M512 VERIFY	M512 VER		FACILITY VERIFICATION (MDA EXP C/L)
M516 1-6	M516 UNSCHE 10.08.01-00		M516-1 F0-1 THRU 6 UNSCH MAIN	M516-1	M516-1 PHOTO PAD	M516 UNSCHEDULED MAINT ACTIVI- TIES (EVALUATION EXP C/L)
M551 1	M551 PREP B 11.04.02-00B M551 OP 1/2B 11.04.03-01B	0:10	M551 PREP	M551-1	M551 PHOTO PAD DO NOT STOW FILM	METALS MELTING PREP METALS MELTING OPS (MDA EXP C/L)
		0:05	M551 OP 1/2A			

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M551 2	M551 REMOVE 11.04.04-00B M551 OP 1/2B 11.04.03-01B	0:05	M551 REMOVE	M551-2	M551 PHOTO PAD DO NOT STOW FILM	METALS MELTING RE- MOVAL METALS MELTINGS OPS (MDA EXP C/L)
		0:05	M551-2,F0-2			
M551 3	M551 REMOVE 11.04.04-00B M551 OP 3 C 11.04.03-02C	0:05	M551 REMOVE	M551-3		
		0:05	M551 OP 3			
	M551 REMOVE 11.04.04-00B M551 TERM B 11.04.05-00B	0:05	M551 REMOVE	M551 TERM		METALS MELTING RE- MOVAL METALS MELTING TERM- INATION (MDA EXP C/L)
		0:06	M551 TERM			
M552 1	M552 PREP B 11.04.07-00B M552 OP-1 11.04.08-01	0:04	M552 PREP	M552-1	(X=1,2,3,4)	EXOTHERMIC HEATING PREP EXOTHERMIC HEATING OPS (MDA EXP C/L)
		0:04	M552 OP 1			
M552 2	M552 OP-2 11.04.08-02	0:04	M552 OP 2	M552-2		EXOTHERMIC HEATING OPS (MDA EXP C/L)
M552 3	M552 OP-3 11.04.08-03	0:04	M552 OP 3	M552-3		
M552 4	M552 OP-4 11.04.08-04	0:04	M552 OP 4	M552-4		
M552	M552 TERM A 11.04.09-00A	0:04	M552 TERM	M552 TERM		

*KEY COLUMN

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M553 1	M553 OP WH1C 11.04.06-01C	0:45	M553 WH 1 FO-1	M553-1	M553 PHOTO PAD	SPHERE FORMING PREP/ OPS (MDA EXP C/L)
M553 2	M553 OP WH2B 11.04.06-02B	0:35	M553 WH 2 FO-2	M553-2		
M555 1	M555 INIMONA 11.04.14-00A	3:15	M555 INIT FO-1	M555 OPS	INCLUDES UNATTENDED TIME OF 3:00	CRYSTAL PREP/OPS (MDA EXP C/L)
M555	M555 RECORDA 11.04.15-00A	0:05	M555 RECORD	M555 RCD		CRYSTAL TEMP RECORD (MDA EXP C/L)
	M555 TERMONA 11.04.16-00A	9:10	M555 TERM	M555 TERM	INCLUDES UNATTENDED TIME OF 9:00	CRYSTAL TERMINATE (MDA EXP C/L)
	MED DEACTIVA 16.05.01-00A		MED DEAC	MED DEAC	M092, M093, M171	MED DEACTIVATION

*KEY COLUMN
(SEE NOTE)

4-38B

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	OFF DUTY-1 A 15.01.09-00A OFF DUTY-3 A 15.01.10-00A	1:00 5:00 1:00 5:00	OFF DUTY (1 CM) OFF DUTY (3 CM)			N/A
	PER HYGIENEA 15.01.01-00A	0:10 0:30	PER HYGIENE	PH		
M071 2,3,4,5	PER HYGIENEA 15.01.01-00A	0:10 0:30	PER HYGIENE	POST- SLEEP	EAT CONCURRENT WITH POST SLEEP	(SWS SYSTEMS C/L)
	M071-2 URIN 10.01.02-00	0:04	M071-2 LOG			
	M071-3 ID 10.01.03-00	0:04	M071-3 ID & ST			
	M071-4 STOWA 10.01.04-00A	0:08	M071-4 SAMPLE STOW			
	M071-5 BMMDB 10.01.05-00B	0:06	M071-5 BMMDB			
	M071-4 PROCA 10.01.06-00A	0:15	M071-4 SAMPLE PROCESS		(NORMAL)	
M110				POST- SLEEP (M110)	NORMAL PLUS M110, PAGE 17	POST SLEEP (M110) (SWS SYSTEMS C/L)
EREP				POST- SLEEP (EARLY EREP)	NORMAL PLUS OPTIONS FROM EREP, PAGE 7	POST SLEEP (EARLY EREP) (SWS SYSTEMS C/L)
20.11 2-7 10-30 34-37			PRD-1	PRD-1	3 PRD'S	OWS FILM VAULT PRD READING (SWS SYSTEMS C/L)

*KEY COLUMN
(SEE NOTE)

4-30C

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
T003			T003 SH 3, 1A WMC WATER DUMP	PRESLEEP	EAT CONCURRENT WITH PRESLEEP	PRE-SLEEP (SWS SYSTEMS C/L)
	PRESS CONF 15.03.12-00	0:30	PRESS CONF	PRESS CONF		N/A
	PT 15.01.08-00	0:10 0:30	PT	PT		N/A
		0:05	RAD-1	RAD-1		CENTER SLEEP STATION RADIATION MEASUREMENT(S) (SWS SYSTEMS C/L)
		0:05	RAD-2	RAD-2		WARDROOM RADIATION MEASUREMENT (W) (SWS SYSTEMS C/L)
		0:05	RAD-3	RAD-3		VABD AREA RADIATION MEASUREMENT (E) (SWS SYSTEMS C/L)
		0:05	RAD-4	RAD-4		SAL/PRD LOCATION RADIATION MEASUREMENT (F) (SWS SYSTEMS C/L)
		0:05	RAD-5	RAD-5		OWS FILM VAULT VICINITY RADIATION MEASUREMENT (F) (SWS SYSTEMS C/L)
		0:05	RAD-6	RAD-6		RSM IN OWS BRACKET RADIATION MEASUREMENT (E) (SWS SYSTEMS C/L)
		0:05	RAD-7	RAD-7		ATM C&D AREA RADIATION MEASUREMENT (SWS SYSTEMS C/L)
		0:05	RAD-8	RAD-8		AM RADIATION MEASUREMENT (SWS SYSTEMS C/L)

*KEY COLUMN
(SEE NOTE)

4-300

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
	SLEEP-1 B 15.01.02-00B SLEEP-3 15.01.03-00	6:30 8:30	SLEEP (1 CM) SLEEP (3 CM)	SLEEP		
	SUIT DRY INA 04.01.03-00A	0:20	SUIT DRY	SUIT DRY 1		POST EV 1 & 2 (EVA C/L)
	SUIT STOW A 04.01.04-00A	0:20	SUIT STOW INTERIM	SUIT DRY X	(X = 2,3)	POST EV 3
	SUIT STOW F 04.01.05-00	0:20	SUIT STOW FINAL	SUIT ST		(EVA C/L)
	TV PREP EVA 15.03.04-00	1:00	TV PREP EVA	TV PREP (EVA)	S073 HDWR - 0:50 W/O - 0:30	TV PREP (EVA) (SAL EXP C/L)
	TV ST-1 EVAA 15.03.08-00A	1:00	EVA TV ST-1	TV STOW (EVA)		TV STOW (EVA)
	TV PREP IVAA 15.03.03-00A TV TOUR SU C 15.03.09-00C	0:10 0:10	TV PR IVA TV SU/TOUR	TV SU		
20.15 1-3 4&5	TEM 1 A 09.08.01-00A TEM 2 A 09.08.02-00A TEM 3 A 09.08.03-00A	0:10 0:10 0:15	TEM 1 PIPES TEM 2 WALL 7 TEM 3 WALL 15	TEM 1 TEM 2 TEM 3	HEAT PIPES - 6 LOCATIONS WALLS 7 LOCATIONS WALLS 15 LOCATIONS	HEAT PIPE MEASUREMENTS (F) WALL MEASUREMENTS(F) WALL MEASUREMENTS (CREW QTRS) (SWS SYSTEMS C/L)
				TRIM (PM OR RN)	PM IS PRIME	(CSM SYS C/L)

4-3EE

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S009	S009 PREP 08.01.01-00	0:10	S009 ACT	S009 ACT		S009 EXPERIMENT ACTIVATION (MDA EXP C/L)
	S009 INIT B 08.01.02-00B	0:05	S009 INIT	S009 INIT		S009 EXPERIMENT INITIATION (MDA EXP C/L)
	S009 SET B 08.01.03-00B	0:05	S009 SET	S009 SET		S009 BETA ANGLE AND TIMER UPDATE (MDA EXP C/L)
S009 1	S009 STOW 08.01.05-00	0:10	S009 STOW FO-1	S009 STOW		S009 EXPERIMENT EQUIPMENT STOWAGE (MDA EXP C/L)
S009	S009 TERM B 08.01.04-00B	0:04	S009 TERM	S009 TERM		S009 EXPERIMENT TERMINATION (MDA EXP C/L)
S019	S019 FIIN B 08.03.06-00B	0:10	S019 FILM INSTALL	S019 FI		S019 FILM STOW/ INSTALL (SAL EXP C/L)
	S019 FIST B 08.03.05-00B	0:10	S019 FILM STOW	S019 FS		
S019 1-12	S019-1 OP B 08.03.03-00	0:30 TO 0:55	S019 OPS FO-1 TO 12	S019 OPS	S019 PAD UPDATE	S019 OPS (SAL EXP C/L)

4-3FF

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S019	S019 PREP A 08.03.11-00A	0:10	S019 PRE PREP	S019 PR-1	FULL PREP, AMS IS STOWED	S019 PREP (SAL EXP C/L)
	S019 AMS FUB 08.03.01-01B	0:10	S019 AMS PREP OPT 1			
	S019 INST AB 08.03.02-01B	0:14 TO 0:17	S019 INST A			
	OR S019 INST BA 08.03.02-02A	0:15 TO 0:18	S019 INST B			
S019 INST P 08.03.01-02 S019 INST AA 08.03.02-01A	0:02	S019 INST P	S019 PR-2	AM IS ON SAL PRESSURIZED		
	0:14 TO 0:17	S019 INST A				
	OR S019 INST BA 08.03.02-02A	0:15 TO 0:18			S019 INST B	
S019 INST DA 08.03.01-03A S019 INST AB 08.03.02-01B	0:05	S019 INST D	S019 PR-3	AMS IS ON SAL		
	0:14 TO 0:17	S019 INST A				
	OR S019 INST BA 08.03.02-02A	0:15 TO 0:18			S019 INST B	

4-36A

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S019 (CONT)	S019 REM AB 08.02.08-01B OR	0:06	S019 REM A	S019 ST-1	FULL STOW, AMS IS TO BE STOWED	S019 STOW (SAL EXP C/L)
	S019 REM BA 08.03.08-02A AND	0:07	S019 REM B			
	S019 FUST B 08.03.10-01B	0:35	S019 FUST			
	S019 REM A B 08.03.08-01B OR	0:06	S019 REM A	S019 ST-2	AMS LEFT ON SAL PRESSURIZED	
	S019 REM A B 08.03.08-01B AND	0:07	S019 REM B			
	S019 STOW PA 08.03.10-02A	0:25	S019 STOW P			
	S019 REM A B 08.03.08-01B OR	0:06	S019 REM A	S019 ST-3	AMS LEFT ON SAL DEPRESSURIZED	
	S019 REM A B 08.03.08-01 AND	0:07	S019 REM B			
	S019 STOW DA 08.03.10-03A	0:20	S019 STOW D			

4-31H

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S020 1&2	S020-1 OPER 08.04.03-01	0:06 TO 1:05	S020-1 OPER	S020 OPS -QS	QS - QUIET SUN	S020 OPS (SAL EXP C/L)
	S020-2 OPER 08.04.03-02	8:00	S020-2 OPER	S020 OPS -FL	FL - FLARE	
S020 M151 17-19	S020 PREP 08.04.01-00	0:25	S020 PREP	S020 PREP	S020 PAD UPDATE	S020 PREP (SAL EXP C/L)
S020 M151 17-19	S020 STOW A 08.04.04-00A	0:25	S020 STOW	S020 STOW		S020 STOW (SAL EXP C/L)
S073 M151 9-11	S073 DEPL AB 11.08.04-01B OR S073 DEPL SB 11.08.04-02B	0:15 0:15	S073 DEPL A ANTI S SAL S073 DEPL S SOLAR SAL	S073 EXT (M151)	ADD 0:05 FOR M151	S073/T027 EXTENSION (SAL EXP C/L)
S073 M151 9-11	S073 PR-1 AA 11.08.03-01A OR S073 PR-1 BB 11.08.03-02B	0:50 0:50	S073 PR-1 ANTI S SAL S073 PR-1 SOLAR SAL	S073 PR-1 (M151) S073 PR-2 (M151) S073 PR-3 (M151)	S073 PAD UPDATE XXXX RECORDERS OFF EXP 1 & EXP 2 M151 PHOTO PREP (IF REQD)	S073/T027 PREP (SAL EXP C/L)
S073 M151 12&13	S073 RETR AA 11.08.05-01A OR S073 RETR SB 11.08.05-02B	0:10 0:15 0:10 0:15	S073 RETR A ANTI S SAL S073 RETR S SOLAR SAL	S073 RET (M151)	ADD 0:05 FOR M151	S073/T027 RETRACTION (SAL EXP C/L)

4-31I

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S073 1-4	S073-1 OA SA 11.08.06-01A	1:34	S073-1 OAS FO-1,2,3 & 4	S073-0A	ADD 0:15 TO OPS REQUIRING ROD CHANGE	S073/T027 OPS (SAL EXP C/L)
	S073-1 OA A 11.08.06-02	1:34	S073-1 OAA FO-1,2,3 & 4			
S073 5-8	S073-2 1AS A 11.08.06-03A	1:33	S073-2 1AS FO-5,6,7 & 8	S073-1 A		
	S073-2 1A A 11.08.06-20	1:33	S073-2 1AA FO-5,6,7 & 8			
S073 19	S073-7 1B A 11.08.06-14	0:53	S073-7 1BA FO-19	S073-1 B		
S073 17-18	S073-10 1D A 11.08.06-13	0:35	S073-6 1EA FO-17,18	S073-1 E		
S073 11	S073-3 2A A 11.08.06-07	0:23	S073-3 2AA FO-11	S073-2 A		
S073 12	S073-3 2BS A 11.08.06-08A	1:06	S073-3 2BS FO-12	S073-2 B		
S073 13	S073-4 2C A 11.08.06-09	1:03	S073-4 2CA FO-13	S073-2 C		
S073 14	S073-4 2D S 11.08.06-10	1:03	S073-4 2DS FO-14	S073-2 D		
S073 21	S073-8 3A A 11.08.06-17	0:21	S073-8 3AA FO-21	S073-3 A		
S073 9	S073-2 3B S 11.08.06-05	1:11	S073-2 3BS FO-9	S073-3 B		

4-3KK

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S073 M151 12&13	S073 ST1/3AA 11.08.07-01A	0:50	S073 ST-1/3 FULL STOW	S073 ST-1, 3, (M151)	FROM SAL TO INSIDE CONTAINER INCL FILM STOW	S073/T027 STOW (SAL EXP C/L)
	S073 ST1/3BA 11.08.07-02A	0:50	S073 ST-1/3 FULL STOW SOLAR SAL +Z			
	S073 ST-1 A 11.08.07-03	0:25	S073 ST-1 SAL/CTNR TOP NO FILM ST ANTI S SAL	S073 ST-1, (M151)	FROM SAL TO TOP OF CONTAINER, NO FILM STOW	
	S073 ST-1 B 11.08.07-04	0:25	S073 ST-1 SAL/CTNR TOP NO FILM ST SOLAR SAL +Z			
	S073 ST-2 A 11.08.07-05	0:25	S073 ST-2 SAL/IN CNTR NO FILM ST ANTI S SAL	S073 ST-2, (M151)	FROM SAL TO INSIDE CONTAINER, NO FILM STOW	
	S073 ST-2 B 11.08.07-06	0:25	S073 ST-2 SAL/IN CNTR NO FILM ST SOLAR SAL +Z			
	S073 ST-3 A 11.08.07-07	0:20	S073 ST-3 CNTR TOP/IN FILM STOW ANTI S SAL	S073 ST-3, (M151)	FILM STOW WITH EXP ON CONTAINER TOP	
	S073 ST-3 B 11.08.07-08	0:20	S073 ST-3 CNTR TOP/IN			

4-3JJ

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S073 10	S073-2 3D A 11.08.06-06	1:36	S073-2 3DA FO-10	S073-3 D		S073/T027 OPS (SAL EXP C/L)
S073 20	S073-7 4A A 11.08.06-16	14:17	S073-7 4AA FO-20	S073-4 A		
S073 22	S073-9 4BS A 11.08.06-18A	14:33	S073-9 4BS FO-22	S073-4 B		
S073 15	S073-5 5A A 11.08.06-11	14:31	S073-5 5AA FO-15	S073-5 A		
S073 16	S073-5 5BS 11.08.06-12	14:28	S073-5 5BS FO-16	S073-5 B		
S149	S149 PR (+Z) 08.02.01-01	0:50	S149 PR (+Z) X=1,2,3,4	S149 - XFR	S149 PAD UPDATE (X=1,2,3,4) CASSETTE NO.'S ADD 0:5 FOR M151	S149 PREP (SAL EXP C/L)
	S149 PR (-Z) 08.02.01-02	0:50	S149 PR (-Z) X-1,2,3,4			
S149 1&2	S149 OPERATA 08.02.03-00A	0:15	S149 OPS FO-1,2	S149 OPS		S149 OPS (SAL EXP C/L)

*KEY COLUMN
(SEE NOTE)

4-31L

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S149	08.02.10-01	VAR TBD	S149 RET +Z	S149 RET	ADD 0:05 FOR M151	S149 RETRACT (SAL EXP C/L)
	08.02.10-02	VAR TBD	S149 RET -Z			
S149	08.02.09-01	0:50	S149 ST-1,3A FULL STOW ANTI S SAL	S149 ST-1,3	FULL STOW	S149 STOW (SAL EXP C/L)
	08.02.09-02	0:50	S149 ST-1,3S FULL STOW SOLAR SAL			
	08.02.09-03	0:25	S149 ST-1 A SAL/CNTR TOP NO FILM ST ANTI S SAL	S149 ST-1	SAL TO CONTAINER TOP & NO CASSETTE STOW	
	08.02.09-04	0:25	S149 ST-1 S SAL/CNTR TOP NO FILM ST SOLAR SAL			
	08.02.09-05	0:25	S149 ST-2 A SAL/IN CNTR NO FILM ST ANTI S SAL	S149 ST-2	SAL TO INSIDE CONTAINER & NO CASSETTE STOW	
	08.02.09-06	0:25	S149 ST-2 S SAL/IN CNTR NO FILM ST SOLAR SAL			
	08.02.09-07	0:15	S149 ST-3 A CNTR TOP/IN FILM STOW ANTI S SAL	S149 ST-3	STOW IN CONTAINER & STOW CASSETTE	
	08.02.09-08	0:15	S149 ST-3 S CNTR TOP/IN FILM STOW SOLAR SAL			

*KEY COLUMN

4-31M

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
S183	S183 FIIN B 08.09.05-00B	0:15	S183 FI FILM INSTALL	S183 FI		S183 FILM INSTALL (SAL EXP C/L)
	S183 FIST B 08.09.04-00B	0:15	S183 FS FILM STOW	S183 FS		S183 FILM STOW (SAL EXP C/L)
S183	S183-1 OP B 08.09.03-00B	0:15 TO 0:55	S183 OPS FO-1 THRU 12	S183 OPS	S183 PAD UPDATE 0:15 FOR NO GUIDING PASS	S183 OPS (SAL EXP C/L)
S183	S183 AMS FUB 08.09.09-01B	0:10	S183 AMS OPT 1	S183 PR-1	FULL PREP & NO FI ADD 0:05 FOR M151	S183 PREP (SAL EXP C/L)
	S183 INST P 03.09.09-02 S183 PREP 08.09.01.00	0:05	S183 AMS OPT 2	S183 PR-2	AMS DEPRESSURIZED & NO FI - IN SAL ADD 0:05 FOR M151	
		0:15 TO 0:25	S183 PR			
	S183 INST D 08.09.09-03 S183 PREP 08.09.01-00	0:05	S183 AMS OPT 3	S183 PR-3	AMS PRESSURIZED & NO FI - IN SAL ADD 0:05 FOR M151	
		0:15 TO 0:25	S183 PR			
	S183 REMOVEC 08.09.06-00C S183 FUST B 08.09.08-01B	0:13 0:30	S183 ST S183 ST OPT 1	S183 ST-1	FULL STOW & FS ADD 0:05 FOR M151	S183 STOW (SAL EXP C/L)
S183 REMOVEC 08.09.06-00C S183 STOW DA 08.09.08-02A	0:15	S183 ST	S183 ST-2	AMS DEPRESSURIZED & FS - IN SAL ADD 0:05 FOR M151		
	0:27	S183 ST OPT 2				
S183 REMOVEC 08.09.06-00C	0:15	S183 ST	S183 ST-3	AMS PRESSURIZED & FS - IN SAL		

4-3NH

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
EREP	S190 CLEAN 07.01.09-00	1:00	S190 A CL	S190 CL		MAINTENANCE (EREP C/L)
T003	T003 ACT A 04.05.03-00A	0:04	T003 ACT	T003 ACT		(ACTIVATION C/L)
T003 1-7	T003 MEAS 1A 10.07.01-01A	0:04	T003 MEAS 1	T003	USE FILTER(S)-X (2-8) FILTERS 2,3,4 TOGETHER	T003 MEASUREMENT (EVALUATION EXP C/L)
	T003 MEAS 2A 10.07.01-02A	0:16	T003 MEAS 2,3,4			
	T003 MEAS 5 10.07.01-03	0:04	T003 MEAS 5			
	T003 MEAS 6 10.07.01-04	0:04	T003 MEAS 6			
	T003 MEAS 7 10.07.01-05	0:04	T003 MEAS 7			
T003	T003 DEACT 16.05.04-00 T003 PAD UPB 10.07.02-00B	0:04 0:04	T003 DEAC T003 ST S913	T003 DEAC		T003 DEACTIVATION (EVALUATION EXP C/L)
T025	T025 ACT 04.06.04-00	0:15	T025 ACT	T025 ACT		T025 ACT (SAL EXP C/L)
T025 1-5	T025 OP C 11.07.08-00C	0:10 1:40	T025 A THRU E	T025-X	(X = A-E)	T025 PROGRAM A-E (SAL EXP C/L)
	T025 ALIGN 11.07.03-00	0:07	T025 ALIGN	T025 AL		T025 ALIGN OPS (SAL EXP C/L)

4-300

*KEY COLUMN

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
T025	T025 PREP E 11.07.01-01	0:40	T025 PREP	T025 PREP	T025 PAD UPDATE	T025 PREP (SAL EXP C/L)
	T025 PREP I 11.07.01-02	0:38	T025 PREP I			
	T025 STOW E 11.07.06-01	0:40	T025 STOW E	T025 STOW		T025 STOW (SAL EXP C/L)
	T025 STOW I 11.07.06-02	0:38	T025 STOW I			
T027 (SA) 1	T027 PREP EA 11.08.01-00A	0:35	T027 PREP FO-1	T027 OPS		T027 A PREP-OPS
T027 (SA)	T027 STOW 11.08.02-00	1:00	T027 STOW	T027 STOW		T027 A STOW

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
M518	M518 PREP 11.10.01-00	0:25	M518 PREP	M518 PREP		M518 PREP
	M518 REMOVE 11.10.04-00	0:10	M518 TERM	M518 TERM		M518 TERM
S015 1	11.09.01-00		S015 CAMERA MONITOR			ZERO GRAVITY - SINGLE HUMAN CELL
S228 1	S228 DEPLOY 08.22.01-00	0:20	S228 DEPLOY FO-1	S228 DEP		S228 DEPLOYMENT (EVALUATION EXP C/L)
				S228 RET		
T002 1-6	T002 STARS 09.03.02-01	0:35 TO	T002 STARS SXT MIDCOURSE	T002 XXX	(X = 1 THRU 6) PERFORMED ON NON-INTERFERENCE BASIS	SEXT/STAD OPER SIGHT SEXTANT MIDCOURSE (EVALUATION EXP C/L)
T002 7-18	T002 STAR M 09.03.02-02	0:35 TO	T002 STAR M SXT MIDCOURSE			
T002 19-24	T002 MOON M 09.03.02-03	0:35 TO	T002 MOON M SXT MIDCOURSE			
T002 25&26	T002 STAD O 09.03.03-00	0:25 TO 0:45	T002 STAD O STD M ORBIT			
T002 27-29	T002 SEXT O 09.03.04-00	0:25 TO 0:45	T002 SEXT O SXT ORBIT			
T002 30-34	T002 STADIM 09.03.05-00	0:25 TO 0:45	T002 STADIM STD M OPS			
	T002 SEXTAN 09.03.06-00	0:35 TO 0:55	T002 SEXTAN SXT OPS			

*KEY COLUMN
(SEE NOTE)

FLIGHT PLAN CORRELATION MATRIX

APRIL 11, 1973

DTO/FTO	DESIGNATOR	AE ΔT	ASP FLIGHT PLAN ENTRY	FLIGHT PLAN UPDATE		CHECKLIST TAB AND TITLE
				TITLE*	REMARKS	
T002	T002 STOW 09.03.07-00	0:10	T002 STOW	T002-7		EQUIPMENT STOWAGE (EVALUATION EXP C/L)
	ZLV ASSIST 07.01.14-00	0:47 TO 1:16	ZLV ASSIST	ZLV ASSIST		

*KEY COLUMN
(SEE NOTE)

4-3PP

4-30Q

4-38R

M071 MINERAL BALANCE					DATE: 4/11/73
					MRD: 2/01/73
					C/L: 1/10/73
ET	AM			CREWMAN	SL-2
	1	2	3	V	
0:00					FUNCTIONAL OBJECTIVES: FO-1 Measure & record total diet residue, menu deviation and daily fluid intake for each crewman throughout the mission. FO-2 Collect, identify, measure, and process all urine eliminations of each CMN throughout the mission. FO-3 Collect, identify, measure, process and store for return a 45 ml urine sample every 24-hours for each CMN (1/2 samples taken on selected days). FO-4 Collect, identify, measure, process and return all fecal and vomitus elimination of each CMN throughout the mission. FO-5 Measure and record body mass of each crewman once daily throughout the mission. PERFORMANCE REQUIREMENTS: Baseline - Perform FO's 1, 2, 3 & 5 each day for each crewman. Perform FO-4 upon occurrence. Minimum - Same as Baseline. Redline - Not applicable. SCHEDULING DATA: 1. Each crewman will be scheduled to take an alternate dye marker pill every 6 days. 2. Each crewman to consume a nominal menu as completely as possible and record any deviations. 3. Record individual water intake daily. 4. Six 1/2 samples are to be collected per the following: a. not on successive days b. not on first or last 7 mission days c. not on day before, of or after M110 blood sample 5. Urine samples are to be collected in 24-hour cycles; each cycle closeout within 30 minutes of the same hour each day. 6. Support FO-1 thru FO-4 during ascent and recovery phases, within CM limitations. 7. Body mass of each crewman will be measured and recorded immediately after first urine voiding following the sleep period.
0:08				FO-1 M071/M073 GENERAL LOG FOOD RESIDUE AND WATER GUN READING W NOTE: All activities are included as part of pre-sleep, post-sleep, PH or the eat periods	
0:00				FO-2 COLLECT AND PROCESS URINE H	
0:04				FO-3 TAG & STORE URINE SAMPLE H	
0:00				FO-4 M071/M073 GENERAL INGEST DYE MARKER PILL EVERY SIXTH DAY TAG & WEIGH FECES/VOMITUS REMOVE PROCESSED FECES STOW FECES/VOMITUS H	
0:14					
0:00				FO-5 M071/M073 GENERAL MEASURE AND LOG BODY MASS F	
0:06					

4-4

M071 MINERAL BALANCE					
ET	AM			V	NOTES:
	1	2	3		
					1. The daily 122 ml urine sample satisfies the M071 (45 ml), the M073 (75 ml) requirements and 2 ml for volume determination. 2. Calibrate SMMD per M074 requirements, prior to use. 3. Calibrate BMMD per M172 requirements, prior to use. 4. Voice comments and log entries on total diet residue menu deviations, fluid intake, voids and body mass will be recorded for each crewman. 5. Provisions must be made for identification of all samples as to crewmember, date and time. 6. Urine voids are to be maintained at 50° ± 9°F. Within 3 hours after termination of the 24-hour urine pool the 122 ml sample drawn will be frozen below -4°F. 7. Urine samples must be stored in a passive freezer which will maintain the maximum temperature below 14°F at time of recovery.

4-4A

M073 BIO-ASSAY OF BODY FLUIDS					DATE: 4/11/73
					MRD: 2/01/73
ET	AM			V	SL-2
	1	2	3		
					FUNCTIONAL OBJECTIVES: FO-1 Collect, identify, measure, process and store for return, a homogeneous urine sample of 75 ml, (except when half samples are scheduled). PERFORMANCE REQUIREMENTS: Baseline - Accumulate voids in 24 hour cycle for each crewman. Minimum - Same as Baseline. Redline - Not Applicable SCHEDULING DATA: Refer to M071 NOTES: Refer to M071
					NOTE: REFER TO M071, FO-3

4-5

M074 SPECIMEN MASS MEASUREMENT				DATE: 4/11/73
				MRD: 2/01/73
				C/L: 1/10/73
ET	AM	SPT		SL-2
1	2	3	V	
0:00		M074 CALW		FUNCTIONAL OBJECTIVES: FO-1 Perform SMMD calibration validation THRU using pre-flight calibrated masses of FO-3 50, 150, 400, 500, 750, 850 and 900 grams. PERFORMANCE REQUIREMENTS: Baseline - Calibration measurements will be taken on each of the two SMMD's 3 times. Minimum - Same as Baseline. Redline - Not Applicable. SCHEDULING DATA: 1. Schedule FO-1 after OA activation, FO-2 10 +2 days after FO-1, and FO-3 10 +2 days after FO-2. 2. SMMD operations will not be performed during any vehicle maneuvers or momentum dumps. SI attitude required. 3. Any measurements made during inadvertent shocks or accelerations must be repeated. NOTES: 1. M074 operation occurs under M071. 2. Each mass will be measured 5 times. 3. Voice record and log calibration data.
		FO-1, FO-2, FO-3 W SMMD CALIBRATION(WARDROOM) OBTAIN PRE-CALIBRATED MASSES LOG TEMPERATURE AND GMT RECORD TIME DISPLAYS 5 TIMES EACH MASS VOICE RECORD REQ'D DATA LOG TEMPERATURE AND GMT		
0:30		M074 CALH		
0:00		FO-1, FO-2, FO-3 H SMMD CALIBRATION(WARDROOM) OBTAIN PRE-CALIBRATED MASSES LOG TEMPERATURE AND GMT RECORD TIME DISPLAYS 5 TIMES EACH MASS VOICE RECORD REQ'D DATA LOG TEMPERATURE AND GMT		
0:30				

4-6

M092/M171 IN-FLIGHT LOWER BODY NEGATIVE PRESSURE/METABOLIC ACTIVITY				DATE: 4/11/73												
				MRD: 2/01/73												
				C/L: 12/72												
ET	AM	ANY CREWMAN	EACH CREWMAN	SL-2												
1	2	3	V													
0:00		M092/M171-1	M092/M171-1	FUNCTIONAL OBJECTIVES: M092 Measure LBNP to detect degradation in cardiovas- cular function resulting from space flight. M171 Determine if man's metabolic effectiveness in doing mechanical work is progressively altered during exposure to a space environment by performing calibrated exercise. Experiment <table border="0" style="margin-left: 20px;"> <tr> <td>M092/M171</td> <td>{</td> <td>M092</td> <td>1,3,5,7 & 8</td> </tr> <tr> <td></td> <td></td> <td>M171</td> <td>1 thru 5</td> </tr> <tr> <td></td> <td></td> <td>M093</td> <td></td> </tr> </table> NOTE: During performance of M171, VCG to satisfy M093 FO-1 thru FO-5 will be accomplished. PERFORMANCE REQUIREMENTS: (M092) Baseline - 24 performances total, 8 performances per crewmán performed every third day, +1 day. Minimum - Same as Baseline Redline - Not Applicable PERFORMANCE REQUIREMENTS: (M171) Baseline - Bicycle ergometry performed five times by each crewman. Minimum - Same as Baseline Redline - Not Applicable SCHEDULING DATA: (M092) 1. Perform using each of three crewmen as a subject. A crewman will act as observer on each run. 2. Perform for each crewman every third day (+1 day). 3. First experiment to commence as soon as possible after activation. 4. The tests will not be preceded by vigorous exercise, nor should they be performed while fatigued. 5. It is highly desirable that at least 2 hours and mandatory for 1 hour to intervene between eating	M092/M171	{	M092	1,3,5,7 & 8			M171	1 thru 5			M093	
M092/M171	{	M092	1,3,5,7 & 8													
		M171	1 thru 5													
		M093														
		FO-1,3,5,7 & 8 E,H OBSERVER M092 OPERATION MA PREP ELECTRODE PREP SET UP DAC (IF REQ'D) AID SUBJECT IN ELECTRODE DONNING M092 PREP INSTALL LVMS BANDS BPMS CHECKOUT ADJUST BPMS CUFF CHECK BPMS CUFF M092 RUN CALIBRATE ESS DISPLAY AND TEST VCG ELECTRODES OPERATE PRESS CONTROL KNOB OBSERVE SUBJECT SO THAT M092 CONSTRAINTS ARE NOT EXCEEDED PERFORM EXP (EVAC LBNPD) LBNPD EGRESS CALIBRATE ESS SIGNAL FOR TLM TEST & TEST VCG ELECTRODES REMOVE AND STOW LVMS BAND & SECURE LBNPD FO 1-5	FO-1,3,5,7 & 8 E SUBJECT M092 OPERATION VCG DONNING ATTACH ELECTRODES M092 PREP INGRESS LBNP SECURE WAIST SEAL BPMS CHECKOUT DON BPMS CUFF M092 RUN SUBJECT SELF TO LBNPD OPERATING SEQUENCE FO 1-5													

4-7

M092/M171 IN-FLIGHT LOWER BODY NEGATIVE PRESSURE/METABOLIC ACTIVITY

4-7A

ET	AM			ANY CREWMAN	EACH CREWMAN	
	1	2	3			
				MA STANDBY TO OPERATE MA CALIBRATION CHECK MA PRE RUN CAL ESS PRE-RUN CAL M171 RUN MONITOR MA FOR PROPER OUTPUT POST OPERATION ASSIST SUBJECT AS REQUIRED EQUIP CLEANUP ASSIST SUBJECT MA OPERATE TO STANDBY	MOUNT ERGOMETER ESS PRE-RUN CAL M171 RUN PERFORM CALIBRATED EXERCISE REST 5 MINUTES 25% WORK RATE 5 MIN 50% WORK RATE 5 MIN 75% WORK RATE 5 MIN REST 5 MIN POST OPERATION DEACT AND DISMOUNT ERGOMETER EQUIP CLEAN REMOVE AND CLEAN BREATHING APPARATUS, VCG ELECTRODES, TEMP PROBE, BPMS CUFF AND PERSONAL HYGIENE	SCHEDULING DATA (M092) (Cont.): 6. It is desirable that M092 be followed by either M093 or M171. 7. M092 must be first in the sequence. 8. Schedule last performance close to end of mission. 9. At least 3 hours should intervene from time hot shower is taken to performance of this experiment. 10. Before the performance of this experiment, one-half hour should elapse following a venipuncture. 11. It is mandatory that a crewman participate in M092 tests during the same part of the day for each performance. If his first test is done in the morning, then all subsequent tests will be done in the morning and will be completed prior to the noon eat period. If his first test will be done in the afternoon, so will all the subsequent tests and they will be completed prior to the evening meal.
2:17				M092/M171-2	M092/M171-2	SCHEDULING DATA (M171): 1. Two hour constraints on eating and a 1 hour constraint on exercise prior to M171 performance. 2. Experiment period should be scheduled at approximately the same time each day for each crewman. 3. Perform FO-1 as close to activation as possible and FO-5 as close to end of mission as possible. The remaining FO's will be spaced evenly throughout the mission. 4. M092/M171-2 and M092/M171-3 must be performed within one hour of each other. (Mission Rules)
0:00				NOTE: DO M092 PORTION OF THIS EXPERIMENT THE SAME AS ABOVE. DO NOT PLACE MA TO STANDBY DURING M171 PORTION.		NOTES: 1. Ambient temperature 67° to 78° at 5 PSIA. 2. Air motion in vicinity of the equipment will be controlled from 15 ft/min to 100 ft/min during M171.
2:15				M092/M171-3	M092/M171-3	
0:00				NOTE: DO M092 PORTION OF THIS EXPERIMENT THE SAME AS ABOVE. DO NOT PERFORM MA PREP IN M092 PORTION AND DO NOT PERFORM MA CALIBRATION IN M171 PORTION.		
2:00						

M092/M093 IN-FLIGHT LOWER BODY NEGATIVE PRESSURE/VECTORCARDIOGRAM					
					NOTES (Cont.): 3. For Photo Requirements see Photo Matrix, Page 4-37. 4. Each FO consists of 3 performances, one by each crewman. 5. Telemetry - real time when ground coverage permits; otherwise, data will be recorded. 6. Voice record on log comments.
					DATE: 4/11/73 MRD: 2/01/73 C/L: 12/72

4-8

ET	AM			ANY CREWMAN	EACH CREWMAN	SL-2
	1	2	3			
0:00				M092/M093 FO-2,FO-4,FO-6 E,H M092 OPERATION OBSERVER ELECTRODE PREP SET DAC (IF REQ'D) AID SUBJECT IN ELECTRODE DONNING M092 PREP INSTALL LVMS BANDS BPMS CHECKOUT ADJUST BPMS CUFF CHECKOUT BPMS CUFF M092 RUN CALIBRATE ESS DISPLAY AND TEST VCG ELECTRODES OPERATE PRESS CONTROL KNOB OBSERVE SUBJECT SO THAT M092 CONSTRAINTS ARE NOT EXCEEDED PERFORM EXP (EVAC LBNPD) LBNPD EGRESS CALIBRATE ESS SIGNAL FOR TIME TEST & TEST VCG ELECTRODES REMOVE AND STOW LVMS	M092/M093 FO-2,FO-4,FO-6 E,H M092 OPERATION SUBJECT VCG DONNING ATTACH ELECTRODES M092 PREP INGRESS LBNP SECURE WAIST SEAL BPMS CHECKOUT DON BPMS CUFF M092 RUN SUBJECT [ΔP TIME] SELF TO (mmHG) (MIN) LBNPD 0 5 OPERATING 7-9 1 SEQUENCE 15-17 1 28-32 3 38-42 5 48-52 5 0 5 LBNPD EGRESS DETACH SIB FROM LBNPD	FUNCTIONAL OBJECTIVES: M092 Measure LBNP to detect degradation in cardiovascular function resulting from space flight. M093 Obtain electrocardiographic potentials (VCG) of each crewman using precise quantitative measurements. Experiment { M092 FO M092/M093 { M093 2, 4 & 6 6 thru 8 NOTE: During performance of M171, VCG to satisfy M093 FO-1 thru FO-5 may be accomplished. PERFORMANCE REQUIREMENTS: Baseline - 24 performances total, 8 performances per crewman. Minimum - Same As Baseline Redline - Not Applicable SCHEDULING DATA: (M092) 1. Perform using each of three crewmen as subject every third day ±1 day. A crewman will act as observer on each run. 2. First experiment to commence as soon as possible after activation. 3. The tests will not be preceded by vigorous exercise exceeding a rate of 1000 BTU/hr, nor should they be

M092/M093 IN-FLIGHT LOWER BODY NEGATIVE PRESSURE/VECTORCARDIOGRAM

ET	AM			ANY CREWMAN	EACH CREWMAN	SCHEDULING DATA (M092) Cont.:
	1	2	3			
1:45				PERFORM M093 EXP (TAKE VCG OF SUBJECT DURING EACH SEQUENCE) REMOVE BPSM CUFF ERGOMETER DISMOUNTING VCG DOFFING DETACH AND CLEAN VCG ELECTRODES ASSIST SUBJECT WITH PERSONAL HYGIENE STOW FILM & LOG	PERFORM SEQUENCE 5 MIN REST 2 MIN ERGOMETER EXERCISE 10 MIN REST ERGOMETER DISMOUNTING DISMOUNT ERGOMETER VCG DOFFING REMOVE TEMP PROBE AND PERFORM PERSONAL HYGIENE STOW EQUIP	5. M092 should be followed by either M093 or M171. 6. M092 must be first in the sequence. 7. Schedule last performance close to end of mission. 8. At least 3 hours should intervene from time hot shower is taken to performance of this experiment. 9. Before the performance of this experiment, one-half hour should elapse following a venipuncture. 10. It is mandatory that a crewman participate in M092 tests during the same part of the day for each performance. If his first test is done in the morning, then all subsequent tests will be done in the morning and they will be completed before the noon meal. If his first test will be done in the afternoon, so will all the subsequent tests and they will be completed before the evening meal.
						SCHEDULING DATA (M093): 1. VCG's will be taken of each crewman as subject as soon as possible after activation. Perform on each crewman every third day (± 1 day) of the mission. 2. Not to be performed one hour after vigorous exercise or one-half hour before performance of M131 (Human Vestibular Function). 3. It is desirable that a two-hour constraint on eating and performance of experiment be maintained with a mandatory one hour constraint. 4. It is desirable to perform M093 immediately after M092. 5. VCG data from five in-flight performances of M171 experiment may be substituted for M093 performances. M171 protocol will govern these performances. 6. At least three hours should intervene from the time of a hot shower and the performance of this experiment. 7. A performance by each crewman will be accomplished as close to the end of the mission as possible.

4-8A

M092/M093 IN-FLIGHT LOWER BODY NEGATIVE PRESSURE/VECTORCARDIOGRAM

ET	AM					SCHEDULING DATA (M093) Cont.:
	1	2	3			
						8. Before the performance of the experiment, one-half hour should elapse following a venipuncture. 9. It is mandatory that a crewman participate in M093 tests during the same time of the day for each performance.
						NOTES: 1. Ambient temperature 67° to 78° at 5 PSIA. 2. Bicycle ergometer from M171 will be used by the subject for exercise period required for the vectorcardiogram. 3. Each FO consists of 3 performances, one by each crewman. 4. Air motion in the vicinity of the experiment should be controlled from 15 ft/min to 100 ft/min during M093. 5. Telemetry measurements for each experiment session will be transmitted real time if possible, otherwise recorded for a later dump. 6. Voice recorder or log comments

4-8B

M131 HUMAN VESTIBULAR FUNCTION

DATE: 4/11/73
C/L: 10/18/72
MRD: 2/01/73

ET	AM			SPT OR PLT	SPT OR PLT	SL-2
	1	2	3			
0:00				M131 ACT	M131 ACT	FUNCTIONAL OBJECTIVES: FO-1 Perform Motion Sensitivity (MS) using the rotating THRU litter chair in the rotating mode to determine FO-5 susceptibility to coriolis forces as a function of time in weightlessness, and measure semicircular canal response thresholds by conducting Oculogyral Illusion (OGI) threshold tests. FO-6 Perform Spatial Localization (SL) test using the THRU Otolith Test Goggles (OTG), rod and sphere device, FO-8 and the rotating chair in the static mode.
0:10				M131 ACTIVATION UNSTOW, CONFIGURE AND CHECK OUT CHAIR	M131 ACTIVATION UNSTOW, CONFIGURE AND CHECK OUT CHAIR	
0:00				M131-1	M131-1	PERFORMANCE REQUIREMENTS: Baseline - Perform OGI and MS tests 5 times on each of 2 crewmen. Perform SL test on all crewmen early, mid and late in mission. Minimum - Same as Baseline. Redline - Not Applicable SCHEDULING DATA: 1. Schedule OGI and MS tests (FO-1 thru -5) five times on each of two crewmen (10 tests). Each FO is to be completed within a 16-hour time period. Schedule various FO's no closer than every other day, equally spaced throughout the mission, if possible. It is highly desirable to schedule OGI tests immediately prior to MS test. No MS testing shall be done until one hour after a meal. 2. Spatial localization test (FO-6 thru -8) should be scheduled for each crewman early (days 3-6), middle (days 12-16) and late (days 22-28) in the mission (9 tests). Each FO is to be completed within a 16-hour time period. Spatial localization tests should not be scheduled on the same day as OGI and MS tests. However, if it is necessary to schedule both tests on the same day, then the spatial localization test will precede the OGI and MS tests.
0:00				FO-1 THRU FO-5 TEST 1-OGI MODE SUBJECT ENTER CHAIR, DON OGI GOGGLES AND ADJUST BITE-BOARD PERFORM OGI TEST FOR FOUR ACCEL/DECEL PROFILES REMOVE GOGGLES AND BITE-BOARD DEBRIEFING (ENTER COMMENTS ON TAPE) TEST 2-MS MODE RECONFIGURE CHAIR FOR MS TEST ADJUST PROXIMITY SENSORS AND DON BLINDFOLD PERFORM MS TEST	FO-1 THRU FO-5 TEST 1-OGI MODE OBSERVER PREPARE CAMERA (IF REQD) ADJUST LIGHTING & FAN ACTIVATE CONTROL CONSOLE CONDUCT AND OBSERVE OGI TEST VOICE RECORD COMMENTS AND ENTER SUBJECT RESPONSE ON CONSOLE TEST 2-MS MODE PREPARE CONSOLE FOR MS TEST CONDUCT AND OBSERVE TEST	

4-10

M131 HUMAN VESTIBULAR FUNCTION

ET	AM			SPT OR PLT	SPT OR PLT	SL-2
	1	2	3			
1:15				EGRESS CHAIR	ASSIST SUBJECT IN EGRESS-ING CHAIR	SCHEDULING DATA (Cont.) 3. During FO-2 photo one crewman (preferably the pilot) from immediately prior to initiation of the first set of acceleration/deceleration profiles to the end of four such profiles or six minutes, whichever occurs first, (OGI threshold). Photo both crewmen (P & SP) from first head movement sequence to reaching Malaise IIa level. 4. If any film remains from FO-2, then during FO-7, start camera at the beginning of the session and stop at the end of the session for one crewman (preferably the commander). 5. If any additional film remains after FO-7, expend during additional MS tests. 6. During the performances of OGI and spatial localization tests, the vehicle will be in solar inertial attitude and momentum dumps will be inhibited. 7. The OWS lighting should be adequate while the experiment is in progress to allow the observer to recognize color changes in the subjects face and to read applicable instrumentation.
0:00				DEBRIEFING (ENTER COMMENTS ON TAPE) STOW EQUIPMENT M131-2	VOICE RECORD COMMENTS AND ENTER SUBJECT RESPONSES ON CONSOLE ASSIST SUBJECT AS REQD VOICE RECORD TEST COMMENTS ASSIST SUBJECT STOW EQUIPMENT	
0:45				FO-6 THRU FO-8 TEST -3 SL MODE SUBJECT ENTER CHAIR & DON OGI GOGGLES PERFORM VISUAL SPATIAL LOCALIZATION STATIC TEST EGRESS AND RECONFIGURE CHAIR DEBRIEFING (ENTER COMMENTS ON TAPE) STOW EQUIPMENT	FO-6 THRU FO-8 TEST -3 SL MODE OBSERVER ASSIST SUBJECT AS REQD VOICE RECORD TEST COMMENTS ASSIST SUBJECT STOW EQUIPMENT	NOTES: 1. OWS ambient temperature to be within 67° to 78° at 5 PSIA. 2. Air velocity to be within 15 to 100 ft/min in vicinity of experiment. Measure only if out of tolerance is suspected. 3. For photo requirements see Photo Matrix, Page 4-37. One 16mm roll of color film is allocated to M131.

