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JSC-09137

ASTP

JULY 15 LAUNCH

FINAL

REVISION A

PCN-2

NOTE: This is a PAGE CHANGE NOTICE to be incorporated into the previous edition. DISCARD ONLY the changed out pages.

FLIGHT PLAN

PREPARED BY

FLIGHT PLANNING BRANCH

CREW TRAINING & PROCEDURES DIVISION

National Aeronautics and Space Administration

LYNDON B. JOHNSON SPACE CENTER

Houston, Texas

JULY 3, 1975

JSC-09137
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FINAL

REVISION A

ASTP FLIGHT PLAN

JUNE 18, 1975

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CHANGE CONTROL RECORD

APOLLO/SOYUZ TEST PROJECT ASTP FLIGHT PLAN CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
001	ASTP, FINAL	5/15/75	
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086			DISAPPROVED
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Introduction

This flight plan schedules the ASTP mission operations and crew activities to fulfill, when possible, the objectives defined in the Mission Requirements Document.

The trajectory parameters used for this flight plan are for the July 15, 1975 first opportunity launch and were obtained from the ASTP Reference Trajectory.

Section 4.2, The Joint Crew Activities Plan is published in 40301 and is not included in this document.

Section 7, contains the detailed crew procedures for undocking and UVA.

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ABBREVIATIONS

AC	alternating current or Apollo Commander
ACCEL	accelerometer
ACN	Ascension
ACT	activation
ACE	audio center equipment
ACM	Apollo circularization maneuver
ACQ	acquisition or acquire
ADAPT	adapter
ADM	Apollo deorbit maneuver
AEM	Apollo evasive maneuver
AGC	automatic gain control
AGO	Santiago, Chile (STDN)
AH	ampere hours
AJ-BOX	Apollo junction box
ALT	altitude
ALTM	altimeter
AM	amplitude modulation
AMP or amp	amperes
AMPL	amplifier
ANT	antenna
APDS	androgynous peripheral docking system
AOL	Atlantic Ocean line
AOS	acquisition of signal or acquisition of site
AS-X	Apollo-Soyuz joint experiment, 1 thru 5
ASCP	attitude set control panel
ASE	artificial solar eclipse (AS-4)
ASTP	Apollo Soyuz Test Project
ATS	applied technology satellite
ATT	attitude
AUX	auxiliary
AZ	azimuth
BAT or BATT	battery
BEF	blunt end forward
BD	band
BDA	Bermuda (STDN)
BIOMED	bio-medical data
BIOS	Biostack Experiment (MA 017)
BKWD	backward
BMAG	body mounted attitude gyro
BP	barber pole
BRKT	bracket
BT	burn time
BU	backup

C	centigrade
CAPCOM	capsule communicator
CAL	calibration
CAMR or CAM	camera
CAN	canister (Soyuz film)
CARR	carrier
CB or cb	circuit breaker
CC	cubic center
CCU	comm carrier umbilical
CCW	counter clockwise
CDT	Central Daylight Time
CDU	coupling data unit
CGE	Crystal Growth Experiment (MA 028)
CI	color interior film
CIRC	circulation
CK or ck	check
CKT	circuit
C/L	centerline or checklist
CM	command module or centimeters
CMC	command module computer
CMD	command
CNTL	control
CO2	carbon dioxide
C/O	check out
COAS	crew optical alignment sight
COMM	communications
COMM HEAD	communications head
CONFIG	configuration
COMP	compare or compensate
CONT	continue or contingency
CP	Command Module Pilot
CRYO	cryogenic
CSM	command and service modules
CST	central standard time
CTE	central timing equipment
CTR	center
C&WS	caution and warning system
CW	clockwise
CWG	constant wear garment
CX	color exterior film