4-10A

M131 HUMAN VESTIBULAR FUNCTION

4-108

		AM				
ET	1	2	3	V	SPT	
0:00					MED DEACT	E
					MED DEACTIVATION DEACTIVATE AND CONFIG FOR STOWAGE LBNPD MA ERGOMETER RLC CONFIG EQUIP STOWAGE FOR NEXT MISSION STOW MISCELLANEOUS EQUIP	
0:30						

M133 SLEEP MONITORING

DATE: 4/11/73
 C/L: 8/14/72
 MRD: 2/01/73

4-11

		AM					SL-2
ET	1	2	3	V	SPT		
0:00					M133 ACT	D,E,F,S	FUNCTIONAL OBJECTIVE: FO-1 THRU FO-15: Obtain EEG, EOG, and head movement from subject continuously during a sleep period for 15 scheduled sleep periods. PERFORMANCE REQUIREMENTS: Baseline - 15 performances Minimum - Same as baseline Redline - Not Applicable. SCHEDULING DATA: 1. Schedule the experiment on mission days 3,4,5,7,9,11, 13,15,17,19,21,23,24,25 and 26.
					M133 ACT SL-2 REMOVE PANEL ASSY FROM STOWAGE; INSTALL IN SLEEP STATION 1 CONNECT CABLES VERIFY CONTROLS VERIFY PROPERLY THREADED		
0:30					M133 OPS		NOTES: 1. M133 uses its own recorder. 2. Results transmitted to ground in near real-time. 3. Log book entries required following each sleep period.
0:00					FO-1 THRU FO-15 M133 OPS ENTER SLEEP RESTRAINT, DON AND C/O EQUIPMENT	S	
0:12					ACTIVATE RECORDER		
8:12					SLEEP 8 HOURS		
8:22					CHECK ELECTRODE STATUS LOG COMMENTS DOFF CAP, DISCONNECT AND STOW EQUIPMENT PERSONAL HYGIENE		

M133 SLEEP MONITORING

		AM					
ET	1	2	3	V	SPT		
0:00					M133 DEACT	D,F,S	
					M133 DEACT SL-2 POST OPERATION EXT PWR DOWN REPLACE TAPE RECORDER REELS STOW TAPE RETURN CANISTERS		

M151 TIME AND MOTION STUDY					DATA: 4/11/73
					MRD: 2/01/73
ET	AM	1	2	3	V
					SL-2
					<p>FUNCTIONAL OBJECTIVES:</p> <p>FO-1 THRU FO-8 Photo 2 cmn donning VCG sensors, harness and belt; translation to and from and ingress/egress of confined enclosures; mounting, applying restraints and operating ergometer.</p> <p>FO-9 THRU FO-16 Photo crew activities during deployment/retrieval of large hardware (size and mass).</p> <p>FO-17 THRU FO-19 Photo crew activities during deployment/retrieval of medium size/mass hardware.</p> <p>FO-20 AND FO-21 Photo 2 cmn during donn/off of PGA.</p> <p>FO-22 THRU FO-25 Photo crewman during food preparation.</p> <p>PERFORMANCE REQUIREMENTS:</p> <p>Baseline - See Table, Page 4-37</p> <p>Minimum - Same as Baseline</p> <p>Redline - Not Applicable</p> <p>SCHEDULING DATA:</p> <p>1. Schedule in flight sequence photos with TV data, if possible.</p> <p>NOTES:</p> <p>1. Voice record experiment, crewman, cassette, camera settings and GMT.</p>

4-12

M172 BODY MASS MEASUREMENT					DATA: 4/11/73
					C/L: 11/17/72
					MRD: 2/01/73
ET	AM	1	2	3	V
					SPT
					SL-2
0:00					<p>M172 CAL</p> <p>FO-1, FO-2, FO-3 F</p> <p>M172 CALIBRATION</p> <p>MEASURE TEMP</p> <p>SET CONTROLS</p> <p>TAKE MEASUREMENTS</p> <p>OBTAIN PRE-FLIGHT CALIBRATED MASSES</p> <p>PERFORM CALIBRATION MEASUREMENTS</p> <p>RECORD PERTINENT DATA</p> <p>STOW CALIBRATED MASSES</p>
1:15					<p>FUNCTIONAL OBJECTIVES:</p> <p>FO-1 Perform BMMD calibration validations during the THRU mission using pre-flight calibrated masses from FO-3 0 to 100 kilograms.</p> <p>PERFORMANCE REQUIREMENTS:</p> <p>Baseline - Calibration measurements will be taken 3 times during mission:</p> <p>Minimum - Same as Baseline.</p> <p>Redline - Not Applicable</p> <p>SCHEDULING DATA:</p> <p>1. Schedule three times during the mission as follows:</p> <p>FO-1: as soon as possible after activation.</p> <p>FO-2: 10 ± 2 days after FO-1.</p> <p>FO-3: 10 ± 2 days after FO-2.</p> <p>2. Do not schedule concurrently with M071-5.</p> <p>3. Do not schedule during vehicle maneuvers or momentum dumps.</p> <p>4. Perform in SI attitude. Any measurements made during inadvertent shocks or accelerations must be repeated.</p> <p>NOTES:</p> <p>1. Calibration data shall be made available to PI within 48-hours after each calibration sequence.</p> <p>2. The measurement of each mass during calibration or operation will be repeated five times.</p> <p>3. Voice record and log calibration data.</p>

4-13

APOLLO TELESCOPE MOUNT					DATE: 4/11/73
ET	AM	1	2	3	V
					SL-2
					<p>NOTES:</p> <p>1. Mission requirements document for constraints, test conditions and description of building blocks.</p> <p>2. ATM De...</p>

ET				AM	PLT	CDR	SL-2
1	2	3	v				
EREPA; S190A, S191, S192, S193 AND S194							
DATE: 4/11/73 C/L: 2/02/73 MRD: 2/01/73							
0:00					EREPA C/O I	EREPA C/O I	FUNCTIONAL OBJECTIVES: Not applicable. Refer to MRD for a detailed description of EREP tasks and sites. PERFORMANCE REQUIREMENTS: Baseline - 14 Z-LV passes, 1 solar inertial pass. Minimum - S190A - One roll of film exposed at each camera station S191 - Data acquired for 2 or 3 sites within the regions covered by S190A and/or S190B. S192 - Continuous data acquired during the above S190 passes. S193 - Data acquired over ocean areas both along track and cross-track. At least 5 minutes of altimeter data should be acquired over ocean areas. S193 data should be acquired over land only when other data acquisition is planned. S194 - Data acquired over reasonably homogeneous areas, preferably deserts, vegetation, lakes and oceans. ALL EREP - In the event that Z-LV operations are not possible, EREP data should be acquired for all sensors during at least one pass. Redline - Same as minimum SCHEDULING DATA: 1. EREP passes are constrained to the following: a) The Z-LV(E) attitude for the data-take period may be maintained for up to 160 orbital degrees centered at any location within the orbit. b) The Z-LV(E) attitude maneuvers may be planned for Beta (β) angles up to +65 degrees. c) There shall be a maximum of 2 consecutive Z-LV(E) passes.
1:06					REMOVE AND STOW FOUR TAPE HANDLING CONTAINERS C & D CHECK VERIFY SWITCH POSITIONS CHECK C&D PANEL COVER CHECK METERS FOR BROKEN GLASS AND DAMAGED INDICATORS TAPE RECORDERS CHECK CHECK FOR DAMAGE ON TAPE RECORDERS #1 AND #2 CHECK TAPE RCDR COOLANT VALVES, SET TO POS. 1 S192 CHECK VERIFY SWITCH POSITIONS CHECK FOR BROKEN OR DAMAGED HARDWARE, CONTROLS, CABLES AND CONNECTORS INSPECT PRIMARY & SECONDARY COOLER/DETECTOR ASSY C & D POWER UP SET SWITCHES, LAMP TEST TAPE RECORDER CHECKOUT LOAD BOTH TAPE RECORDERS TURN RECORDERS ON AND VERIFY TAPE MOTION AND PROPER LIGHTS C & D POWER DOWN POWER SWITCHES OFF CLOSE C & D COVER	VTS CHECK VERIFY SWITCH POSITIONS CHECK VTS FOR DAMAGE AND PROPER INSTALLATION VERIFY CONTROL OPERATION S190A CHECK OPEN S190A FRONT SHIELD CHECK CABLES CONNECTORS AND LENS FACES VERIFY CONTROLS OPERATION INSPECT ALL DESICCANTS REPLACE IF NECESSARY OPEN S190A REAR SHIELD CHECK CONTROLS, METERS CAMERAS & SWITCH SETTING CHECKOUT STOWAGE CONTAINER OBTAIN TOOLS FROM MDA TOOL BOX. REMOVE BETA BAG FROM STOW CONTAINER WRAP S192 ATTENUATORS WITH VELCRO STRAPS. STOW. REMOVE EREP DOWNLINK BOX AND STOW REPLACE TOOLS NOTE: DELETE C&D POWER DOWN IF C/O II FOLLOWS IMMEDIATELY	

4-15

4-15A

ET				AM	PLT	CDR	SL-2
1	2	3	v				
EREPA; S190A, S191, S192, S193 AND S194							
0:00					EREPA C/O II		SCHEDULING DATA (Cont.) d) No more than 2 Z-LV(E) passes per crew day for no more than 2 consecutive days shall be planned. e) Availability of electrical power, even under normal conditions may be limited for some Z-LV(E) maneuver profiles. Therefore, power management techniques must be applied. 2. Update pads as follows: EREP MNVR PAD - within 2 revs of data take. EREP PREP PAD - within 2 revs of data take. OPERATE PAD - within 2 revs of data take. VTS PAD - within 2 revs of data take. (site selection sent up the night before) 3. Free liquid discharges into the OWS waste tank and controllable OA venting must be completed 15 minutes prior to exp. operation and avoided during exp. performance of S190A, S191, and S192. 4. ATM recorder required. 5. Aperture doors and experiment optics (including their windows) must be closed except during the data taking periods of the sensors involved. 6. Any EREP pass in excess of 6 1/2 hours of total crew time for preparation, setup, pass performance, and post pass activities (excluding time required for film transport mechanism film loading and unloading) will be charged as two passes. (stating requirement) 7. Test sites to be scheduled on the basis of priority, weather, and proximity of ground tracks. Site coverage will primarily be scheduled on the basis of assigned priorities as compatible with other mission constraints. The completion of minimum requirements for tasks already started will be given preference over the initial gathering of new data for new tasks. 8. A total of 60 EREP passes in Z-LV(E) and 5 passes in SI are required during Skylab. SL-2 required 14 Z-LV(E) & 1 SI. S190B requires 10 Z-LV(E) passes on SL-2.
					C & D POWER UP VERIFY SWITCH POSITIONS FILM TRANSFER NOTE DAC FILM MAG IN DETAIL PAD (MAG #) STOW DAC MAG IN POCKET INSTALL DAC MAG ON DAC DAC CHECKOUT VERIFY CAMERA AND STATUS LIGHT OPERATION S190 CHECKOUT REMOVE CAMERA SHIELDS SET APERTURE SETTINGS (6) TO f2.8, SET CONTROLS, CB'S VERIFY SHUTTER OPERATION & CHECK SHUTTER SPEED CONTROL SWITCH ON 6 CAMERAS SET APERTURE SETTINGS (6) TO f16.0 ROTATE TO STOWAGE POSITION INSTALL S190A FILTERS MAGAZINE VERIFICATION AND SENSITOMETER ADVANCE (K) REMOVE MAG, VERIFY FILM ADVANCE, INSTALL MAG, (6) S190 POWER ON VERIFY SHUTTER SPEED VERIFY MALFUNCTION LIGHTS OFF VERIFY ALL FRAME COUNTERS ADVANCE ONE DIGIT EREP SYSTEM - START VERIFY READY LIGHTS		

EREP; S190A, S191, S192, S193 AND S194				
ET	AM			PLT
	1	2	3	
1:45				WORKING PROPERLY EREP SYSTEM - STOP REMOVE (6) S190 MAGS AND STOW IN DRAWER K(L) STOW DAC MAG IN POCKET REPEAT VERIFICATION AND SENSIMETER ADVANCE DRAWER (L) INSPECT PLATENS (6) UNSTOW REAR SHIELD AND INSTALL ON CAMERA UNLOCK KNOB LOCKING PIN UNLATCH WINDOW COVER OPEN S190 WINDOW COVER SET S190 SWITCHES C&D POWER DOWN, SWITCHES OFF, CLOSE C&D COVER
				NOTE: Delete C & D power down if C/O III follows immediately
				SCHEDULING DATA (Cont.) 9. OA drift rates not to exceed 0.05°/sec in any axis. 10. The OA attitude will be the Z-LV(E) and maintained with a pointing accuracy of 2 degrees in all three axes. 11. Film is to be stowed in the OWS film vault after each pass and when possible, prior to SAA overflight. However, the SAA and Van Allen Belt horns are not EREP constraints on data taking. 12. EREP passes will not be scheduled unless 35% of the sites along the pass have suitable weather conditions for taking required data.
				NOTES: 1. OWS maneuvers to Z-LV and back to SI can be pre- programmed to occur at the desired time by ground uplink; however, the crew is considered prime in initiating all Z-LV/SI maneuvers. 2. Film cassettes returned: S190A - 18 S191 - 2 3. For a site to be considered covered by an EREP pass, either of the following conditions should be satisfied. a) The centerline of the required sensor field-of- view passes over some portion of the site. b) For small sites, more than 50% of the site area falls within the field-of-view of the required sensors. 4. The ability to view sites of opportunity is an EREP requirement within hardware and trajectory limita- tions. These passes will count against the total allowable EREP passes. 5. For each data pass, voice record site ID, equipment problems, meteorology notations, unusual items, and GMT at start and finish. 6. Back to back EREP is not feasible if both film XFER and EREP tape are required between passes.

4-158

EREP; S190A, S191, S192, S193 AND S194				
ET	AM			PLT
	1	2	3	
0:00				EREP C/O III
				C & D POWER UP M POSITION SWITCHES PER C/L WARMUPS TAPE RECORDER POWER ON S192, S191 & S194 POWER ON S193 POWER STBY S193 (15 MIN) S191/S194 (30 MIN) RECORD ON TIME VTS ALIGNMENT VTS POWER ON DETERMINE RETICLE ALIGNMT ADJUST AS REQUIRED ALIGN OFF S192 LAUNCH LATCH RELEASE LAUNCH LATCH RELEASE, ARM FIRE AND OFF S193 CHECKOUT AFTER 15 MIN WARMUP CHECKOUT S193 S191 CHECKOUT AFTER 30 MIN WARMUP VERIFY S191 READY LIGHT ON AUTO CAL, DOOR OPEN, CLOSE CHECKOUT S191 POWER OFF S192 DETECTOR ALIGNMENT S192 MODE - CHECK CONDUCT ALIGNMENT S192 MODE READY S192 MODE CHECK S194 CHECKOUT AFTER 30 MIN WARMUP VERIFY S194 READY LT ON S194 POWER OFF C & D POWER DOWN
				NOTES (Cont...) 7. Performing more cleaning than necessary may damage the S190A optical element surface.

4-15C

EREP; S190A, S191, S192, S193 AND S194

4-15D

		AM				
ET	1	2	3	PLT	CDR	
1:17				EREP POWER SWITCH OFF EREP COOLANT V/V BY-PASS		
0:00				EREP XX	EREP XX	<p>NOTE: The EREP XX procedure is divided into three parts - PREP, C&D OPERATE, and POST OPERATE. Approximate times are given for each of the individual parts.</p>
				<p>PREP</p> <p>UNSTOW/INSTALL FOOT RESTRAINT PLATFORM, DON SHOES C & D POWER UP POWER UP C & D PANEL VERIFY STATUS LIGHTS ON TAPE RECORD PREP RELOAD IF REQUIRED SET SWITCHES WARMUPS POWER UP PER PREP PAD NOTE TIME COMM PREP SETUP/VERIFY COMM S190A PREP REMOVE FRONT SHIELD, ROTATE, REMOVE REAR SHIELD OPTICS INSPECTION CAPPING SHUTTER C/O REMOVE FILTERS SET APERTURES TO f2.8 VERIFY SHUTTER OPER (6) FILTERS & APERTURES INSTALL FILTERS SET APERTURES/FMC RATE ROTARY SHUTTER CHECK S190 POWER ON VERIFY SHUTTER SPEED INSTALL MAGAZINES (6) SENSITOMETRY ADVANCE INSTALL SHIELDS SET CONTROLS</p>	<p>PREP</p> <p>OBTAIN S190A/S191 FILM EREP SITE BOOK & CLIPBOARD INSTALL DAC MAGAZINES</p> <p>VTS PREP VTS POWER ON CAMERA ON (10 SEC) OFF CHECK VTS ALIGNMENT</p> <p>COMM PREP SETUP/VERIFY COMM</p> <p>REVIEW SITE MAPS REFER TO VTS PAD</p> <p>Capping shutter C/O only if required by Prep Pad remarks</p> <p>Perform sensitometry advance if required by Prep Pad remarks</p>	

EREP; S190A, S191, S192, S193 AND S194

4-15E

		AM				
ET	1	2	3	PLT	CDR	
1:50				<p>VERIFY COUNTER ADVANCE EREP SYSTEM START, STOP FILM ADVANCE ADVANCE FILM/VERIFY CAMERA POSITIONING ROTATE CAMERA TO OPERATE POSITION READY VERIFICATION POSITION SWITCHES S190A, S192, S193 & S194</p> <p>S192 ALIGNMENT CHECK C & D MONITOR VOICE RECORD MONITOR READINGS S191 DOOR OPEN S190 WINDOW COVER OPEN, POWER ON VERIFY READY LIGHT ON PRE OPER CONFIGURATION VERIFY SWITCH SETTING</p>	<p>Omit film advance if sensitometry advance was performed.</p> <p>OA MANEUVER PERFORM S1 TO Z-LV MANEUVER</p> <p>Perform S192 alignment check if required by Prep Pad.</p> <p>RECORD TV START VTR - ON VERIFY OA IN Z-LV</p>	
0:00				<p>C&D OPERATE EREP SYSTEM - START PERFORM DATA TAKE PER EREP OPERATE PAD S193 NADAR ALIGN S190A OPERATE S192 OPERATE S193 OPERATE S194 OPERATE</p>	<p>VTS OPERATE EREP SYSTEM - START CENTER S191 DATA SITES IN RETICLE PER VTS OPERATE PAD EREP SYSTEM - STOP</p>	
DATA TAKE				EREP SYSTEM STOP	PERFORM DATA TAKE PER VTS OPERATE PAD	119
0:00				<p>POST OPERATE S192 DOOR CLOSE S190 WINDOW COVER CLOSE AND LATCH</p>	<p>VTS POST OPERATE VTS POWER OFF S191 DOOR CLOSE OA MANEUVER</p>	

EREP; S190A, S191, S192, S193 AND S194

ET	AM			PLT	CDR	
	1	2	3			
0:20				S191 AUTO CAL MONITOR EREP SYSTEM START S191 AUTO CALIBRATE EREP SYSTEM STOP C & D POST OPERATE C & D POWER DOWN	PERFORM Z-LV TO SI MANEUVER	NOTE: If a 2nd pass is scheduled, refer to C/L "Back to back interim activities." Use 15 min. securing in place of the 35 minutes shown.
					STOW EREP SITE BOOK ON UTILITY BELT COMM POST OPERATE FILM TRANSFER S190 POWER OFF REMOVE S190 FILM MAGAZINES (6) AND STOW IN DRAWER INSPECT CAMERA DESSICANTS	
0:35						NOTE: The PLT may also be required to perform S190 MAG DEPLETION and TAPE RECORDER DEPLETION as required by OPERATE PAD REMARKS
						NOTE: For last EREP pass, an additional 25 minutes is required for final securing procedures.

4-15F

EREP; S190A, S191, S192, S193 AND S194

ET	AM			PLT		
	1	2	3			
0:00				EREP TAPE		
				TAPE RECORDER RELOADING UNLOAD TAPE, STOW		
0:35				CLEANING CLEAN, WAIT 5 MIN PRIOR TO C/O		
				LOADING LOAD TAPE RECORDER PER TAPE LOADING INSTRUCTIONS CHECK VERIFY PROPER OPERATION		
0:00				EREP MAG		
				S190A MAGAZINE RELOADING		
1:00				UNLOADING REMOVE FULL CASSETTE FROM EACH OF 6 MAGAZINES		
				LOADING INSTALL NEW CASSETTE IN EACH OF 6 MAGAZINES		

4-15G

EREP; S190A, S191, S192, S193 AND S194

4-15H

ET	AM				PLT	CDR	
	1	2	3	V			
0:00					S190 DES REPL		
					S190 DESICCANT REPLACEMENT UNSTOW SPANNER WRENCH LOOSEN DESICCANT LOCKING COLLAR (6) STOW WRENCH REMOVE PACKAGED DESICCANT PARTIALLY CUT THROUGH END OF PACKAGE REMOVE OLD DESICCANT INSTALL FRESH DESICCANT CLOSE STOWAGE CONTAINER		NOTE: Replace all six S190 desiccants if replacement has not occurred during the previous 10 days or if any desiccant color changes from blue to pink or white.
0:25					S190A CLEAN		
0:00					DON GLOVES EXAMINE THE ELEMENT SURFACE TO DETECT DUST, SPOTS, SCRATCHES REMOVE MAJOR DUST PARTICLES WITH BELLOWS DUSTER AND CAMEL-HAIR BRUSH MOISTEN TISSUES WITH DISTILLED WATER WIPE OPTICS WITH LINEAR MOTION, TOP TO BOTTOM LEFT TO RIGHT EXAMINE OPTICS FOR CLEANLINESS, USE BELLOW DUSTER TO AID DRYING		NOTE: Perform S190 CL only if optics element is dusty. Time for the procedure varies
0:10 TO 0:60							

EREP; S190A, S191, S192, S193 AND S194

4-15I

ET	AM				PLT	CDR	
	1	2	3	V			
0:00					EREP CAL	EREP CAL	
					PREP FMC CB OPEN OPERATE VTS POINTING VERIFICATION PER OPERATE PAD CENTER VTS TELESCOPE RETICLE ON MOON VERIFY VTS GIMBAL ANGLE READOUTS C & D OPERATE PERFORM C & D OPERATION USING EREP LC OPER PAD POST OPERATE FMC CB CLOSE	CHANGE S190 FILTERS AND APERTURES AS REQ'D BY PREP PAD VERIFY OA IN SI PERFORM EREP CAL MANEUVER VTS OPERATE PERFORM VTS OPERATION USING EREP LC VTS PAD FILTER CHANGE PERFORM OA MANEUVER TO SI	NOTE: EREP CALIBRATION is normally scheduled immediately after an EREP pass. Any filter and aperture changes will be noted in the PREP PAD REMARKS for the pass.
0:40							

EREP; S190A, S191, S192, S193 AND S194

ET	AM				PLT
	1	2	3	V	
0:00					VTS TV
					TBD
0:00					S191 INT
					TBD
0:00					S190 DES BRAKE OUT
					TBD
0:00					EREP DWN
					TBD

4-15J

S190B EARTH TERRAIN CAMERA

DATE: 4/11/73
C/L: 2/09/73
MRD: 2/01/73

ET	AM				SPT
	1	2	3	V	
0:00					ETC PREP
					-Z SAL CAMERA PREPARATION M151 SETUP IF REQ'D INSTALL ETC SAL WINDOW REMOVE AND STOW SAL WINDOW INSTALL ETC WINDOW IN SAL REMOVE CAMERA FROM STOWAGE, INSTAL FILTER IF REQUIRED INSTALL CAMERA IN SAL SET CAMERA CONTROL AND RECORD CAMERA CLOCK TIME CONNECT POWER CABLE
0:30					ETC OPS
0:00					-Z SAL CAMERA OPS MAGAZINE LOADING OBTAIN FILM, INSTALL IN CAMERA SET CONTROLS PER PAD UPDATE VENT SAL, VERIFY PRESSURE CHANGES DOOR-UNLOCKED AND OPEN DATA TAKE OPERATE CAMERA PER PAD UPDATE MONITOR CAMERA WHEN COMPLETED DEPRESS FILM ADVANCE UNTIL END OF FILM LIGHT ILLUMINATES REMOVE/STOW FILM SAL DOOR CLOSED AND LOCKED
					ETC CALIBRATION IS INCLUDED IN ETC OPS. IT IS PERFORMED DURING EREP CALIBRATION AND TAKES 25 MINUTES CAUTION: NEVER REMOVE MAGAZINE FROM ETC WITHOUT DISCONNECTING VACUUM HOSE FROM ETC.
.15					
+DT					

FUNCTIONAL OBJECTIVES:
Not Applicable

PERFORMANCE REQUIREMENTS:
Baseline - 10 Z-LV data taking passes
Minimum - Expose one roll of film
Redline - Not Applicable

SCHEDULING DATA:

- Z-LV attitude is required and must be maintained to within $\pm 2^\circ$ along the Nadir.
- Vehicle rates must not exceed .05 deg/sec in any axis.
- Aperture doors and experiment optics (SAL outer window) must be closed except during data taking periods.
- Venting from the following controllable external OA vents must be completed 15 minutes prior to and avoided during experiment performance;
 - Contingency condensate dump
 - CSM RCS firings
 - EVA vent
 - M512 exp vent
- Avoid film exposure if possible while passing thru the Van Allen Belt and SAA.
- Photography in the summer hemisphere is constrained to periods when the sun elevation angle is greater than 30° and in the winter hemisphere greater than 20° . See MRD matrix for specific pass details.
- Free liquid discharges into the OWS waste tank & controllable OA venting must be completed 15 minutes prior to experiment operation and avoided during experiment performance.

4-15K

S190B EARTH TERRAIN CAMERA

ET	AM			SPT	NOTES:
	1	2	3		
0:00				ETC STOW -Z SAL	1. Voice record such items as equipment problems, meteorological descriptions, unusual occurrences, start and stop time. 2. S0242 film with no filter, EK3443 with W-12 filter and EK3443 with no filter may be used depending on specific MRD requirements. 3. Return four film cassettes.
0:20				ETC CAMERA STOWAGE M151 SETUP IF REQUIRED DISCONNECT/STOW POWER CABLE REMOVE AND STOW CAMERA INSTALL ETC SAL WINDOW COVER, PRESSURIZE SAL REMOVE ETC SAL WINDOW INSTALL -Z SAL WINDOW	
0:00				ETC LOAD	
0:15				ETC MAGAZINE RELOADING LOAD FILM IN MAGS	

D008 RADIATION IN SPACECRAFT

DATE: 4/11/73
C/L: 10/30/72
MRD: 2/01/73

ET	AM			CDR	SL-2
	1	2	3		
0:00				D008-1 FO-1 OR FO-2 A, CM ZERO STOPWATCH (SW) IN AM START SW AT GMT TRANSLATE TO CM, LOG GMT, START STOPWATCH COMM CHK, INGRESS RH COUCH UNSTOW SENSOR HEAD AT 11:30 MIN FIRST SURVEY AT 12:00 MIN PERFORM RADIATION SURVEY IN SAA PER C/L SCHEDULE (13 PLACES 1 MIN EACH) STOW SENSOR, C/L, & HEADSET	FUNCTIONAL OBJECTIVES: FO-1 Perform part 1 of active dosimeter survey in SAA area. FO-2 Perform part 2 of active dosimeter survey in SAA area. FO-3 Perform part 1 of active dosimeter survey in most northern magnetic latitudes. FO-4 Perform part 2 of active dosimeter survey in most northern magnetic latitudes. FO-5 Obtain active dosimeter data during solar proton event FO-6 Record active dosimeter output (5 consecutive THRU passes per day for 14 days) in the SAA. FO-19 FO-20 Record active dosimeter output (1 pass per THRU day for 14 days) in the NML. FO-33 FO-34 Obtain radiation data from five passive dosimeters in CM. PERFORMANCE REQUIREMENTS: Baseline - Two active dosimeter surveys in SAA. - Two active dosimeter surveys in North Magnetic Latitudes. - One active dosimeter survey of Solar Proton Event, in north magnetic latitude. Minimum - One active dosimeter survey in SAA. - One active dosimeter survey in North Magnetic Latitude. - One active dosimeter survey of Solar Proton Event, in north magnetic latitude. Redline - TBD SCHEDULING DATA: 1. D008-1 Radiation Survey (SAA) is scheduled to complete measurements in all locations in 13 minutes plus 12 minutes preparation time. 2. D008-2 Radiation Survey primary cosmic radiation of solar proton (PRI/SOL) is scheduled to complete measurements in all locations in 26 minutes plus 12 minutes preparation time. 3. D008-2/D008-1 back to back is scheduled to complete measurements in all locations in 39 minutes plus 12 minutes preparation time. 4. Log GET times for each position change of sensor within +5 sec., voice record or log book. 5. Update stopwatch times to crew one rev prior to exp. 6. Ground control may manage DSE during calibration, 15 minutes before and 15 minutes after FO's 1 and 2, 7.5 minutes before and 7.5 minutes after FO's 3, 4, and 5. If MCC cannot command the before and after calibrations, then the crew must be notified to perform these functions. 7. Spacecraft attitude for FO's 1 & 2 should be within +23 degrees (all axes) with respect to Earth. 8. Active dosimeter dose rate from non-space radiation not to exceed 0.1 millirad/hr during mission.
0:30				D008-2 FO-3 OR FO-4 A, CM ZERO STOPWATCH (SW) IN AM START SW AT GMT TRANSLATE TO CM, LOG GMT, START STOPWATCH COMM CHK, INGRESS RH COUCH UNSTOW SENSOR HEAD 11:30 MIN FIRST SURVEY AT 12:00 MIN PERFORM RADIATION SURVEY IN NORTH MAGNETIC LAT- ITUDE PER C/L SCHEDULE (13 PLACES 2 MIN EACH) STOW SENSOR HEAD STOW C/L STOW HEADSET	
0:00				D008-2/1 FO-1 THRU FO-4 A, CM PERFORM D008-1 & D008-2 BACK TO BACK	
1:15 MIN.					

DO08 RADIATION IN SPACECRAFT

ET	AM				CDR		
	1	2	3	V			
0:00					<p>F0-5 AM,CM (FOR A CONFIRMED SOLAR PROTON EVENT OF SPECIFIED ENERGY)</p> <p>ZERO STOPWATCH (SW) IN AM START SW AT GMT TRANS TO CM, LOG GMT, SW ST COMM CHK, INGRESS RH COUCH</p> <p>UNSTOW SENSOR HEAD 11:30 M. FIRST SURVEY AT 12:00 MIN</p> <p>PERFORM RADIATION SURVEY IN MOST NORTH MAGNETIC LATITUDES PER C/L SCHED. (13 PLACES 2 MIN EACH) (SAME AS F0-3) STOW SENSOR HEAD STOW C/L STOW HEADSET</p>		<p>SCHEDULING DATA (Cont.)</p> <p>9. Perform F0-5 when a solar proton event of an energy equal to at least 10 mev and a flux of at least 10 protons/CM²-Sec is measured at Skylab altitudes external to the spacecraft. Center survey about the most northern latitude on the earliest possible orbit.</p> <p>SAA Area;</p> <ol style="list-style-type: none"> 1. Survey period must be centered on SAA zone descending node within 77°W and 50°W. 2. Two active surveys in CM in SAA during mission. 3. In SAA area record active stowed dosimeter TLM data for 15 minutes before and 15 minutes after survey. <p>Northern Magnetic Latitude Area;</p> <ol style="list-style-type: none"> 1. Survey period must be centered on closest approach to 70°N latitude, 98°W longitude. 2. Two active surveys in CM in northern magnetic latitude during mission. 3. In northern magnetic latitude record active stowed dosimeter TLM data for 7.5 minutes before and 7.5 minutes after survey. <p>NOTES:</p> <ol style="list-style-type: none"> 1. The SAA is defined as an area of geomagnetic trapped protons having energy equal to or greater than 10 Mev and flux equal to or greater than 10 protons/CM²-Sec. 2. F0's 6 thru 34 do not require crew participation. 3. Passive dosimeter dose rate from non-space radiation not to exceed 7.2 millirad accumulated dose from installation to delivery to PI. No crew action is planned.
0:45							

4-168

DO24 THERMAL CONTROL COATINGS

DATE: 4/11/73
C/L: 10/25/72
MRD 2/01/73

ET	AM				CDR		SL-2
	1	2	3	V			
0:00					EVA		<p>FUNCTIONAL OBJECTIVE: F0-1 Retrieve two exposed DO24 exp panels from VF during EVA.</p> <p>PERFORMANCE REQUIREMENTS: Baseline - Two DO24 exp panels one of each type retrieved during EVA. Minimum - Same as Baseline Redline - Not Applicable</p> <p>SCHEDULING DATA:</p> <ol style="list-style-type: none"> 1. Two sample panels are retrieved on SL-2 EVA. 2. The remaining two panels are retrieved on last EVA of SL-3 or SL-4. 3. Sample panels are retrieved after ATM film mags. have been returned to AM. 4. Same DAC used to photo ATM and DO24 retrieval. <p>NOTE:</p> <ol style="list-style-type: none"> 1. The DO24 sample panels will be placed in the material return container which will be sealed during retrieval and checked prior to repressurizing the AM airlock. 2. The EVA crewman retrieving the DO24 sample panels will voice record comments regarding desk orientation and the general condition of the samples.
0:10					<p>F0-1 A,CM OBTAIN DO24 SAMPLE CONTAINER FROM AM AND CARRY TO CM STOW DO24</p>		

4-17

M487 HABITABILITY/CREW QUARTERS				DATED: 4/11/73 MRD: 2/01/73 C/L: 10/30/72	
ET	AM	PLT	SL-2		
0:00	1 2 3 V	M487-1A	FUNCTIONAL OBJECTIVES: FO-1 Perform part 1 of individual CMN subjective data relative to OA habitability early in the mission. FO-2 Perform part 2 of individual CMN subjective data relative to OA habitability during mid mission. FO-3 Perform parts 1 and 3 of individual CMN subjective data relative to OA habitability late in the mission. FO-4 Group discussion of subjective data relative to OA habitability, early in the mission. FO-5 Same as FO-4 with different questionnaire form, mid-mission. FO-6 Same as FO-4 and FO-5 with different questionnaire form, late in mission. FO-7 Measure noise sound level and frequency at specified OA locations. FO-8 At moments of opportunity, obtain environmental measurements to support subjective impressions. FO-9 Photograph eating of evening meal, early mission. FO-10 Photograph eating of evening meal, late mission. FO-11 Photograph clothes doffing and ingress sleep restraint early in mission. FO-12 Photograph clothes doffing and ingress sleep restraint late in mission. FO-13 Photograph egress sleep restraint and clothes donning early in mission. FO-14 Photograph egress sleep restraint and clothes donning late in mission. FO-15 Photograph cleaning dome mixing chamber screen early in mission. FO-16 Photograph cleaning dome mixing chamber screen late in mission. FO-17 Photograph trash airlock operation at mid-mission. FO-18 Photograph trash airlock operation late in mission. FO-19 Photograph a demonstration of activity in the WMC during mid-mission. FO-20 Photograph various off-duty and hygiene activity per crew choice.		
		FO-7 AS LISTED M487-1A SOUND LEVEL METER/FREQUENCY ANALYZER UNSTOW SOUND LEVEL METER INSTALL BATTERIES (3) UNSTOW FREQUENCY ANALYZER MATE SLM & ANALYZER CALIBRATE OBTAIN FOLLOWING READINGS S, SLEEP COMPARTMENT H, WASTE MANAGEMENT COMPARTMENT W, WARDROOM E, EXP. COMPARTMENT F, FORWARD COMPARTMENT & D, FORWARD DOME AREA M, MULTIPLE DOCKING ADAPTER & ST, STRUCTURAL TRANSITION SECTION A, AIRLOCK MODULE VOICE RECORD READINGS STOW EQUIPMENT			
0:45					

4-19

M415 THERMAL CONTROL COATINGS				DATE: 4/11/73 MRD: 2/01/73	
ET	AM	PLT	SL-2		
	1 2 3 V		FUNCTIONAL OBJECTIVES: FO-1 Obtain data to determine the degradation of three thermal control coating materials when subjected to environments which include moisture and dust prior to launch, heat and erosion effects from launch, S-IB/interstage retrofire, Launch Escape System (LES) tower jettison, and space environment. FO-2 Obtain data to determine the degradation of three thermal control coating materials when subjected to environments which include S-IB boost environment, S-IB/interstage retrorocket firing, LES jettison, and space environment. FO-3 Obtain data to determine the degradation of three thermal control coating materials when subjected to environments which include S-IB/interstage retrorocket firing, LES jettison, and space environment. FO-4 Obtain data to determine the degradation of three thermal control coating materials when subjected to an orbital space environment.		
			SCHEDULING DATA: 1. No crew requirements.		
			NOTES: 1. This experiment is launched aboard and controlled by the SL-2 IU.		

4-18

M487 HABITABILITY/CREW QUARTERS

ET	AM			PLT	
	1	2	3		
				M487-1B	<p>PERFORMANCE REQUIREMENTS: Baseline - One performance of each FO listed on preceding page. Minimum - FO's 4,6,7,10 thru 15,17,19 & 20. Redline - TBD</p> <p>SCHEDULING DATA:</p> <ol style="list-style-type: none"> Schedule FO's 1, 4, 7, 9, 11, 13, and 15 early in the mission. Early mission is defined as the time period prior to MD 7. Schedule FO's 2, 5, 17, and 19 during mid-mission which is defined as MD 14 + 3 days. Schedule FO's 3, 6, 10, 12, 14, 16, and 18 late in the mission. Late mission is defined as the time period after MD 21. Data recorded for each FO performance should include comments covering all aspects including, adequacy, utility, comfort, safety, and improvement. Crewmen to voice record subjective data in the absence of other crewmen during performance of FO-1,2 & 3. Individual crewmen and group debriefing data acquisition periods will not be scheduled on the same mission days. When possible, the group debriefings will coincide with operational debriefings. Environmental measurements to include ambient air temperature, dewpoint temperature, surface temperature, air velocity, sound pressure level/frequency distribution, reflective illumination, locational dimensions and push/pull force. When possible, photo tasks will coincide with operational activities. <p>NOTES:</p> <ol style="list-style-type: none"> Refer to the photography matrix on page 4-36 for additional photo data pertaining to M487. Photographs of various off-duty & hygiene activities per FO-20 will be per crew option.
0:00				FO-8 M M487-1B VELOMETER UNSTOW VELOMETER INSTALL BATTERIES (2) UNSTOW/INSTALL PROBE ZERO ADJUST REMOVE PROBE COVER INSERT PROBE IN AIRSTREAM OBTAIN READINGS, RECORD DEMATE PROBE, STOW EQUIP	
0:20				M487-1C	
0:00				FO-8 M M487-1C TEMP. SENSORS UNSTOW DIGITAL TEMPERATURE SENSOR & PROBE, MATE MEASURE AIR TEMP. DEMATE & STOW EQUIPMENT	
0:10					

4-19A

M487 HABITABILITY/CREW QUARTERS

ET	AM			PLT	
	1	2	3		
				M487-1D	<p>NOTES (Cont.)</p> <ol style="list-style-type: none"> All instrument readings to be voice recorded for subsequent downlink transmission. Scheduled real-time and video recorded operational TV of onboard activities are desired as a supplement to designated activities to be photographed.
0:00				FO-8 M M487-1D FORCE GAUGE UNSTOW FORCE GAUGE AND ATTACHMENTS,ZERO INDICATOR OBTAIN MEASUREMENTS, RECORD	
0:10				M487-1E	
0:00				FO-8 M M487-1E LIGHT INTENSITY OBTAIN SPOTMETER AND SET ASA TO 100 MEASURE LIGHT AT DESIGNATED STATIONS RECORD LIGHT INTENSITY READINGS	
0:15				M487-1F	
0:00				FO-8 M M487-1F BATT REMOVAL REMOVE 3 BATTERIES FROM SND LVL MTR AND 2 BATTERIES FROM VELOMETER DISCARD BATTERIES OR MARK AND RESTOW	
0:20					

4-198

M487 HABITABILITY/CREW QUARTERS							
ET	AM			CDR	SPT	PLT	
	1	2	3				
0:00				M487-2A	M487-2A	M487-2A	NOTE: Schedule all three CMN at the same time.
				FO-4 M487-2A CREW DEBRIEFING	FO-4 M487-2A CREW DEBRIEFING	FO-4 M487-2A CREW DEBRIEFING	
				PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	
0:20				M487-2B	M487-2B	M487-2B	
0:00				FO-5 M487-2B CREW DEBRIEFING	FO-5 M487-2B CREW DEBRIEFING	FO-5 M487-2B CREW DEBRIEFING	
				PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	
0:20				M487-2C	M487-2C	M487-2C	
0:00				FO-6 M487-2C CREW DEBRIEFING	FO-6 M487-2C CREW DEBRIEFING	FO-6 M487-2C CREW DEBRIEFING	
				PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	PARTICIPATE IN OFF-DUTY ROUND TABLE DISCUSSION PER QUESTIONAIRE	
0:20							

4-19C

M487 HABITABILITY/CREW QUARTERS							
ET	AM			CDR	SPT	PLT	
	1	2	3				
0:00				M487-3A	M487-3A	M487-3A	NOTE: Schedule each CMN separately
				FO-1 M487-3A SUBJECTIVE EVALUATION GUIDE 1	FO-1 M487-3A SUBJECTIVE EVALUATION GUIDE 1	FO-1 M487-3A SUBJECTIVE EVALUATION GUIDE 1	
0:20				EVALUATE AND VOICE RECORD THE OVERALL ADEQUACY OF EQUIPMENT ITEMS LISTED IN GUIDE 1	EVALUATE AND VOICE RECORD THE OVERALL ADEQUACY OF EQUIPMENT ITEMS LISTED IN GUIDE 1	EVALUATE AND VOICE RECORD THE OVERALL ADEQUACY OF EQUIPMENT ITEMS LISTED IN GUIDE 1	
0:00				M487-3B	M487-3B	M487-3B	
				FO-2 M487-3B SUBJECTIVE EVALUATION GUIDE 2	FO-2 M487-3B SUBJECTIVE EVALUATION GUIDE 2	FO-2 M487-3B SUBJECTIVE EVALUATION GUIDE 2	
0:15				EVALUATE DESIGN OF COMPARTMENTS PER GUIDE 2	EVALUATE DESIGN OF COMPARTMENTS PER GUIDE 2	EVALUATE DESIGN OF COMPARTMENTS PER GUIDE 2	
0:00				M487-3C	M487-3C	M487-3C	
				FO-3 M487-3C SUBJECTIVE EVALUATION GUIDES 1 AND 3	FO-3 M487-3C SUBJECTIVE EVALUATION GUIDES 1 AND 3	FO-3 M487-3C SUBJECTIVE EVALUATION GUIDES 1 AND 3	
0:25				EVALUATE EQUIPMENT ITEMS PER GUIDE 1 AND THE FREQUENCY OF USE OF ITEMS PER GUIDE 3	EVALUATE EQUIPMENT ITEMS PER GUIDE 1 AND THE FREQUENCY OF USE OF ITEMS PER GUIDE 3	EVALUATE EQUIPMENT ITEMS PER GUIDE 1 AND THE FREQUENCY OF USE OF ITEMS PER GUIDE 3	

4-19D

M487 HABITABILITY/CREW QUARTERS

ET	AM				PLT
	1	2	3	V	
					M487-4A
0:00					FO-9 & FO-10 W M487-4A EVENING MEAL SET UP DAC & RMCC TO COVER ALL CREWMEN PHOTOGRAPH EATING EVENING MEAL FOR 10 MINUTES
1:15					STOW FILM IN VAULT
					M487-4B
0:00					FO-11 & FO-12 S M487-4B DOFF CLOTHING & INGRESS SLEEP RESTRAINT SET UP DAC & RMCC PHOTO CDR 2 MINUTES
0:10					
					M487-4C
0:00					FO-13 & FO-14 S M487-4C EGRESS SLEEP RESTRAINT & DON CLOTHING PHOTO CDR 2 MINUTES
0:10					STOW FILM IN VAULT

4-19E

M487 HABITABILITY/CREW QUARTERS

ET	AM				PLT
	1	2	3	V	
					M487-4E
0:00					FO-15 & FO-16 D M487-4E CLEAN SCREENS CLEAN MIXING CHAMBER SCREENS & PHOTO CLEANING OPERATION FOR 10 MINUTES
0:10					
					M487-4D
0:00					FO-19 H M487-4D WMC DEMONSTRATION HAND HOLD DAC PHOTO WMC ACTIVITY FOR 5 MINUTES
0:10					
					M487-4F
0:00					FO-17 & FO-18 E M487-4F TRASH AIRLOCK SET UP DAC & RMCC PHOTO TRASH AIRLOCK OPERATION FOR 3 MINTUES
0:10					
					M487-4G
0:00					FO-20 M487-4G OFF-DUTY & HYGIENE SET UP DAC OR HAND HOLD PHOTO OFF-DUTY AND HYGIENE ACTIVITIES
0:10					

4-19F

M509		ASTRONAUT MANEUVERING EQUIPMENT				
ET	AM			PLT	CDR	NOTES:
	1	2	3			
0:15				INSTALL PSS IN RECHARGE STATION, LEAK CHECK CHARGE FOR 5 MINUTES REMOVE PSS STOW RECHARGE STATION		1. Atr velocity should not exceed 15 FPM during experiment operations in the OWS forward compartment. 2. Voice comment from the pilot and observer required during and after each test run. 3. M151 and M516 photography will cover hardware maintenance while two cameras will cover parts of each test during the run. 4. The first three runs will be operated in the four available modes; hand-held, direct, rate gyro and control moment gyro. 5. OWS cabin pressure & vehicle rates will be monitored in realtime when possible. Some data will be flagged for processing at MCC-H for post pass performance analyses. 6. Voice record pertinent comments during each debriefing session following each run. 7. Log subjective comments & record experiment runs.
				M509-F		
0:00				A,E,W,ST M509 ATMOS MANAGEMENT PERFORM PER PAD REQ'D		
0:05				M509 ACT	M509 ACT	
0:00				M509 ACT UNSTOW M509 FROM LAUNCH CONFIGURATION OBTAIN TOOLS REMOVE/STOW HHMU DEPLOY HANDRAILS ROTATE PADDLES REMOVE SHOCK MOUNTS RAISE & POSITION ASMU, VERIFY ASMU LOCKED REMOVE BATTERY LAUNCH RESTRAINTS TURN OF DAC/PHOTO LIGHTS & STOW FILM	M509 ACT SET UP M509 (M516) PHOTO EQUIP. PERFORM M509 PSS RECHARGE ASSIST WITH M509 UNSTOWAGE RAISE & POSITION ASMU, ALIGN	
1:00						

4-20A

M509		ASTRONAUT MANEUVERING EQUIPMENT				DATE: 4/11/73	C/L: 11/10/72	MRD: 2/01/73
ET	AM			PLT/CDR	SL-2	FUNCTIONAL OBJECTIVE:	PERFORMANCE REQUIREMENTS:	SCHEDULING DATA:
	1	2	3					
0:00				M509-A		FO-1 Shirtsleeve, familiarization & mission maneuvers, 50 min. test. FO-2 Shirtsleeve, repeat familiarization & mission maneuvers, exploratory maneuvers, 70 min. test. FO-3 Suited, repeat previous maneuvers (FO-1 & FO-2) 80 min. test. FO-4 Shirtsleeve, mission & exploratory maneuvers, 60 min. test.	Baseline - 4 runs, 4 hours 20 minutes total flying time. Minimum - 1 suited run, 1 hour 30 minutes total flying time. Redline - TBD	1. FO-3 will be conducted while the crewman wears a pressurized spacesuit, (ALSA & LSU). 2. Nominally 40 hours will be required between runs for battery recharge. Other factors affecting time between runs are previous run time, gas used, mode used, SWS leakage rate & ECS procedures. 3. T027 extension mechanism cannot be installed in the -Z SAL during any run. 4. Do not schedule OWS maneuvers during experiment operation except for required CMG dump maneuvers. 5. Max allowable spacecraft angular rates about any axis is 6° per minute. 6. The start of the first experiment run should be scheduled to maximize real-time monitoring. 7. Telemetry data will be transmitted to the ground during the runs for quick look evaluation.
				M509 UNSTOW PSS RACK OBTAIN TOOLS, REMOVE SUPPORT BOLTS, STOW TOOLS				
0:25				M509 PSS RECHARGE INSTALL PSS, CHARGE 5 MIN, REMOVE PSS STOW RECHARGE STATION				
				M509 INITIATE BATTERY CHG (APPROX 20 HRS REQ'D)				
0:00				M509-B				
0:02				M509 INITIATE BATTERY CHG.				
0:00				M509-C				
0:02				M509 TERMINATE BATTERY CHG				
0:00				M509-D				
				M509 PSS RECHARGE INSTALL PSS IN RECHARGE STATION, LEAK CHECK CHARGE FOR 5 MINUTES REMOVE PSS, STOW STOW RECHARGE STATION				
0:15				M509-E				
0:00				M509 PSS TOP OFF				

4-20

M509 ASTRONAUT MANEUVERING EQUIPMENT

ET	AM			PLT	CDR
	1	2	3		
			V	M509-1	M509-1
0:00				F0-3 EMU DONNING FOR M509 UNSTOW ALSA & LSU DONN PRESSURE GARMENT ASSEMBLY (PGA), EMU M509 DONNING & C/O DON ASMU, ADJUST ARMS	F0-3 M509 PREP (SUITED) PREPARE EMU SYSTEM UNSTO PCU CONNECT LSU TO PCU SET UP M509/151 PHOTO EQUIPMENT M509 PREFLIGHT (PART I) DEACTIVATE TCS MOVE ASMU TO SERVICE POSITION, CONNECT POWER CABLE. REMOVE/STOW FIREMANS POLE & T027 EQUIP. FROM SAL IF REQ'D. INSTALL CONSUMABLES M509 PREFLIGHT (PART II) ADJUST SEAT OBTAIN EAR PROTECTION ACTIVATE SUS SUIT COOLING START TAPE RECORDERS DONN EAR PROTECTION, GOGGLES & COMM. CONFIGURE COMM START M151 DAC M509 DONNING & C/O ASSIST PLT WITH ASMU

4-208

M509 ASTRONAUT MANEUVERING EQUIPMENT

ET	AM			PLT	CDR
	1	2	3		
			V		
				POSITION & ATTACH LSU TO ASMU PCU/EMU CHECKOUT CHECK PCU CHECK EMU VERIFY CONTROLLERS LOCKED CHECKOUT M509 M509 RUN 1 (SUITED) PERFORM TEST MNVRS PER CHECKLIST & UPDATE PAD, 80 MINUTE CHANGE OUT BATTERY & PSS TANK AFTER MINUTES OPER. M509 SHUTDOWN (SUITED) DOCK, SHUTDOWN M509 SECURE CONTROLS, BLEED MANIFOLD DOFF ASMU	ASSIST WITH LSU/ ASMU TURN OFF DAC, STOW FILM TURN OFF HI INTENSITY LIGHTING PCU/EMU CHECKOUT TIGHTEN SEAT BELT/VELCRO OPEN PSS VALVE VERIFY M509 OPERATION M509 RUN 1 (SUITED) ASSIST PLT, VOICE RECORD EVENTS & CUE PLT MNVRS ASSIST WITH BATT/ PSS CHANGEOUT M509 SHUTDOWN (SUITED) ASSIST WITH DOCKING DACS/HI INTENSITY LIGHTS OFF ASSIST WITH ASMU DOFF

4-20C

M509 ASTRONAUT MANEUVERING EQUIPMENT

ET	AM			PLT	CDR
	1	2	3		
4:30				M509 STOWAGE (SUITED) DOFF EMU VOICE RECORD PERTINENT COMMENTS	M509 STOWAGE (SUITED) RECORDERS OFF DEACTIVATE EVA/IVA PNLS STOW LSU STOW PHOTO EQUIP STOW AME REMOVE CONSUMABLES STOW ASMU REACTIVATE TCS VOICE RECORD PERTINENT COMMENTS
				M509-2,3	M509-2,3
0:00				FO-1, FO-2, FO-4 M509 PREP & C/O (UNSUITED) SETUP M509/M151 PHOTO EQUIPMENT SETUP M509 COMM	FO-1, FO-2, FO-4 M509 PREP & C/O (UNSUITED) M509 PREFLIGHT (PART I) TAPE RECORDERS ON MOVE ASMU TO SERVICE POSITION, CONNECT POWER CABLE. HI INTENSITY LIGHTS ON REMOVE/STOW FIREMAN'S POLE & T027 EQUIP FROM SAL IF REQ'D
				M509 PREFLIGHT (PART II) DONN EAR PROTECTION DONN BUMP HAT DONN ASMU	INSTALL CONSUMABLES M509 PREFLIGHT (PART II) ROTATE ASMU TO DOWN POSITION, ADJUST SEAT DONN EAR PROTECTION ASSIST WITH ASMU TURN OFF M151 DAC, STOW FILM

4-200

M509 ASTRONAUT MANEUVERING EQUIPMENT

ET	AM			PLT	CDR
	1	2	3		
3:00				VERIFY HAND CONTROLLERS LOCKED CHECKOUT M509	PSS VALVE OPEN VERIFY M509 OPERATION
				M509 RUN 2, 3 OR 4 (UNSUITED) PERFORM TEST MNVRS PER CHECKLIST & UPDATE PAD; RUN 2 (50 MIN) RUN 3 (70 MIN) RUN 4 (60 MIN)	M409 RUN 2, 3, OR 4 (UNSUITED) ASSIST PLT, VOICE RECORD EVENTS & CUE PLT MNVRS
3:00				CHANGEOUT BATTERY & PSS AFTER _____ MINUTES OF RUN TIME	ASSIST WITH BATTERY/ PSS CHANGEOUT
				M509 SHUTDOWN & STOWAGE (UNSUITED) DOCK, SHUTDOWN M509 SECURE CONTROLS, BLEED MANIFOLD DOFF ASMU	M509 SHUTDOWN & STOWAGE (UNSUITED) ASSIST WITH DOCKING DACs/HI INTENSITY LIGHTS OFF RECORDERS OFF ASSIST WITH ASMU DOFF STOW PHOTO EQUIP REMOVE CONSUMABLES STOW ASMU REACTIVATE TCS VOICE RECORD PERTINENT COMMENTS
3:00				VOICE RECORD PERTINENT COMMENTS	VOICE RECORD PERTINENT COMMENTS

4-20E

M552 EXOTHERMIC BRAZING

DATE: 4/11/73
MRD: 2/01/73
C/L: 11/03/72

4-23

ET	AM	PLT	SL-2
		M552-1	<p>FUNCTIONAL OBJECTIVES: FO-1 THRU Perform exothermic brazing operations. FO-4</p> <p>PERFORMANCE REQUIREMENTS: Baseline - Four exothermic brazing operations. Minimum - TBD Redline - TBD</p> <p>SCHEDULING DATA: 1. Performance after completion of experiment M551 and M553, but before experiment M555. 2. The four brazing operations must be accomplished in numerical sequence. 3. Each of the four brazing operations must be continuous and uninterrupted. It is highly desirable that all four operations be performed in a continuous series. 4. One MPF vacuum chamber cycle is required for the four brazing operations, if operations are continuous. 5. The work chamber to be evacuated to space during entire experiment operation including cooldown periods. 6. A cooldown period is required after each of the four brazing operations. Crewman is free during cooldown, but must be scheduled to continue task after the specified cooldown period to terminate task or continue the next task. 7. Each cooldown period is a minimum of 2 hours and 45 minutes. Do not proceed unless the hot indicator light is out. 8. Schedule the experiment within the lifetime of the M512 battery, (Battery life is 90 days after activation).</p> <p>NOTES: 1. Brazing operations will be performed and comments voice recorded by one crewman. 2. Any pertinent observation will be entered in experiment log book.</p>
0:00		FO-1 PREPARE WORK CHAMBER, INST SPEC 1, EVACUATE MPF FIRE SPECIMEN 1	
0:18		M552-2	
0:00		FO-2 FIRE SPECIMEN 2	
0:04		M552-3	
0:00		FO-3 FIRE SPECIMEN 3	
0:04		M552-4	
0:00		FO-4 FIRE SPECIMEN 4	
0:04		M552 TERM	
0:00		EXOTHERMIC HEAT TERM M,CM ACT.CLEANER,STOW EXTH,PKG	

M553 SPHERE FORMING

DATE: 4/11/73
C/L: 11/03/72
MRD: 2/01/73

4-24

ET	AM	PLT	SL-2
		M553	<p>FUNCTIONAL OBJECTIVES: FO-1 Perform sphere forming operation on wheel specimen number 1. FO-2 Perform sphere forming operation on wheel specimen number 2.</p> <p>PERFORMANCE REQUIREMENTS: Baseline - Two sphere forming operations. Minimum - TBD Redline - TBD</p> <p>SCHEDULING DATA: 1. Perform after M551 and before M552 and M555. 2. Perform within lifetime of M512 battery. 3. Each sphere forming operation on a specimen wheel must be continuous and uninterrupted, halt operation only if a loose sphere obstructs performance. 4. While each operation must be done to completion once started, the two operations can be scheduled separately. 5. Work chamber to be evacuated to space for experiment operation. 6. One MPF vacuum chamber cycle is required for each specimen wheel unless loose sphere precludes continuing operations. 7. 30 minutes cooldown required after each group of 14 spheres has been melted before sphere removal.</p> <p>NOTES: 1. Sphere forming OPS will be performed and observed by one crewman and photographed with the 16mm DAC. One 400 foot roll of film will be shared with M551. 2. Voice record astronaut comments and enter pertinent observations in log book. 3. Each specimen wheel contains 28 spheres of pure nickel, nickel-tin alloy, nickel-silver and nickel-copper.</p>
0:00		FO-1 SPHERE FORMING PREP/OPS SET UP CAMERA EQUIP POSITION CONTROLS & VLVS INSTALL SPHERE CATCHER #1 EVACUATE MPF CONDUCT MELT SEQUENCE ON 14 SPHERES WAIT 5 MIN, INITIATE REPRESS OF WORK CHAMBER	
0:20		COOLDOWN (WAIT 30 MIN)	
0:50		REMOVE LOOSE SPHERES WITH VACUUM CLEANER REMOVE WHEEL, CUT SPHERES FROM DISC & PLACE IN SPHERE CATCHER	
1:00		FO-2 INSTALL SPHERE CATCHER #2 EVACUATE MPF CONDUCT MELT SEQUENCE WAIT 5 MIN, INITIATE REPRESS	
1:10		COOLDOWN (WAIT 30 MIN)	
1:40		REMOVE LOOSE SPHERES REMOVE WHEEL, CUT SPHERES & PLACE IN CATCHER REMOVE/STOW MOTOR, LENS ASSY, FILM & SPHERES	
1:50			

3. All spheres (captured or placed) in sphere catchers will be stowed in M136 in the CM for return to earth.

M555 GALLIUM ARSENIDE CRYSTAL GROWTH					DATE: 4/11/73	
					MRD: 2/01/73	
					C/L: 11/03/72	
ET	1	2	3	V	PLT	SL-2
					M555 OPS	FUNCTIONAL OBJECTIVES: FO-1 Grow single crystals of gallium arsenide in a space environment. PERFORMANCE REQUIREMENTS: Baseline - One single crystal growth operation. Minimum - TBD Redline - TBD SCHEDULING DATA: 1. Perform after completion of M551, M552 and M553. 2. Transfer experiment specimen, after docking, to MPF stowage location, if CM power is not available. If CM power is available, specimen may remain in CM until experiment performance. 3. Work chamber to be evacuated to space ($\leq 10^{-4}$ torr) for experiment operation. 4. One MPF vacuum chamber cycle required for performance of this experiment. 5. Temperature of specimen will be recorded every 30 minutes for the first three hours and every 12 hours for the remaining 112 hours. NOTES: 1. Single crystal growth ops will be performed and observed by one crewman. 2. Voice record astronauts comments and enter pertinent observations in log book, including monitored temperature readings. 3. Data (i.e., time in acceleration) on TACS firings occurring during experiment performance will be required and recorded on ATM-1. Acceleration will be avoided if possible. 4. Maintain initial specimen in the molten state in CM or MDA until experiment is scheduled for performance. 5. Crystal growth will require 115 hours plus six hours cooldown.
0:00					FO-1 M CRYSTAL PREP/OPS VERIFY EXPR INTEGRITY INSTALL EXP IN HEAT SINK CRYSTAL GROWTH POWER ON TEST VERIFY TUBE HEATERS CRYSTAL GROWTH POWER ON	
0:15					▲ EVACUATE MPF	
					M555 RCD	
0:00					CRYSTAL TEMP RECORD M RECORD TEMP IN TEMP	
0:05					SOURCE POSITIONS 1 THRU 6	
					M555 TERM	
0:00					CRYSTAL TERMINATE M CRYSTAL GROWTH POWER OFF ALLOW 6 HOURS COOLDOWN REPRESSURIZE MPF	
0:10					REMOVE/STOW EXP CONTAINER	

4-25

S009 NUCLEAR EMULSION					DATE: 4/11/73	
					MRD: 2/01/73	
					C/L: 11/03/72	
ET	1	2	3	V	CDR	SL-2
					S009 ACT	FUNCTIONAL OBJECTIVES: FO-1 Install, expose and return detector pkg to earth. PERFORMANCE REQUIREMENTS: Baseline - Obtain data from day 5 throughout mission. Minimum - TBD Redline - TBD SCHEDULING DATA: 1. The detector package will be installed in the MDA within 5 days after launch. 2. The experiment field of view will point perpendicular to the OA X-axis and be adjusted throughout the mission as the beta angle changes. Adjustment frequency can vary from one per day to one every 6 days. 3. The detector package must be closed north of 30 degree north latitude or south of 25 degrees south latitude, this is automatic, but the experiment will require crewman time to remove accumulated error from the experiment timer. NOTES: 1. Field of view of the detector package must not be directed to the earth or its atmosphere. 2. No radiation sources will be allowed near the detector. 3. The minimum temperature requirement is 35°F. 4. The detector must be refrigerated (35°F to 50°F) after re-entry. 5. Experiment field-of-view adjustments during Z-LV passes will not be necessary if these passes do not exceed two consecutive orbits.
0:00					FO-1 M S009 EXPERIMENT ACTIVATION PREPARE EXPERIMENT HOUSING INSTALL DETECTOR IN MDA	
0:10					S009 INIT	
0:00					FO-1 M S009 EXPERIMENT INITIATION SET BETA ANGLE, INITIATE	
0:05					S009 SET	
0:00					FO-1 M S009 EXP Bz & TIMER UPDATE SET BETA ANGLE PER PAD	
0:05					S009 TERM	
0:00					FO-1 M S009 EXPERIMENT TERMINATION	
0:03					S009 STOW	
0:00					FO-1 CM S009 EXPERIMENT STOW REMOVE DETECTOR PACKAGE STOW DETECTOR IN CM	
0:10						

4-26

S015 ZERO GRAVITY SINGLE HUMAN CELL				DATE: 4/11/73
				C/L: 12/72
				MRD: 2/01/73
ET	AM	CDR	SL-2	
		S015		FUNCTIONAL OBJECTIVES: FO-1 Obtain data on living human cells in zero gravity using the Zero Gravity Experiment Package.
0:00		FO-1 CSM		PERFORMANCE REQUIREMENTS: Baseline - Obtain photographic data on living human cells throughout the 28 day mission (requires no crew participation). Minimum - Not Applicable Redline - Not Applicable
0:05		CHECK LIGHTS & TEST 40X CAMERA SWITCH POSITION		
				SCHEDULING DATA: 1. S015 light check is made every 2 days as part of the Quiescent Mode Systems Check/Ops, 2-Day System Checks in CSM Systems Checklist. 2. The flight hardware package must be kept in an ambient temperature of 50°F to 95°F before, during, and after the flight. Temperature excursions beyond those limits are to be reported.
				NOTES: 1. Temperature deviations must be reported hourly. 2. Malfunctions will be logged. 3. Photomicrographic data will be obtained from the self-contained cameras.

4-27

S019 UV STELLAR ASTRONOMY				DATE: 4/11/73
				MRD: 2/01/73
				C/L: 2/09/73
ET	AM	PLT	ANY	SL-2
		S019 PR-1, 2 OR 3	S019 INHIBIT	FUNCTIONAL OBJECTIVES: FO-1 Obtain selective UV photographs of as many thru designated starfields as possible on darkside FO-12 passes.
0:00		-Z SAL PRE PREP OBTAIN SUPPORT EQUIPMENT ACTIVATE SIA	ATM C&D INHIBIT CMG DUMP AND ANY CREW CONT. VENTS	PERFORMANCE REQUIREMENTS: Baseline - (FO-1 thru FO-12) One hundred fifty photographs of selected starfields. Minimum - (FO-1 thru FO-8) One hundred photographs of selected starfields. Redline - TBD
		AMS PREP (SELECT ONE OPT.) OPT.1 (AMS IS STOWED) OPT.2 (AMS ON SAL PRESS) OPT.3 (AMS ON SAL DEPRESS) OPTICAL CANISTER PREP MODERATE DISPERSION REMOVE CAN. FROM STOWAGE AND INSTALL ON AMS LOW DISPERSION REMOVE CAN. FROM STOWAGE REMOVE AND STOW PRISM INSTALL CAN. ON AMS FILM CANISTER PREP INSTALL ON OPTCAL CAN. DEPRESSURIZE SAL	PHOTO PREP IF REQ'D	
0:40				SCHEDULING DATA: 1. The -Z SAL is required. Do not schedule concurrently with S149, S183, T027/S073, S190B, ED 23, ED 26. 2. Twelve photographic periods (FO-1 thru FO-12) will be scheduled during night-side passes of 32 minutes average duration. Photographic periods of less than 32 minutes duration are acceptable, provided the lost time is made up during other night-side passes of greater than 32 minutes duration or by scheduling photographic periods during additional night-side passes. 3. It is highly desirable to have two separate observing periods with an interval of at least five days. 4. Programmed exposure times are 30, 90, & 270 seconds, depending on starfield brightness. The duration of any exposure is to be within 10% of programmed duration. The number of exposures per starfield will vary from two to four. A fourth exposure is dependent on OWS stability and direction.

4-28

S019 UV STELLAR ASTRONOMY						
ET	AM			PLT	ANY	
	1	2	3	V		
SS -10 M.					<p>S019 OPS</p> <p>FO-1 THRU FO-12 -Z SAL PRE OPS SUBDUE LIGHTING EXTEND MIRROR VERIFY POINTING IF REQUIRED</p> <p>STARFIELD EXPOSURES SET TILT & ROTATION KNOBS EXPOSE FILM</p> <p>STABILIZATION VERIFICATION (PERFORM ONLY AS REQUIRED PER PAD)</p> <p>RETRACT MIRROR POST OPS CLOSE FILM HATCH TURN ON LIGHTS</p>	<p>SCHEDULING DATA (Cont.)</p> <p>5. Pre-exposure attitude knowledge of the Orbital Assembly (OA) to within 2.5 degrees (in the stellar inertial reference system) will be required in order to allow the operator to locate designated target starfields.</p> <p>6. The experiment should be performed when the moon is less than half illuminated and when the OA is in an inertially stable mode, e.g., Solar Inertial Attitude (X-IOP/Z).</p> <p>7. Pointing verification is performed only on the initial experiment operation of each mission.(C/L reqm't).</p> <p>8. The mirror should be erected just before sunset and retracted just after sunrise.</p> <p>9. To minimize exposure to radiation and to fulfill temperature requirements, the film canister should be removed and stowed in the film vault between observing periods separated by more than 12 hours. The remainder of the experiment may remain in the SAL provided the cover is placed on the optical canister and the assembly is vented to space.</p> <p>10. Upon removal of the spectrograph assembly from the SAL, evacuation to 1 torr or less is required within 30 minutes of removal.</p> <p>11. Total film canister time outside the OWS film vault should not exceed 96 hours. This includes time after transfer to the CM at the end of the mission.</p> <p>12. Moisture must not be allowed to condense on the mirror system. All crew controlled vents and dumps must be inhibited during and 30 minutes prior to scheduled experiment operation. TACS firings are to be minimized when the mirror system is extended, and inhibited during an exposure. SMRCS firings are to be inhibited when the mirror system is extended.</p>
SR +10 M.						

4-28A

S019 UV STELLAR ASTRONOMY						
ET	AM			PLT	ANY	
	1	2	3	V		
0:00					<p>S019 ST-1,2 OR 3</p> <p>-Z SAL</p> <p>FILM CANISTER STOW REMOVE FILM CAN. & STOW OPTICAL CANISTER STOW MODERATE-REMOVE CAN.& STOW LOW-INSTALL PRISM,STOW CAN.</p> <p>AMS STOW/EXP DEPRESS OPT.1 AMS TO BE STOWED REMOVE AMS FROM SAL INSTALL AMS FRONT COVER STOW AMS INSTALL SAL WINDOW DEPRESSURIZE OPTICAL CANISTER 5 MINUTES AMS FOR 7 MINUTES STOW VACUUM HOSE</p> <p>OPT.2 AMS TO BE LEFT ON SAL PRESSURIZED</p> <p>OPT.3 AMS TO BE LEFT ON SAL DEPRESSURIZED DEPRESSURIZE OPTICAL CANISTER 5 MINUTES</p>	<p>SCHEDULING DATA (Cont.)</p> <p>13. OWS interior lights are to be turned off 5 minutes prior to and during the exposure period. Ports that scatter light into the spectrograph are to be covered. Pen lites with red filters are acceptable for use during the operation. All exterior running lights must be turned off.</p> <p>14. It will be necessary to inhibit momentum dump maneuvers during the period when this experiment is operating since this experiment cannot operate while the spacecraft is in motion.</p> <p>NOTES:</p> <p>1. Experiment M509 must not be operated while S019 equipment is installed in the SAL. Crew motions are to be kept to a minimum during film exposures. Excursions resulting from random transitory events such as crew motion are acceptable without limitations or magnitude so long as the interval between such events exceeds 2 minutes.</p> <p>2. Spacecraft stabilization directly affects the quality of the spectra. Uniform rates are acceptable up to a magnitude of 10 arc sec/sec.</p> <p>3. The MRD states that the starfield and pointing coordinates (mirror tilt and rotation, etc.) will be supplied to the crew 24-hours prior to the experiment session. The Correlary SSR and PAD's procedure is to update the S019 pad one rev prior to the experiment operation.</p> <p>4. S019 PREP times will vary according to the option selected. Forty minutes is the maximum time required.</p> <p>5. S019 STOW time will vary according to the option selected. Fifty-five minutes is the maximum time required.</p> <p>6. Ambient temperature conditions are tolerable for the duration of experiment operation periods.</p>
0:50						

4-28B

S019 UV STELLAR ASTRONOMY

ET	AM	PLT	
	1 2 3 V	S019 FS	
0:00		-Z SAL REMOVE FILM CANISTER-STOW INSTALL REAR COVER ON OPTICAL CANISTER	
0:10	▲	DEPRESSURIZE SAL	
		S019 FI	
0:00		-Z SAL PRESSURIZE SAL INSTALL FILM CANISTER ON OPTICAL CANISTER	
0:10	▲	DEPRESSURIZE SAL	

4-28C

S020 UV/X-RAY SOLAR PHOTOGRAPHY

DATE: 4/11/73
MRD: 2/01/73
C/L: 2/09/73

ET	AM	PLT	CDR OR SPT	SL-2												
	1 2 3 V	S020 PREP		FUNCTIONAL OBJECTIVES: FO-1 Obtain calibration photographs of the sun FO-2 Perform a S020/ATM co-alignment check.												
0:00		+Z SAL INSTALL SA ON SAL PRESSURIZE SA FOR 15 SEC REMOVE FMSC-OWS FILM VAULT, RESTRAIN ON SA AND PRESSURIZE FOR 5 SEC LOAD FILM & FILTER ▲DEPRESSURIZE FMSC-3 MIN VACUUM VALVE-CLOSE ▲VENT SAL		PERFORMANCE REQUIREMENTS: Baseline - Five pre-planned exposures of the sun are required (FO-1). One alignment check between S020 hardware when installed in the +Z SAL and the ATM navigation base to an accuracy of .1 degree. Minimum - Same as Baseline Redline - Not Applicable												
0:25		S020 QS	S020 QS	SCHEDULING DATA: 1. FO-1 and FO-2 can be performed during one rev. A way of scheduling the FO's is as follows: ● Perform pointing alignment to within 0.25° of center of the solar disk for start of photo sequence. ● Begin exposures and continue alignment to within 0.1° of center of the solar disk for SAL alignment determination. Exposures are as follows: <table border="1"> <thead> <tr> <th>Frame #</th> <th>Exposure</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>30 min</td> </tr> <tr> <td>2</td> <td>10 min</td> </tr> <tr> <td>3</td> <td>3 min</td> </tr> <tr> <td>4</td> <td>1 min</td> </tr> <tr> <td>5</td> <td>30 sec</td> </tr> </tbody> </table>	Frame #	Exposure	1	30 min	2	10 min	3	3 min	4	1 min	5	30 sec
Frame #	Exposure															
1	30 min															
2	10 min															
3	3 min															
4	1 min															
5	30 sec															
0:00		FO-1 & FO-2 +Z SAL OPEN SAL OUTER DOOR AT SUNRISE PERFORM OA ATTITUDE POINT- ING TO WITHIN AT LEAST .25° OF SOLAR DISC (0.1° DESIRED) (BEGIN EXPOSURE & CONTINUE POINTING ALIGNMENT TO WITHIN 0.1° OF SOLAR DISK, IF REQUIRED) FRAME # __, EXP __ SEC AT EXPOSE FILM VOICE RECORD ● START OF EXPOSURE-GMT ● FRAME NUMBER ● INTENDED DURATION AT END EXPOSURE, RECORD GMT	FO-1 & FO-2 ATM C&D EXECUTE OA Y & Z ATTITUDE MANEUVERS RECORD BIAS INPUTS ØY1 __ ØZ1 __	2. Film canister interior will not be exposed to an oxygen-rich atmosphere for more than 30 minutes. 3. Film magazine will be stowed in the Film Magazine Storage Container (FMSC) which in turn will be stowed in the OWS Forward Compartment film vault during experiment non-operational periods. 4. After completion of the experiment photography, the FMSC will be evacuated to 1 torr and returned to the OWS film vault.												

4-29

S020 UV/X-RAY SOLAR PHOTOGRAPHY

		AM					
ET	1	2	3	V	PLT	ANY	
APPROX 1:00					PERFORM PHOTO TAKE FOR REMAINING EXPOSURES VOICE RECORD ACTUAL ALIGNMENT ACHIEVED CLOSE SAL OUTER DOOR AT SUNSET	RECORD BIAS INPUTS ØY1 _____ ØZ1 _____	SCHEDULING DATA (Cont.) 5. Determine the alignment of the +Z SAL with respect to the ATM navigation base by biasing the ATM sun sensor in increments of 0.1 degree until the S020 operator observes that the experiment line-off-site is within 0.1 degree of the center of the sun disk, (FO-2). 6. The experiment will be mounted in the +Z SAL and performed when in the Solar Inertial Attitude (X-IOP/Z). 7. Once the experiment is pointed within 0.25 degree of the center of the solar disk, the photographic data taking can begin even though fine alignment adjustments are still in process. (FO-1) 8. Experiment operation will be limited to the period from five minutes after OA sunrise to five minutes before OA sunset. 9. Exp. M509 must not be operated while S020 equipment is installed in the SAL. All events that cause external contamination and that are capable of being inhibited will be inhibited whenever the SAL outdoor is open. NOTES: 1. Voice record and log MRD required data. 2. The checklist procedure is for the Flare Watch and the Quiet Sun Modes. The MRD only requires a Quiet Sun Calibration on SL-2. 3. Update specific MRD alignment and exposure times data to the crew, as required.
					S020 ST		
	0:00					+Z SAL PRESSURIZE SAL, FMSC REMOVE FILM (FILTER ON FINAL) & STOW IN FMSC ▲DEPRESSURIZE FMSC -3 MIN	
					VACUUM VALVE-CLOSE REMOVE FMSC AND STOW REMOVE SA AND STOW SECURE SAL		
0:25							

4-29A

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

DATE: 4/11/73
MRD: 2/01/73
C/L: 2/09/73

		AM					
ET	1	2	3	V	PLT	CDR OR SPT	SL-2
0:00					S073 PR-1	S073 PR-1	FUNCTIONAL OBJECTIVES: FO-1 thru FO-4 Perform System Monitor Programs FO-5 thru FO-10 Perform Contamination Programs FO-11 and FO-12 Perform In Ecliptic Programs FO-13 and FO-14 Perform Vertical Circle Programs FO-15 and FO-16 Perform All Sky Map Programs FO-17 and FO-18 Perform Celestial Poles (N and S) Programs FO-19 and FO-20 Perform Gegenschein Programs FO-21 Perform Perpendicular to Ecliptic Program FO-22 Perform Inner Zodiacal Light/Contamination Programs FO-23 Perform Ecliptic Pole (N) Programs PERFORMANCE REQUIREMENTS: Baseline - 23 performances of the Photometer System Programs as presented in Table I are required. (Should additional time be made available during the mission, real time scheduling will be made in accordance with Table II.) Minimum - 15 performances of the Photometer System Programs designated in Table I are required. (Reduction from the 23 Baseline Requirements to the 15 Minimum Scheduling Requirements should be done in accordance with guideline given in Table I.) Redline - TBD SCHEDULING DATA: 1. Refer to Tables I and II and the Mode Program Summaries for scheduling data pertinent to individual FO's. 2. When either Program 1a or 0a are performed for the first time from the solar SAL, they must both be performed during the same deployment period, (FO-1 & FO-5). 3. Programs 1a and 3d require a change of rod length for each half of the performance. Therefore, the order of performance should be consistent with temperature requirements, (FO-5 thru FO-8 and FO-10).
	0:05				+ Z SAL PHOTOMETER SYSTEM PREP INSTALL M151 EQUIP IF REQD FILM INSTALL REMOVE PHOTOMETER FROM COFFIN, RESTRAIN ON LID DEPLOY HEAD, LOAD FILM, RETRACT HEAD	+ Z SAL ASSIST WITH REMOVAL OF EXP HARDWARE FROM COFFIN	
0:20					SAL INSTALLATION POSITION TRIPOD INSTALL PHOTOMETER SYSTEM IN SAL ADJUST TRIPOD	NOTE: Assistant req'd to be present only at times indicated.	
0:30					CONDUCT CONTROL PANEL PRE-POWER SETUP/ VERIFICATION	ASSIST WITH TRANSFER OF EXP HARDWARE FROM COFFIN TOP TO SAL AND INSTALLATION IN SAL	
0:50					INSTALL PWR/INST CABLES TURN OFF M151 EQUIP IF USED, STOW FILM		
0:00					S073 PR-2	S073 PR-2	
0:10					+ Z SAL PHOTOMETER SYSTEM PREP INSTALL M151 EQUIP IF REQD SAL INSTALLATION POSITION TRIPOD INSTALL PHOTOMETER SYSTEM IN SAL ADJUST TRIPOD	+ Z SAL ASSIST WITH TRANSFER OF EXP HARDWARE FROM COFFIN TOP TO SAL AND INSTALLATION IN SAL	

4-30

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

ET	AM			PLT	CDR OR SPT	SCHEDULING DATA (Cont.)
	1	2	3			
4-30A	0:25			CONDUCT CONTROL PANEL PRE-POWER SETUP/VER		<p>4. Program 3b requires an astronaut for 1 minute each 15 minutes to change trunnion, (FO-9).</p> <p>5. Program 5a should be performed during the first deployment of the photometer from the anti-solar SAL because at the high priority of the program, (FO-15).</p> <p>6. If scheduling is a problem with Programs 4a, 4b, 5a, or 5b due to the 10-orbit requirement, the number of filters and hence the number of orbits may be reduced to eight, (FO-15, FO-16, FO-20 and FO-22).</p> <p>7. Do not schedule +Z SAL installation concurrently with T027, T025, S020, M509 and S149.</p> <p>8. Do not schedule -Z SAL installation concurrently with S019, TV, S183, S190B, M509, and S149.</p> <p>9. Do not schedule any data collection concurrently with M092, M093, M171 and any operational biomedical measurements.</p> <p>10. Extinguish lighting and cover windows that interface with data collection.</p> <p>11. SI or any other inertial mode with random rates below 0.05 degree is preferred, (FO-11 thru FO-23).</p> <p>12. Constant rates up to 0.1 degree causing secular change in orientation are acceptable if they do not result in the loss of target, (FO-11 thru FO-23).</p> <p>13. Angular accelerations which result in rates less than 0.05 degree/sec are acceptable, (FO-11 thru FO-23).</p> <p>14. Do not schedule major OA maneuvers concurrent with experiment data collection. Refer to Table II for momentum dump inhibit requirements.</p> <p>15. Schedule at least 5-min. warmup from power on to initial data collection.</p> <p>16. The photometer shall not be pointed within 18 degrees of the moon or the sun.</p>
				INSTALL PWR/INST CALBES TURN OFF M151 EQUIP IF USED, STOW FILM		
	0:00			S073 PR-3	S073 PR-3	
				+ Z SAL PHOTOMETER SYSTEM PREP	+ Z SAL ASSIST WITH REMOVAL OF EXP HARDWARE FROM COFFIN	
	0:05			FILM INSTALL	<p>NOTE: If exp. system is on top of coffin assistant is not required.</p>	
				REMOVE PHOTOMETER FROM COFFIN IF REQD, RESTRAIN ON LID		
	0:20			DEPLOY HEAD, LOAD FILM, RETRACT HEAD	<p>NOTE: For 2 rod deployment, 10 minutes is required.</p>	
				S073 EXT		
	0:00			+ Z SAL PHOTOMETER EXTENSION	<p>NOTE: Add 5 min for M151 OPS</p>	
				T027 PWR ON, POSITION PHOTOMETER FOR EXTENSION VENT SAL, OPEN DOOR DEPLOY PHOTOMETER 2 OR 7 RODS PER PAD REQUIREMENTS		
0:15			S073 OA	<p>NOTE: Start anytime in orbit 94 min. data take</p>		
			FO-1,2,3,4 +Z SAL EXPERIMENT OPERATION OA SYSTEM MONITOR START RECORDERS AND PROGRAM MONITOR FOR SEVERAL MIN.			
0:00						
			0:10			

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

ET	AM			PLT	CDR OR SPT	SCHEDULING DATA (Cont.)
	1	2	3			
4-30B	0:00			S073-1A		<p>17. Power is to be left on when the photometer is deployed out the -Z SAL.</p> <p>18. The photometer must be inside the SAL with the SAL door closed during and for at least 30 minutes after any hot gas thruster firing.</p> <p>19. An update pad is required at least one rev prior to conducting a data scan.</p> <p>20. Unless otherwise noted, after photometer setup and deployment, the crewman need only be present to set the automatic programmer, start the scan and verify proper initial operations. It is not mandatory that an astronaut be present during scan sequences. However, if other duties permit, it will be highly desirable for an astronaut to monitor detector signal levels and programmer functions and make verbal and/or written record relative to experiment operation.</p> <p>21. The crewman will voice record and time correlate comments relevant to experiment operation.</p>
				FO-5,6,7,8 + Z SAL EXPERIMENT OPERATION 1a CONTAMINATION		
	0:15			PERFORM CALIBRATION	NOTE: For 1st perf, monitor intensity during entire 20 min. data take.	
				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN		
	0:00			(WAIT 50 MIN)	<p>Restart 15 min before OWS night. 20 min. data take.</p>	
				ROTATE SHAFT 180°		
	0:15			DEPLOY PHOTOMETER FROM 2 TO 7 RODS		
				START PROGRAM MONITOR FOR SEVERAL MIN		
	0:00			S073-1B		
				FO-19 -Z SAL EXPERIMENT OPERATION 1b GEGENSCHNEIN		
0:15			PERFORM CALIBRATION			
			START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN.			