DAC	data acquisition camera
DAP	digital auto pilot
DB	deadband
DC	direct current
DEG	degrees
DEPL	depletion
DEPRESS	depressurize, depressurization
DET	digital event timer
DIFF	difference
DIR	direct
DK	docked
DM	docking module (Apollo)
DM1	1st shaping maneuver for Doppler
DM2	2nd shaping maneuver for Doppler
DOPP	Doppler Tracking Experiment (MA 089)
DP	Docking Module Pilot
DSE	data storage equipment (CSM)
DSKY	display and keyboard
DUA	digital uplink assembly
DV	descent vehicle (Soyuz)
DWN	down
E	enter
EARTH OBS	Earth Observations & Photography (MA 136)
ECS	environmental control system
ED	explosive device
EDT	eastern daylight time
EFH	earth far horizon
EI	earth (atmosphere) interface and entry interface
EKG	electrocardiogram
ELECT	electrical
ELEV	elevation
EMER	emergency
EMP	erasable memory program
EMS	entry monitor system
ENG	engine
ENH	earth near horizon
ENT	entry
E.O.	earth orbit
EOM	end of mission
EPE	Electrophoresis, German Experiment (MA 014)
EPHEM	Ephemeris
EPS	electrical power subsystem
EQUIP	equipment
ERR	error
ETE	Electrophoresis Technology, USA Experiment (MA 011)
EUV	Extreme UV Telescope Experiment (MA 083)
EVA	extravehicular activity

EVAP	evaporator
EXP	experiment
EXT	external
EXTD	extend
F	farenheit, thrust (force)
f	f-stop
FAM	familiarize or familiarization
FC	fuel cell
FCS	fecal containment system
FDAI	flight director attitude indicator
FE	flight engineer or onboard engineer (Soyuz)
FK-6	Soyuz still camera
FLT	flight
FM	frequency modulated
FOV	field of view
FPS	feet per second
FR	frame(s)
FR/SEC	frames per second
FREQ	frequency
FT or ft	feet
FTO	functional test objective
FTP	full throttle position
FURN or AS-3	Multipurpose Electrical Furnace Experiment (MA 010)
FWD	forward
G	grams or gravity
GA	gimbal angle
GAL	galactic
G&C	guidance and control
GDC	gyro display coupler
GDS	Goldstone, California (STDN)
GEO	Geodynamics Experiment (MA 128)
GET	ground elapsed time
GETI	ground elapsed time of ignition
GETIL	ground elapsed time of landing for TIG time of abort burn
GLY	glycol
GMT	Greenwich mean time
G&N	guidance and navigation
GNCS	guidance, navigation and control system (CSM)
GRP	group
GWM	Guam

H2	hydrogen
HA	apogee altitude
HAW	Hawaii (STDN)
HBR	high bit rate (TLM)
HD	highly desirable or head (VTR)
HDC	Hasselblad data camera
HDS	heads
HeG	Helium Glow Experiment (MA 088)
HGA	high-gain antenna
HH	hand-held
HI	high (switch position)
HOR	horizon
H2O	water
HP	perigee altitude
HR(s)	hours(s)
HRC	Hasselblad reflex camera
HSB	helmet stowage bag
HTR	heater
I	current
ICDU	inertial coupling data unit
ID	identification
IED	interacting equipment document
ICG	inflight coverall garment
ICS	intercomm system
ICV	Interface control valve (Soyuz)
IGA	inner gimbal angle
IGN	ignition
IMP	impulse
IMU	inertial measurement unit
INCR	increase
IND	indicator
INIT	initialization
INT	interval
INTEG	integrity
IPV	Interface pressure valve (Soyuz)
IU	instrumentation unit
IV	interface volume
IVC	intervehicular communications
IVL	intervalometer
IVT	intravehicular transfer
iR	inclination of the ascending return

JETT	jettison
JSC	Lyndon B. Johnson Space Center
K-3A	camera (Soyuz)
KG	kilogram
KM	kilometer
KSC	John F. Kennedy Space Center
kwh	kilowatt hour
L	liter
LA	launch azimuth
LAT	latitude
LBR	low bit rate (TLM)
LB or lb	pound(s)
L/D	lift/drag
LDG	landing
LDMK	landmark
LEB	lower equipment bay
LFE	Light Flash Experiment (MA 106)
LH	left-hand
L/H	local horizontal
LiOH	lithium hydroxide
LLOS	landmark line of sight
L/O	lift-off
LONG	longitude
LOS	loss of signal or line of site
L/S or LS	landing site
LT	light
LTG	lighting
LUB	lubrication
LV	launch vehicle
L/V	local vertical
LVPD	launch vehicle pressure display
M	mandatory, meter or mass
MAD	Madrid, Spain (STDN)
MAG	magazine (camera)
MAN	manual
MAX	maximum
MAX Q	maximum dynamic pressure
MCC-H	Mission Control Center - Houston
MCC-M	Mission Control Center - Moscow
MDC	main display console
MEAS	measurement
MED	medical or medium
MET	mission event timer
MGA	middle gimbal angle

M/I	minimum impulse
MICR	microphone
MIN	minimum or minute(s)
MIR	mirror
MLA	Merrit Island, Florida, launch area
MM or mm	millimeter
MNA or MNB	main electrical bus A or B
MNVR	orientation maneuver
MO	manual orientation
MON	monitor
MONO	monaural
MPL	mid-Pacific line
MPS	main propulsion system or meters per second
M/R	mixture ratio (fuel to oxidizer)
MS	mass spectrometer
MSFC	George C. Marshall Space Flight Center
MT	Moscow time
MTN	motion
MTS	mountains
MTVC	manual thrust vector control
MULT	multiplier
N2	nitrogen
NAV	navigation
NC1	first phasing maneuver
NC2	second phasing maneuver
NCC	corrective combination maneuver
NEG	negative
NFL	Newfoundland, Canada (STDN)
NK	Nikon camera
NM	nautical miles
NPC	plane change maneuver
NO.	number
NOM	nominal
NSR	coelliptic maneuver
NXX	Noun XX
O2	oxygen
OBS	observation/OPS biomed system
ODB	Operational Data Book
O/F	oxidizer to fuel ratio
OGA	outer gimbal angle
OID	octal identifier
OM	orbital module (Soyuz)
OMNI	omnidirectional antenna
OPR	operate
OPT	option

ORB	orbital or orbit
ORDEAL	orbit rate display earth and lunar
ORIENT	orientation
ORR	Orroral, Australia (STDN)
OVBD	overboard
OVHD	overhead
P	pitch, program, or pressure
PAD	voice update
PART	particle
PC	plane change or chamber pressure
PCM	pulse code modulation or phase correction maneuver
PCU	pressure control unit (Soyuz)
PET	phased elpased time
PEV	pressure equalization valve
Pg	page
PGA	pressure garment assembly
PHOTO	photograph
PKG	package
P/L	portable light (Apollo)
PLU	portable light unit (Soyuz)
PM	phase modulated
P/M	photos & movies
POL	polarity or polarizing
PNL	panel
POS	positive
POT	potable
PRD	personal radiation dosimeter
PREF	preferred
PREL	preliminary
PREP	preparation
PRESS	pressure
PRIM	primary
PRO	proceed
PROP	proportional
PRN	pseudo random noise
PRPLNT	propellant
PRV	pressure relief valve
PSIA	pounds per square inch absolute
PSID	pounds per square inch differential
PSIG	pounds per square inch gage
PT	point
PTC	passive thermal control
PTT	push to talk
PU	propellant utilization
PUGS	propellant utilization gaging system
PWR	power
PXX	Program XX
PYRO	pyrotechnic