*ORBITAL NIGHT

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHN/ZODIACAL LIGHT

ET	AM			PLT		NOTES:
	1	2	3			
				S073-1D		
0:00				FO-23 -Z SAL EXPERIMENT OPERATION 1d ECLIPTIC POLES		1. The photometer temperature should be above the dew-point temperature during retrieval procedures.
				PERFORM CALIBRATION	Start upon entering earths shadow. 15 min data take.	2. Photographs will automatically be taken by the Photometer System by single frames during an observation program. (See photo chart page 4-37)
0:15				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN		3. The film magazine will be placed in the OWS film vault before and after exposure and returned to earth in the CM.
				S073-1E		4. Use moderate hand torque when assembling Photometer System extension rods.
0:00				FO-17,18 -Z SAL EXPERIMENT OPERATION 1e CELESTIAL POLES		5. Only the crew can turn the AM experiment recorders on and off. The ground can dump the AM experiment recorders over any station. For multiple orbit scans, the recorders will be required to run during the non-data taking periods unless crew time can be scheduled during each orbit for recorder operation.
				PERFORM CALIBRATION	Start 15 min before anti sol. point 30 min data take	6. For the Experiment Operation Timelines, a black strip in the column with an * refers to a night-time pass.
0:15				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN		
				S073-2A		
0:00				FO-11 -Z SAL EXPERIMENT OPERATION 2a IN ECLIPTIC		
				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start upon leaving earths shadow. 19 min data take	
0:10						
				S073-2B		
0:00				FO-12 +Z SAL EXPERIMENT OPERATION 2b ECLIPTIC		
				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start 10 min before anti-sol point. 19 min data take	
0:10						

4-30C

*ORBITAL NIGHT

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHN/ZODIACAL LIGHT

ET	AM			PLT		
	1	2	3			
				(WAIT 40 MIN)		
0:00				RESTART PHOTOMETER MONITOR FOR SEVERAL MIN	Restart 10 min before solar point. 19 min data take	
0:05						
				S073-2C		
0:00				FO-13 -Z SAL EXPERIMENT OPERATION 2c VERTICAL CIRCLE		
				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start 15 min before orbital darkness. 30 min data take	
0:10						
				(WAIT 25 MIN)		
0:00				CHANGE SHAFT ANGLE RESTART PHOTOMETER MONITOR FOR SEVERAL MIN	Restart near anti-solar point. 30 min data take	
0:05						
				S073-2D		
0:00				FO-14 +Z SAL EXPERIMENT OPERATION 2d VERTICAL CIRCLE		
				START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start 15 min before orbital darkness. 30 min data take	
0:10						
				(WAIT 25 MIN)		
0:00				CHANGE SHAFT ANGLE RESTART PHOTOMETER MONITOR FOR SEVERAL MIN	Restart near anti solar point 30 min data take	
0:05						

4-30D

*ORBITAL NIGHT

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT			
ET	AM	PLT	
	1 2 3 *	S073-3A	
0:00		F0-21 -Z SAL EXPERIMENT OPERATION 3a PERP TO ECLIPTIC START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start at anti-solar point 17 min data take
0:10			
		S073-3B	
0:00		F0-9 +Z SAL EXPERIMENT OPERATION 3b CONTAMINATION SET TRUNNION TO 15° START RECORDERS & PROGRAM	Start upon entering day- light. 68 min data take
		(WAIT 15 MIN)	
		SET TRUNNION TO 20°	
		(WAIT 15 MIN)	
		SET TRUNNION TO 25°	
		(WAIT 15 MIN)	
0:52		SET TRUNNION TO 30°	

4-30E

*ORBITAL NIGHT

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT			
ET	AM	PLT	
	1 2 3 *	S073-3D	
0:00		F0-10 -Z SAL EXPERIMENT OPERATION 3d CONTAMINATION SET TRUNNION TO 112.5° START RECORDERS & PROGRAM MONITOR INTENSITY & CHANGE GAIN AS REQD	Start at the solar point 34 min data take
0:27		SET TRUNNION TO 110° RESTART PROGRAM MONITOR, CHANGE GAIN	
0:42		DEPLOY PHOTOMETER TO 7 RODS SET TRUNNION TO 112.5° WAIT UNTIL ORBITAL DAYLIGHT	Restart upon entering daylight. 34 min data take
0:00		RESTART PROGRAM MONITOR INTENSITY CHANGE GAIN AS REQD	
0:17		SET TRUNNION TO 110° RESTART PROGRAM MONITOR CHANGE GAIN	

4-30F

*ORBITAL NIGHT

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

4-306

ET	AM 1 2 3 *	PLT	
0:34		RECORDERS OFF	
		S073-4A	
0:00		FO-20 -Z SAL EXPERIMENT OPERATION 4a GEGENSCHNEIN START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start upon entering orbit at night. 160 min data take. 10 orbits
0:10		S073-4B	
0:00		FO-22 +Z SAL EXPERIMENT OPERATION 4b INNER ZOD LIGHT START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start 16 min prior to solar point 320 min data take. 10 orbits
0:10		S073-5A	
0:00		FO-15 -Z SAL EXPERIMENT OPERATION 5a ALL SKY MAP START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start 16 min prior to anti sol. point 320 min data take. 10 orbits
0:10		S073-5B	
0:00		FO-16 +Z SAL EXPERIMENT OPERATION 5b ALL SKY MAP START RECORDERS & PROGRAM MONITOR FOR SEVERAL MIN	Start 16 min prior to solar point 320 min data take. 10 orbits
0:10			

*ORBITAL NIGHT

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

4-30H

ET	AM 1 2 3	PLT	CDR OR SPT
		S073 RET	
0:00		+Z SAL PHOTOMETER RETRACTION POSITION PHOTOMETER FOR RETRACTION	NOTE: For 2 rods, 10 min is required
		REMOVE 2 OR 7 RODS	
0:15		CLOSE SAL OUTER DOOR	NOTE: Add 5 min for M151 OPS
		S073 ST-1,3	
0:00		+Z SAL EXPERIMENT STOW PRESSURIZE SAL DISCONNECT SAL PWR AND SAL INST CABLE	
0:10		STOW CABLES REMOVE PHOTOMETER SYSTEM CANISTER FROM SAL	S073 STOW (M151 IF REQD) ASSIST IN REMOVING PHOTOMETER FROM SAL TO COFFIN TOP
0:20		REMOVE TRIPOD AND STOW	
		FILM REMOVAL RESTRAIN PHOTOMETER SYSTEM ON TOP OF COFFIN REMOVE FRONT END PLATE AND EXTENSION ROD DEPLOY PHOTOMETER SYSTEM HEAD OUT OF THE CANISTER	NOTE: The assisting crew- man need only be present to remove the photometer from the SAL and to stow it in the coffin.
0:40		REMOVE FILM MAG, RETRACT HEAD	
		STOW IN COFFIN	+Z SAL S073 STOW (M151 IF REQD) ASSIST IN STOWING PHOTOMETER IN COFFIN
0:50			

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

ET	AM			PLT	CDR OR SPT
	1	2	3		
0:00				S073 ST-1	
				EXPERIMENT STOW PRESSURIZE SAL DISCONNECT SAL PWR AND SAL INST CABLE STOW CABLES	S073 ST-1
				REMOVE PHOTOMETER SYSTEM CANISTER FROM SAL AND PLACE ON COFFIN TOP	S073 STOW ASSIST IN REMOVING PHOTOMETER FROM SAL TO COFFIN TOP
				REMOVE TRIPOD AND STOW	
				S073 ST-2	
0:10				EXPERIMENT STOW PRESSURIZE SAL DISCONNECT SAL PWR AND SAL INST CABLE STOW CABLES	S073 ST-2
				REMOVE PHOTOMETER SYSTEM CANISTER FROM SAL AND PLACE IN COFFIN	S073 STOW ASSIST IN REMOVING PHOTOMETER FROM SAL INTO COFFIN
				REMOVE TRIPOD AND STOW	
				S073 ST-2	
				S073 ST-2	
0:20				EXPERIMENT STOW PRESSURIZE SAL DISCONNECT SAL PWR AND SAL INST CABLE STOW CABLES	S073 ST-2
				REMOVE PHOTOMETER SYSTEM CANISTER FROM SAL AND PLACE IN COFFIN	S073 STOW ASSIST IN REMOVING PHOTOMETER FROM SAL INTO COFFIN
				REMOVE TRIPOD AND STOW	
				S073 ST-2	
				S073 ST-2	
0:25				EXPERIMENT STOW PRESSURIZE SAL DISCONNECT SAL PWR AND SAL INST CABLE STOW CABLES	S073 ST-2
				REMOVE PHOTOMETER SYSTEM CANISTER FROM SAL AND PLACE IN COFFIN	S073 STOW ASSIST IN REMOVING PHOTOMETER FROM SAL INTO COFFIN
				REMOVE TRIPOD AND STOW	
				S073 ST-2	
				S073 ST-2	

T027/S073 CONTAMINATION MEASUREMENTS AND GEGENSCHNEIN/ZODIACAL LIGHT

ET	AM			PLT	CDR OR SPT
	1	2	3		
0:00				S073 ST-3	
				EXPERIMENT STOW FILM REMOVAL RESTRAIN PHOTOMETER SYSTEM ON TOP OF COFFIN REMOVE FRONT END PLATE DEPLOY PHOTOMETER SYSTEM HEAD OUT OF CANISTER REMOVE FILM MAG, RETRACT HEAD, STOW IN COFFIN	S073 ST-3
0:20				EXPERIMENT STOW FILM REMOVAL RESTRAIN PHOTOMETER SYSTEM ON TOP OF COFFIN REMOVE FRONT END PLATE DEPLOY PHOTOMETER SYSTEM HEAD OUT OF CANISTER REMOVE FILM MAG, RETRACT HEAD, STOW IN COFFIN	S073 ASSIST IN STOWING PHOTOMETER INTO COFFIN

T027/S073 MODE PROGRAM SUMMARY

<p>PROGRAM 0-a</p> <ul style="list-style-type: none"> SYSTEM MONITOR PHOTOMETER CAPPED SCAN DURING ENTIRE ORBIT +Z SAL 3 PERF -Z SAL 1 PERF <p>FO-1 THRU FO-4</p>	<p>PROGRAM 1-b</p> <ul style="list-style-type: none"> GEGENSCHNEIN PHOTOMETER POINTED IN ANTI SOLAR DIRECTION 48 MINUTE OPERATING PERIOD -Z SAL 1 PERF ONE PERFORMANCE REQUIRED ± 1 WEEK OF THE NEW MOON COORDINATE WITH GROUND OBSERVATIONS AT HAWAII <p>FO-19</p>	<p>PROGRAM 1-d Continued</p> <ul style="list-style-type: none"> ECLIPTIC POLES N. OR S. PHOTOMETER POINTED AT NORTH OR SOUTH ECLIPTIC POLE 10-15 MINUTE OPERATING PERIOD -Z SAL 1 PERF PERFORM WITHIN EARTH'S SHADOW COORDINATE WITH GROUND OBSERVATIONS AT HAWAII <p>FO-23</p>	<p>PROGRAM 2-a Continued</p> <ul style="list-style-type: none"> ECLIPTIC SCAN IN TRUNNION FROM 112.5° TO 0°, ROTATE 180°, SCAN TO -112° 19 MINUTE SCAN -Z SAL 1 PERF TRUNNION 180° ROTATION IS AUTOMATIC PERFORM ANYWHERE OUTSIDE THE EARTH'S SHADOW <p>FO-11</p>	<p>PROGRAM 2-c Continued</p> <ul style="list-style-type: none"> VERTICAL CIRCLE SCAN IN TRUNNION BETWEEN 0° & 112.5° AS ILLUSTRATED FOUR 15 MINUTE SCANS PER PERFORMANCE START PROGRAM 15 MIN. BEFORE ORBITAL DARKNESS -Z SAL 1 PERF 30 MINUTE MINIMUM DARK PERIOD DESIRABLE CREWMAN REQUIRED TO CHANGE SHAFT SETTINGS & RESTART PROGRAM AFTER THE FIRST TWO 15 MIN. SCANS <p>FO-13</p>
<p>MODE 1</p> <ul style="list-style-type: none"> FIXED POSITION OBSERVATIONS ARE MADE WITH THE PHOTOMETER POINTED AT A TARGET. NO PHOTOMETER MOVEMENT IN SHAFT OR TRUNNION. 	<p>PROGRAM 1-c</p> <ul style="list-style-type: none"> CONTAMINATION PHOTOMETER POINTED IN DIRECTION OF CONTAMINATION SOURCE 20 MINUTE OPERATING PERIOD -Z SAL START PRIOR TO LEAVING EARTH'S SHADOW & CONTINUE IN SUNLIGHT CAMERA SYSTEM REQUIRED 	<p>PROGRAM 1-e</p> <ul style="list-style-type: none"> CELESTIAL POLES N. OR S. PHOTOMETER POINTED AT NORTH OR SOUTH ECLIPTIC POLE 30 MINUTE OPERATING PERIOD -Z SAL 2 PERF ONE PERFORMANCE REQUIRED ± 1 WEEK OF THE NEW MOON FOR N. POLE SITTING COORDINATE WITH GROUND OBSERVATIONS AT HAWAII FOR N. POLE SITTING <p>FO-17(N) AND FO-18(S)</p>	<p>PROGRAM 2-b</p> <ul style="list-style-type: none"> ECLIPTIC SCAN IN TRUNNION BETWEEN 112.5° & 15° TWO 19 MINUTE SCANS PER PERFORMANCE PERFORM IN EARTH'S SHADOW, REPEAT DURING DAYLIGHT PORTION OF ORBIT +Z SAL 1 PERF CREWMAN REQUIRED TO RESET PROGRAM AFTER INITIAL 19 MIN. OBSERVATION <p>FO-12</p>	<p>PROGRAM 2-d</p> <ul style="list-style-type: none"> VERTICAL CIRCLE SCAN IN TRUNNION BETWEEN 15° & 112.5° AS ILLUSTRATED FOUR 15 MINUTE SCANS PER PERFORMANCE START PROGRAM 15 MIN. BEFORE ORBITAL DARKNESS +Z SAL 1 PERF 30 MINUTE MINIMUM DARK PERIOD DESIRABLE CREWMAN REQUIRED TO CHANGE SHAFT SETTINGS & RESTART PROGRAM AFTER THE FIRST TWO 15 MINUTE SCANS <p>FO-14</p>
<p>PROGRAM 1-a</p> <ul style="list-style-type: none"> CONTAMINATION PHOTOMETER IN FIXED POSITION POINTED 90° TO SUN LINE TWO 20 MINUTE OPERATING PERIODS PER PERFORMANCE +Z SAL 2 PERF -Z SAL 2 PERF CREWMAN REQUIRED TO REPOSITION PHOTOMETER BETWEEN SCANS AND CHANGE ROD LENGTHS <p>FO-5 THRU FO-8</p>	<p>PROGRAM 1-d</p>	<p>MODE 2</p> <ul style="list-style-type: none"> VERTICAL CIRCLE PHOTOMETER SCANS IN TRUNNION BETWEEN SET LIMITS SHAFT IS SET AT A FIXED POSITION ALL FILTERS ARE USED 	<p>PROGRAM 2-c</p>	<p>MODE 3</p> <ul style="list-style-type: none"> ALMUCANTER PHOTOMETER SCANS IN SHAFT BETWEEN SET LIMITS TRUNNION IS SET AT A FIXED POSITION ALL TO FILTERS ARE USED

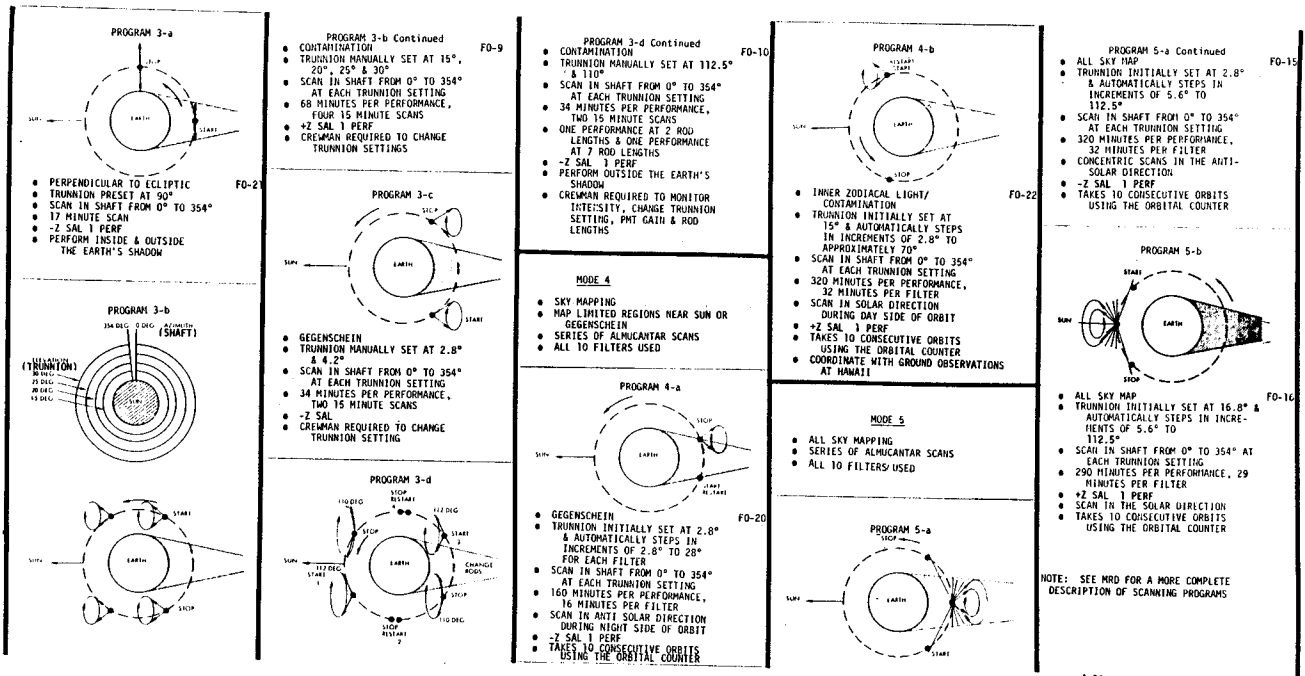


Table I. Desired Program Performance Sequence

Early Mission +Z SAL (Target for Mission Days 2 thru 5)	Early Mission -Z SAL (Target for Mission Days 6 thru 10)	Mid Mission +Z SAL (Target for Mission Days 11 thru 14)	Mid Mission -Z SAL (Target for Mission Days 15 thru 18)	Late Mission +Z SAL (Target for Mission Days 19 thru 22)	Late Mission -Z SAL (Target for Mission Days 23 thru 27)
1a (FO-5)+	1a (FO-6)+	0a (FO-3)*	1b (FO-19)	1a (FO-7)*	3d (FO-10)*
0a (FO-1)+	0a (FO-2)+	2d (FO-14)*		3b (FO-9)	3a (FO-21)
2b (FO-12)+	2a (FO-11)+	5b (FO-16)		0a (FO-4)*	1a (FO-8)*
4b (FO-22)+	5a (FO-15)+				
	1d(N)(FO-23)				
	1e(N)(FO-17)				
	4a (FO-20)				
	1e(S)(FO-18)*				
	2c (FO-13)*				

*Programs to be deleted to meet Minimum Scheduling Requirements. Programs should be deleted in the following order: 2c (FO-13), 0a (FO-4), 1a (FO-18), 1e (S) (FO-18), 0a (FO-3), 2d (FO-14), 3d (FO-10), and 1a (FO-7), i.e., Program 2c (FO-13) should be deleted first, Program 0a (FO-4) second, etc.

+It is mandatory that these programs be performed early in the mission. It is highly desirable that the remaining scans be performed at the indicated times.

NOTE: Should additional time be made available to S073/T027 during the mission, the following additional performances of the photometer programs will be made.

Early Mission	+Z SAL - 3b, 2d, 5b	Early Mission	-Z SAL	1b, 3a, 1d(S), 3c
Mid Mission	+Z SAL - 2b, 4b	Mid Mission	-Z SAL	1c(N), 2a, 3a, 2c, 1e(S), 4a
Late Mission	+Z SAL - 2b	Late Mission	-Z SAL	1b, 1e(N), 2a, 1e(S), 3c, 1c

Flight planners should consult the MRD and the principal investigator for the proper sequence of the above programs.

Table II. Functional Objective Summary

FO	Program	SAL	Number of Rods	Duration of Performance (min)	CMG Dump Inhibit	Crew Requirements	(HD)* Hawaii Coordinates	(HD)* New Moon ±1 Week	Remarks
1	0a	S	7	94					Highly desirable prior to ATM
2	0a	A	2	94					
3	0a	S	7	94					
4	0a	S	7	94					
5	1a	S	2,7	40	Yes	Monitor intensity, change rods			Highly desirable prior to ATM Power and telemetry on during rod changes
6	1a	A	2,7	40	Yes	Change rods			Power and telemetry on during rod changes
7	1a	S	2,7	40	Yes	Change rods			Power and telemetry on during rod changes
8	1a	A	2,7	40	Yes	Change rods			Power and telemetry on during rod changes
9	3b	S	7	68		Change trunnion angles			Perform at least 5 days after Program 4b (FO-22)
10	3d	A	2,7	68		Change trunnion angles Monitor intensity Change gain and rods			Perform near end of mission Power and telemetry on during rod change
11	2a	A	2	19	Yes				FO-11 and 12 should be performed no more than 2 days apart.
12	2b	S	7	38	Yes				FO-11 and 12 should be performed no more than 2 days apart.
13	2c	A	2	60	Yes	Change shaft angles			Greater than 30 minute dark side pass is highly desirable. FO-13 and 14 should be performed at least 1 day apart.
14	2d	S	7	60	Yes	Change shaft angles			Greater than 30 minute dark side pass is highly desirable. FO-13 and 14 should be performed at least 1 day apart.
15	5a	A	2	320					Requires use of orbital counter
16	5b	S	7	290					Requires use of orbital counter
17	1e(N)	A	2	30	Yes		Yes	Yes	North celestial pole FO-17 and FO-18 should be performed no more than 2 days apart
18	1e(S)	A	2	30	Yes				South celestial pole FO-17 and FO-18 should be performed no more than 2 days apart
19	1b	A	2	48	Yes		Yes	Yes	
20	4a	A	2	160					Requires use of orbital counter. May be performed during day off or sleep period.
21	3a	A	2	17	Yes				
22	4b	S	7	320			Yes		Perform at least 5 days before Program 3b (FO-9) Requires use of orbital counter.
23	1d(N)	A	2	10-15	Yes		Yes		North ecliptic pole

*Highly Desirable

4-30H

S149 PARTICLE COLLECTION				DATE	4/11/73
				MRD	2/01/73
				C/L	2/09/73
ET	AM	PLT	CDR or SPT	SL-2	
0:00	1 2 3 V	S149-1 PR FO-1 +Z SAL S149 PREPARATION REMOVE MD/CSU & CASSETTE FROM STOWAGE REMOVE PHOTOMETER FROM UXM (UNIVERSAL EXT.MECHANISM) ATTACH S149 HEAD TO UXM INSTALL ASSEMBLY INTO +Z SAL WITH TRIPOD ASSY	S149-1 PR FO-1 +Z SAL ASSIST WITH INSTALLATION OF THE S149 ASSEMBLY INTO THE +Z SAL	FUNCTIONAL OBJECTIVES: FO-1 Deploy one cassette set from the (+Z) solar SAL @ end of mission for exposure during unmanned storage period of SL-3. PERFORMANCE REQUIREMENTS: Baseline - Deploy one cassette set prior to departure. Minimum - Same as Baseline Redline - Not Applicable SCHEDULING DATA: 1. The Motor Drive/Cassette Support Unit will be deployed from the solar SAL just prior to CSM separation. 2. Ground control will cycle the detection cassettes during a low contamination period just prior to crew departure to insure proper operation. 3. In the event that ground control cannot open the cassettes, they are to be opened by a crewman as near to CSM separation as possible and after contamination events, associated with preparing the Orbital Assembly for storage, have been completed. NOTES: 1. If necessary, the cassettes can be retracted through the SAL fully open. 2. Voice record comments concerning experiment preparation, checkout and operation. 3. Extend the cassette seven (7) rods.	
0:50		S149 OPS CONNECT PWR/INST CABLES OPEN SAL OUTER DOOR DEPLOY CASSETTE 7 RODS OUT VOICE RECORD EXP COMMENTS			
0:00		FO-1 +Z SAL S149 OPERATION EXP RECORDER ON NOTIFY GROUND EXP. IS READY FOR ACTIVATION VERIFY PROPER OPERATION WITH GROUND CONTROL			
0:15					

4-31

S183 UV PANORAMA		DATE: 4/11/73 MRD: 2/01/73 C/L: 2/09/73		
ET	AM 1 2 3 v	PLT	CDR	SL-2
0:00		S183 PR-1,2 OR 3 -Z SAL OBTAIN SUPPORT EQUIPMENT AMS PREP (SELECT ONE OPT.) OPT.1 (AMS IS STOWED) OPT.2 (AMS ON SAL PRESS) OPT.3 (AMS ON SAL DEPRESS) PERFORM OPTION PER C/L		FUNCTIONAL OBJECTIVES: FO-1 thru FO-12 Selective UV photos of as many designated starfields as possible on darkside passes. PERFORMANCE REQUIREMENTS: Baseline - Thirty-five UV film plate photos of approximately 20 starfields with simultaneous DAC photos, (12 photo periods). Minimum - Twenty-five UV film plate photos with simultaneous DAC photos, (8 photo periods). Redline - TBD SCHEDULING DATA: 1. At least 32 minutes duration to obtain photos during nightside passes. Approx. 3 UV photos can be taken during a night-side pass. (-Z SAL) 2. Performed on darkside passes exceeding 32 minutes, when the moon is less than half illuminated and the OA is in an inertially stable mode. If it becomes apparent during the mission that all the S183 film will not be exposed, these constraints may be relaxed. 3. It is highly desirable that at least one sequence of three photos for S183 be obtained on an orbit successive to an orbit where S019 is scheduled to obtain starfield photos. If successive orbits are not possible, then the closest orbit possible will be satisfactory provided the time span is no greater than 24 hours. 4. The experiment line-of-site shall be aligned to within 30 arc minutes of selected starfields. 5. Experiment M509 must not be in operation while S019/S183 equipment is installed in SAL. 6. Inhibit CMG desaturation maneuvers or stop photo during CMG maneuvers. 7. All OWS interior and exterior lights listed in the C/L must be turned off 5 minutes before and remain off during the experiment. 8. Evacuate the film stowage container and SA prior to stowage to a vacuum of 10 torr.
0:15		INSTALL SA TO AMS LOAD AND INSTALL 16MM DAC INSTALL FILM CARROUSEL CHECK POWER CONFIGURATION, INSTALL PWR/INST CABLES	S183 PR-1,2 OR 3 -Z SAL ASSIST WITH SPECTROGRAPH INSTALLATION INHIBIT CMG DUMP IF REQ'D	
0:30		DEPRESSURIZE SAL		
0:35		S183 OPS	NOTE: If AMS is installed in SAL, S183 PREP is shortened 10 min. for PLT and 5 min. for CDR.	
SS -10 M.		FO-1 THRU FO-12 SUBDUCE LIGHTING OPEN SAL DOOR EXTEND AMS PERFORM EXP. POINTING VERIFICATION IF REQUIRED SELECT STARFIELD, SET TILT & ROTATION, PERFORM EXPOSURES PER UPDATE PAD REPEAT FOR ALL STARFIELDS LISTED ON UPDATE PAD		

4-32

S183 UV PANORAMA		DATE: 4/11/73 MRD: 2/01/73 C/L: 2/09/73		
ET	AM 1 2 3 v	PLT	CDR	SL-2
0:00		S183 FI FILM INSTAL F,-Z SAL PRESS SAL OBTAIN DAC & FILM, STOWAGE CONTAINER & CARROUSEL INSTALL FILM ▲ VENT SAL		
0:15		S183 FS FILM STOW F,-Z SAL PRESSURIZE SAL REMOVE CARROUSEL STOW FILM, EVAC CONT 1 MIN		
0:00				
0:15		▲ VENT SAL		

4-32B

S183 UV PANORAMA		AM				PLT		CDR		SCHEDULING DATA (Cont.)	
ET	1	2	3	V							
SR +10 M.	0:00				RESET TILT & ROTATION KNOBS TO 000 RETRACT AMS, SECURE SAL				9. Moisture must not be allowed to condense on the mirror system. All crew controlled vents and dumps must be inhibited during and 30 minutes prior to scheduled experiment operation. TACS firings are to be minimized when mirror system is extended and inhibited during exposure. SMRCS firings to be inhibited when mirror system is extended. 10. AMS will be erected just before sunset and retracted just after sunrise. 11. Total film canister time outside the film vault should not exceed 96 hours. This includes time after transfer to the CM at the end of the mission.		
					S183 ST-1,2 OR 3						
					-Z SAL SELECT ONE OPTION						
					OPTION 1 S183 AND AMS STOW						
0:15					OPTION 2 S183 STOW - AMS LEFT IN SAL		S183 ST-1,2 OR 3		NOTES: 1. Duration of each exposure will be defined by the starfield brightness and vary from 20 secs to 1260 secs. 2. Time correlation to within 1 second GMT is required with the "shutter open" timing signal. 3. Crew motions are to be kept at a minimum. 4. If necessary to remove the S019 AMS from airlock for more than 12 hours, it must be evacuated to 1 torr or less within 30 min. of experiment disassembly. 5. The following crew voice comments are required: a) exposure number b) target field ID c) time of initiation correlation to GMT d) length of exposure e) DAC setting f) pointing g) pertinent comments 6. An update pad will be supplied to the crew 24 hours prior to the experiment.		
					OPTION 3 S183 STOW - AMS LEFT IN SAL PREP FOR S019		-Z SAL ENABLE CMG DUMP IF REQUIRED ASSIST WITH SPECTROGRAPH STOWAGE				
0:30					PERFORM SAL VAC HOSE UTILITY PROCEDURES TO DEPRESS THE FOLLOWING UNITS FOR INDICATED TIMES:						
					FILM STOW CONTAINER 1 MIN AMS (IF REQ'D) 7 MIN SA 15 MIN						
0:45					REPLACE VENT CAP		NOTE: Option 2 & 3 stowage time will be shortened by 15 minutes for PLT & 5 minutes for CDR.				

4-32A

S228 TRANS-URANIC COSMIC RAYS		AM				SL-2		DATE: 4/11/73	MRD: 2/01/73	C/L:
ET	1	2	3	V						
0:00					S228 DEP				FUNCTIONAL OBJECTIVES: FO-1 Deploy the cosmic ray detector modules in the OWS.	
					FO-1 S228 DEPLOY OBTAIN 36 COSMIC RAY DE- TECTORS FROM OWS STOWAGE		E			
0:20					DEPLOY IN OWS ACCORDING TO CHECKLIST				PERFORMANCE REQUIREMENTS: Baseline - FO-1 The 36 detector modules will be deployed at any convenient time during the SL-1/SL-2 mission. Minimum - Not Applicable Redline - Not Applicable	
									SCHEDULING DATA: 1. The deployment of the detector modules in the OWS experiment compartment will be accomplished in accordance with procedures contained in the appropriate checklist. 2. One crewman will be required to deploy the 36 detector modules. 3. Voice recorded comments on the deployment process will be required. Periodic crew inspection of the deployed modules will be voice recorded to verify continued proper deployment.	
									NOTES: 1. The detector modules will not be retrieved during the SL-1/SL-2 mission, but will remain deployed for a minimum of 100 days. 2. Time required for deployment is a preliminary estimate	

4-33

T003 IN-FLIGHT AEROSOL ANALYSIS				DATE:	4/11/73
				MRD:	2/23/73
				C/L:	3/02/73
ET	AM	PLT		SL-2	
		T003		FUNCTIONAL OBJECTIVE:	
0:00		FO-1 THRU FO-7 CS-LISTED T003 MEASUREMENT		FO-1 Operate the AA to obtain readings at Crew Station CS-11 (crew quarters near the ceiling), CS-10, CS-1B, CS-11 (crew quarters near air diffuser), CS-15, CS-16, and CS-12 as early in the mission as possible.	
0:15 TO 0:35		SET FILTER PER MESSAGE PAD TAKE MEASUREMENT AT LOCATIONS INDICATED ON ANALYZER		FO-2 Operate the AA to obtain periodic readings in stowage location in crew quarters starting approximately 8 hours after FO-1.	
0:00		T003 DEAC		FO-3 Operate the AA to obtain readings at CS-10, CS-1B, & 4 and CS-11 (crew quarters near air diffuser) every 10 days after FO-1.	
0:04		T003 DEACTIVATION CHANGE FILTER, STOW	E	FO-5 Operate the AA to obtain readings at CS-15, CS-16, & 6 and CS-12 every 10 days after FO-1.	
				FO-7 Operate the AA, at the crew's discretion, to obtain up to 20 readings, at any time interval or location to investigate suspected particle generation sources.	
				PERFORMANCE REQUIREMENTS:	
				Baseline - FO-1, 7 readings FO-2, 3 readings per day after accomplishing FO-1 FO-3, 3 readings FO-4, 3 readings FO-5, 5 readings FO-6, 5 readings FO-7, 20 readings	
				Minimum - FO-1, Same as Baseline FO-2, 3 readings every other day after accomplishing FO-1 FO-3 thru FO-7, Same as Baseline	
				Redline - TBD	
				SCHEDULING DATA:	
				1. Schedule FO-1 as early in the mission as possible but no later than 5 days from the start of the mission.	

4-34

T003 IN-FLIGHT AEROSOL ANALYSIS			
ET	AM		
			SCHEDULING DATA (Cont.)
			2. Schedule FO-2 every 8 (+2) hours after completion of FO-1.
			3. Schedule FO-3 on the tenth day after FO-1 and following completion of regular scheduled FO-2.
			4. Schedule FO-4 on the tenth day after completion of FO-3.
			5. Schedule FO-5 on the tenth day after completion of FO-1.
			6. Schedule FO-6 on the tenth day after completion of FO-5.
			7. FO-7, take 20 measurements at any time during the mission at the crewman's discretion.
			8. Crew movements to be minimum during measurements.
			9. During measurements, the inlet of the analyzer will be pointed perpendicular to the spacecraft longitudinal axis and away from the CM couch pad.
			10. Do not operate analyzer if relative humidity is 95% or greater.
			11. Schedule the removal and stowage of the filter assembly after the last reading has been taken in the mission.
			12. Time for each measurement is 5 minutes. FO-1 - seven measurements - 35 minutes FO-2 - three measurements - 15 minutes FO-3 - three measurements - 15 minutes FO-4 - three measurements - 15 minutes FO-5 - five measurements - 25 minutes FO-6 - five measurements - 25 minutes FO-7 - twenty measurements at any time interval throughout the mission.
			13. For filter position 1, take measurements with analyzer attached to slide assembly.
			14. For filter position 5, take measurements before and after eating.
			15. For filter position 6, take measurements before and after use of waste management facility.
			16. For filter position 7, take measurements before and after changing clothes.

4-34A

4-34B

T003 IN-FLIGHT AEROSOL ANALYSIS																																																																				
ET	AM	1	2 3 V																																																																	
<p>NOTES:</p> <table border="1"> <thead> <tr> <th>FO</th> <th>LOCATION</th> <th>CREW STA.</th> <th>FILTER POS.</th> </tr> </thead> <tbody> <tr> <td rowspan="7">FO-1</td> <td>CS 10 Center AM/OWS Hatch</td> <td>D</td> <td>2</td> </tr> <tr> <td>CS 11 Crew Quarters Near Ceiling</td> <td>E</td> <td>1</td> </tr> <tr> <td>CS 1B CM Center Couch</td> <td>CM</td> <td>3</td> </tr> <tr> <td>CS 11 Crew Quarters Near Air Diffuser</td> <td>E</td> <td>4</td> </tr> <tr> <td>CS 15 Wardroom</td> <td>W</td> <td>5</td> </tr> <tr> <td>CS 16 Head</td> <td>H</td> <td>6</td> </tr> <tr> <td>CS 12 Forward Compartment</td> <td>F</td> <td>7</td> </tr> <tr> <td>FO-2</td> <td>CS 11 Crew Quarters Near Ceiling</td> <td>E</td> <td>1</td> </tr> <tr> <td rowspan="4">FO-3</td> <td>CS 10 Center AM/OWS Hatch</td> <td>D</td> <td>2</td> </tr> <tr> <td>CS 1B CM Center Couch</td> <td>CM</td> <td>3</td> </tr> <tr> <td>CS 11 Crew Quarters Near Air Diffuser</td> <td>E</td> <td>4</td> </tr> <tr> <td>CS 11 Crew Quarters Near Ceiling</td> <td>E</td> <td>1</td> </tr> <tr> <td>FO-4</td> <td colspan="3">Same as FO-3</td> </tr> <tr> <td rowspan="3">FO-5</td> <td>CS 15 Wardroom Before Food Prep and After Meals</td> <td>W</td> <td>5</td> </tr> <tr> <td>CS 16 Head - After Use of Sanitary Facility After Weighing Wet Fecal Bag</td> <td>H</td> <td>6</td> </tr> <tr> <td>CS 12 Forward Compartment - After Changing Suits and/or Donning Suits</td> <td>F</td> <td>7</td> </tr> <tr> <td>FO-6</td> <td colspan="3">Same as FO-5</td> </tr> <tr> <td>FO-7</td> <td colspan="3">Crews Discretion</td> </tr> </tbody> </table>				FO	LOCATION	CREW STA.	FILTER POS.	FO-1	CS 10 Center AM/OWS Hatch	D	2	CS 11 Crew Quarters Near Ceiling	E	1	CS 1B CM Center Couch	CM	3	CS 11 Crew Quarters Near Air Diffuser	E	4	CS 15 Wardroom	W	5	CS 16 Head	H	6	CS 12 Forward Compartment	F	7	FO-2	CS 11 Crew Quarters Near Ceiling	E	1	FO-3	CS 10 Center AM/OWS Hatch	D	2	CS 1B CM Center Couch	CM	3	CS 11 Crew Quarters Near Air Diffuser	E	4	CS 11 Crew Quarters Near Ceiling	E	1	FO-4	Same as FO-3			FO-5	CS 15 Wardroom Before Food Prep and After Meals	W	5	CS 16 Head - After Use of Sanitary Facility After Weighing Wet Fecal Bag	H	6	CS 12 Forward Compartment - After Changing Suits and/or Donning Suits	F	7	FO-6	Same as FO-5			FO-7	Crews Discretion		
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4-35

T025 CORONOGRAPH CONTAMINATION MEASUREMENT			
ET	AM	1	2 3 V
		PLT	SPT OR CDR
			SL-2
		T025 ACT	FUNCTIONAL OBJECTIVES:
0:00		T025 ACTIVATION E,F UNTORQUE RETAINING KNOBS ON DISC AND CANISTER RELOCATE & SECURE RETAIN- ING BRACKET	FO-1 Perform photo sequence containing modes CM,AM,FM during early mission, low contamination. FO-2 & FO-3 Perform photo sequence containing modes CM, AM & FM low contamination at mid & late mission. FO-4 & FO-5 Perform photo sequence containing modes CM, AM during 2 high contamination periods.
0:15		T025 PREP	PERFORMANCE REQUIREMENTS:
0:00		T025 PREP F INSTALL EXP CANISTER ON +Z SAL OBTAIN FILM & UV OR VIS CAMERA PER PAD INSTALL FILM, ATTACH CAMERA	Baseline - Five (FO-1 thru FO-5) photographic sequences, each one orbit in duration to obtain 200-210 exposures total. Minimum - Three photographic sequences, each one orbit in duration, any three FO's Redline - TBD
0:40		VENT SAL EXTEND DISC, LOCK BOOM SUBDUE LIGHTING	SCHEDULING REQUIREMENTS:
0:00		T025 AL +Z SAL	1. Perform FO-1 prior to beginning of ATM experiment operation if possible. 2. Prevent dumping or venting into atmosphere during FO-1 thru FO-3. 3. Schedule AM and FM during high solar activity periods FO-2 and FO-3, (Coordinate with S020, S149, and ATM operations). 4. Do not schedule concurrently with S020, T027/S073, and S149. 5. Do not operate M509 while T025 is in the SAL. 6. Solar Inertial Attitude is required except for small angular bias corrections or when attitude hold is specified. 7. The experiment principal axis must be pointed at the center of the solar disc within 0.25 degrees during data take. 8. ATM pointing and control system will maintain pointing control. 9. Turn off all external lights in FOV during T025 operation. 10. No more than one film cassette will be exposed during any data-taking period.
0:10		T025 ALIGNMENT ALIGN OPTICAL SIGHT TO +0.25° OF CENTER OF SOLAR DISC	T025 ALIGNMENT EXECUTE OA X&Y ATTITUDE MANEUVERS AS REQUESTED RECORD BIAS
SR -5MIN		T025 A FO-1 +Z SAL TAKE ONE ALIGNMENT EXPO- SURE. CONTAMINATION MODE, 6 EXPOSURES (SOL ELEVATION ANGLE >0°) CONTAMINATION MODE, 6 ADDITIONAL EXPOSURES	

T025 CORONOGRAPH CONTAMINATION MEASUREMENT

		AM					
ET		1	2	3	V		
SS +5 MIN SR -5 MIN	4-35A	PLT			SPT OR CDR		
		SOLAR F-CORONA MODE, 9 EXPOSURES (WITHIN TEN MINUTES OF ORBITAL NOON) CONTAMINATION MODE, 6 ADDITIONAL EXPOSURES					<p>SCHEDULING DATA (Cont.)</p> <p>11. Do not perform FO-5 until the contamination from FO-4 has dispersed.</p> <p>12. Perform any FO when Venus, Mercury, Jupiter, Saturn Mars, a crescent moon or bright star are within 10° of center of disc.</p> <p>NOTES:</p> <p>1. a) During FO-4 and FO-5 it is desirable to have the condensate tank as full as possible prior to emptying and have trash airlock as full as possible prior to dumping.</p> <p>b) Desirable to have at least one photo sequence occur during simultaneous contamination from two sources.</p> <p>c) Photo sequences should include venting:</p> <ol style="list-style-type: none"> 1) Solid and liquid waste 2) M512 vent (M551 & M553 preferred) 3) RSC thruster firing during a trim-burn maneuver <p>2. Roll rates about major axis must remain less than 0.12 deg/sec.</p> <p>3. OA drift rates must remain less than 0.012 deg/sec in all axes during experiment performance except for a period during sunrise when attitude hold is required.</p> <p>4. Of the photographic exposures, approximately one-third will be UV, the remainder visible light.</p> <p>5. High β angles are desirable because of increased orbital daylight.</p> <p>6. Crew voice comments are required on:</p> <ol style="list-style-type: none"> a) Start time (GMT) for initial exposure b) Start time (GMT) of each contamination event c) Start time (GMT) of each mode d) Description of phenomena e) A voice "mark" for each shutter release f) Comments concerning preparation, operation and post operation <p>7. Solar F photographs require rotating occulting disk.</p>
		ATMOSPHERIC MODE, 12 EXPOSURES @ SUNSET (SOLAR ELEVATION ANGLE BETWEEN -8°35' AND -28°35')					
		T025-C & D			T025-C & D		
SS +5 MIN	4-35A	FO-2, FO-3 +Z SAL			FO-2, FO-3 ATM C&D		
		ATMOSPHERIC MODE, 12 EXPOSURES @ SUNRISE (SOLAR ELEVATION ANGLE BETWEEN -28°35' AND -8°35') TAKE ONE CALIBRATION PHOTO ALIGN OPTICAL SIGHT TO +0.25° OF CENTER OF SOLAR DISC TAKE ONE ALIGNMENT PHOTO SOLAR F-CORONA MODE, 9 EXPOSURES (WITHIN TEN MINUTES OF ORBITAL NOON) CONTAMINATION MODE, 6 EXPOSURES (SOLAR ELEVATION ANGLE >0°) ATMOSPHERIC MODE, 12 EXPOSURES SUNSET (SOLAR ELEVATION ANGLE BETWEEN -8°35' AND -28°35')			AFTER MOMENTUM DUMP, PLACE OA IN ATTITUDE HOLD FOR SUNRISE OP, RETURN TO SI AFTER CALIB PHOTO EXECUTE OA X&Y ATTITUDE MANEUVERS AS REQUESTED RECORD BIAS		

T025 CORONOGRAPH CONTAMINATION MEASUREMENT

		AM					
ET		1	2	3	V		
SS -5 MIN	4-35B	SPT			SPT OR CDR		
		T025-B & E			T025-B & E		<p>NOTES (Cont.)</p> <p>7. Record the following in log book:</p> <ol style="list-style-type: none"> a) Initial exposure frame for each mode b) Start time (GMT) for initial exposure c) Final exposure frame number for each sequence d) Experiment stop time (GMT) e) Comments concerning preparation, operation, and post operation. <p>8. A description of the contaminants observed during each CM mode performed is required. Observation made thru camera.</p>
		FO-4, FO-5 +Z SAL			FO-4, FO-5 E, ATM C&D		
		ATMOSPHERIC MODE, 12 EXPOSURE @ SUNRISE (SOLAR ELEVATION ANGLE BETWEEN -28°35' AND -8°35') TAKE ONE CALIBRATION PHOTO ALIGN OPTICAL SIGHT TO +0.25° OF CENTER OF SOLAR DISC TAKE ONE ALIGNMENT PHOTO CONTAMINATION MODE, 6 EXPOSURES PRIOR TO RELEASE OF CONTAMINANTS (BEGINNING NO SOONER THAN A SOLAR ELEVATION ANGLE OF -9°) CONTAMINATION MODE, 6 EXPOSURES BEGIN WITHIN ONE MINUTE OF CONTAM RELEASE			AFTER MOMENTUM DUMP, PLACE OA IN ATTITUDE HOLD FOR SUNRISE OP, RETURN TO SI AFTER CALIB PHOTO EXECUTE OA X&Y ATTITUDE MANEUVER AS REQUESTED, RECORD BIAS		
SS +5 MIN	4-35B				PERFORM WASTE DUMP WHEN REQUIRED PER PAD		
		CONTAMINATION MODE, 16 EXPOSURES (DETERMINE THE TIME SCALE OF CONTAM DISSIPATION)					
		T025 STOW					
0:00		T025 STOW F,W,E REMOVE & STOW (BOOM ASSY CAMERA, FILTER, FILM & CANISTER). SECURE SAL					
0:40		TURN ON LIGHTING					

DATE: 4/11/73
 MRD: 2/01/73
 C/L: 10/06/72

T027 CONTAMINATION MEASUREMENT

4-36

ET		AM	PLT	SL-2
1	2	3	V	
			T027 OPS	<p>FUNCTIONAL OBJECTIVES: FO-1 Measure the various forms of contamination around the orbital assembly. Deploy, expose, retrieve, and return the sample array system.</p> <p>PERFORMANCE REQUIREMENTS: Baseline - Expose SAS for 120 consecutive hours. Minimum - Expose SAS for 72 consecutive hours. Redline - TBD</p> <p>SCHEDULING DATA: 1. Deploy from +Z SAL as soon as possible after the initial performance of T027/S073 from this SAL. 2. Do not schedule concurrently with T027/S073, S149, T025, or EVA TV.</p> <p>NOTES: 1. The SAS will remain deployed, exposing samples for varying periods of time, after which the system automatically shuts down. No crew monitoring is required. 2. The SAS will require vacuum evacuation of the end cover plates & stowage container after removal from the SAL. 3. Voice comment on pertinent preparation, operation and post operation tasks including time and date of activation/deactivation. 4. For photo requirements see page 4-37, photo matrix.</p>
0:00			FO-1 +Z SAL SAMPLE ARRAY PREP/OP SETUP DAC & PHOTO LIGHTS VENT SAS STOWAGE CONTR & END PLATES REMOVE FORWARD PLATE & INSTALL SAS IN +Z SAL PHOTO PER M151-17 OPEN SAL OUTER DOOR DEPLOY SAMPLE ARRAY WITH EXTENSION MECH CONNECT PWR/INST CABLES POWER ON START SWITCH ON DAC/LIGHTS OFF RECORD PERTINENT DATA	
0:35			T027 STOW	
0:00			FO-1 +Z SAL SAMPLE ARRAY STOWAGE SETUP DAC & PHOTO LIGHTS DISCONNECT PWR/INST CABLES, STOW DON UTILITY GLOVES RETRACT SAS, CLOSE SAL OUTER DOOR ATTACH SAS REAR END PLATE REMOVE SAS FROM +Z SAL, PHOTO M151-18 ATTACH SAS FRONT END PLATE	

ET		AM	PLT	
1	2	3	V	
			EVACUATE END PLATE AREAS (5 MIN EACH) STOW IN CONTAINER EVACUATE STOWAGE CONTAINER (15 MIN) SECURE SAL, STOW EQUIPMENT	
1:00				

4-36A

9 MAR 1973

SKYLAB 2 PHOTOGRAPHY

EXP	FO	ACTIVITY	SOURCE		PERFORMANCES	FILMING TIME PER PERF (MIN)	FRAME RATE (FPS)	FILM FOOT-AGE (ONE PERF)	FILM TYPE	CAM-ERA TYPE	FILM FOOT-AGE (ALL PERF)	
			PRIME	ALT								
1	THRU 8	DOWNING OF VCG SENSORS, HARNESS AND BELT, TRANSLATION TO AND FROM AND INGRESS AND EGRESS OF COMPRESSED ENCLOSURES, MOUNTING, APPLYING RESTRAINTS AND OPERATING ERGOMETER	M092/ M171	1. M093 2. M11D	8 PERFORMANCES OF 2 CREWMEN 4 TIMES EACH	30	6	270	50168	16 MM DAC	2160	
			M092/ M092									
9	THRU 16	DEPLOY AND RETRIEVAL OF HARDWARE LARGE SIZE AND MASS	T027	1. S149 2. S183	3 PREPARATION/ EXTENSION 2 RETRACTION/STOWS 3 SAL TO SAL TRANSFER	36 36 30	6	324 324 270	50168	16 MM DAC	972 648 810	
17	18 19	DEPLOY AND RETRIEVAL OF HARDWARE MEDIUM SIZE AND MASS	S1908	1. M509 2. S019 3. S020 4. T027A	3 DEPLOYMENTS OR RETRIEVALS	30	6	180	50168	16 MM DAC	540	
20	21	DOWNING AND DOFFING OF THE PRESSURE GARMENT ASSEMBLY, PR CONTROL UNIT AND SECONDARY OXYGEN PACK	PRE-EVA AND POST-EVA	1. M509 (PRE- AND POST-SUITED)	ONE PERFORMANCE OF 2 CREWMEN DOWNING AND DOFFING	DON 30 DOFF 15	6	DON 270 DOFF 135	50168	16 MM DAC	DON 270 DOFF 135	
22	THRU 25	FOOD PREPARATION	MEALS (OWS)	1. MEALS (CSM) 2. MEALS (MDA)	4 PERFORMANCES	10	6	90	50168	16 MM DAC	468	
9	10	DINING, EVENING MEAL			2 PERFORMANCES; ON MISSION DAY 4 AND 21	10	6	90	50168	16 MM DAC	360	
11	12	DOFF CLOTHING, INGRESS SLEEP RESTRAINT			2 PERFORMANCES; ON MISSION DAY 4 AND 21	2	6	20	50168	16 MM DAC	40	
13	14	EGRESS SLEEP RESTRAINT DOWNING CLOTHING			2 PERFORMANCES; ON MISSION DAY 5 AND 22	2	6	20	50168	16 MM DAC	40	
15	16	CLEAN MIXING CHAMBER SCREENS, OWS DOOME			2 PERFORMANCES; ON MISSION DAY 8 AND 22	10	2	30	50168	16 MM DAC	60	
17	18	THRASH A/L OPERATIONS			2 PERFORMANCES; ON MISSION DAY 11 AND 25	3	2	10	50168	16 MM DAC	20	
19	20	WMC I/F DEMO			1 PERFORMANCE	5	2	15	50168	16 MM DAC	15	
20	21	OFF-DUTY/HYGIENE			1 PERFORMANCE	15	CREW OPTION	45	50168	16 MM DAC	45	
1	2	RECONFIGURE FOOD STOWAGE LOCKERS F50 AND F81 TO ON ORBIT LOCATION M509 REMOVAL OF SHOCK MOUNTS, BATT RESTRAINTS DUST COVERS, INSTALLATION OF ASMU IN OPS. POS. IN PADDLES			PERFORM TWICE ON MISSION DAY 3, ONCE FOR EACH OF TWO CONTAINERS PERFORM CONCURRENT WITH M509 UNSTOWAGE ON MISSION DAY 13	15	2	45	50168	16 MM DAC	90	
3	4	TRANSFER OF RESUPPLY FOOD BALE TO PANTRY			2 PERFORMANCES; MD 11 AND 25 2 CAMERAS EACH PERF	5	2	30	50168	16 MM DAC	60	
5	6	REMOVE FILM CASSETTES FROM S054 MAGAZINE UNSCHEDULED MAINTENANCE			PERFORM ON EVA MISSION DAY, M026 AS AVAILABLE	10	6	90	50168	16 MM DAC	90	

4-37

SKYLAB 2 PHOTOGRAPHY (CONTINUED)

EXP	FO	ACTIVITY	SOURCE		PERFORMANCES	FILMING TIME PER PERF (MIN)	FRAME RATE (FPS)	FILM FOOT-AGE (ONE PERF)	FILM TYPE	CAM-ERA TYPE	FILM FOOT-AGE (ALL PERF)
			PRIME	ALT							
OPER PHOTOS	1	SWS PRIOR TO AND DURING CSM DOCKING			PHOTO DOCKING TARGETS, DOCKING LIGHTS, FLOATING DEBRIS DURING DAYLIGHT	5 (16 MM)	6 (16 MM)	16 MM 45 FT 20 FRAMES	50368	16 MM DAC 70 MM HASSELBLAD	16 MM 45 FT 20 FR
					PHOTO BREP (MDA), OWS AFT SKIRT, EVA AREA (AM), EVA/EXP PREA (ATM) DURING DAYLIGHT	NA	NA	30 FRAMES	50368	70 MM HASSELBLAD	30 FR
					1 PERFORMANCE OF ALL INTERIOR AREAS PRIOR TO LEAVING SWS	NA	NA	TBS	50168	35MM	TBS
M131	2 8	OGI THRESHOLD MS - 1ST HEADMOVEMENT TO MALAISE II SL - SPATIAL LOCALIZATION			1 CMN, 4 PROFILES 2 CMN, 1 TIME EACH 1 CMN, 1 TIME	6(MAX) 19(MAX)	6	54 171 (REMAINDER OF FILM)	50168	16 MM DAC	54 342
M509	2 3 4	OPERATIONAL RUN			3 PERFORMANCES	NA	NA	15-20 FRAMES	50168	35 MM HASSELBLAD	50 FRAMES
			1 2 3 4	EACH OPERATIONAL RUN, TWO CAMERAS OPERATING SIMULTANEOUSLY	4 PERF (DOOME LOCATION)	28	6	252	50168	16 MM DAC	1000
4 PERF (FLOOR LOCATION)	28	6			252	50168	16 MM DAC	1000			
M551	1 2	METALS MELTING OPER			3 SAMPLES	1.2	24	43	7241	16 MM DAC	129
M553	1 2	SPHERE FORMING OPER			2 SPECIMEN WHEELS	1.5	24	54	7241	16 MM DAC	108
S073	19	CONTAMINATION			4 PERFORMANCES	40		200 FR	2483	16 MM DAC	800 FR
		GEGENSCHEN			1 PERFORMANCE	48		240 FR			240 FR
		ECLIPTIC POLE N			"	15		70 FR			70 FR
		CELESTIAL POLE N & S			2 PERFORMANCES	30		150 FR			300 FR
		ECLIPTIC			1 PERFORMANCE	17		200 FR			200 FR
		ECLIPTIC			"	34		360 FR			360 FR
		VERTICAL CIRCLE			"	60		880 FR			880 FR
		VERTICAL CIRCLE			"	60		720 FR			720 FR
		PERP. TO ECLIPTIC			"	15		80 FR			80 FR
		CONTAMINATION			"	60		320 FR			320 FR
		CONTAMINATION			"	30		160 FR			160 FR
		GEGENSCHEN			"	160		800 FR			800 FR
		ZODIACIAL LIGHT			"	320		1600 FR			1600 FR
		ALL SKY MAP			"	320		1600 FR			1600 FR
		ALL SKY MAP			"	290		1360 FR			1360 FR
		UNEXPOSED WASTE					NA		20 FR		
EVA		PICTURES TAKEN FROM THE FAS AREAS OF THE CENTER WORK STATION & TRANSFER WORK STATION, AND D024 RETRIEVAL			1 PERFORMANCE	44	6	400	50368	16 MM DAC	400

4-37A

Summary of All SL-2 Telecasts

Activity (MRD)	Scenes	Remarks	Flight Plan Update	
1. EVA to change ATM film	1	Tape and live, MD 26	TV43	
2. M071/M074/M110 Series/M172- Body Fluid, Mineral Balance, Blood Studies and Mass Measurement	2	Eating, MD 5	TV3	
	6	Prepare next meal	TV2	
	4	SMMD/water gun	TV1	
	5	**Blood sampling	TV4	
4	**Body mass measurement	TV5		
3. EREP - Earth Resources Sensors	5	Sensor operations	TV11	
	1	Tape reloading	TV12	
4. M092/M093/M171 - Cardiovascular and Metabolic Activity	4	**Lower body negative press (part 1)	TV6	
	1	**Lower body negative press (part 2)	TV7	
	4	**Vectorcardiogram	TV8	
	6	**Metabolic activity	TV9	
5. M487 - Habitability/ Crew Quarters	1	Food locker activation	TV40	
	2	Entertainment center	TV14	
	3	Sleep restraint/trash/shower	TV15	
	8	Personal hygiene	TV16	
6. ATM operations	6	ATM-C&D operations, MD 6	TV13	
7. ED 31 - Student Investigation, Bacteria and Spores	3	Inoculation sequence	TV17	
	2	Data collection, MD 21	TV18	
8. M131 - Human Vestibular Function	4	**Oculogyral illusion mode	TV19	
	3	**Motion sensitivity mode	TV20	
	4	**Spatial localization mode	TV21	
*9. M509 - Astronaut Maneuvering Equipment	2	Preparation and operations	TV36	
10. M133 - Sleep Monitoring	4	Demonstrate system	TV35	
11. ED 76 - Student Investigation, Neutron Analysis	4	Deploy analyzers	TV22	
12. S183 - Ultraviolet Panorama	3	Deploy AMS and spectrograph	TV23	
13. M551/M552/M553/M555 - Metals Processing	4	Metals melting	TV24	
14. Spacecraft tour	1	Handheld tour }	TV25	
	1	Handheld tour }	TV26	MD 14-18
15. Rendezvous	1	Ground record	TV41	

SKYLAB 2 PHOTOGRAPHY (CONTINUED)

EXP	FO	ACTIVITY	SOURCE		PERFORMANCES	FILMING TIME PER PERF (MIN)	FRAME RATE (FPS)	FILM FOOT- AGE ONE PERF	FILM TYPE	CAM- ERA TYPE	FILM FOOT- AGE ALL PERF
			PRIME	ALT							
CONTAMINATION	1 thru 4	PHOTO CONTAMINATION EFFECTS OF CERTAIN OA VENT PLUMES AND HOW THEY CHANGE DURING MISSION			4 PERFORMANCES	NA	NA	TBD	TBD	TBD	TBD
	5 and 7	PHOTO CONTAMINATION ON CERTAIN OA WINDOW AND HOW THEY CHANGE DURING MISSION			4 PERFORMANCES	NA	NA	TBD	TBD	TBD	TBD
ED31	1	PETRI DISHES INCUBATED IN MASS INCUBATOR			5 TOTAL; AT START, 4 HRS, 8 HRS 12 HRS AND 24 HRS	10	NA	10 FRAMES	50168	35 MM	50 FRAMES
	2	PETRI DISHES INCUBATED AT AMBIENT TEMPERATURE			5 TOTAL; AT START AND TBD INCREMENTS	10	NA	5 FRAMES	50168	35 MM	25 FRAMES

4-378

NOTE: EXPERIMENTS REQUIRING AN UPDATE PAD 1, 2, 3, 5019, THAT HAVE THE PHOTOGRAPHY REQUIREMENTS INCLUDED AS PART OF THE UPDATE INFORMATION, ARE NOT INCLUDED ON THIS LISTING.

Summary of All SL-2 Telecasts (Continued)

Activity (MRD)	Scenes	Remarks	Flight Plan Update
16. End-of-mission fly-around	1	Live, MD 29	TV42
17. Press Conference	1	Live press conference, MD 24	TV27
18. EREP telescope and out-the- window	1	Out-the-window, Rev 114/115, MD 8	TV30
	1	Out-the-window, Rev 143/144, MD 10	TV31
	1	Out-the-window, Rev 171, MD 12	TV32
	1	Out-the-window, Rev 200, MD 14	TV33
	1	Out-the-window, Rev 203/204	TV34
	1	EREP telescope, Track 15	} TV29
	1	EREP telescope, Track 19	
1	EREP telescope, Track 43		
1	EREP telescope, Track 62		
1	EREP telescope, Track 63		
19. Scientist pilot highlights	2	In-flight medical support system, MD 9	TV28

*Candidate experiment, may not be performed until SL-3.

**Medical experiments telecasts will be scheduled on MD 11-21 and announced 36 hours in advance.

20.10 ENVIRONMENTAL MICROBIOLOGY

DATE: 4/11/73
MRD: 2/01/73
C/L: 9/21/72

ET	AM			SPT	SL-2
	1	2	3		
0:00				FO-1, FO-2 REF C/L ENVIRONMENTAL SAMPLING TAKE SWAB SAMPLE AT DESIGNATED SITE (REF IMSS C/L) PLACE SWAB SAMPLE IN TRANSPORT MEDIA TUBE AND REPLACE CAP REPEAT SAMPLE TAKING AT 14 DESIGNATED SITES AS LISTED IN THE C/L STOW TRANSPORT MEDIA TUBES IN FOOD CHILLER	FUNCTIONAL OBJECTIVES: FO-1 Obtain in-flight microbiological samples from SWS hardware 16±2 days prior to the end of the mission. FO-2 Obtain samples from SWS hardware on mission day 26, 27, or 28. FO-3 Obtain in-flight microbiological samples from the crew 16±0 days prior to the end of the mission. FO-4 Obtain in-flight microbiological samples of the SWS atmosphere on mission day 27 or 28. PERFORMANCE REQUIREMENTS: Baseline - FO-1, 15 hardware samples. FO-2, 15 hardware samples. FO-3, A total of 12 body samples (4/crewman). FO-4, 2 atmospheric samples (each consisting of 3 separate volumes). Minimum - Same as Baseline Redline - Not Applicable SCHEDULING DATA: 1. Schedule per above FO's for locations in Table I. 2. Schedule FO-1 and FO-2 shortly after high crew activity periods on the days specified. 3. Schedule FO-3 immediately after crew sleep period. 4. Do not schedule FO-4 when OWS vacuum cleaner in use for general cleaning or for M512 and M479 chamber cleaning. 5. Schedule the transport media tubes and air samples to be placed in the CM resupply and return system of the IMSS within 6 hrs prior to separation. NOTES: The FO-1, FO-2, FO-3, FO-4 are referred to IMSS-1, IMSS-2, IMSS-3, IMSS-4 in the checklist.
1:00					
0:00				FO-3 W CREW SAMPLING TAKE 4 BODY SWAB SAMPLES & PLACE IN MEDIA TUBES STOW TRANSPORT MEDIA TUBES IN FOOD CHILLER NOTE: EACH CREWMAN TAKES 4 BODY SWAB SAMPLES	
0:15					
0:00				FO-4 M, OWS AIR SAMPLING ATTACH AIR SAMPLER TO VAC AT OWS SITE, TAKE 10, 5, & 1 MINUTE SAMPLES CHANGE AIR SAMPL RECEPTACLE AT MDA SITE, TAKE 10, 5, & 1 MINUTE SAMPLES STOW AIR SAMPLE RECEPTACLES IN FOOD CHILLER	
1:00					

TABLE I

FO	SITE LOCATION	REMARKS
FO-1, FO-2	1) MDA - ECS branching duct between stations 3522.503 and 3566.964 below the -X direction cable tray cover. 2) Panel 205 AM - Structural Transition Section 3) Forward dome; hatch cover 4) OWS wall behind film vault 5) Experiment compartment outer wall (panel 614) 6) Sleep compartment entry (intra grid to the left side of entry) 7) Experiment compartment wall (within grid above light switch panel 630) 8) Waste management compartment; odor control debris screen 9) Waste management compartment; fecal and urine collection subsystems blower compartment door 10) Waste management compartment; exterior of waste processor drawer 3 11) Waste management compartment; handrail in the +X direction 12) Wardroom; surface between panels 760 and 763 13) Top of one wardroom food tray (below heat and time advisory module) 14) Top surface of trash disposal airlock 15) M092 LBNP device (to the left and right of switch)	Sites 5, 9, and 15 may be substituted with contingency sampling sites with the appropriate transport tube label change to identify such contingency site.
FO-3	The four body samples from each crewman will be taken using a single swab at each of the following sites: 1) Throat (pharyngeal vault and tonsillar area) 2) Each nasal passage 3) Each auditory canal 4) Between the large and fourth toe of each foot	Site 4 may be substituted with a contingency sample, if any, with the appropriate transport tube label change to identify such contingency site.
FO-4	Atmosphere samples: 1) OWS - beside trash airlock 3 to 4 feet above the deck 2) AM/OWS hatch	Each sample will consist of separate volumes of SWS atmosphere. Ten, five, and one minute(s) of atmosphere collection operations will be performed at each site using a separate plate for each volume.

DATE: 4/11/73
MRD 2/01/73

20.11 OPERATIONAL RADIATION MEASUREMENT

ET	AM				ANY	SL-2
	1	2	3	v		
					PRD REL	FUNCTIONAL OBJECTIVES:
0:00					FO-5 S, E&Z	FO-1 Obtain VABD and CSM EPS data for all passes through SAA and Van Allen Belt Horns. Obtain PRD readings on the first mission day.
0:10					INSTALL PRDS AT SLEEP STA, OWS EXP COMPT AND SAL, READ	FO-2 Obtain VABD and CSM EPS data for the five passes THRU } per day through the SAA and outer Van Allen Belt FO-7 } Horns. Obtain PRD readings on the second through seventh mission days.
0:00					FO-6,7,10 THRU 30 S, E&Z	FO-8 Obtain three 1-minute RSM readings from the sleep AND } station, the wardroom, the VABD area and the FO-9 } scientific airlock PRD attachment point locations as soon as possible after OA activation and repeat these readings prior to mission day eleven.
0:10					VOICE LOG PRD DATA AT SLEEP STA, OWS EXP COMPT AND +SAL ONCE PER DAY	FO-10 Obtain VABD & CSM EPS data for the 1 pass per day THRU } through the SAA which yield max. radiation. Obtain FO-30 } PRD readings on the 8th day to mission term.
						FO-31 Obtain VABD and CSM EPS data for one additional pass through the SAA and for two passes through the Horns during the period between 24 and 48 hours prior to the start of EVA preparation and within 24 hours prior to the start of EVA preparation.
						FO-32 Obtain VABD data continuously during EVA. Obtain PRD data just prior to and just after EVA from the three PRD's assigned to crewman. Monitor the RSM radiation dose rate data during EVA.
						FO-33 Wear and return one CPD per crewman which has been worn continuously throughout the mission.
						FO-34 Obtain one PRD reading on each of four mission THRU } days from the film vault (locker F510) in the OWS FO-37 } forward compartment.
						FO-38 Obtain radiation data from the film vault by use of two CPD's.

4-40

20.11 OPERATIONAL RADIATION MEASUREMENT

ET	AM				CDR	SPT	PLT
	1	2	3	v			
0:00					FO-1 & FO-2	FO-1 & FO-2	FO-1 & FO-2
0:05					VOICE LOG PRD PRE SLEEP	VOICE LOG PRD PRE SLEEP	VOICE LOG PRD PRE SLEEP
0:00					FO-1,-2,-3,-4	FO-1,-2,-3,-4	FO-1,-2,-3,-4
0:05					VOICE LOG PRD POST SLEEP	VOICE LOG PRD POST SLEEP	VOICE LOG PRD POST SLEEP
0:00					FO-32 EVA	FO-32 EVA	
0:10					VOICE LOG PRD DATA PRIOR TO AND FOLLOWING EVA	VOICE LOG PRD DATA PRIOR TO AND FOLLOWING EVA	
0:00					PRD-1		
0:00					FO-34 THRU FO-37		
0:05					VOICE LOG PRD DATA IN FILM VAULT DRAWER A		
0:00					RAD 1 THRU 4		
0:00					FO-8 & 9 S,W,E,+Z,OR-Z		
0:24					VOICE LOG THREE ONE MINUTE RSM READINGS AT EACH OF FOUR DESIGNATED LOCATIONS AS FOLLOWS: = SLEEP STATION = WARDROOM = VABD AREA = EITHER SAL	FO-8 IS MANDATORY FO-9 IS HIGHLY DESIRABLE	

4-40A

20.11 OPERATIONAL RADIATION MEASUREMENT

ET	AM			V		
	1	2	3			
						<p>PERFORMANCE REQUIREMENTS:</p> <p>Baseline - FO-1, MD1, PRD, each CMN 2 times, (Pre & Post Sleep). FO-2, MD2, PRD, each CMN 2 times, (anytime). FO-3 & FO-4, MD3 & MD4, PRD, each CMN one time. FO-5 thru FO-7, MD3 thru MD7, PRD 3 readings each 24 hours (sleep area, OWS experiment compartment, one SAL). FO-8, Three RSM readings per location, four locations as soon as possible after OWS activation. FO-9, Same as FO-8 on MD11, (highly desirable) FO-10 thru FO-30, MD8 thru MD28, PRD, 3 readings per day (sleep area, OWS experiment compartment, one SAL). FO-32, EVA, PRD, each CMN 2 readings (Prior to and following EVA). RSM monitor during EVA. FO-33, CPD, each CMN, throughout mission. FO-34 thru FO-37, PRD, OWS film vault drawer A, 4 readings total. FO-38, CPD's, two each inside film vault drawer B & F. Return 2, leave 2 for SL-3.</p> <p>Minimum - FO-1 thru FO-8 and FO-10 thru FO-33, Same as Baseline. FO-9, None (NOTE: If this FO becomes mandatory during the mission, then the minimum requirement becomes "Same as Baseline Requirements". FO-34 thru FO-38, None.</p> <p>Redline - FO-1 thru FO-8 and FO-10 thru FO-33, Not Applicable. FO-9, Any RSM readings will be useful. (NOTE: If this FO becomes mandatory during this mission then the performance redline becomes "Not Applicable". FO-34 thru FO-37, Any two PRD readings. FO-38, Any one CPD from the film vault will be useful.</p>

4-40B

20.11 OPERATIONAL RADIATION MEASUREMENT

ET	AM			V		
	1	2	3			
						<p>SCHEDULING DATA:</p> <ol style="list-style-type: none"> PRD's will be worn for all crew activities for the first thru the fourth mission days. After MD4, the three crewmen will remove their individual PRD's and locate one each in the sleep area, OWS experiment compartment and one of the scientific airlocks. The 3 PRD's will be read each 24-hours during MD5, 6, 7, and 10 thru 30. Three 1-minute RSM readings are required in each of four locations, ASAP after OWS activation, FO-8. It is highly desirable to repeat these readings in the same areas prior to MD11. The four areas in descending order of priority are; sleep station, wardroom, VABD area and either one of the two SAL's. The RSM surveys (FO-8 & FO-9) will be made on a SAA pass that encounters significant radiation levels, (approximately three opportunities per day). The PRD readings (FO-5 thru FO-7 and FO-10 thru FO-30) at the locations specified in item 1 above are to be scheduled on a pass thru the SAA which yields maximum radiation. The PRD reading taken in the film vault drawer A are to be scheduled as follows: FO-34 read PRD at time of installation, ASAP after activation. FO-35 read PRD 5 days after FO-34. FO-36 read PRD 5 days after FO-35. FO-37 read PRD as late in the mission as possible. The PRD will be installed and read when normal access to the film vault is required. Each crewman will wear a CPD continuously during the mission. The CPD worn by each crewman and two CPD's from film vault (drawers B & F) are to be returned at the end of the mission. Two additional CPS's placed in the film vault (drawers B & F) will be left until the end of SL-3. Additional PRD data will be obtained during solar flares of a specific magnitude as reported by NOAA.

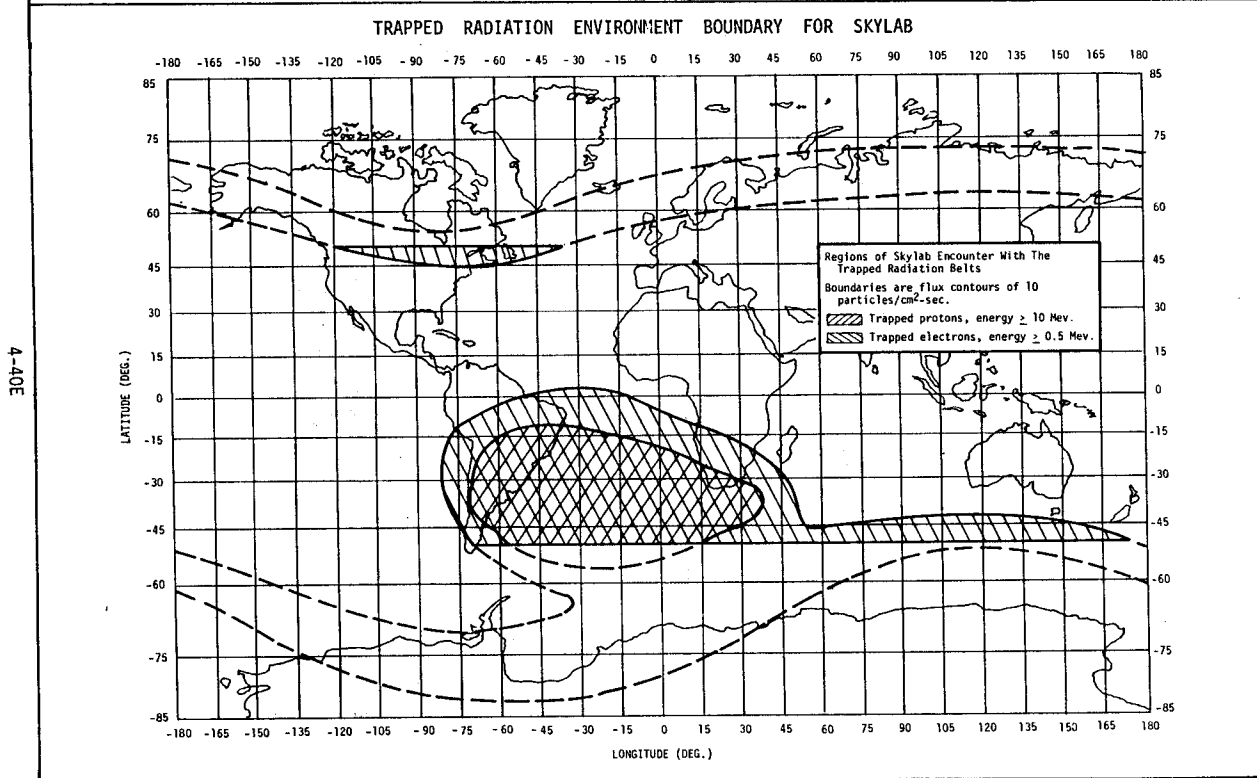
4-40C

20.11 OPERATIONAL RADIATION MEASUREMENT

ET	AM						
	1	2	3	V			
							<p>SCHEDULING DATA (Cont.)</p> <p>8. During EVA, the RSM will be located where observable by the non-EVA crewman and monitored. The radiation level is to be voice downlinked if levels above that stated in the mission rules are observed. In addition, PRD's will be worn by the two crewmen engaged in EVA. PRD data will be voice logged for each crewman (3) prior to and following EVA.</p> <p>9. For scheduling purposes, the radiation boundaries are shown on page 4-40E.</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. A spare PRD, stowed in the CM (locker B-1) is available for use if required. 2. Each time the RSM is used, it will be pointed at the closest unencumbered exterior wall of the spacecraft with the RSM axis parallel to the floor. 3. The RSM readings and time of reading will be logged at one minute intervals during each of the three minute periods. 4. The crew will identify the pointing directions of the RSM by voice recording for each reading. 5. When not in use, the RSM will be stowed in the RSM bracket operating on the 1.0 rad/hour range. 6. All PRD and RSM readings will be voice recorded or logged if voice recording cannot be accomplished.

4-40D

20.11 OPERATIONAL RADIATION MEASUREMENT



4-40E

20.13 PORTABLE CO₂/DEWPOINT MONITOR

DATE: 4/11/73
MRD: 2/01/73
C/L: Change 1/2/71

ET	AM	CREWMAN	SL-2
	1 2 3 v		FUNCTIONAL OBJECTIVE: FO-1 Obtain humidity and CO ₂ data early in mission during the last half of a working day at selected locations in the OWS. FO-2 Obtain humidity and CO ₂ data to determine CO ₂ humidity distribution for sleep areas and the molecular sieve inlet immediately after rising. FO-3 Obtain data to determine any changes in CO ₂ and humidity distribution in OWS by mid-mission.
0:00		CO ₂ 1 FO-1 & FO-3 F, M, E, W, H, CM DEWPOINT/CO ₂ MEASUREMENT PUMP AIR HANDLE, TURN ON, MEAS AMB TEMP, DEWPOINT TEMP, AND CO ₂ REPEAT FOR EACH LOCATION (5 MINUTES/LOCATION)	PERFORMANCE REQUIREMENTS: Baseline - FO-1 Take data on last half of day 4, $\pm 2_0$ per checklist. FO-2 Take data immediately after rising on day 4, $\pm 2_0$ per checklist. FO-3 Take data during last half of day 14 ± 2 days (same locations as FO-1). Minimum - FO-1 & FO-2 Same as Baseline. FO-3 None (NOTE: If this FO becomes mandatory during the mission, the minimum scheduling requirements become "Same as Baseline Requirements".) Redline - FO-1 & FO-2 Not Applicable FO-3 Any measurement will be useful. (NOTE: If this becomes mandatory during the mission the performance redline becomes "Not Applicable".)
1:00		VOICE RECORD REQ'D DATA	
0:00		CO ₂ 2 FO-2 M, S SLEEP AREA MEASUREMENT TAKE MEAS' TS (3) IN SLEEP AREAS AND BY INLET TO MOL SIEVE	
0:20		VOICE RECORD REQ'D DATA	
0:00		CO ₂ STOW	
0:05		CO ₂ /DEWPOINT MON STORAGE	

4-41

20.13 PORTABLE CO₂/DEWPOINT MONITOR

ET	AM																													
	1 2 3 v		SCHEDULING DATA: 1. Schedule as described above. 2. Three readings per location: Ambient Temp, Dewpoint Temp., and CO ₂ partial pressure. 3. Measurement locations: <table border="1"> <thead> <tr> <th>LOCATION</th> <th>CO₂ 1</th> <th>CO₂ 2</th> </tr> </thead> <tbody> <tr> <td>1 Three sleep stations (adjust ventilators)</td> <td>X</td> <td>X</td> </tr> <tr> <td>2 Inlet to MOL SIEVE (compare with panel 203 ind-ref meas)</td> <td>X</td> <td>X</td> </tr> <tr> <td>3 CSM LEB</td> <td>X</td> <td></td> </tr> <tr> <td>4 In front of D412 and D438</td> <td>X</td> <td></td> </tr> <tr> <td>5 In front of each SAL</td> <td>X</td> <td></td> </tr> <tr> <td>6 Rotating Chair Seat, LBNP PAN, ergometer seat</td> <td>X</td> <td></td> </tr> <tr> <td>7 In front of Wardroom window and W775</td> <td>X</td> <td></td> </tr> <tr> <td>8 Center WMC</td> <td>X</td> <td></td> </tr> </tbody> </table>	LOCATION	CO ₂ 1	CO ₂ 2	1 Three sleep stations (adjust ventilators)	X	X	2 Inlet to MOL SIEVE (compare with panel 203 ind-ref meas)	X	X	3 CSM LEB	X		4 In front of D412 and D438	X		5 In front of each SAL	X		6 Rotating Chair Seat, LBNP PAN, ergometer seat	X		7 In front of Wardroom window and W775	X		8 Center WMC	X	
LOCATION	CO ₂ 1	CO ₂ 2																												
1 Three sleep stations (adjust ventilators)	X	X																												
2 Inlet to MOL SIEVE (compare with panel 203 ind-ref meas)	X	X																												
3 CSM LEB	X																													
4 In front of D412 and D438	X																													
5 In front of each SAL	X																													
6 Rotating Chair Seat, LBNP PAN, ergometer seat	X																													
7 In front of Wardroom window and W775	X																													
8 Center WMC	X																													
			4. If the variation between the highest and lowest CO ₂ measurements obtained for FO-1 or FO-2 exceeds 3.0mm of mercury, if the absolute value of any CO ₂ measurement for FO-1 or FO-2 exceeds 7.6mm of mercury, or if the absolute value of any dewpoint measurements for FO-1 or FO-2 is less than 40°F, then the extent of FO-3 is expected to be increased in a manner dependent upon the degree of the problems.																											
			NOTES: 1. Stow CO ₂ Dewpoint Monitor if not to be used immediately after prep. 2. During all data gathering periods, the start time, the number of operative portable fans, their locations, and time of completion should be logged and recorded. 3. If initial data is indicative of significant pocketing of CO ₂ or water vapor, the extent of subsequent measurements is expected to be increased commensurate with the degree of the problem.																											

4-41A

DATE: 4/11/73
 CPCR: 2/13/73
 MRD: 2/01/73

20.14 OA CONTAMINATION ASSESSMENT

ET	AM			ANY	SL-2
	1	2	3		
0:00	█	█	█	CON-1 PH	FUNCTIONAL OBJECTIVES: FO-1 Observe, photograph and comment on the characteristics of certain OWS vent plumes early in the mission.
				FO-5 WINDOW CONTAMINATION PHOTO UNSTOW 70mm HASSELBLAD CAMERA, LOAD WITH S0368 COLOR FILM	
0:10	█	█	█	CON-1 CX	FO-2 Observe and comment on the characteristics of certain OWS vent plumes during mid-mission.
5 MIN PER WIND.	█	█	█	FO-8 WINDOW CONTAM. OBSERVATION CSM WINDOWS	FO-3 Observe, photograph and comment on the characteristics of certain OWS vent plumes late in the mission.
				CON-1 M	FO-4 Observe, photograph and comment on the characteristics of certain OA vent plumes as they occur during the mission.
0:00	█	█	█	FO-5, -6, -7 WINDOW CONTAM. OBSV/PHOTO S190 MDA WINDOW	FO-5 Observe, photograph and comment on the characteristics of window contaminants early in the mission.
0:05	█	█	█	CON-1 SX	FO-6 Observe and comment on the characteristics of window contaminants during mid-mission.
5 MIN PER WIND.	█	█	█	FO-5, -6, -7 WINDOW CONTAM. OBSV/PHOTO STS VIEWPORTS	FO-7 Observe, photograph and comment on the characteristics of window contaminants, late in the mission.
				CON-1 A	FO-8 Observe and comment on the characteristics of window contaminants during normal viewing times.
0:00	█	█	█	FO-8 WINDOW CONTAM. OBSV/PHOTO EVA HATCH WINDOW	FO-9 Observe and comment on the characteristics of contaminants on experiment optical surfaces as the experiments are used during the mission.
0:05	█	█	█	CON-1 W	FO-10 Observe and photograph OWS vent plumes and contaminants on external surfaces during EVA.
0:00	█	█	█	FO-5, -6, -7 WINDOW CONTAM. OBSV/PHOTO WARDROOM WINDOW	PERFORMANCE REQUIREMENTS: Baseline - The baseline requirements are described in Table I, (FO-1 thru FO-10). Minimum - The minimum scheduling requirements are shown in Table I (minimum scheduling requirements are denoted by asterisks), (FO-1 thru FO-10) Redline - Not Applicable
0:05	█	█	█		

4-42

20.14 OA CONTAMINATION ASSESSMENT

ET	AM			ANY	SCHEDULING DATA:
	1	2	3		
0:00	█	█	█	CON-2 OBS	1. If contamination of windows and experiment optics is not observed and if vent plumes are not observed negative reporting is acceptable, i.e., no comments or photographs are required, (FO-1 thru FO-10).
				FO-1, -2, -3 WASTE TANK VENT OBSERVATION SQUEEZER BAG DUMP	
0:05	█	█	█	CON-2 PH	2. The OWS waste tank vent plume will be observed for visible particles during a dump early (FO-1) (within first eight days) and late (FO-3) (within last seven days) in the mission, (FO-1, FO-3).
0:00	█	█	█	FO-1, -3 WASTE TANK VENT PHOTO EXTINGUISH WR LIGHTS INITIATE SQUEEZER BAG DUMP PHOTO PLUME IF VISIBLE	3. Observations should begin approximately 5 minutes after the squeezer bag dump initiation and should last for approximately 20 seconds, (FO-1, FO-3).
				CON-3 OBS	4. If the squeezer bag dump plume is visible, it is mandatory that a photograph be obtained, (FO-1, FO-3).
0:10	█	█	█	FO-4 MOL SIEVE VENT OBSERVATION RECORD OBSERVATIONS	5. Photographs may be obtained of the dump following the observation which revealed a visible vent, (FO-1, FO-3).
0:00	█	█	█	CON-3 PH	6. Observations of the flush and drain operations should begin approximately 10 minutes after the start of such operation and last for approximately 20 seconds, (FO-1, FO-3).
				FO-4 MOL SIEVE VENT PHOTO DURING MOL SIEVE VENT PHOTO VENT PLUME IF VISIBLE	7. Observations should begin approximately 5 minutes after a squeezer bag dump initiation and last for approximately 20 seconds, (FO-2).
0:05	█	█	█		8. Observations of the OWS waste tank vent plume should begin approximately 10 minutes after ECS condensate dump initiation and last for approximately 20 seconds, (FO-4).
0:00	█	█	█		9. All observations should be made from the wardroom window, (FO-1, FO-2, FO-3).
0:10	█	█	█		10. Each time the following prime mode dumps to the OWS waste tank occur, the event time will be voice recorded for relay to earth, (FO-1, FO-2, FO-3). a) Condensate - Initiating time within 3 to 5 minutes accuracy.

4-42A

20.14 OA CONTAMINATION ASSESSMENT

4-42B

ET	AM				
	1	2	3	V	
					<p>SCHEDULING DATA (Cont.)</p> <p>b) Squeezer bag - Initiating time within 3 to 5 minutes accuracy.</p> <p>c) Waterline flush and drain (beginning and end of mission) - Initiating times within 3 to 5 minutes accuracy.</p> <p>11. The molecular sieve vent operation will be observed for visible particles at least once from the STS viewport (located between the +Z and -Y axes), (FO-4).</p> <p>12. The molecular sieve vent observation should begin at the onset of the venting and continue for approximately 2 minutes, (FO-4).</p> <p>13. If the molecular sieve vent plume is visible, it is mandatory that a photograph be obtained during a subsequent vent cycle, (FO-4).</p> <p>14. If the following contingency mode dumps are used, the initiation times will be voice recorded, (FO-4).</p> <p>a) Condensate (overboard from AM) - Initiating time and terminating time within 1 minute accuracy.</p> <p>b) Urine (free liquid into OWS waste tank) - Initiating time within 3 to 5 minutes accuracy.</p> <p>* c) Urine (overboard from CSM) - Initiating time and terminating time within 1 minute accuracy.</p> <p>* d) Waste water (overboard from CSM) - Initiating time and terminating time within 1 minute accuracy.</p> <p>15. With respect to the comments required during vent observation, the general appearance, angular spread and approximate length of all visible plumes and the random motions of individual particles relative to the plume axis are the types of things that should be described. The comments will be voice recorded during the viewing period. (FO-1 thru FO-4).</p>

20.14 OA CONTAMINATION ASSESSMENT

4-42C

ET	AM				
	1	2	3	V	
					<p>SCHEDULING DATA (Cont.)</p> <p>16. Observations and photographs should be made during orbital daylight with the dark sky forming a background for the plume, (FO-1 thru FO-4).</p> <p>17. The wardroom window will be observed for contamination deposition trends during early, middle, and late mission periods, (FO-5 thru FO-7).</p> <p>18. The STS viewports between the +Z and +Y axes and the -Z and +Y axes will be inspected during normal viewing periods during early, middle and late mission periods, (FO-5 thru FO-7).</p> <p>19. It is desirable to observe the following windows for contamination during normal viewing times: (FO-8)</p> <p>a) -Y +Z and -Z -Y STS viewports</p> <p>b) EVA hatch window</p> <p>c) CSM windows</p> <p>20. The general appearance and location of any contamination, including the particular pane surface(s) upon which it is located, will be voice recorded, (FO-5 thru FO-8).</p> <p>21. It is desirable that observations be made (during normally scheduled EVA) of external surfaces, to include the solar array assemblies and emission from the OWS waste tank vent within the field-of-view of an EVA crewman, (FO-10).</p> <p>22. Description of any vent emission and any contaminant on external surfaces as observed during EVA should be voice recorded, (FO-10).</p> <p>*The times for these dumps are required only when the CSM is docked or within 1,000 feet of the OA.</p> <p>NOTES:</p> <p>1. All light sources which reflect on the window from which observations and photographs are being made should be extinguished if possible, (FO-1 thru FO-8).</p>

20.14 OA CONTAMINATION ASSESSMENT

4-420

20.14 OA CONTAMINATION ASSESSMENT				
ET	AM			V
1	2	3	4	
				<p>NOTES (Cont.)</p> <p>2. All exterior OA light sources within the field-of-view should be extinguished, (FO-1 thru FO-8).</p> <p>3. When making observations from the wardroom window, the T002 hood can be used to minimize undesirable interior light sources, (FO-1 thru FO-3).</p> <p>4. The typical kinds of contamination which may be observed will generally fall into four broad categories: (1) particulates, (2) scratches, (3) thin deposition films and (4) thick films or smudges. Particulates may be described by their quantity, estimated size, shape, and location. Scratches may be described by length, number of scratches per inch, estimated area covered by the scratches and orientation of the scratches. Thin deposition films may typically be described by the total area covered, by a description of the shape of the deposit, and by the coloration or diffraction effects of the film. These films may create a diffraction pattern on an optical surface or may show a uniform iridescent coloring of itself. Smudges are the most general class and thus the most difficult to describe. The density of the smudge and the area covered are the only specific parameters that can be described. It would be helpful if the source of the smudge can be identified; e.g., finger print, residue from attempted cleaning.</p> <p>5. The windows should be illuminated by the sun or by reflections from moon or earth but the light source should not be within the field-of-view, (FO-5 thru FO-8).</p>

20.14 OA CONTAMINATION ASSESSMENT

4-42E

20.14 OA CONTAMINATION ASSESSMENT				
ET	AM			V
1	2	3	4	
				<p>NOTES (Cont.)</p> <p>6. It is desirable that the same light source be used for all observations and photographs, (FO-5 and FO-6).</p> <p>7. When making observations from the wardroom window, the T002 hood can be used to minimize undesirable interior light sources, (FO-5 thru FO-7).</p> <p>8. All surface contamination noted during the above observations will be voice recorded by a crewman. (FO-5 thru FO-9).</p>

4-42F

Table I
Baseline and Minimum Scheduling Requirements

Subject	FO	Early	Mid	Late	Anytime	Observation: when normally in vicinity or during experiment performance.	Voice No report will be interpreted as the event occurred as scheduled (i.e., within 3 to 5 minutes) or no contamination was observed.	Vent	Description
								Initiation Time	of Observation
OVS Waste Tank Vent									
1) Squeezer Bag Dump	1,2,3	0*P*	0	0*P*				T*	D*
2) Water line flush & drain	1,3	0		0				T*	D
3) ECS Condensate	4				0			T*	D
Contingency Dumps									
4) Condensate (from AM/	4							T*	
5) Urine (OVS)	4							T*	
6) Urine (CSM) when within	4							T*	
7) Waste Water/1000 ft of SWS	4							T*	
8) Molecular seive vent	4				0*P*				D*
Windows									
9) Wardroom	5,6,7	0*P*	0	0*P*					D*
10) STS (+Z,+Y & -Z,+Y)	5,6,7	0*P*	0	0*P*					D*
11) STS (-Y,+Z,-Y)	8					0			D
12) EVA Hatch	8					0			D
13) CSM	8					0			D
Experiment Optical Surface (as used)									
14) S190B Window	9					0*			D*
15) Camera Lens	9					0*			D*
16) T025 Occulting Disk	9					0*			D*
17) Camera Lens	9					0*			D*
(if cleaned)									
18) S019 Mirror	9					0*			D*
19) S190A Platens	9					0*			D*
Front Lenses (Front Surface)	9					0*			D*
Filters (Both Surfaces)	9					0*			D*
MDA Window (Inside Surface)	9					0*			D*
20) S192 Thermal Imaging Lens	9					0*			D*
Dewar Thermal Window	9					0*			D*

4-42G

Table I
Baseline and Minimum Scheduling Requirements (Continued)

Subject	FO	Early	Mid	Late	Anytime	Vent Initiation Time	Description of Observation
Monochromatic Imaging Lens	9					0*	D*
Dewar Monochromatic Window	9					0*	D*
21) T025 Window	9					0*	D*
Camera Lens	9					0*	D*
22) S190B Window	9					0*	D*
Camera Lens	9					0*	D*
23) M512 Viewport & View mirror	9					0	D
24) Any Deposition (during EVA)	10					0	D
25) Any	10					0	D

KEY: 0 - Observe; P - Photograph; T - Voice Record Time; D - Describe; * - Minimum Scheduling Requirement

20.15 INTERNAL OWS TEMPERATURE MEASUREMENT				DATE: 4/11/73
				MRD: 2/01/73
ET	AM	ANY		SL-2
		TEMP-1		FUNCTIONAL OBJECTIVES:
0:00		FO-1, FO-2, FO-3 TEMP OF HEAT PIPES UNSTOW M487 TEMP SENSOR MEASURE TEMP, VOICE RECORD	F, E	FO-1 THRU FO-3 Measure temperatures in locations pertinent to in-flight evaluation of heat pipes.
0:10		STOW TEMP SENSOR		FO-4 THRU FO-6 Measure OWS internal surface temperatures to establish temperature gradients and radiant environment.
		TEMP-2		
0:00		FO-4, FO-5 TEMP OF INTERNAL WALLS UNSTOW M487 TEMP SENSOR MEASURE TEMP, VOICE RECORD	D, F	PERFORMANCE REQUIREMENTS:
0:10		STOW TEMP SENSOR		Baseline - FO-1 Measurements will be taken directly on thru the heat pipes (Table 1, 6 locations) on 3 separate occasions (FO-1 thru FO-3) during the first 8 days of the mission, at intervals of a minimum of 2 days.
0:00		FO-4, FO-5, FO-6 D, F, E, W, H, S TEMP OF INTERNAL WALLS AND CREW QUARTERS UNSTOW M487 TEMP SENSOR PERFORM TEMP MEASUREMENTS PER TABLE 2 (7 LOCATIONS) PER TABLE 3 (15 LOCATIONS) RECORD DATA BY VOICE TAPE STOW TEMP SENSOR		FO-4 Measurements of temperature at 7 internal wall locations (Table 2) will be taken on 2 separate occasions, once during the first 8 days of the mission (FO-4), and once anytime during the mission (FO-5).
0:10		TEMP-2 & -3		FO-5 Measurements of temperature at 15 internal wall locations (Table 3) will be taken on one occasion anytime during the mission, scheduled concurrently with the performance of FO-4 or of FO-5.
0:00				Minimum - FO-1 Measurements shall be taken on 3 separate occasions at anytime during the mission at intervals of a minimum of 2 days with at least 1 of the occasions being prior to day 9.
0:20				FO-3

4-43

20.15 INTERNAL OWS TEMPERATURE MEASUREMENT			
ET	AM		
			PERFORMANCE REQUIREMENTS (Cont.)
			FO-4 Same as baseline requirement.
			FO-5 None
			FO-6 None
			Redline - FO-1 Any data would be useful thru FO-6
			SCHEDULING DATA:
			1. Perform as directed in performance requirements listed above.
			2. Table 1 (FO-1, -2, -3) Measurements will be taken on heat pipes at the following OWS locations in numerical sequence:
			a) Forward compartment food freezer, at rear, mid-point right rail looking at backside of freezer.
			b) Forward compartment logic control box, (adjacent to food freezer) at rear, under flap as far as possible.
			c) Forward compartment below solar scientific airlock (SAL).
			d) Forward compartment to right of Ventilation Control Subsystem (VCS) duct 3.
			e) Experiment compartment floor to right of VCS duct 1.
			f) Experiment compartment floor adjacent to VCS duct 2.
			3. Table 2 (FO-4, -5) Measurements on internal walls will be taken at (or near) the following locations:
			a) Dome compartment near light 5 (on - sign of -Y decal).
			b) Dome compartment near light 3 (on + sign of +Y decal).
			c) Forward compartment to right of water tank 8 immediately below ring structure.
			d) Forward compartment to left of water tank 6 immediately below ring structure.
			e) Forward compartment to right of water tank 3 immediately below ring structure.