QTY	quantity
QUAD	quadrant
QUI	Quito, Ecuador (STDN)
R	roll or range
RAD	radiator, radial, or radiation
RCDR	recorder
RCS	reaction control system
RCVR	receiver
REACQ	reacquire
REFSMMAT	REFerence Stable Member MATrix
REG	regulator
REL	release
REQD	required
RETR	retract
REV	revolution
RH	right-hand
RHC	rotational hand controller
RMT	remote
RNDZ	rendezvous
RNG	range or ranging
ROS	Rosman, North Carolina (STDN)
RSI	roll stability indicator
RT	realtime
RTC	realtime command
RWD	rewind
RXX	Routine XX
SA	shaft angle
SAM	Stratospheric Aerosol Measurement Experiment (MA 007)
SATT	satellite
S-BD	S-BAND
SC	spacecraft or Soyuz Commander
SCS	stabilization control system
SE	southeast
SEC	second or secondary
SECO	S-IVB engine cutoff
SECS	sequential events control system
SEF	sharp end forward
SEL	select
SEP	separate or separation
SEQ	sequence
SI	solar inertial
S-IVB	Saturn IVB (third stage)
SJ-BOX	Soyuz junction box
SLA	service module DM adapter
SLOS	star line-of-sight
SM	service module

SP1	USSR tracking ship (off Nova Scotia)
SP2	USSR tracking ship (off Honduras)
SI	solar inertial
SPEC	special
SPS	service propulsion system
SR	sunrise
SS	sunset or subsolar
STBY	standby
STDN	Spaceflight Tracking and Data Network
S.V.	state vector
SW	switch
SXT	sextant
SYS	system
T EPHEM	time of Ephemeris update
TA	trunnion angle
TAN	Tananarive, Madagascar (STDN)
TB	time base or talkback
TBD	to be determined
TBS	to be supplied
TC	time (camera setting)
TCA	time of closest approach
TCV	temperature control valve (Soyuz)
TD	touchdown
T&D	transposition and docking
TD&E	transposition and docking and DM ejection
TEMP	temperature or temporary
TERM	terminate
TGT	target
TGR	time of gyro release (Soyuz)
THC	translation hand controller
TIG	time of ignition
TK	tank
TK-X	television camera 1 thru 4 (Soyuz)
TLM or TM	telemetry
TPF	terminal phase final
TPI	terminal phase initiation
TPM	terminal phase midcourse
T/R	transmitter/receiver or transmit/receive
TRANS	translation
TRK	track or tracking
TRUN	trunnion
TV	television report (to control centers only)
TV-X	television in accordance with the Public Information Plan
TVC	thrust vector control or television camera
TWR	tower

UCTA	urine collection transfer assembly
UDL	up data link
ULL	ullage
UMB	umbilical
UNBAL	unbalance (meter)
UNDK	undock
USA, US	United States of America
USSR or USR	Union of Soviet Socialist Republics
UVA or AS-5	Ultraviolet Absorption Experiment (MA 059)
V	velocity or volt
VAN	USNS Vanguard
VER	verify
VGIMU	velocity to be gained as related to IMU orientation
VGX	velocity to be gained (X-body axis)
VGY	velocity to be gained (Y-body axis)
VGZ	velocity to be gained (Z-body axis)
VIS	visual
VR	resultant velocity
VTR	video tape recorder
VX	velocity along the X-axis
VY	velocity along the Y-axis
VZ	velocity along the Z-axis
VHF	very high frequency
VLV	valve
VOX	voice keying
VXX	Verb XX
W	watts
WRT	with respect to
WT	weight
XFER	transfer
XMIT	transmit or transmitter
XPNDER, XPNDR	transponder
X-RAY	X-Ray Observation Experiment (MA 048)
Y	yaw
ZFF or AS-1	Zone Forming Fungi Experiment (MA 147)

ΔAz	azimuth change (difference)
ΔH	altitude change (difference)
ΔP	pressure change (difference)
ΔR	position change (difference)
ΔV	velocity change (difference)
ΔVC	velocity change at engine cutoff
ΔVT	velocity change loaded pre-burn
#	numbers
θ	angle between the +X axis and a look angle vector with values from 0 to 180 deg
Ø	angle between the -Z axis and the projection of the look angle vector on the Y-Z plane with values from 0 to 360 deg
&	and (ampersand)
16KM	movie camera (Soyuz)

SECTION 1 - FLIGHT PLAN NOTES

I. CREW

A. Crew designations are as follows:

APOLLO	PRIME	BACKUP
Apollo Commander (AC)	Stafford	Bean
Command Module Pilot (CP)	Brand	Evans
Docking Module Pilot (DP)	Slayton	Lousma