4-43A

20.15 INTERNAL OWS TEMPERATURE MEASUREMENT

ET	AM				V			
	1	2	3					
								<p>SCHEDULING DATA (Cont.)</p> <p>f) Forward compartment approximately 6 inches below solar SAL.</p> <p>g) Forward compartment approximately 6 inches below anti-solar SAL.</p> <p>4. Table 3 (FO-6) Measurements shall be taken on the crew quarters walls, ceiling, and floor (including partitions, cabinets, etc.) at 15 locations as follows:</p> <p>a) Experiment compartment on face of locker E615.</p> <p>b) Experiment compartment on face of locker E622.</p> <p>c) Experiment compartment at center of waste management compartment (WMC) door.</p> <p>d) Experiment compartment ceiling I-beam between lights 4 & 8.</p> <p>e) Experiment compartment floor I-beam between shower and TAL (trash airlock).</p> <p>f) Experiment compartment wall immediately below speaker intercom assembly (SIA) 600.</p> <p>g) Wardroom on face of locker W708.</p> <p>h) Wardroom on face of locker W755.</p> <p>i) Wardroom on table cover installed on ceiling grid.</p> <p>j) WMC on center of floor.</p> <p>k) WMC on center of ceiling.</p> <p>l) WMC on center of concave wall opposite fecal collector.</p> <p>m) Sleep compartment on face of locker S910.</p> <p>n) Sleep compartment on face of locker S922.</p> <p>o) Sleep compartment on face of locker S932.</p> <p>NOTES:</p> <p>1. Temperature measurements will be made with the portable hand-held temperature sensor provided as part of M487 experiment equipment.</p> <p>2. Performance of "temp-2 & -3" includes conduct of either FO-4 or FO-5 together with FO-6.</p> <p>3. Crew voice comments to be recorded included measurements obtained, location and time of reading.</p> <p>4. FO-5, if not accomplished during the SL-1/SL-2 mission will be accomplished during the first 8 days of the SL-3 mission.</p> <p>5. FO-6, if not accomplished during the SL-1/SL-2 mission will be accomplished during the first 8 days of the SL-3 mission, scheduled within a 4-hour time period after FO-5.</p> <p>6. Temperature measurements will also be made when mission anomalies occur (such as condensation, surfaces exceeding touch temperature limits, or crew discomfort in various compartments, etc.) to help determine locations and/or causes of such conditions.</p>

4-43B

4-43C

20.16 WATER SAMPLE

DATE: 4/11/73

MRD: 2/01/73

ET	AM				V	ANY		SL-2
	1	2	3					
0:00								<p>FUNCTIONAL OBJECTIVES:</p> <p>FO-1 Obtain an 8-ounce sample of water from food pedestal water dispenser.</p> <p>PERFORMANCE REQUIREMENTS:</p> <p>Baseline - Collect one 8-ounce sample of water from the food pedestal water dispenser.</p> <p>Minimum - Not applicable</p> <p>Redline - Not applicable</p> <p>SCHEDULING DATA:</p> <p>1. Collect water sample during approximately the last week of the mission.</p> <p>NOTES:</p> <p>1. Voice log time and date when water sample was taken.</p>
0:10						<p>FO-1 OBTAIN 8-OUNCE WATER SAMPLE FROM FOOD PEDESTAL H₂O DISPENSER</p>		

4-44

DATE: 4/11/73
MRD: 3/13/73

20.17 IODINE MONITORING

4-45

ET	AM	1	2	3	V	ANY CREWMAN	SL-2
						// 20.17-1 I MON //	<p>FUNCTIONAL OBJECTIVES: FO-1 Determine the iodine concentration in the wardroom water supply tank scheduled for initial immediate use. FO-2 Determine the iodine concentration in water from & -3 the water chiller sample port. FO-4 Determine the iodine concentration in a minimum of two untapped wardroom water supply tanks.</p> <p>PERFORMANCE REQUIREMENTS: Baseline - 4 performances Minimum - Same as Baseline Redline - Not Applicable</p> <p>SCHEDULING DATA: 1. Perform FO-1 and FO-2 during OA activation. Perform FO-3 on Mission Day 14 (+3). Performance of FO-4 will be determined during real-time. 2. Usage of the wardroom water supply tank will be determined real-time depending on the amount of iodine. 3. When the iodine concentration of two untapped tanks is determined (i.e., water tank 2 and 10) a real-time decision will be made regarding the requirement for injecting iodine into any or all of the untapped water tanks. 4. Voice comments will be required for all FO's.</p> <p>NOTES: 1. If the iodine concentration in the wardroom water supply tank during activation is less than four ppm, iodine will be injected into the tank to achieve a concentration of up to six ppm. If the iodine concentration in the water tank is less than one ppm, then the water from this tank should not be used for drinking purposes at this time. 2. If the iodine concentration in the water chiller sample port is less than one ppm, then the iodine concentration must be determined in the wardroom</p> <p>NOTES (Cont...) water tank in use and iodine added to result in an iodine residue up to six ppm.</p>
0:00						FO-1 SAMPLE I CONCENTRATION IN WARDROOM WATER SUPPLY PRIOR TO USE	
0:10						// 20.17-2 I MON //	
0:00						FO-2 AND FO-3 SAMPLE I CONCENTRATION IN WATER FROM WATER CHILLER	
0:10						// 20.17-3 I MON //	
0:00						FO-4 SAMPLE I CONCENTRATION IN 2 UNTAPPED WARDROOM WATER SUPPLY TANKS	
0:15							

20.18 CARBON MONOXIDE MONITOR

DATE: 4/11/73
MRD: 3/13/73

4-46

ET	AM	1	2	3	V	ANY CREWMAN	SL-2
						// 20.18 CO MON //	<p>FUNCTIONAL OBJECTIVES: FO-1 Obtain data on the level of CO in the THRU OWS experiment compartment. FO-4</p> <p>PERFORMANCE REQUIREMENTS: Baseline - Determine the CO level four times during the mission. Minimum - Same as Baseline Redline - Not Applicable</p> <p>SCHEDULING DATA: 1. Determine CO level on mission days 3 (+1,-0), 10 (+1), 17 (+1) and 24 (+1) for a total of four measurements (FO-1 thru FO-4). 2. Samples collected in OWS experiment compartment.</p> <p>NOTES: 1. The CO level will be voice logged in parts per million for each of the four measurements.</p>
0:00						FO-1, FO-2, FO-3, FO-4 E OBTAIN CO SAMPLE IN EXP. COMPARTMENT	
0:05							

EVA		DATE: 4/11/73 C/L: 11/27/72		
ET	AM 1 2 3 V	CDR/SPT	PLT	SL-2
0:00		EVA PREP	EVA PREP	
		PREP CDR/SPT PREP OWS COMPT FOR EVA PREP ATM FILM CONNECT LSU TO EVA PANEL CONNECT LSU TO PCU DON EMU IN OWS FOR EVA DON OBS, LCG, PGA, SOP, PCU/LSU DON CAA ACTIVATE PCU CHECKOUT PCU CHECK EMU INTEGRITY CLOSE OWS HATCH FLOW CHECK SOP DEPRESS AM OPEN EVA HATCH	PREP PLT PREP CM/MDA/STS SYSTEM CONFIGURE ATM C&D PANEL CONFIGURE COOLANT LOOP VERIFY O2/N2 SYSTEM PREP DAC (M151 & EVA) PREP OWS SYST ACTIVATE TELEVISION SYSTEM DEACTIVATE OWS VENTILATION ACTIVATE ALSA ACTIVATE SUS SUIT COOLING DON EMU DON PGA, PCU/LSU DON CCA CHECKOUT ALSA AND PRESS INTEGRITY CK ACTIVATE SUS POWER CONFIGURE CSM COMMUNICATION CLOSE AM FORWARD HATCH ASSIST DEPRESS AM START WATCH	
4:00				

4-47

EVA				
ET	AM 1 2 3 V	CREWMAN	CREWMAN	CREWMAN
0:00		EVA OPERATIONS	EVA OPERATIONS	EVA OPERATIONS
		EVA OPERATIONS EV1 EGRESS AM AM/VF OPERATIONS INGRESS VF FOOT RESTRAINTS ASSIST EV2 VC OPERATIONS UNSTOW AND TRANSFER S054 AND S052 TO EV2 STOW USED S052, S054, S056 AND HA1 ON VC TREE VT AND VS OPERATIONS ASSIST EV2 DO24 SAMPLE RETRIEVAL ASSIST EV2 AM/VF OPERATIONS INGRESS AM	EVA OPERATIONS EV2 ASSIST EV1 AM/VF OPERATIONS ASSIST EV1 EGRESS AM VC OPERATIONS INGRESS VC FOOT RESTRAINTS REMOVE S052, S054, S056, HA1 INSTALL NEW S052, S054 VT AND VS OPERATIONS INGRESS VT FOOT RESTRAINTS REMOVE AND STOW VS TREE INGRESS VS FOOT RESTRAINTS REMOVE AND STOW S082A AND S082B IN VS TREE ADVISE EV3 READY FOR DOOR CLOSURE DO24 SAMPLE RETRIEVAL RETRIEVE DO24 AM/VF OPERATIONS STOW DAC VC AND VS TREE AND DO24 INGRESS AM	EVA OPERATIONS EV3 VERIFY ATM OPERATIONAL (PANEL 130) CLOSE APERTURE DOORS (PANEL 130)
2:30				

4-47A

EVA

4-47B

ET	AM				CREWMAN	CREWMAN
	1	2	3	V		
					EVA POST	EVA POST
0:00					POST EV 1 & 2	POST EV 3
					CLOSE EVA HATCH	STOP WATCH FOR END OF EVA
					REPRESS AIRLOCK	OPEN AM FORWARD HATCH
					OPEN OWS HATCH	DOFF CCA, PCU/LSU & PGA
					DEACTIVATE ALSA	
					DOFF PCU/LSU,SOP,PGA & CCA	
					DOFF OBS/LCG	DEACTIVATE TELEVISION
					RECONFIGURE ATM FILM	ACTIVATE OWS VENTILATION
						DISCONNECT LSU FROM IVA
						PANEL
						RECONFIGURE O2/N2 CONTROL
						COOLANT LOOPS
					DISCONNECT LSU FROM EVA/IVA	TERMINATE RECORDING
					PANELS	RECONFIGURE ATM C & D PANEL
					RECONFIGURE PGA	RECONFIGURE COMMUNICATIONS
					SUIT DRYING OPERATIONS	RECONFIGURE PGA
					STOW EMU	RECONFIGURE 16MM DAC(M151
						AND EVA)
					DEACTIVATE SUIT DRYING	DRAIN UCTA
					(AFTER 10 HOURS)	
3:00						

ED 11 ATMOSPHERIC ABSORPTION OF HEAT					DATE: 4/11/73
					MRD: 2/01/73
					C/L:
ET	AM				SL-2
1	2	3	V		NOTES:
					1. This experiment will be accomplished on a data duplication basis no additional crew action is required.
					2. Performance requirements for this experiment are contained in EREP.

ED 12 VOLCANIC STUDY					DATE: 4/11/73
					MRD: 2/01/73
					C/L:
ET	AM				SL-2
1	2	3	V		NOTES:
					1. This experiment will be accomplished on a data duplication basis except that S191, Infrared Spectrometer, will be activated in addition to the other EREP sensors.
					2. Performance requirements for this investigation are similar to EREP baseline volcano investigations and are contained in EREP DTO.
					3. The S191 Infrared Spectrometer will be operated in the crew tracking mode during the operation of the other EREP sensors (S191A, S190B, and S192).

4-50

ED 22 OBJECTS IN MERCURY'S ORBIT					DATE: 4/11/73
					MRD: 2/01/73
ET	AM				SL-2
1	2	3	V		NOTES:
					1. This experiment is classified as a data duplication experiment.
					2. Performance requirements are delineated in the ATM JOP-6 section of the MRD.

ED 23 UV SPECTRA FROM QUASARS

DATE: 4/11/73
MRD: 2/01/73
REV.

AM		PLT		SL-2		
ET	1	2	3	V		
NIGHT -10 MIN					ED 23 OPS	<p>FUNCTIONAL OBJECTIVES: FO-1 Obtain selective UV photographs of designated galaxies on the equivalent of a single darkside pass of 32 minutes or longer duration.</p> <p>PERFORMANCE REQUIREMENTS: Baseline - A thirty-two minute period will be provided for photographic observations. Minimum - Same as the baseline requirement. Redline - One photograph of one galaxy will be obtained.</p> <p>SCHEDULING DATA: 1. ED 23 is to be treated as a "one pass" addition to experiment S019, Ultraviolet Stellar Astronomy; therefore, the experiment preparation, AMS installation and film installation will be assumed to have been performed. 2. Since the time scheduled for ED 23 is that for an operation (i.e., one night-time pass), the S019 experiment equipment must be installed prior to the scheduled operation of ED 23. Additionally, the prism must have been removed from the S019 mirror system for the ED 23 experiment. 3. This investigation should be performed when the moon is less than half illuminated and when the Orbital Assembly (OA) is in an inertially stable attitude, i.e., Solar Inertial Attitude (X-IOP/Z). 4. The -Z SAL is required. Do not schedule concurrently with S019, S149, S183, T027/S073, ED 26 and S190B. 5. Do not schedule concurrently with M509 or any activity requiring excessive crew motion. Crew motions are to be kept at a minimum during film exposure. 6. Experiment must be performed during darkside passes with durations exceeding 32 minutes when the moon (if within 90 degrees of the selected starfields) is less than half illuminated.</p>
					FO-1 -Z SAL ED 23 OPERATION SUBDUE LIGHTING, DARK ADAPT EXTEND AMS STARFIELD - - - - TILT - - - - ROT - - - - EXP - - - - STARFIELD - - - - TILT - - - - ROT - - - - EXP - - - - STARFIELD - - - - TILT - - - - ROT - - - - EXP - - - - RETRACT AMS, CLOSE SAL AM AND OWS LIGHTS ON	
NIGHT +10 MIN						

4-51

ED 23 UV SPECTRA FROM QUASARS

AM		PLT		SL-2	
ET	1	2	3	V	
					<p>SCHEDULING DATA (Cont.) 7. All vents and dumps (including the trash airlock) that can be inhibited must be so inhibited during and 30 minutes prior to scheduled experiment operating periods. 8. Inhibit momentum dumps during film exposure. 9. The vehicle must be in either SI or some other known stable inertial attitude where acceptable targets are available. The OA pointing accuracy must be within +2.5° and the rates <10 arc sec/sec. 10. There will be no SMRCS firings when the mirror system is extended and TACS firings will be minimized when the mirror system is extended. 11. If the experiment is removed from the airlock all experiment hardware must be evacuated. 12. The canisters should be evacuated for stowage not more than 30 minutes after experiment disassembly. 13. To minimize exposure to radiation and to fulfill temperature requirements, the film canister should be removed and stowed between observing periods separated by more than 12 hours. Total exposure duration of the film to ambient radiation during operation must not exceed 96 hours. 14. Film canister to be transferred to CM no earlier than 12 hours prior to SL-2 re-entry. 15. Update pad required one rev prior to pass. 16. The galaxies to be photographed will be designated via update PAD's and will be selected from the following candidates:</p>

4-51A

ED 23 UV SPECTRA FROM QUASARS

4-518

ET	AM			V																																																										
	1	2	3																																																											
							<p>SCHEDULING DATA (Cont.)</p> <table border="1"> <thead> <tr> <th>Object and Type Galaxy</th> <th>Right Ascension (Hrs:Min 1950)</th> <th>Declination (Deg:Min 1950)</th> <th>Visual Magnitude</th> <th>Priority</th> </tr> </thead> <tbody> <tr> <td>NGC1068, Seyfert</td> <td>02:40.1</td> <td>- 00:14</td> <td>8.9</td> <td>1</td> </tr> <tr> <td>NGC1275, Seyfert</td> <td>03:16.5</td> <td>+ 41:20</td> <td>12.3</td> <td>2</td> </tr> <tr> <td>NGC3227, Seyfert</td> <td>10:20.7</td> <td>+ 20:07</td> <td>10.9</td> <td>1</td> </tr> <tr> <td>NGC3516, Seyfert</td> <td>11:03.4</td> <td>+ 72:50</td> <td>12.1</td> <td>2</td> </tr> <tr> <td>NGC4051, Seyfert</td> <td>12:00.6</td> <td>+ 44:48</td> <td>10.2</td> <td>1</td> </tr> <tr> <td>NGC4151, Seyfert</td> <td>12:08.0</td> <td>+ 39:41</td> <td>10.5</td> <td>1</td> </tr> <tr> <td>NGC5128, Radio</td> <td>13:22.4</td> <td>- 42:45</td> <td>8.4</td> <td>1</td> </tr> <tr> <td>NGC5548, Seyfert</td> <td>14:15.7</td> <td>+ 25:22</td> <td>12.9</td> <td>2</td> </tr> <tr> <td>NGC7469, Seyfert</td> <td>23:07.7</td> <td>+ 08:36</td> <td>12.0</td> <td>1</td> </tr> <tr> <td>3C273, Quasar</td> <td>12:26.6</td> <td>+ 02:20</td> <td>12.8</td> <td>1 +</td> </tr> </tbody> </table> <p>Three exposures of each object will be obtained. One will be taken with the object centered in the field, one with the object off-center by one degree in the tilt direction and one with the object off-center by one degree in the rotation direction.</p> <p>17. In order to acquire a high priority object in the S019 field-of-view, it is permissible to perform one roll maneuver of up to +10 degrees about the OA X-axis. This maneuver will be performed only when a crewman is at the Apollo Telescope Mount console and provided it does not interfere with other experiments. The time required for conduct of this maneuver is chargeable to the 32-minute period allocated to ED 23 and no additional night passes on crew time may be scheduled for it.</p> <p>NOTES:</p> <ol style="list-style-type: none"> The purpose is to obtain spectra of selected galaxies, Seyfert galaxies in the ultraviolet spectral region. Extension of spectral information into this region will provide greater insight into the radiation characteristics of these galaxies. This additional spectral information may also aid in the identification of elements present in these stellar objects. 	Object and Type Galaxy	Right Ascension (Hrs:Min 1950)	Declination (Deg:Min 1950)	Visual Magnitude	Priority	NGC1068, Seyfert	02:40.1	- 00:14	8.9	1	NGC1275, Seyfert	03:16.5	+ 41:20	12.3	2	NGC3227, Seyfert	10:20.7	+ 20:07	10.9	1	NGC3516, Seyfert	11:03.4	+ 72:50	12.1	2	NGC4051, Seyfert	12:00.6	+ 44:48	10.2	1	NGC4151, Seyfert	12:08.0	+ 39:41	10.5	1	NGC5128, Radio	13:22.4	- 42:45	8.4	1	NGC5548, Seyfert	14:15.7	+ 25:22	12.9	2	NGC7469, Seyfert	23:07.7	+ 08:36	12.0	1	3C273, Quasar	12:26.6	+ 02:20	12.8	1 +
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ED 23 UV SPECTRA FROM QUASARS

4-51C

169

ET	AM			V			
	1	2	3				
							<p>NOTES (Cont.)</p> <ol style="list-style-type: none"> Due to the low brightness of the galaxies, the prism will be removed from the S019 Mirror System during the conduct of these photographic observations. The widening mechanism will not be employed during conduct of these photographic observations. Programmed exposure time will be 30 or 90 seconds with the longer exposure period preferred. The specific exposure time for a given observation will be dependent on the stability of the Orbital Workshop (OWS) and will be selected following analysis of the OWS attitude rate history. The duration of any given exposure will be within 10 percent of its programmed duration. It is desired that the OWS rates be less than 1.0 arc sec/sec during film exposure. The mirror should be erected just before sunset and retracted just after sunrise. During investigation operations, the following lighting conditions will be required: <ol style="list-style-type: none"> Orbital workshop interior lights will be configured for light adaptation of the crew and for investigation operations in accordance with the appropriate checklist. All ports or windows of any remaining lighted portions of the OA will be covered to prevent light from scattering into the spectrograph. All exterior OA running lights will be off. Moisture must not be allowed to condense on the S019 mirror system. Dark adaptation will also be attained by use of an eye patch. Moisture must not be allowed to condense on the S019 mirror system. Additional performance conditions may be found in the S019 experiment data sheets.

ED 26 UV FROM PULSARS

DATE: 4/11/73
MRD: 2/01/73
REV.

AM		PLT		SL-2	
ET	1	2	3	V	
NIGHT -10 MIN			ED 26 OPS		<p>FUNCTIONAL OBJECTIVES: FO-1 Obtain selective UV photographs of designated pulsars and X-ray sources on the equivalent of a single darkside pass of 32 minutes or longer duration.</p> <p>PERFORMANCE REQUIREMENTS: Baseline - A thirty-two minute period will be provided for photographic observations. Minimum - Same as the baseline requirement. Redline - One photograph of one pulsar or one X-ray source will be obtained.</p> <p>SCHEDULING DATA: 1. ED 26 is to be treated as "one pass" addition to experiment S019, Ultraviolet Stellar Astronomy; therefore, the experiment preparation, AMS installation and film installation will be assumed to have been performed. 2. Since the time scheduled for ED 26 is that for an operation (i.e., one night-time pass), the S019 experiment must be installed prior to the scheduled operation of ED 26. Additionally, the prism must have been removed from the S019 mirror system for the ED 26 experiment. 3. This investigation should be performed when the moon is less than half illuminated and when the Orbital Assembly (OA) is in an inertially stable attitude, i.e., Solar Inertial Attitude (X-IOP/Z). 4. The -Z SAL is required. Do not schedule concurrently with S019, S149, S183, T027/S073, ED 23 and S190B. 5. Do not schedule concurrently with M509 or any activity requiring excessive crew motion. Crew motions are to be kept at a minimum during film exposure.</p>
			FO-1	-Z SAL	
NIGHT +10 MIN			ED 26 OPERATION SUBDUE LIGHTING, DARK ADAPT EXTEND AMS STARFIELD - - - - TILT - - - - ROT - - - - EXP - - - - STARFIELD - - - - TILT - - - - ROT - - - - EXP - - - - STARFIELD - - - - TILT - - - - ROT - - - - EXP - - - - RETRACT AMS, CLOSE SAL AM AND OWS LIGHTS ON		

4-52

AM		PLT		SL-2	
ET	1	2	3	V	
ED 26 UV FROM PULSARS					
					<p>SCHEDULING DATA (Cont.) 6. Experiment must be performed during darkside passes with durations exceeding 32 minutes when the moon (if within 90 degrees of the selected starfields) is less than half illuminated. 7. All vents and dumps (including the trash airlock) that can be inhibited must be so inhibited during and 30 minutes prior to scheduled experiment operating periods. 8. Inhibit momentum dumps during film exposure. 9. The vehicle must be in either SI or some other known stable inertial attitude where acceptable targets are available. The OA pointing accuracy must be within +2.5° and the rates <10 arc sec/sec. 10. There will be no SMRCS firings when the mirror system is extended and TACS firings will be minimized when the mirror system is extended. 11. If the experiment is removed from the airlock all experiment hardware must be evacuated. 12. The canisters should be evacuated for stowage not more than 30 minutes after experiment disassembly. 13. To minimize exposure to radiation and to fulfill temperature requirements, the film canister should be removed and stowed between observing periods separated by more than 12 hours. Total exposure duration of the film to ambient radiation during operation must not exceed 96 hours. 14. Film canister to be transferred to CM no earlier than 12 hours prior to SL-2 re-entry. 15. Update pad required one rev prior to pass.</p>

4-52A

ED 26 UV FROM PULSARS					
ET	AM			V	
	1	2	3		
					<p>SCHEDULING DATA (Cont.)</p> <p>16. The objects to be photographed will be designated via update PAD's and will be selected from candidates identified in the following ED 26 Table of Candidate Objects.</p> <p>Three exposures of each object will be obtained. One will be taken with the object centered in the field. The other two will be taken with the object off center by one degree in the directions indicated in the following ED 26 Table of Candidate Objects.</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. The purpose is to photograph pulsars and X-ray sources in the UV wavelenths to determine the pulse characteristics in this spectral region. 2. Due to the low brightness of the pulsars, the prism will be removed from the S019 Mirror System during the conduct of these photographic observations. 3. The widening mechanism will not be employed during conduct of these photographic observations.

4-52B

ED 26 UV FROM PULSARS					
ET	AM			V	
	1	2	3		
					<p>NOTES (Cont.)</p> <ol style="list-style-type: none"> 4. Programmed exposure time will be 30 or 90 seconds with the longer exposure period preferred. The specific exposure time for a given observation will be dependent on the stability of the Orbital Workshop (OWS) and will be selected following analysis of the OWS attitude rate history. The duration of any given exposure will be within 10 percent of its programmed duration. It is desired that the OWS rates be less than 1.0 arc sec/sec during film exposure. 5. The mirror should be erected just before sunset and retracted just after sunrise. 6. During investigation operations, the following lighting conditions will be required: <ol style="list-style-type: none"> a) Orbital workshop interior lights will be configured for light adaptation of the crew and for investigation operations in accordance with the appropriate checklist. b) All ports or windows of any remaining lighted portions of the OA will be covered to prevent light from scattering into the spectrograph. c) All exterior OA running lights will be off. 7. Moisture must not be allowed to condense on the S019 mirror system. 8. Dark adaptation will also be attained by use of an eye patch. Moisture must not be allowed to condense on the S019 mirror system. 9. Additional performance conditions may be found in the S019 experiment data sheets.

4-52C

ED 31 BACTERIA AND SPORES IN ZERO GRAVITY				DATE: 4/11/73
				MRD: 2/01/73
				C/L: 2/01/73
ET	AM	SPT		SL-2
		ED 31 PREP		FUNCTIONAL OBJECTIVES:
0:00		FO-1, FO-2 ED 31 PREPARATION OPEN IMSS WORK TABLE INSTALL PHOTOGRAPHY EQUIP UNSTOW EXPERIMENT CONTAINER, REMOVE PETRI DISHES INOCULATE EACH DISH PHOTOGRAPH EACH DISH RECORD TIME & TEMP PLACE 9 DISHES IN INCUBATOR 6 DISHES ON PNL W714 STOW CONTAINER & PHOTO EQUIPMENT	W	FO-1 Inoculate nine petri dishes of a nutrient agar with species of bacteria and spores, incubate in the In-Flight Medical Supply System (IMSS) incubator, and obtain photographs of bacteria and bacterial spore colonies. FO-2 Inoculate six petri dishes of a nutrient agar with species of bacteria and spores, incubate in the OWS at ambient temperature, and obtain photographs of bacteria and bacterial spore colonies.
1:00		ED 31 OPS		PERFORMANCE REQUIREMENTS:
0:00		FO-1, FO-2 ED 31 OPERATION SET UP PHOTOGRAPHY EQUIP REMOVE PETRI DISHES FROM INCUBATOR AND FROM W714 PHOTOGRAPH & RECORD DATA REPLACE PETRI DISHES RESTOW PHOTOGRAPHY EQUIP	W	Baseline - The inoculation of 15 dishes and five photography sessions will be performed, (FO-1 &-2) Minimum - The inoculation of 15 dishes and three photography sessions (4,8, and 24 hours after inoculation) will be performed, (FO-1 &-2). Redline - The inoculation of 15 dishes and one photography session (approximately 16 hours after inoculation) will be performed, (FO-1 &-2).
0:20		ED 31 STOW		SCHEDULING DATA:
0:00		FO-1, FO-2 ED 31 POST OPERATION	W	1. This experiment should be scheduled to begin within seven days prior to the end of the mission, or later to reduce "post growth stowage time onboard the OWS, (FO-1 & FO-2)
0:15		PLACE 15 DISHES IN CHILLER		2. Nine petri dishes of nutrient agar will be inoculated with species of bacteria and incubated in the IMSS incubator for 24 ±2 hours, (FO-1). 3. Six petri dishes of nutrient agar will be inoculated with species of bacteria and incubated at OWS ambient temperature for 24 ±2 hours, (FO-2). 4. Still photographs of each of the 15 petri dishes will be obtained in accordance with the following schedule (time zero is immediately after inoculation of the agar):

4-53

ED26

Table of Candidate Objects

Object	Principal Type of Emission	Right Ascension (Hrs: min, 1950)	Declination (Deg: Min, 1950)	Blue Magnitude	Priority	Orientation	Offset **
Unnamed	X-ray	00:58.0	- 73:50	*	1	1 deg north; 1 deg west	
Crab Pulsar	Radio & X-ray	05:31.5	+ 21:59	16.5	1 +	1 deg north; 1 deg west	
Unnamed	Radio	06:28.9	- 28:33	*	1	.1 deg tilt; 1 deg rotation	
Unnamed	Radio	08:09.0	+ 74:38	*	1	1 deg tilt; 1 deg rotation	
Vela Pulsar	Radio	08:33.6	- 45:00	*	1	1 deg tilt; 1 deg rotation	
Unnamed	Radio	09:59.9	- 54:37	*	2	1 deg tilt; 1 deg rotation	
Unnamed	X-ray	11:06.6	- 77:23	*	1	1 deg north; 1 deg west	
Cen X-3	X-ray	11:19.0	- 60:19	11.0	2	1 deg tilt; 1 deg rotation	
Unnamed	Radio	11:33.5	+ 16:08	*	1	1 deg tilt; 1 deg rotation	
Unnamed	Radio	14:49.4	- 65:30	*	1 +	1 deg south; 1 deg east	
HZ Her	X-ray	16:56.0	+ 35:25	13.0	1 +	1 deg tilt; 1 deg rotation	
Unnamed	Radio	19:19.6	+ 21:47	*	2	1 deg tilt; 1 deg rotation	
Unnamed	Radio	19:29.9	+ 10:53	*	2	1 deg tilt; 1 deg rotation	
Cyg X-1	X-ray	19:56.4	+ 35:04	9.0	2	1 deg tilt; 1 deg rotation	

4-52D

* These objects are not optically identifiable.

** Orientation offset indicates the magnitude and direction of the line-of-sight offset required for the two off-center exposures.

ED 31 BACTERIA AND SPORES IN ZERO GRAVITY																					
ET	1	2	3																		
	AM		V																		
			<p>SCHEDULING DATA (Cont.)</p> <table border="1"> <thead> <tr> <th>Incubation Time (Hrs)</th> <th>Tolerance (Hrs)</th> <th>No. Frames (15 Dishes)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>+0.0</td> <td>15</td> </tr> <tr> <td>4</td> <td>+0.5</td> <td>15</td> </tr> <tr> <td>8</td> <td>+2.0</td> <td>15</td> </tr> <tr> <td>12</td> <td>+2.0</td> <td>15</td> </tr> <tr> <td>24</td> <td>+2.0</td> <td>15</td> </tr> </tbody> </table> <p>5. As soon as possible after the incubation period, the petri dishes will be placed in the food chiller to attenuate growth of the bacteria and bacterial spores.</p> <p>6. During OWS deactivation period, the petri dishes will be transferred to the IMSS resupply container for subsequent return to earth.</p> <p>NOTES:</p> <ol style="list-style-type: none"> Bacteria spores (in polyvinyl discs) and nutrient in petri dishes are launched in the OWS. The covers of the petri dishes will not be removed following implantation of the bacteria in the agar. 	Incubation Time (Hrs)	Tolerance (Hrs)	No. Frames (15 Dishes)	0	+0.0	15	4	+0.5	15	8	+2.0	15	12	+2.0	15	24	+2.0	15
Incubation Time (Hrs)	Tolerance (Hrs)	No. Frames (15 Dishes)																			
0	+0.0	15																			
4	+0.5	15																			
8	+2.0	15																			
12	+2.0	15																			
24	+2.0	15																			

4-53A

ED 76 NEUTRON ANALYSIS		DATE: 4/11/73
		MRD: 2/01/73
		C/L: 2/01/73

ED 76 NEUTRON ANALYSIS		SL-2								
ET	1	2								
	AM	V								
SPT OR PLT		FUNCTIONAL OBJECTIVES:								
0:00	ED 76 DEP	FO-1 Deploy ten neutron flux detectors at specified locations.								
0:16	FO-1 W,F ED 76 DEPLOY OBTAIN 10 NEUTRON DETECTORS FROM OWS STOWAGE ACTIVATE DETECTORS AND DEPLOY TO WATER TANK WT9 AND CONTROL LOCATIONS STOW CONTAINER	FO-2 Retrieve four neutron flux detectors at the end of SL-1/SL-2 mission and return them to earth.								
0:00	ED 76 RETX	PERFORMANCE REQUIREMENTS:								
0:15	FO-2 W,F ED 76 SL-2 RETRIEVAL OBTAIN CONTAINER RETRIEVE AND DEACTIVATE 4 DETECTORS DESIGNATED 'A' REPLACE DETECTORS IN STOWAGE CONTAINER RETURN CONTAINER TO STOWAGE	Baseline- Ten neutron flux detectors will be deployed in accordance with ED 76 Table (FO-1). Four neutron flux detectors will be retrieved in accordance with ED 76 Table and returned to earth (FO-2). Minimum - Same as Baseline. Redline - At least one neutron flux detector will be deployed, retrieved and returned to earth (FO-1, FO-2) in accordance with the following priority:								
0:00	ED 76 POST	<table border="1"> <thead> <tr> <th>Priority</th> <th>Detector</th> </tr> </thead> <tbody> <tr> <td>1st</td> <td>1A</td> </tr> <tr> <td>2nd</td> <td>4A</td> </tr> <tr> <td>3rd</td> <td>2A & 3A</td> </tr> </tbody> </table>	Priority	Detector	1st	1A	2nd	4A	3rd	2A & 3A
Priority	Detector									
1st	1A									
2nd	4A									
3rd	2A & 3A									
0:10	FO-1 AND FO-2 W,CM UNSTOW CONTAINER TRANSFER TO CM AND STOW									

4-54

ED 76 NEUTRON ANALYSIS			
ET	1	2	3
	AM		V

			<p>SCHEDULING DATA:</p> <ol style="list-style-type: none"> Within five days of launch of the Command Module (CM), ten neutron flux detectors will be deployed in accordance with procedures contained in the appropriate checklist. Four detectors, designated 'A', will be deployed a minimum of 18 days and subsequently will be stowed in a return container in the CM for return to earth on SL-2. Six detectors, designated 'B', will not be retrieved until the latter part of SL-4. <p>NOTES:</p> <ol style="list-style-type: none"> Neutron flux detectors deployed in accordance with accompanying table.
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4-54A

ED 76 TABLE OF NEUTRON FLUX DETECTOR DEPLOYMENT AND RETRIEVAL

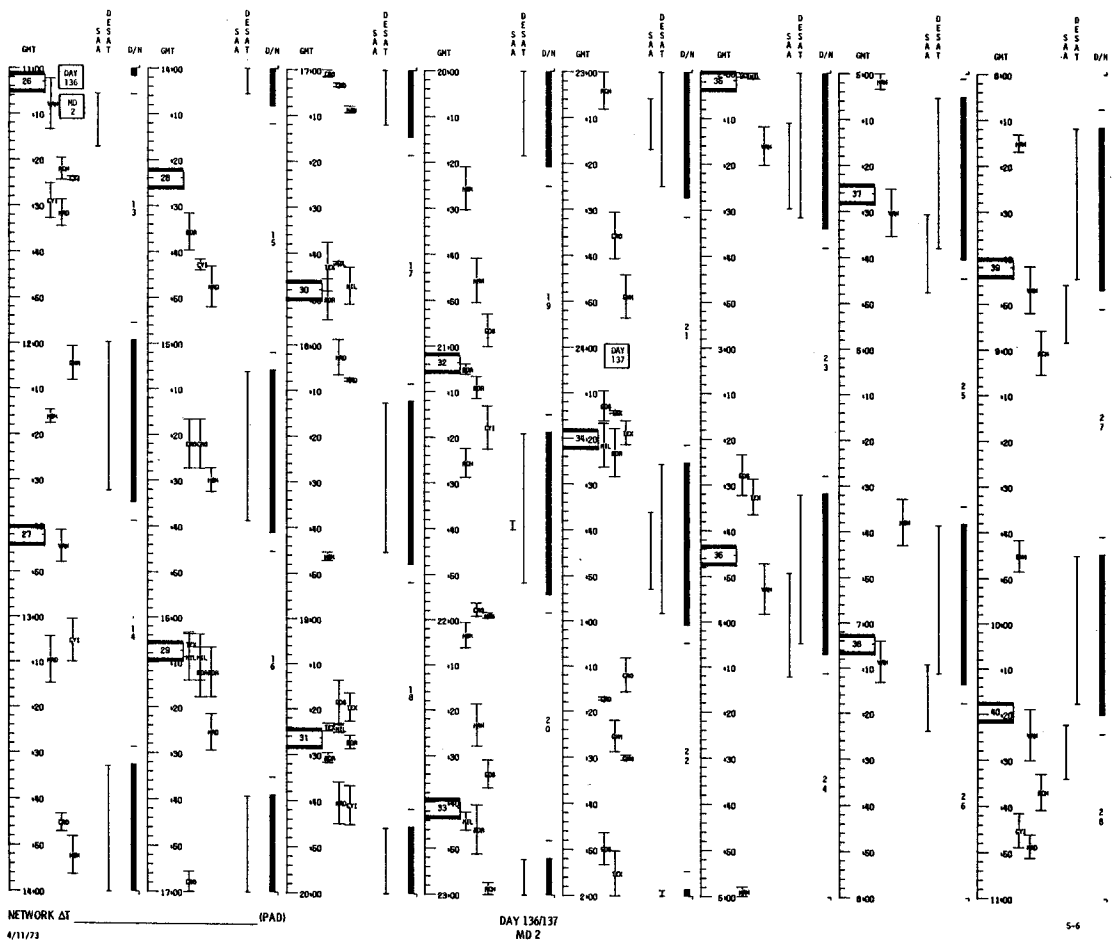
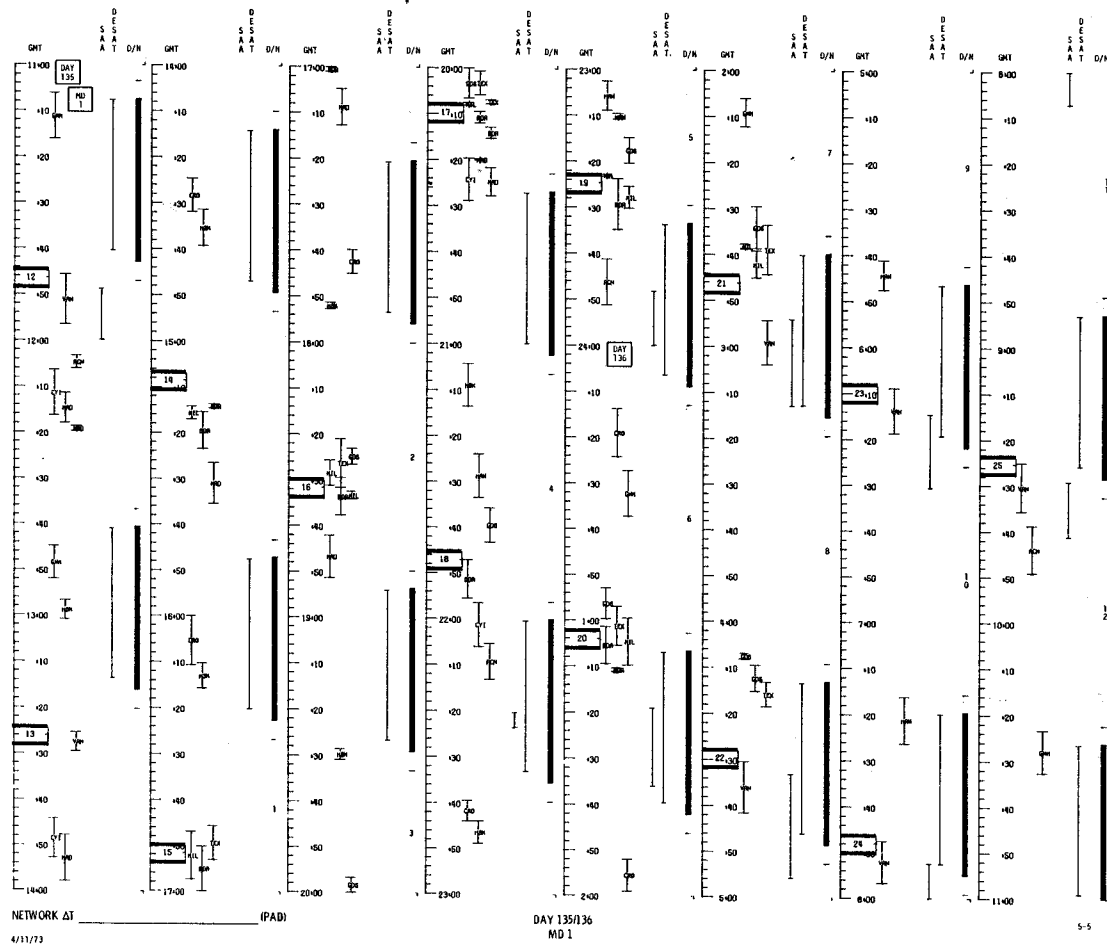
Detector	Deployment Location* (OWS Forward Compartment)	Neutron Detector Retrieved on Mission:
1B	On wall at -Y axis behind OWS film vault (locker F510)	SL-4
2B	On wall at -Z axis above the SAL	SL-4
3B	On experiment compartment ceiling next to ingress/egress opening and close to -Y axis	SL-4
4B	On center of Water Tank No. 9 (WT9)	SL-4
5B	On inboard end of WT9 adjacent to WT8	SL-4
6B	On outboard end of WT9 adjacent to WT10	SL-4
1A	Adjacent to Detector 1B	SL-2
2A	Adjacent to Detector 2B	SL-2
3A	Adjacent to Detector 3B	SL-2
4A	Adjacent to Detector 4B	SL-2

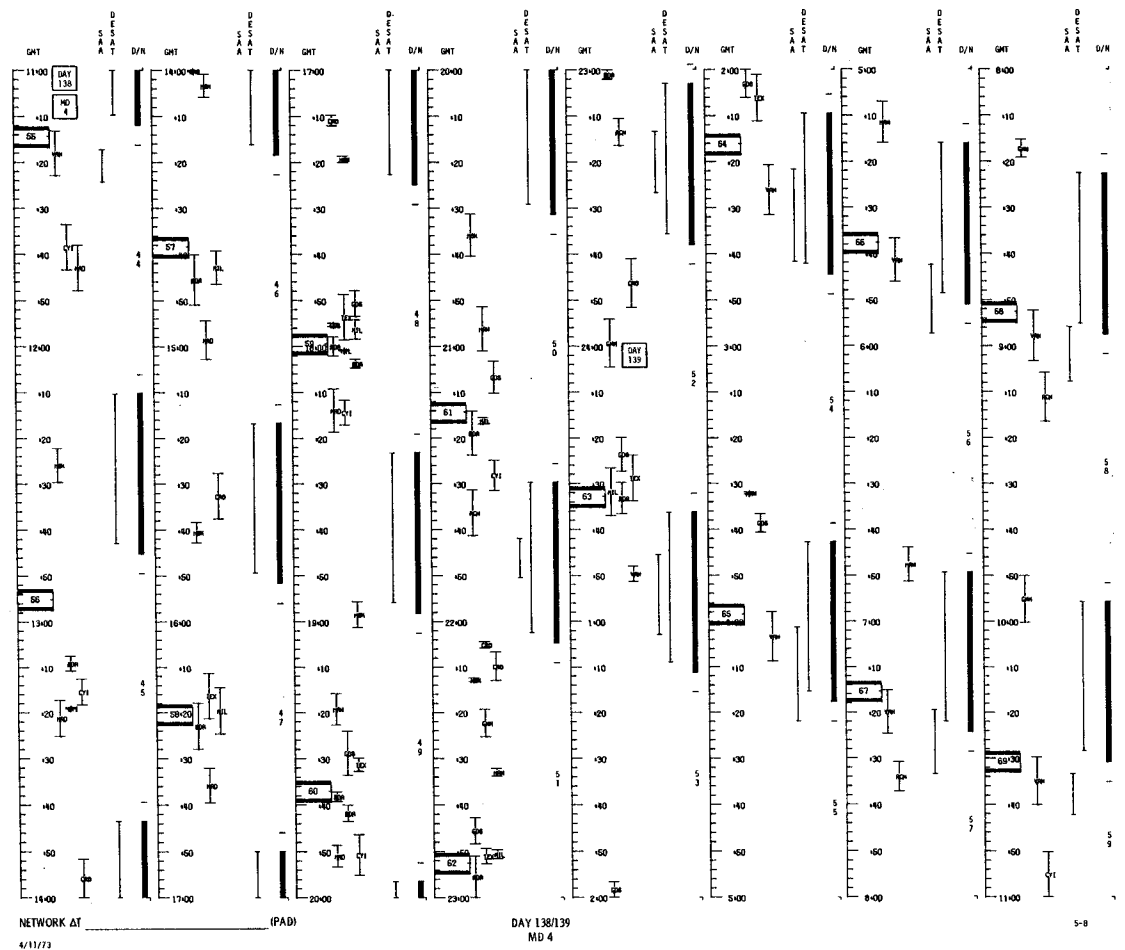
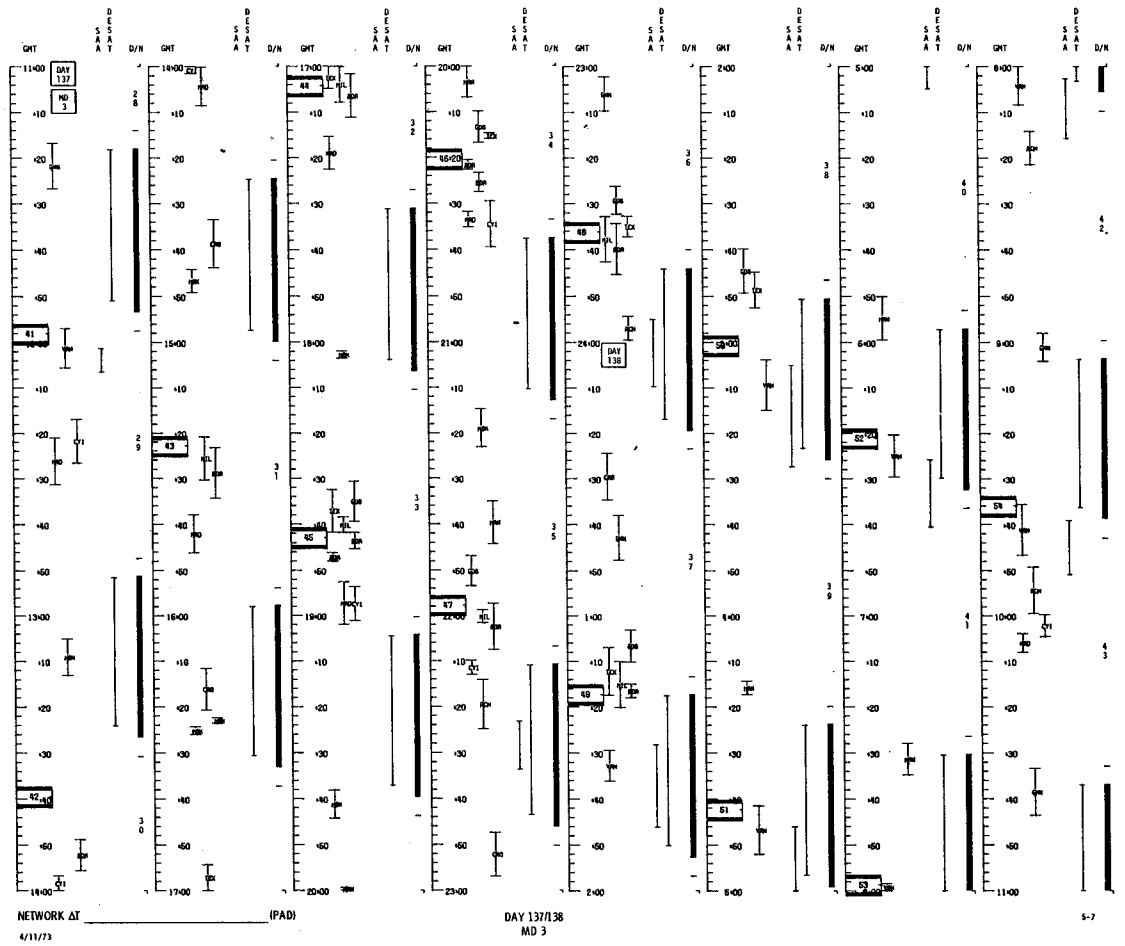
*Mass Properties Axis System

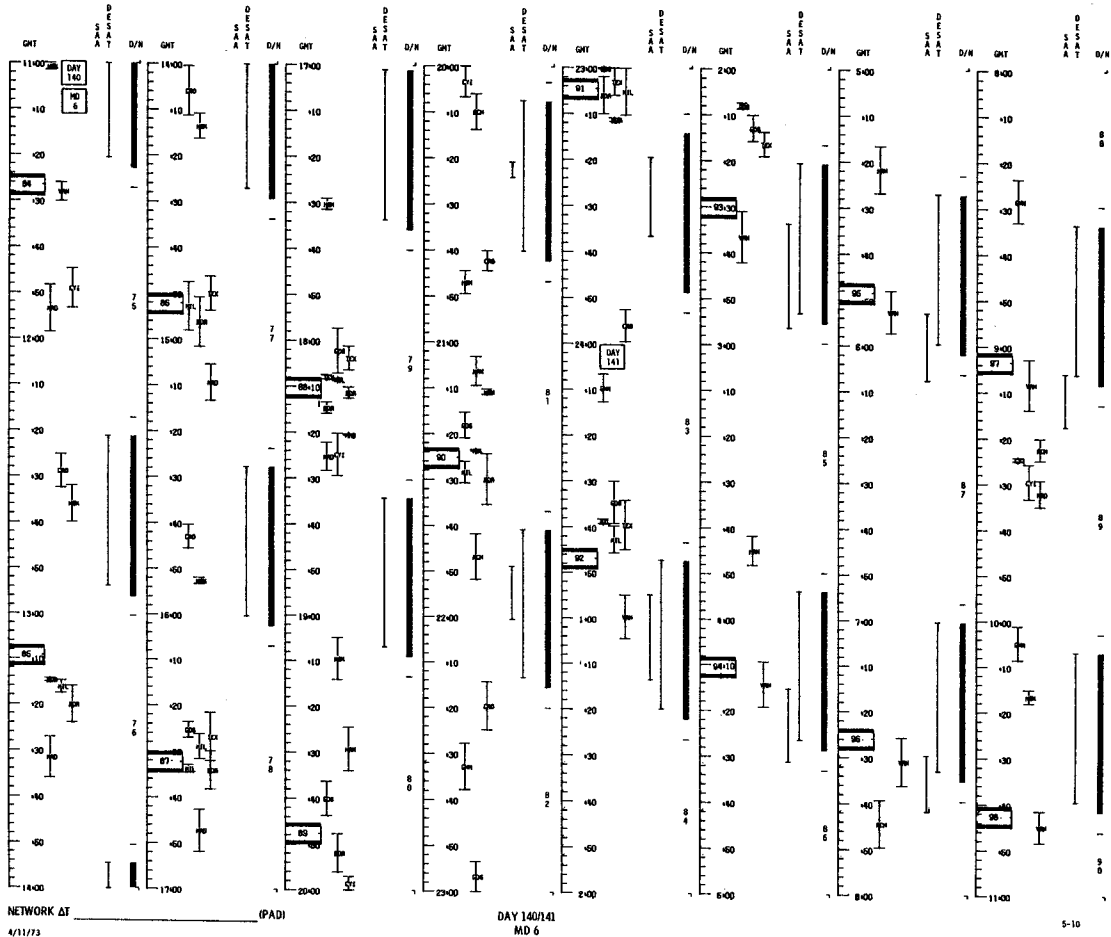
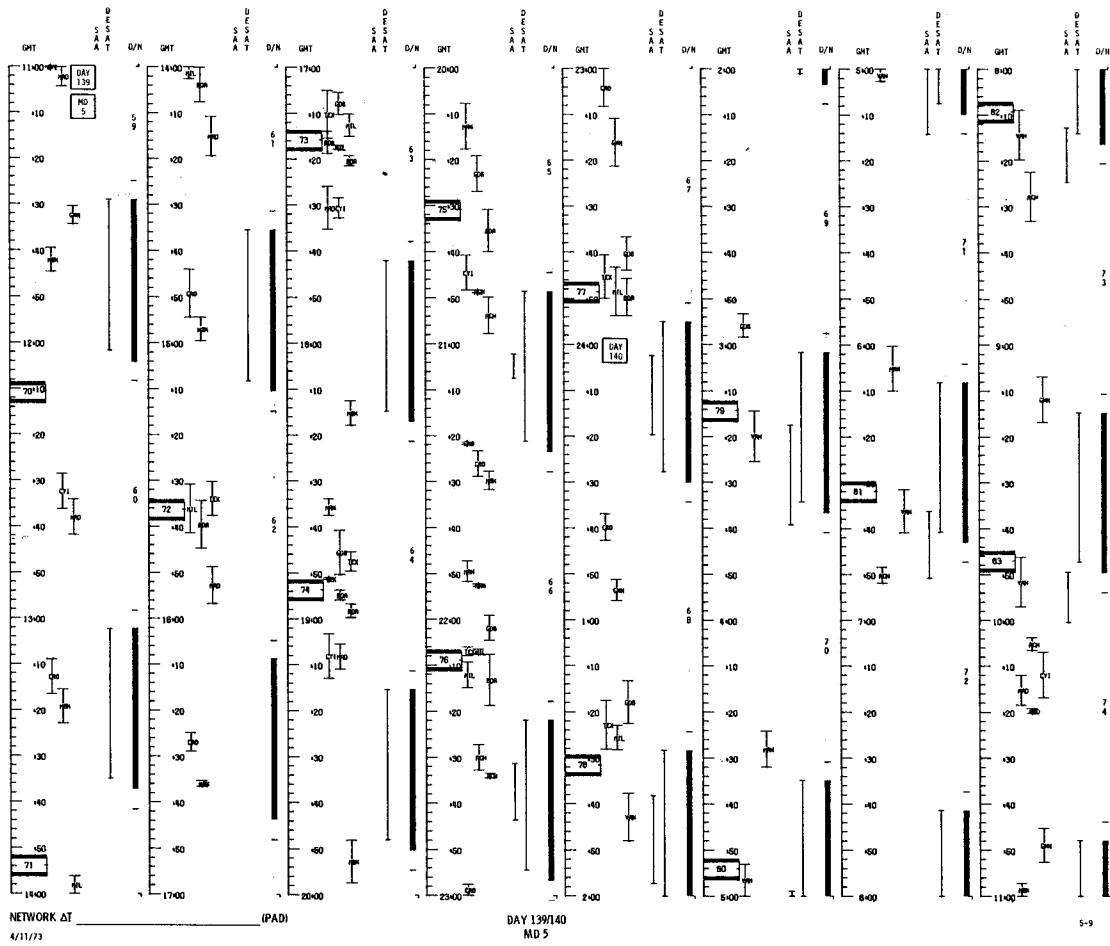
4-548

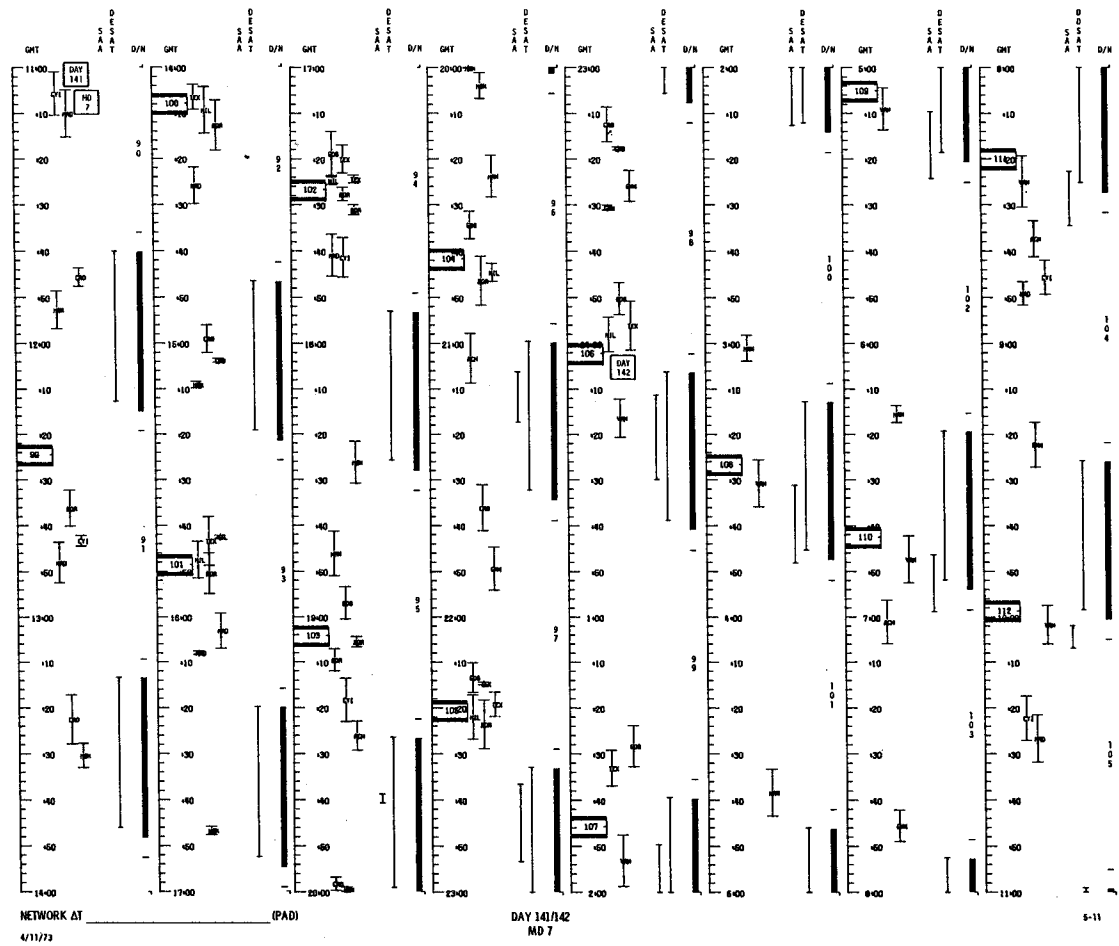
FLIGHT PLAN OVERVIEW

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>HK NOTES PRE-SLEEP-HK1A, 3A, CM2, 4 S10 min-HK5A, 6A, 7A, 7D, 7E, 7K, 10A, 10D, 11B, 14A, 14D, 14F, 14H, 28F, 28G, 28J, 60D, 60E*, 60H, 60L, 60N, 60P 15:30 min-HK3B-1, 7C, 7E, 7F, 7H, 8A, 10B*, 10C, 11A, 14C, 14E, 14G, 28L, 60A*, 60C, 60R</p>	<p>≥35 min-HKCM7, 7B, 7J, 14B, 24A, 28B, 60B, 60E * - Requires 2 Crewmen. ** - Tasks need to be done if time permits.</p>	<p>MAY 15 1 135</p>	<p>MAY 16 2 136</p>	<p>MAY 17 3 137</p>	<p>MAY 18 4 138</p>	<p>MAY 19 5 139</p>
<p>HK-1A, CM2</p>	<p>HK-1A, 3A, 3B-1, 6A (20 min)</p>	<p>HK-1A, 7J, CM2, CM4, CM7 (35 min + 7J)</p>	<p>HK-1A, CM2 ACTIVATION</p>	<p>HK-1A, 3A, 3B-1, 60E, 60G*, CM2, CM4 (1 HR 35 min)</p>	<p>HK-1A, 3A, 3B-1, 60E, 60G*, CM2, CM4 (1 HR 35 min)</p>	<p>HK1A, 5A (10 min)</p>
<p>SPT A M131-2 EREP-2</p>	<p>CDR B M131-1 M133 EREP 3, EREP CAL NRL CALROC</p>	<p>OFF-DUTY</p>	<p>ACTIVATION TRIM BURN M110 PLT A M133</p>	<p>ACTIVATION TRIM BURN M110 PLT A M133</p>	<p>ATM C/O EREP C/O CDR A SPT A M133</p>	<p>M110 PLT A M133 EREP 1</p>
<p>TV-13</p>	<p>TV-15, 12</p>	<p>TV-30</p>	<p>TV-40</p>	<p>TV-32, 35</p>	<p>TV-1, 2</p>	<p>TV-24, 22, 3</p>
<p>MAY 20 6 140</p>	<p>MAY 21 7 141</p>	<p>MAY 22 8 142</p>	<p>MAY 23 9 143</p>	<p>MAY 24 10 144</p>	<p>MAY 25 11 145</p>	<p>MAY 26 12 146</p>
<p>HK-1A, CM2</p>	<p>HK-1A, 3A, 3B-1, 6A (20 min)</p>	<p>HK-1A, 7A, 7B, 7C, 7D, 7E, (Photo), 7F, 7G (2 HR 55 min)</p>	<p>HK-1A, 7A, 7B, 7C, 7D, 7E, (Photo), 7F, 7G (2 HR 55 min)</p>	<p>HK-1A, 3A, 3B-1, 5A, 8A, 60E, CM2 (1 HR 45 min) 010 XFER (45 min)</p>	<p>HK-1A, 7K (10 min)</p>	<p>HK-1A, 10A, 10B-1*, 10B-2*, 10C, 10D, 11B, CM2, CM4 (1 HR 5 min)</p>
<p>SPT A M131-2 EREP-2</p>	<p>CDR B M131-1 M133 EREP 3, EREP CAL NRL CALROC</p>	<p>OFF-DUTY</p>	<p>TRIM BURN PLT B M133 EREP 4</p>	<p>SPT B</p>	<p>M110 CDR A M131-1 M133 EREP 5</p>	<p>PLT A M131-2 EREP 6</p>
<p>TV-13</p>	<p>TV-15, 12</p>	<p>TV-30</p>	<p>TV-11, 28</p>	<p>TV-32, 35</p>	<p>TV-4, 29, 19</p>	<p>TV-33, 21</p>
<p>MAY 27 13 147</p>	<p>MAY 28 14 148</p>	<p>MAY 29 15 149</p>	<p>MAY 30 16 150</p>	<p>MAY 31 17 151</p>	<p>JUNE 1 18 152</p>	<p>JUNE 2 19 153</p>
<p>HK-1A, 3A, 3B-1, 6A, 11A (40 min)</p>	<p>HK-1A, 60A*, 60N (1 HR 5 min)</p>	<p>HK-1A, 5A, 7D, 7E, 7F, 7G, 14D, 14G, 14H, CM7 (2 HR 15 min)</p>	<p>HK-1A, 3A, 7D, 14C, 14E, 60B, 60E (Photo) (3 HR 25 min + 7J)</p>	<p>HK-1A, 7A, 7B, 7C, 14A, 14B, 14F (3 HR 45 min)</p>	<p>HK-1A, 7K, 8A (30 min)</p>	<p>HK-1A, 3A, 6A, 60R (Tanks 2 & 10) (35 min)</p>
<p>SPT A M133 EREP 7</p>	<p>CDR B IMSS (POST SLEEP) EREP B F/C SHUT DOWN</p>	<p>SPT B PLT B M131-1 M133 IMSS-1 HCO CALROC</p>	<p>OFF-DUTY</p>	<p>CDR A M133 EREP 9</p>	<p>PLT A EREP 10</p>	<p>SPT A M133 EREP 11 EREP 12</p>
<p>TV-29, 16</p>	<p>TV-31, 3A, 29 (TOUR)</p>	<p>TV-20, 8</p>	<p>TV-11, 28</p>	<p>TV-14, 26 (TOUR)</p>	<p>TV-9</p>	<p>TV-5, 29, 23</p>
<p>JUNE 3 20 154</p>	<p>JUNE 4 21 155</p>	<p>JUNE 5 22 156</p>	<p>JUNE 6 23 157</p>	<p>JUNE 7 24 158</p>	<p>JUNE 8 25 159</p>	<p>JUNE 9 26 160</p>
<p>HK-1A, 3B-1, 5A (25 min)</p>	<p>HK-1A</p>	<p>HK-1A, 3A, 10A, 10B-1*, 10B-2*, 10C, 10D, CM7 (1 HR 35 min) D22 XFER (1 HR)</p>	<p>HK-1A, 7D, 7E (Photo), 7F, 7G, 7J, 11B, 60B, 60E (Photo) (3 HR 20 min + 7J)</p>	<p>HK-1A, 7A, 7B, 7C, 11A (2 HR 15 min)</p>	<p>HK-1A, 3A, 5A, 6A, 7K (25 min) D25 XFER (45 min)</p>	<p>HK-1A, 8A, 24A (1 HR)</p>
<p>CDR B M131-1</p>	<p>PLT B M133 EREP 13</p>	<p>SPT B E-7 CHECKS M131-2</p>	<p>OFF-DUTY ENTRY SIM M133</p>	<p>CDR A M131-1 M133</p>	<p>SPT A PLT A M133 EREP 14</p>	<p>EVA M133</p>
<p>TV-6</p>	<p>TV-17, 29, 7</p>	<p>TV-18</p>	<p>TV-11, 28</p>	<p>TV-27 (PRESS CONF)</p>	<p>TV-16</p>	<p>TV-EVA</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>	<p>DEACTIVATION</p>	<p>ENTRY SPLASHDOWN</p>	<p>ENTRY SPLASHDOWN</p>	<p>TV-27 (PRESS CONF)</p>	<p>EARLY</p>	<p>LATE</p>
<p>JUNE 10 27 161</p>	<p>JUNE 11 28 162</p>	<p>JUNE 12 29 163</p>	<p>JUNE 13 30 164</p>	<p>JUNE 14 1 165</p>	<p>JUNE 15 2 166</p>	<p>JUNE 16 3 167</p>
<p>HK-1A, 3B-1, 28B, 28L (1 HR 35 min) D27 XFER (5 HR 30 min)</p>	<p>**HK28F, 28G, 28J (15 min)</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>A: M092/M171 B: M092/M093 M131-1 SPT, PLT M131-2 ALL M133 SPT NOMINAL M092 TIMES: CDR AM SPT PM PLT PH</p>	<p>ATRLCK EXPS-BASELINE GOALS S109: 8 PASSES PLUS 2 ED PASSES S183: 8 PASSES T025: 2 RUNS S020: 1 RUN PLUS CAL S149: IN +2 SAL AT END OF MISSION T027: MIN 72 HRS DEPLOYMENT</p>	<p>EARLY</p>	<p>LATE</p>
<p>M110 CDR A IMSS-1-2</p>						



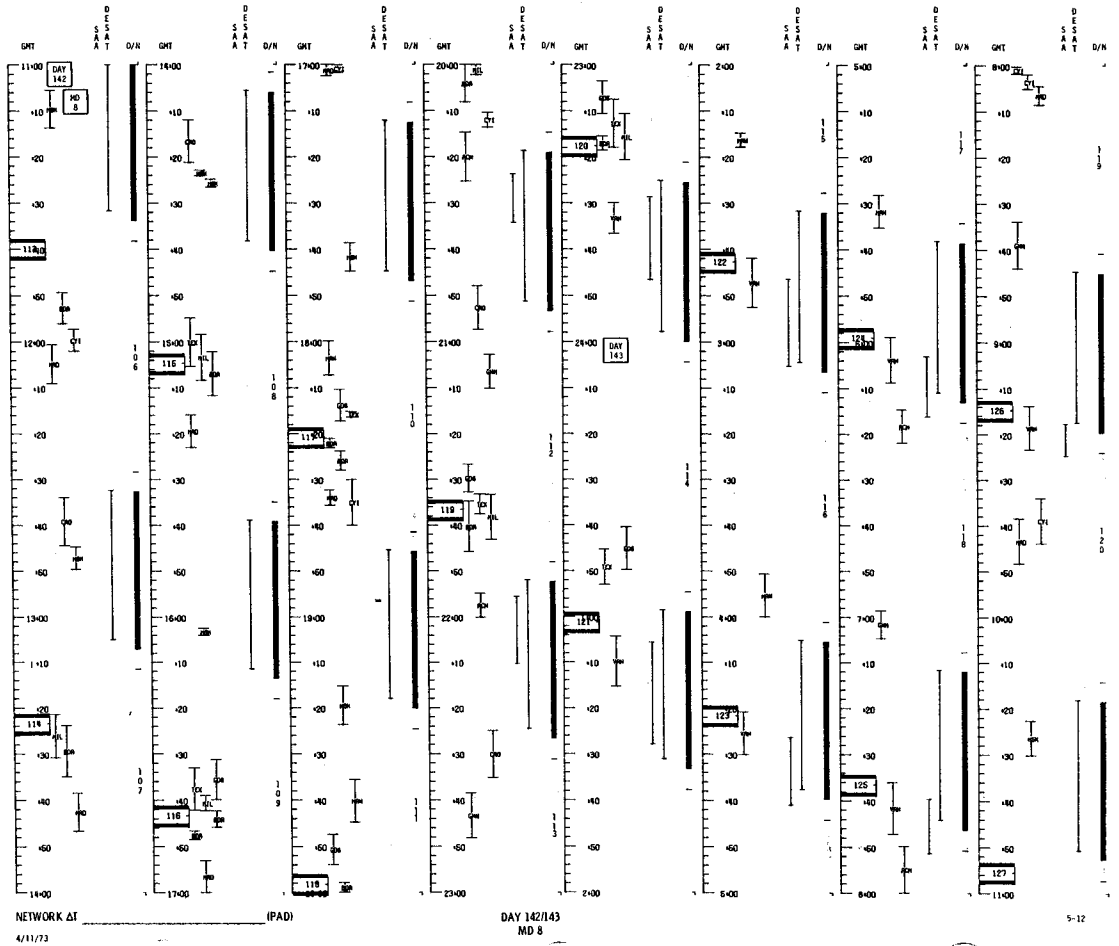






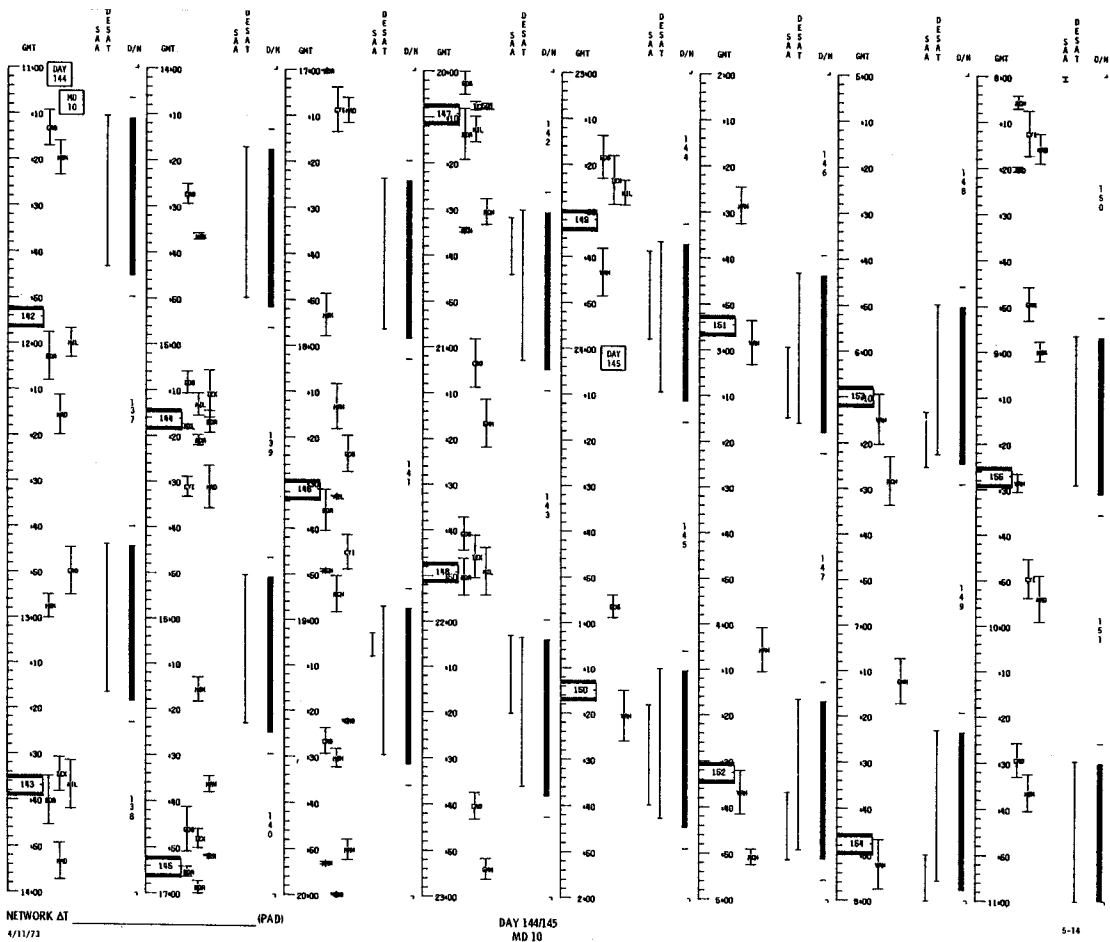
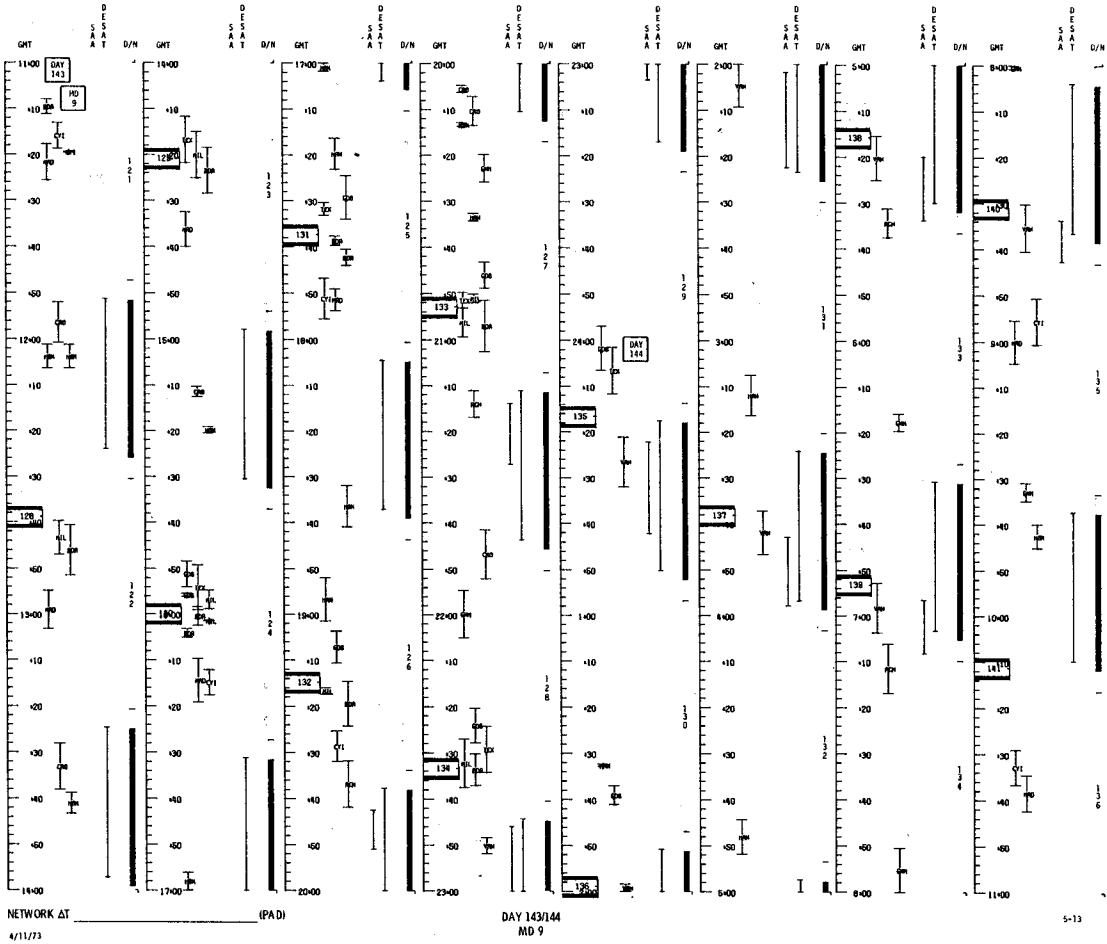
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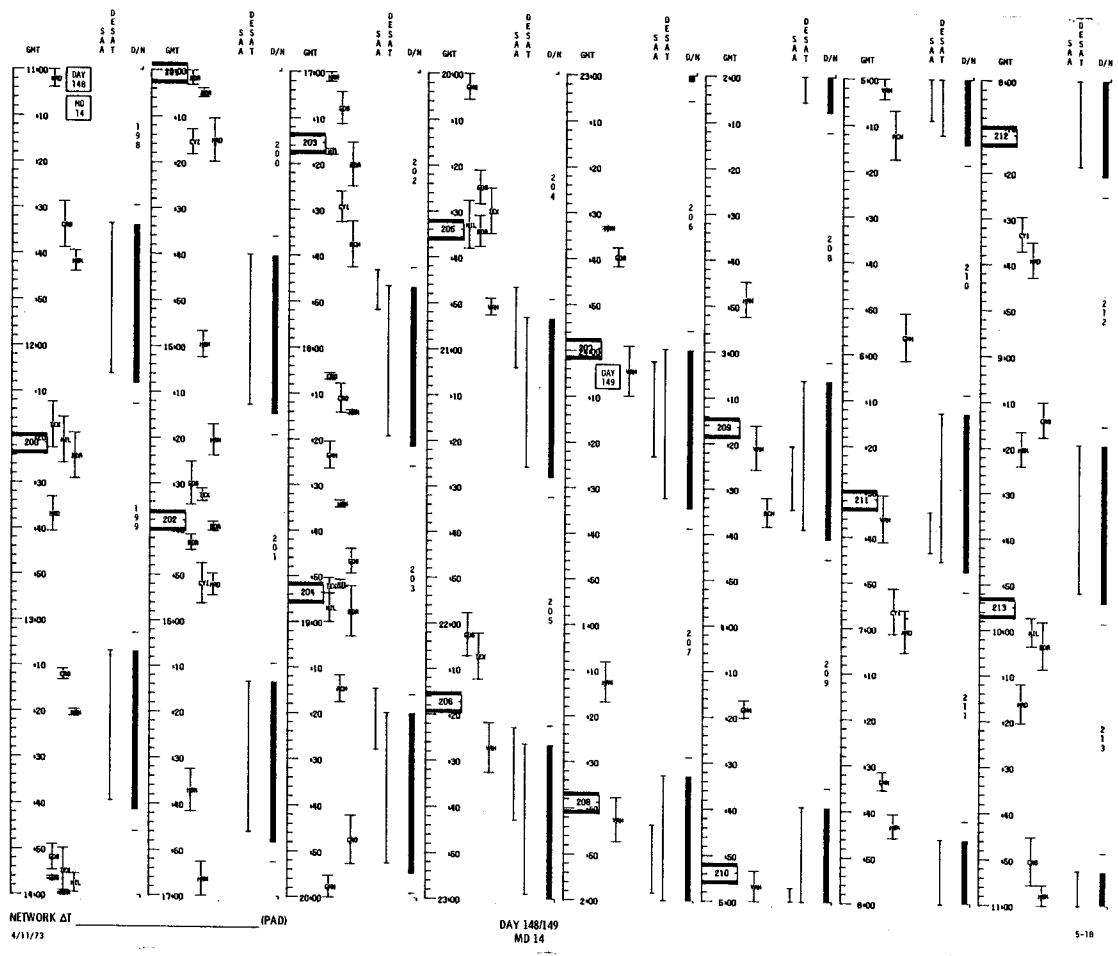
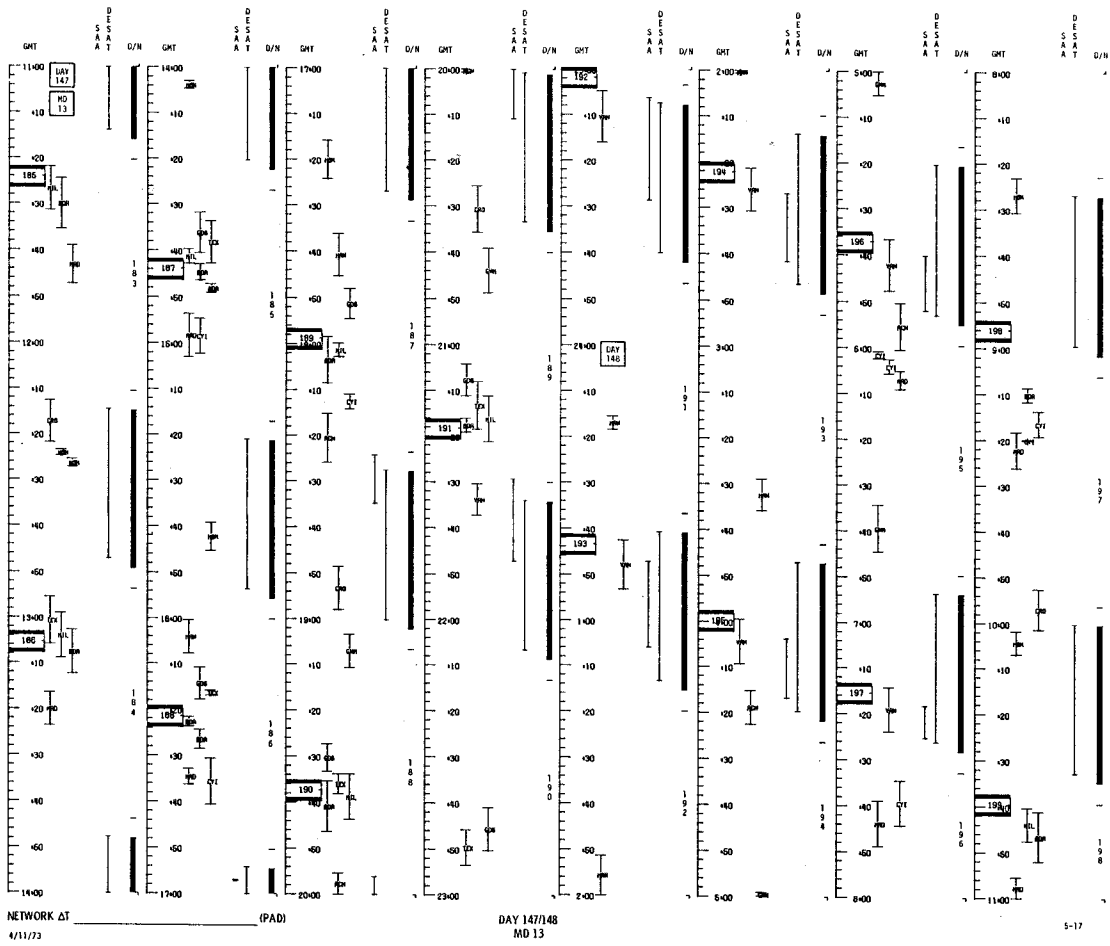
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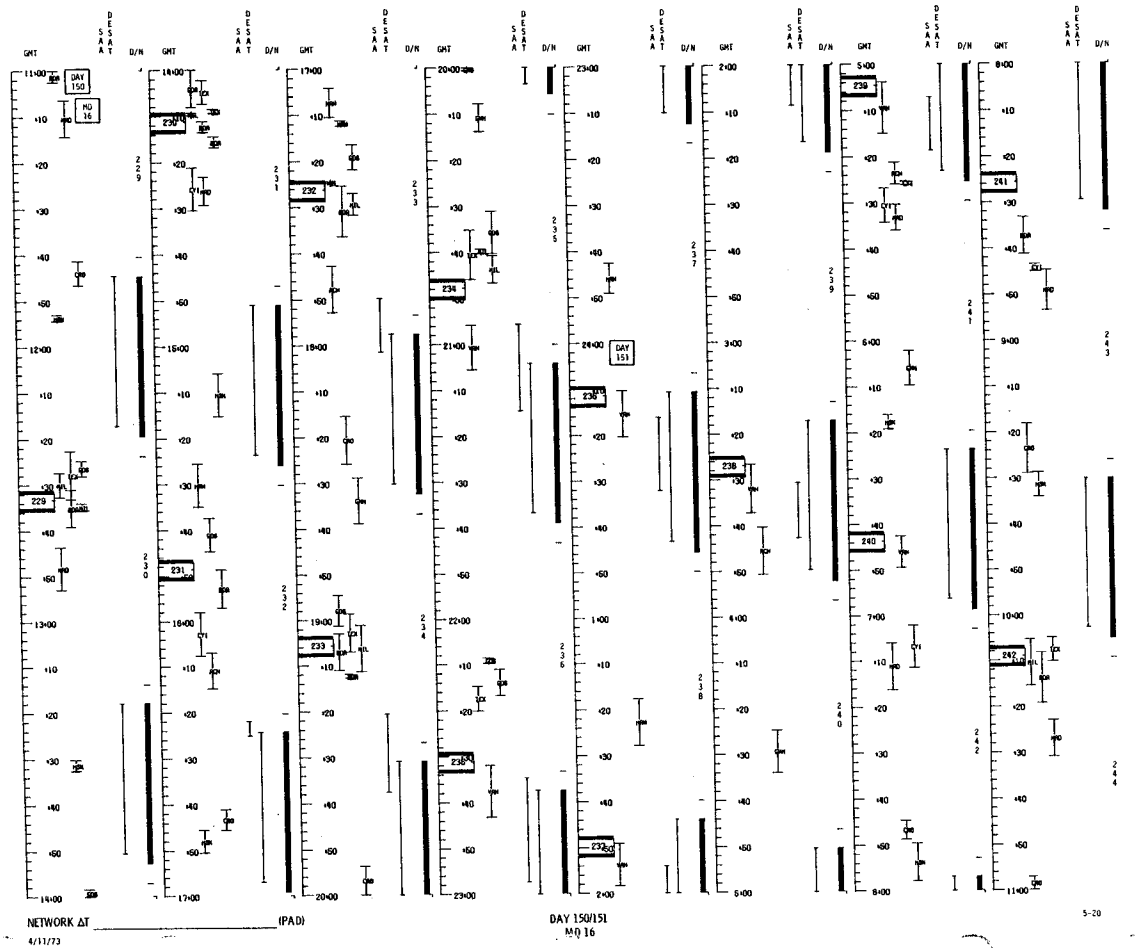
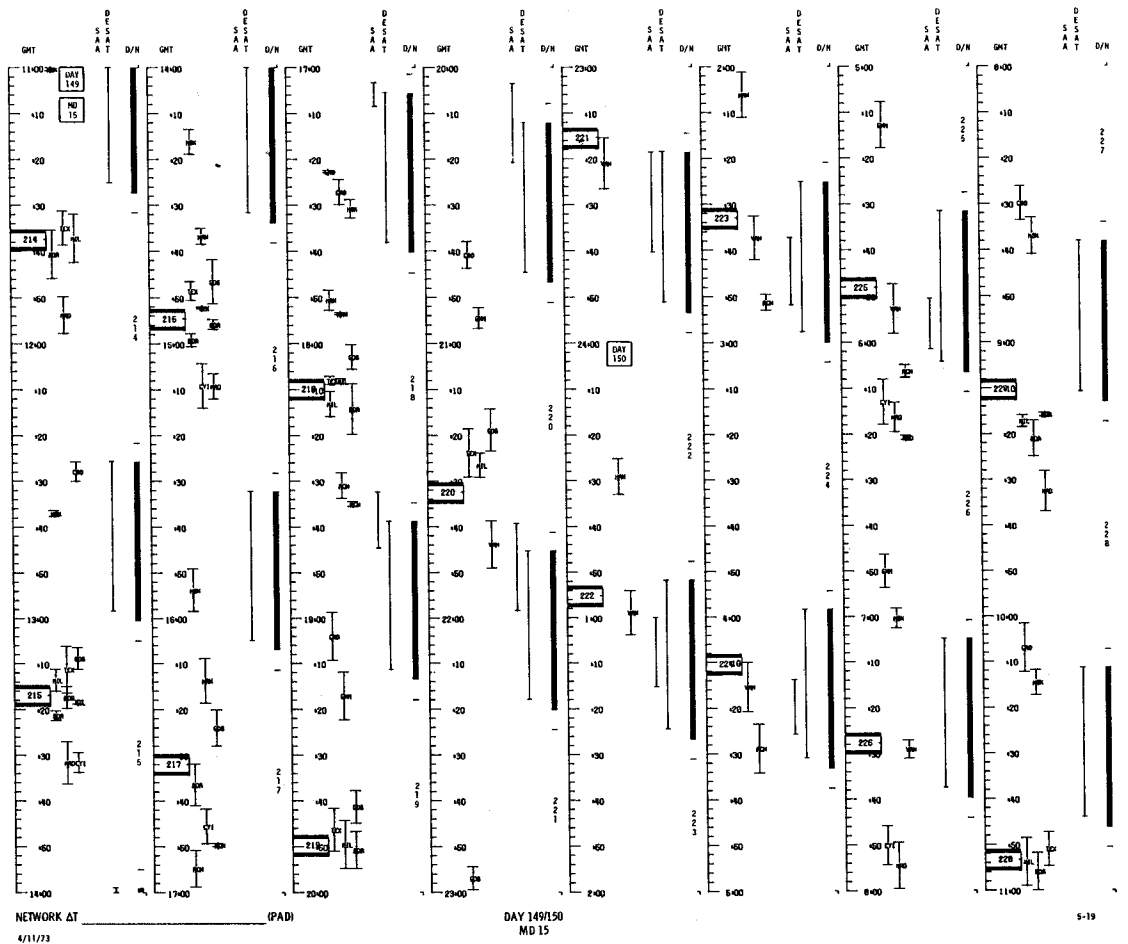


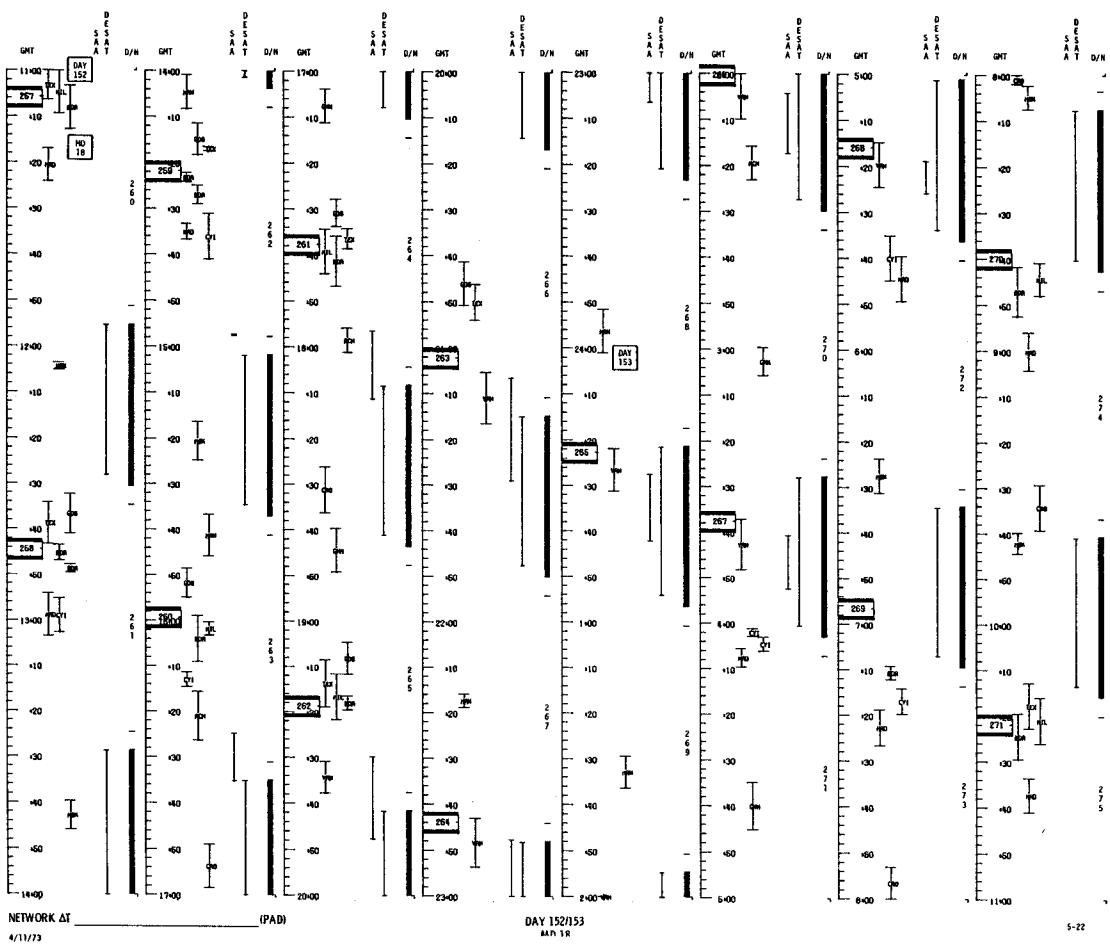
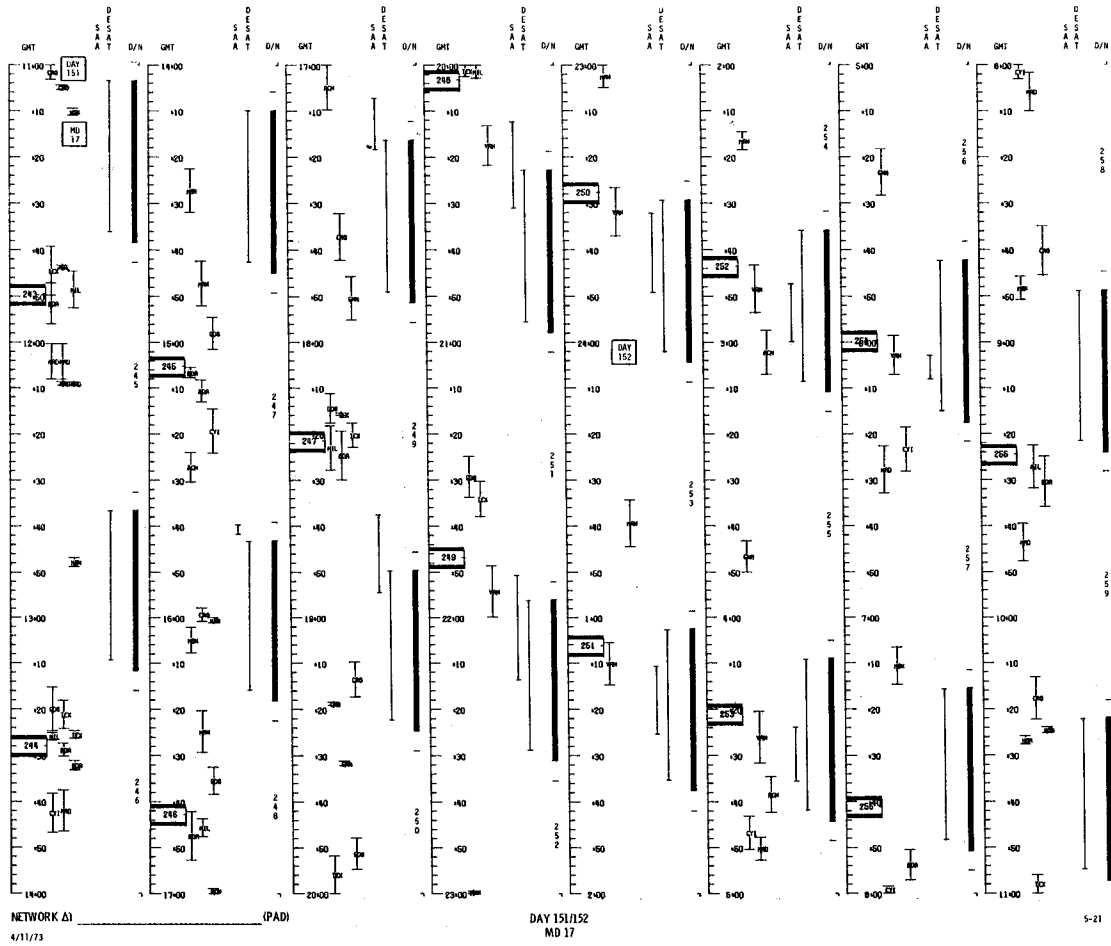
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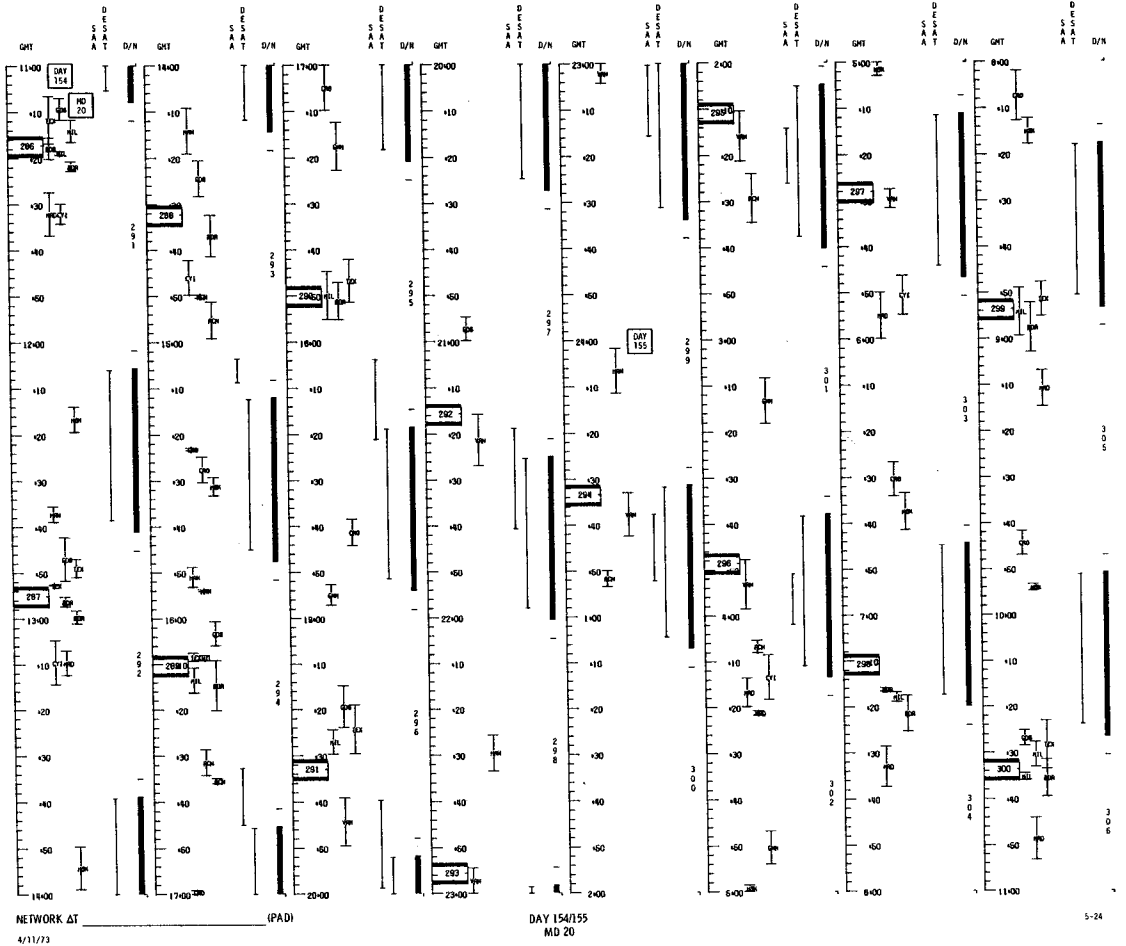
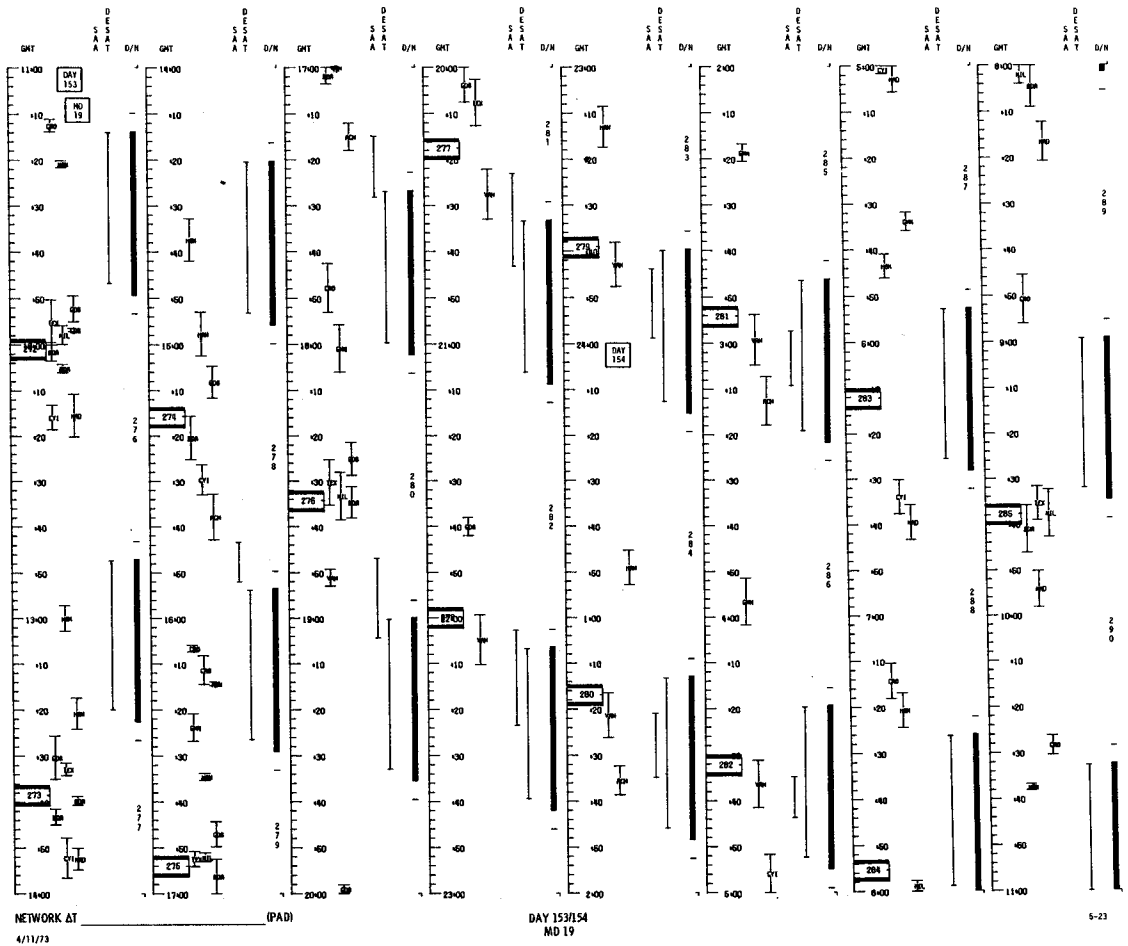
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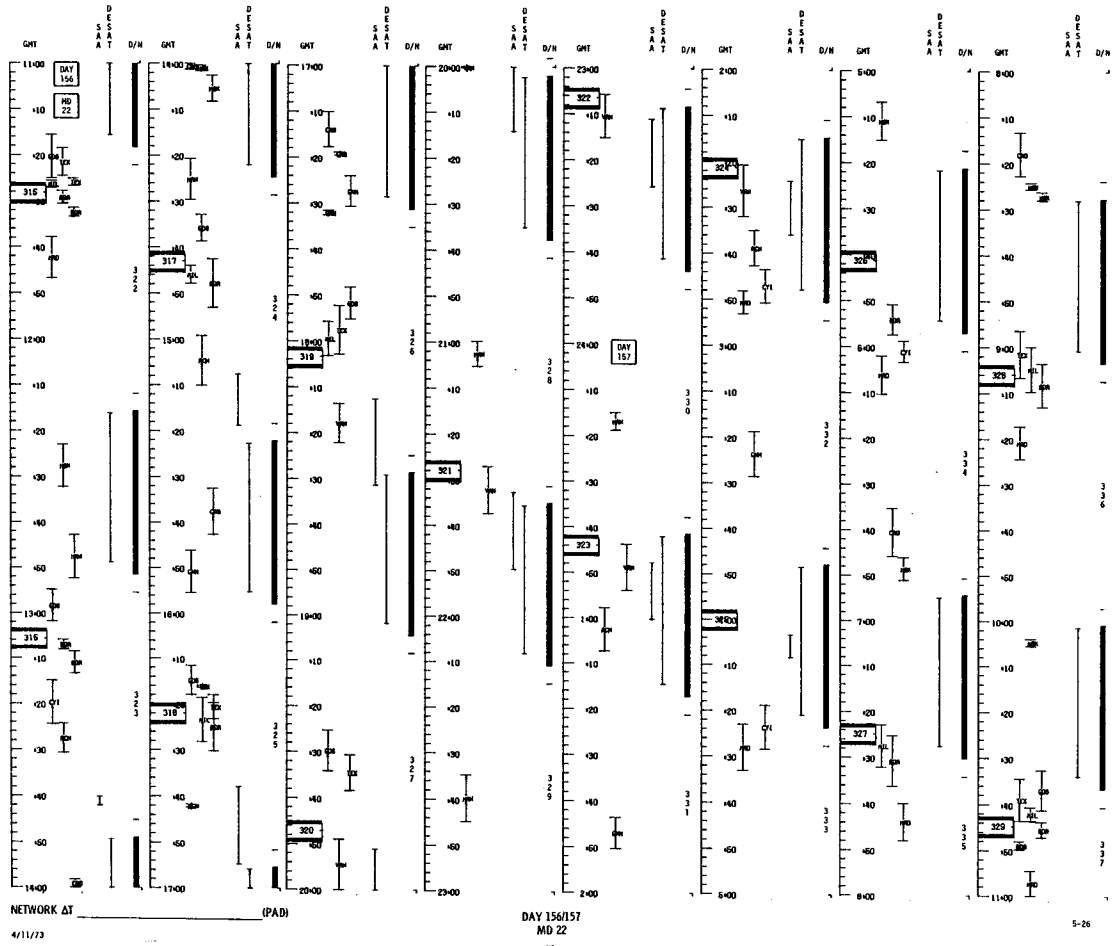
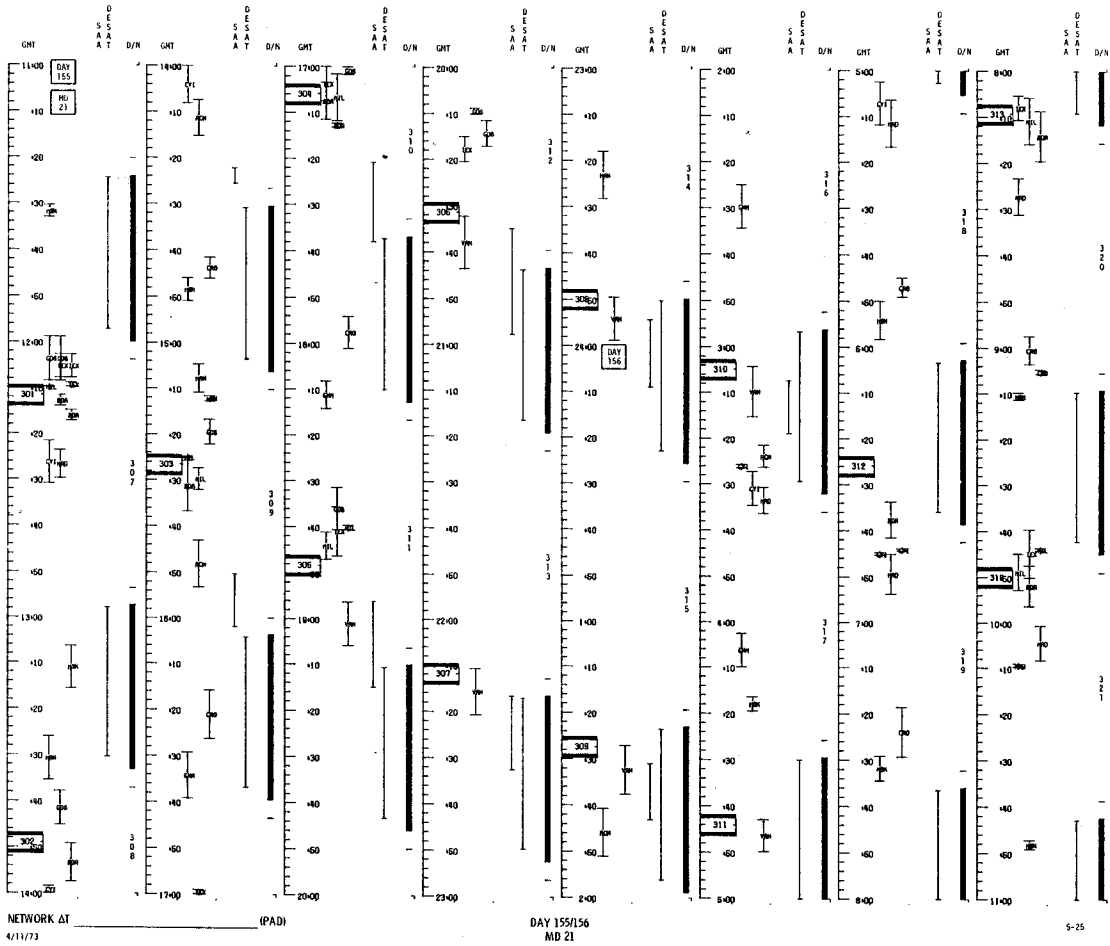


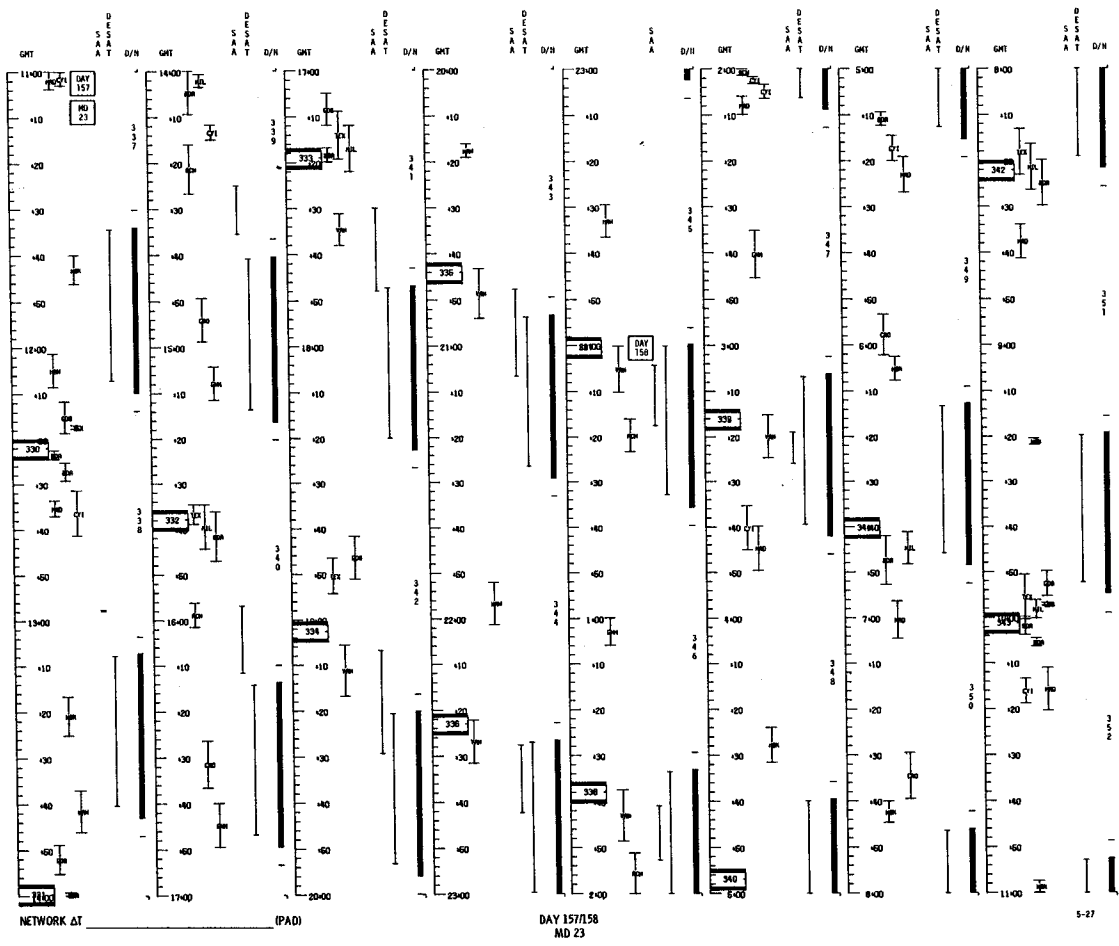




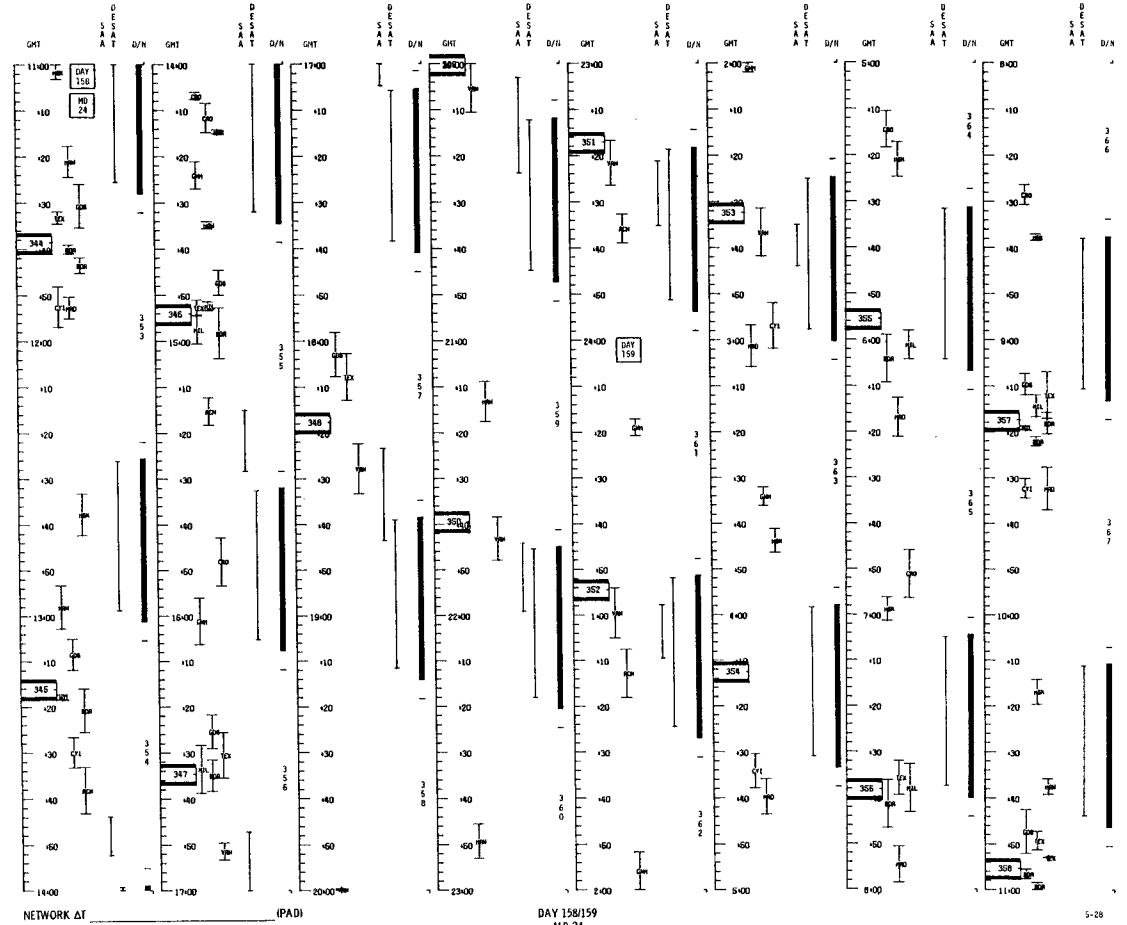




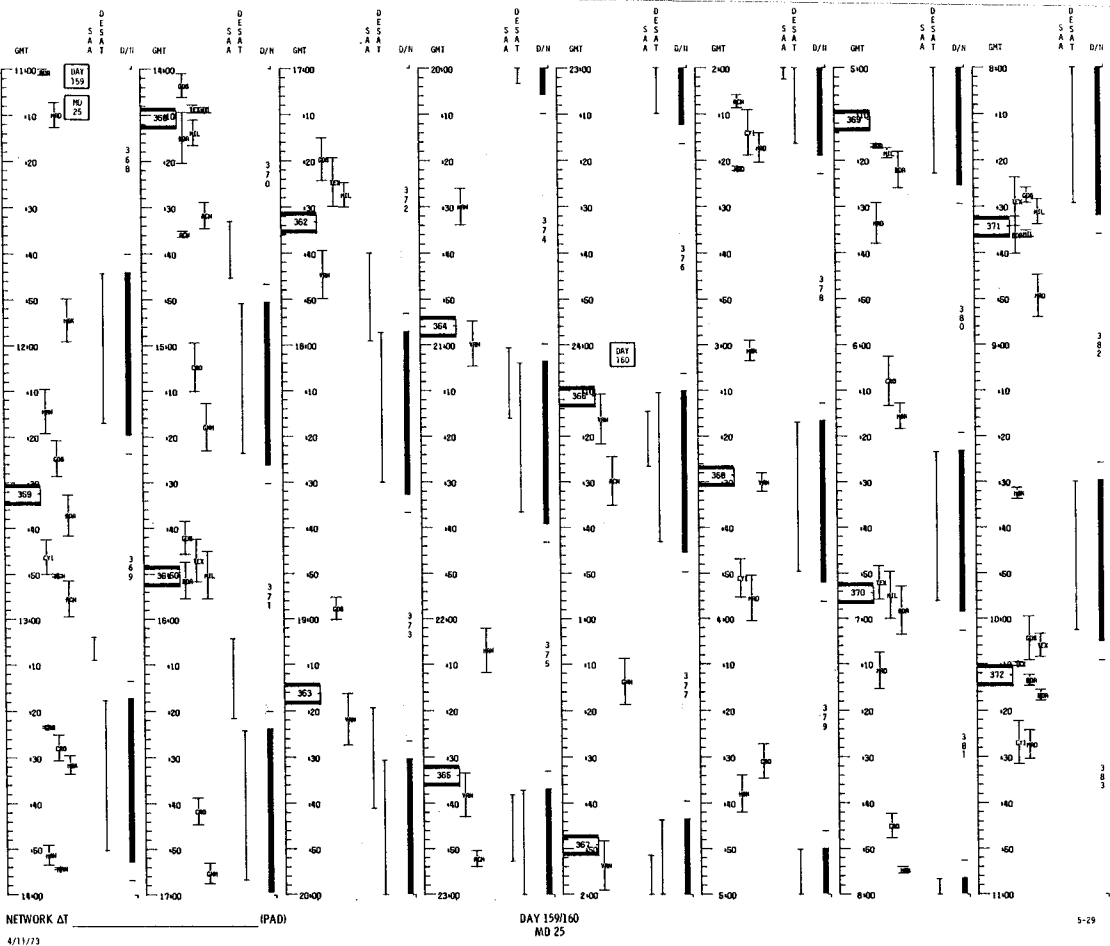
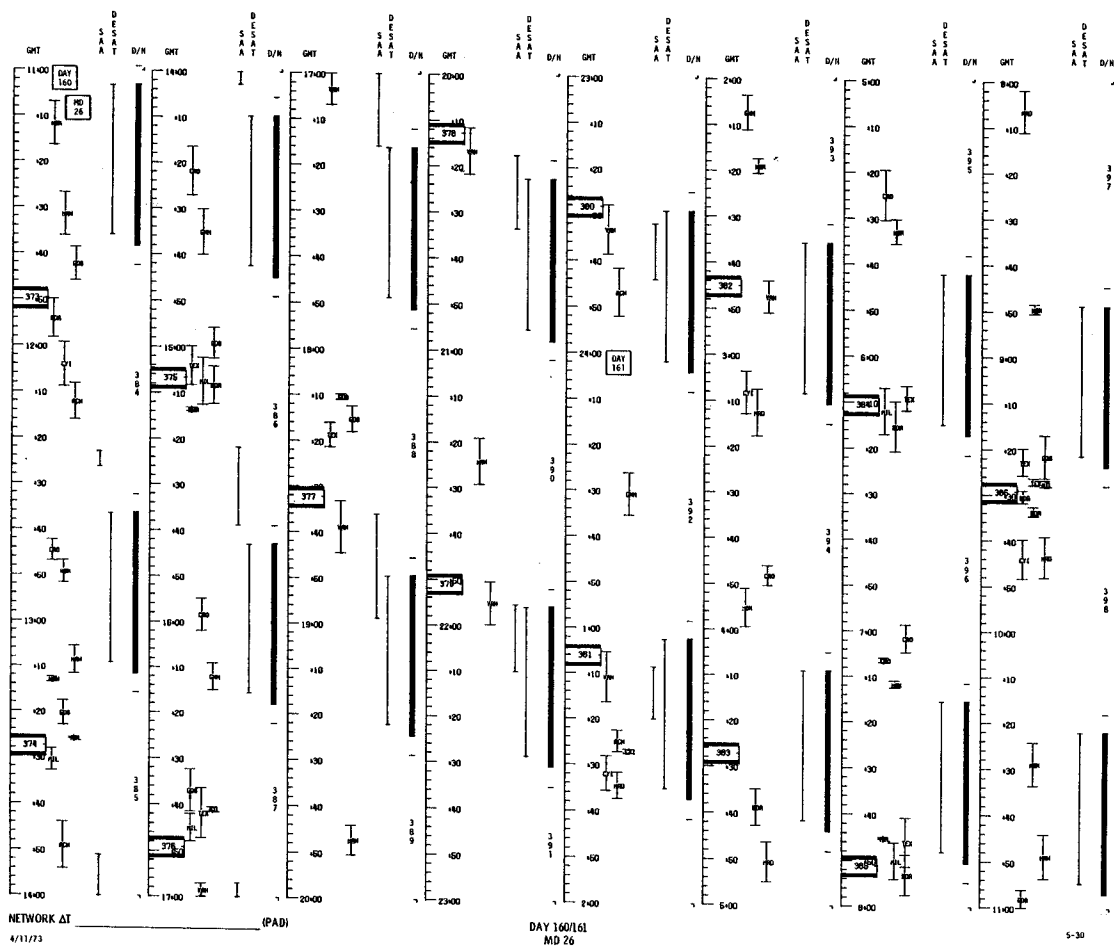


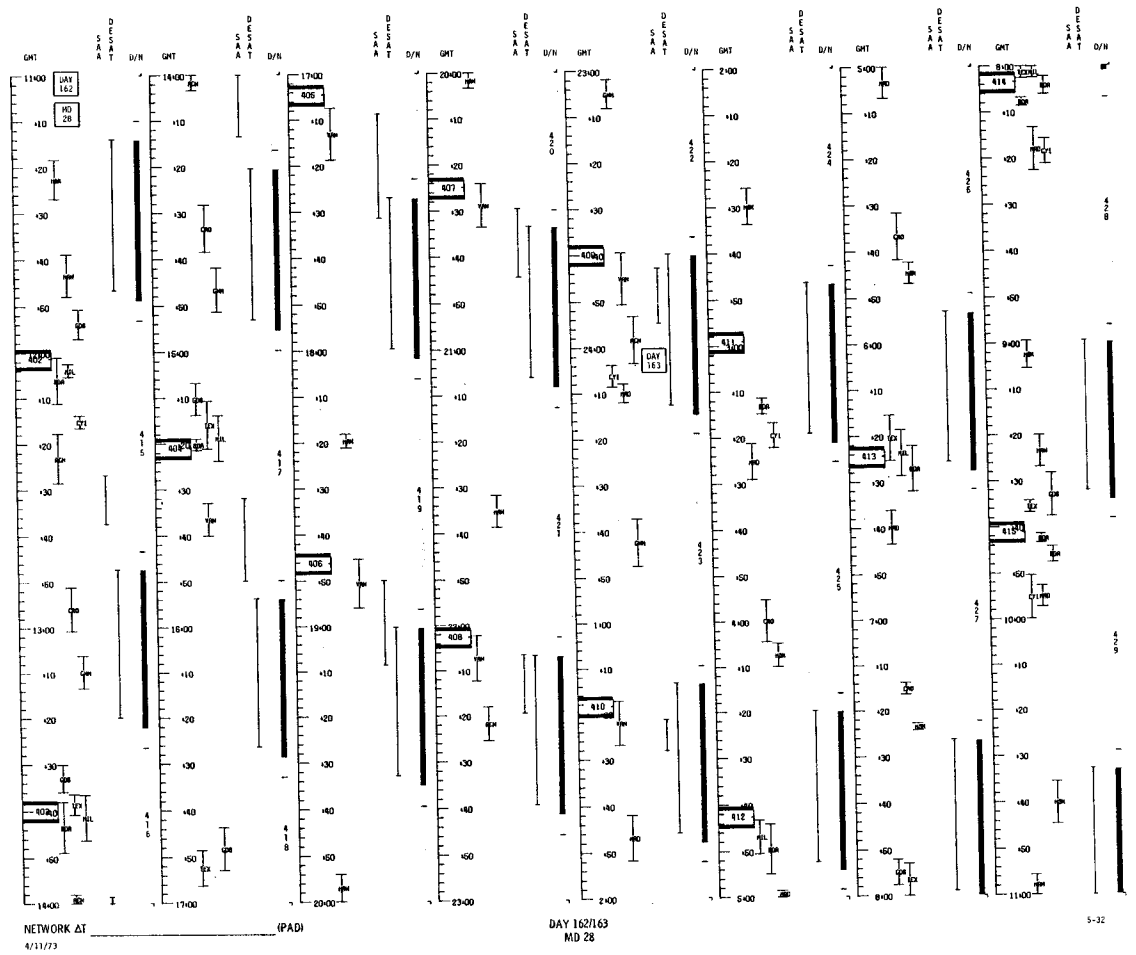
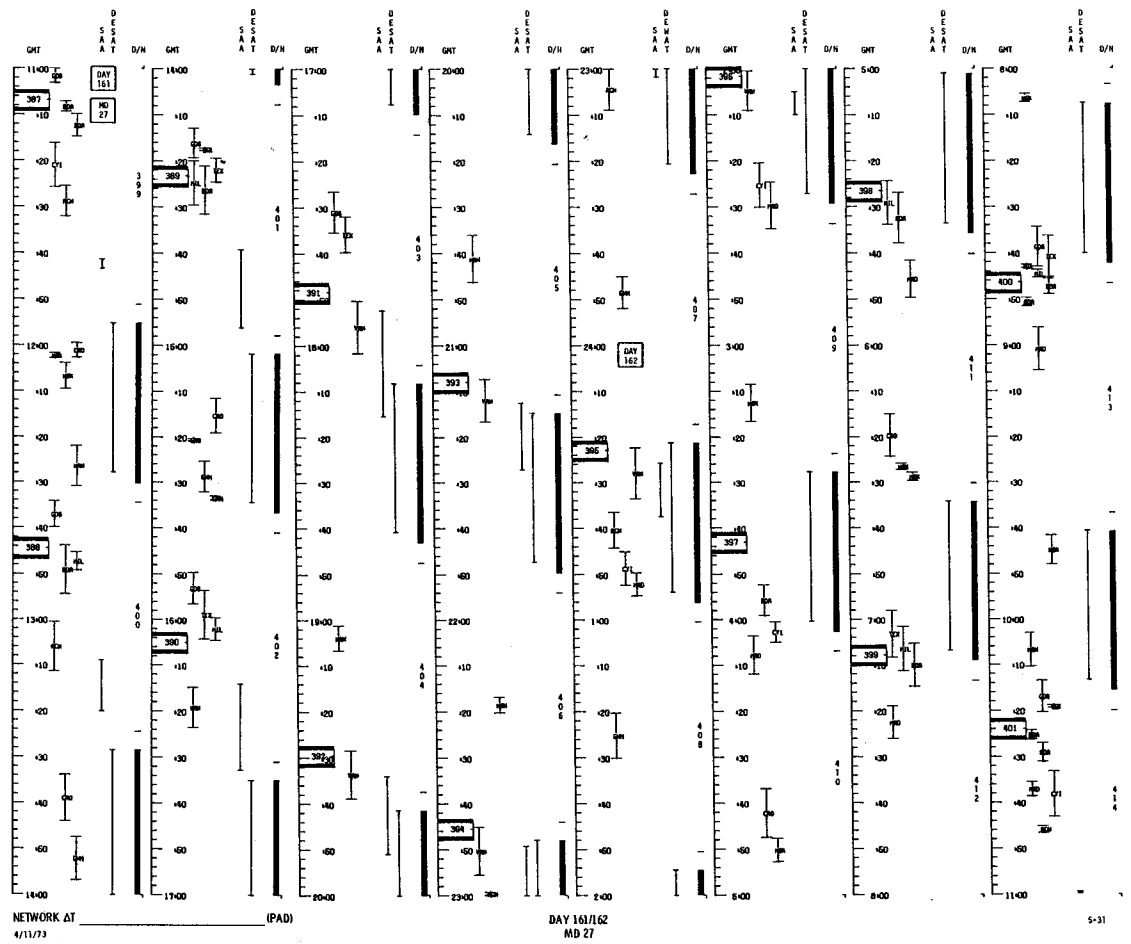


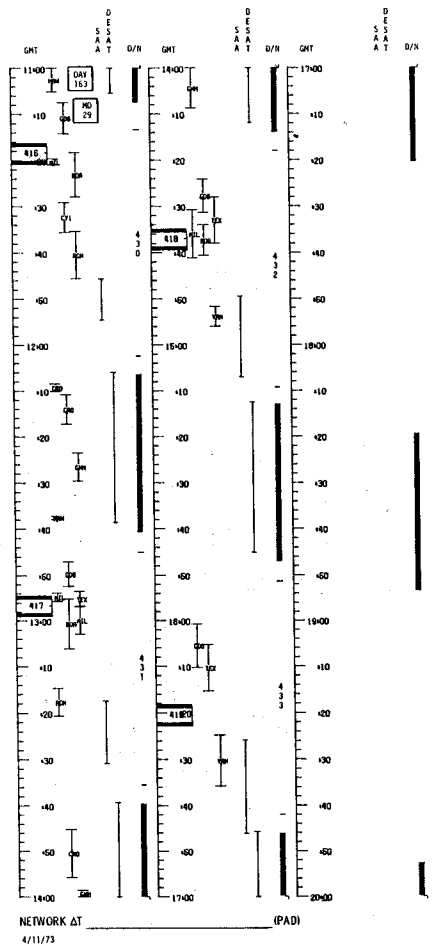
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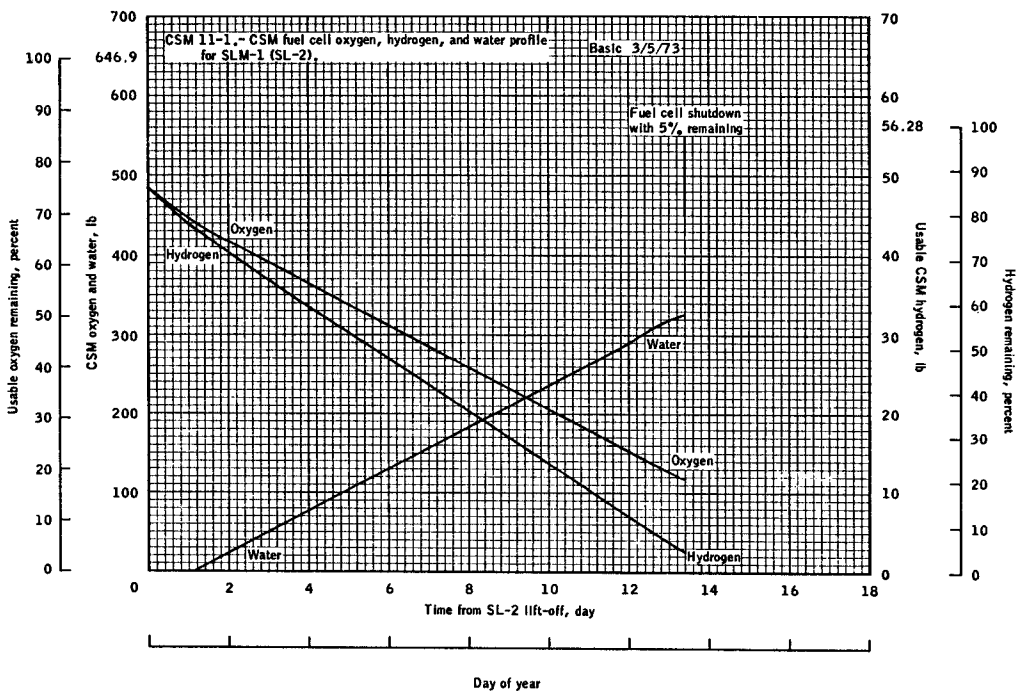




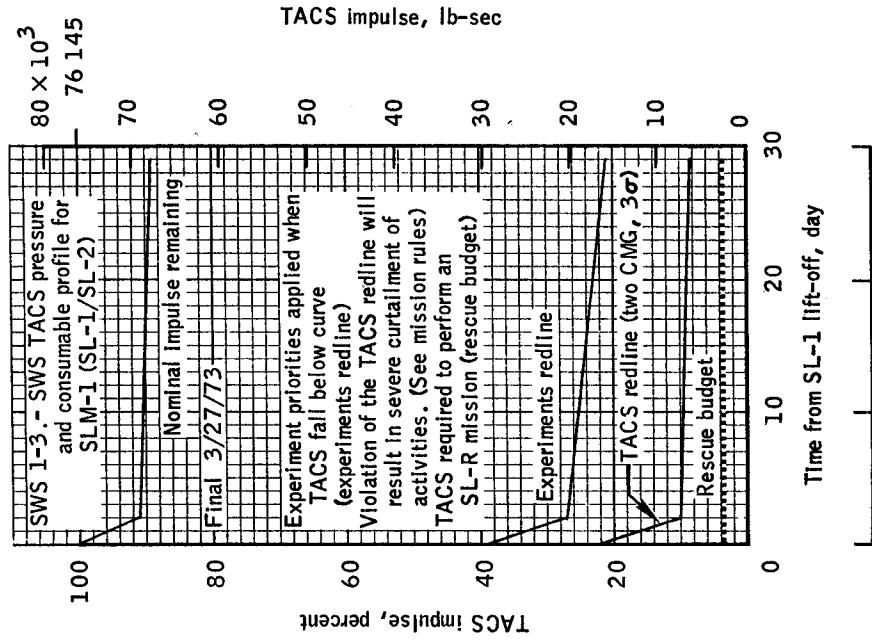
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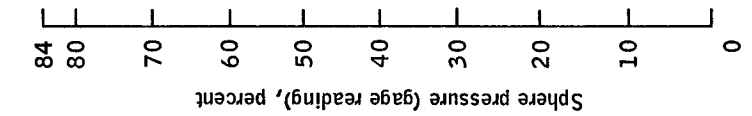
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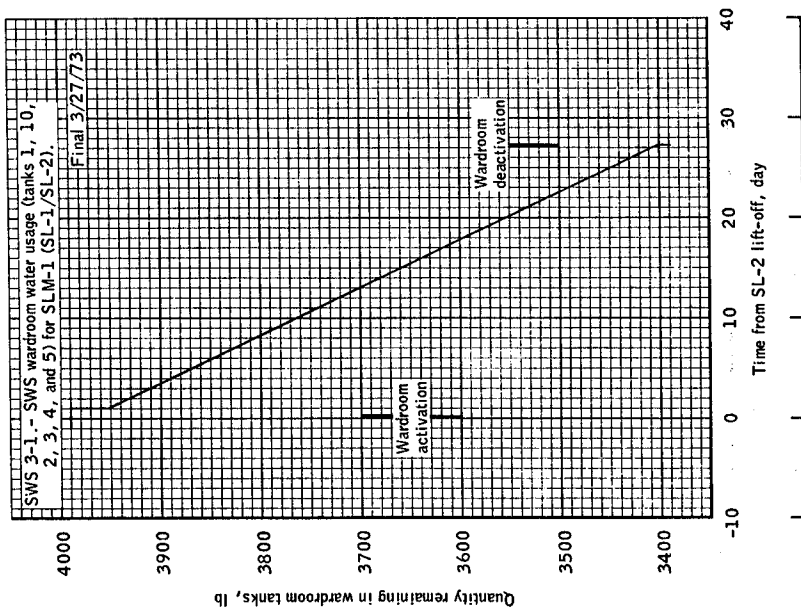
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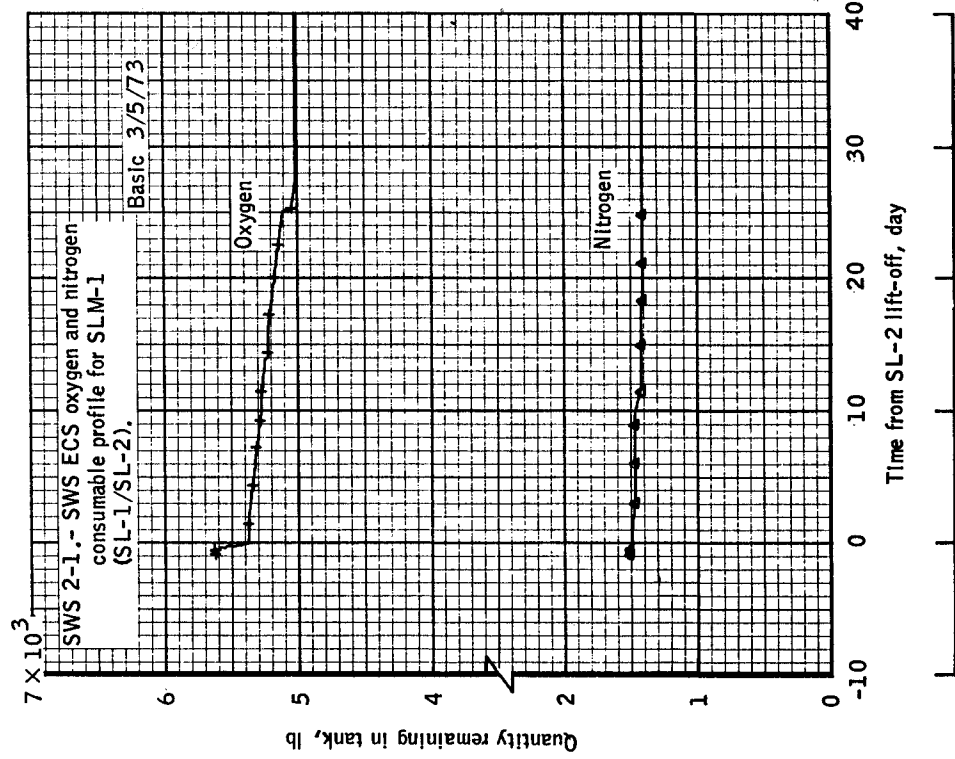


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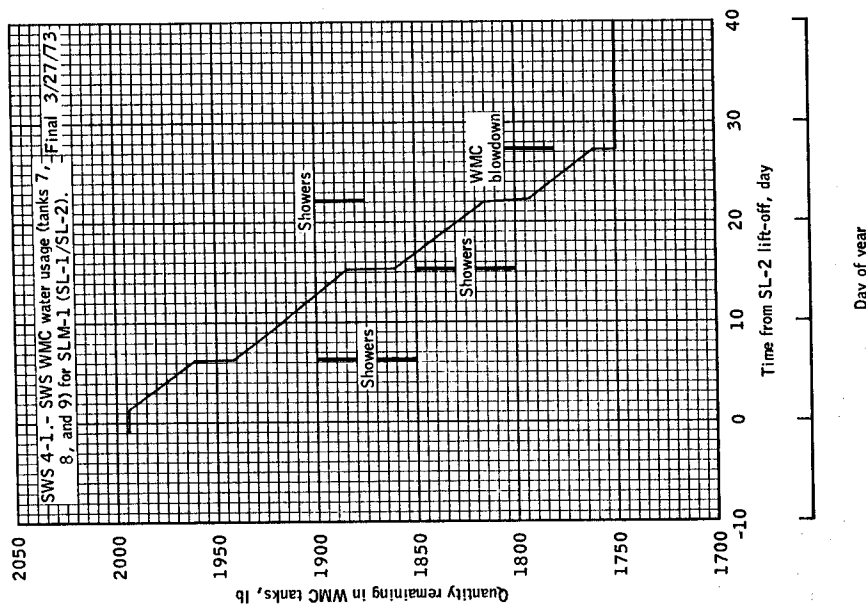
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Day of year
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Day of year
5-37

4/11/73