SOYUZ	SOYUZ 1	SOYUZ 2
Soyuz Commander (SC)	Leonov	Rudavishnikov
Flight Engineer (FE)	Kubasov	Filipchenko

The ASTP crew has been training for primary left seat assignments during the mission; according to the table below:

Left Seat Crewman	Days	Typical Activity
T. P. Stafford	1-2	Launch, ascent, TD&E, burns, rendezvous and docking
Function of crewman availability during joint activity	3-4	Solar inertial attitude maneuvers
D. K. Slayton	5	Undock/test dock/UVA maneuvers and separation
Function of crewman availability during solar phase	6-7	DAP attitude maneuvers to selected targets
V. D. Brand	8-9	Doppler phasing burns and entry

B. The G/N Optics and BMAG-1 Power schedules are shown in Table 2-1.

C. The Apollo crew wear PGA's from lift-off thru the initial earth orbit maneuvers and for DM Jettison. Crew transfer and joint activities are performed in the shirtsleeve mode.

D. The Apollo crew biomedical harness and sensor wearing schedule is shown in Table 2-2.

E. The Apollo crew status report is voiced to MCC-H shortly after each sleep period.

F. Negative reporting is used to indicate checklist completion.

G. Onboard gauge readings do not include calibration bias.

H. Daily crew schedule guidelines and crew activity constraints during joint flight are specified in ASTP 40300, Flight Plan Guidelines.

II. CSM SYSTEMS

A. Communications and instrumentation

1. The preferred S-Band communication modes are:
   (a) STDN Uplink: Mode 6 (PRN, voice, updata)
   (b) Downlink to STDN: Mode 2 (PRN, voice, HBR)
   (c) Uplink via ATS-6: Mode F1 (voice, updata)
   (d) Downlink via ATS-6:
      Joint Operations: Mode R3 (R/T TV, voice)
      Experiment Operations: Mode R5 (DUMP RCM, VOICE, & SCI and R/T VOICE & SCI), MODE 6 = R/T mode, MODE 5 = DUMP mode, Mode R6 (R/T PCM, VOICE & SCI)

2. VHF duplex B is used for launch and on orbit.

3. Selection of CSM omni antennas is normally under ground control; crew selection is available as a backup. VHF antenna switching must be performed by the crew.

4. The Hi-Gain Antenna is used with the ATS-6 satellite only.

5. CSM HBR will be selected during launch, TD&E, SPS thrusting, docking, undocking, deorbit through entry, and during experiment data runs.

6. Table 2-3 summarizes the scheduled real-time TV transmissions.

7. The ATS power amp will remain on continuously from initial activation on rev 2 through the joint phase. After the joint phase, the power amp will be cycled on prior to ATS AOS and off off at ATS LOS to save power.

B. Electrical Power

1. The nominal CSM fuel cell purge schedule is shown in Table 2-4.

2. The time between O2 fuel cell purges is nominally 24 hours. The time between H2 fuel cell purges is nominally 48 hours.

3. O2 heaters will be managed to maintain O2 heater element temperature <350°F. The H2 fans are cycled prior to each sleep period. Table 2-5 contains the CSM cryo management schedule.

4. Table 2-6 contains the battery charge schedule.

C. ECS and Water Management

1. The potable water supply is chlorinated after the last eat period of each day (part of presleep checklist).

2. Table 2-4 contains the urine and waste water dump schedule. All waste water dumps are manual. Dumps are scheduled to avoid periods of SM experiment operation. Urine will be collected and dumped during post sleep periods starting at 92:30 to avoid contamination to experiments.

3. Table 2-7 contains the LiOH canister change schedule. There are 8 canisters onboard the CM and 12 onboard the DM at lift-off.

4. The CM and DM atmospheres consist of 60% O2 and 40% N2 at launch. The CM O2 purge is terminated prior to the first sleep period.

5. Due to the ETE CRYO Freezer's venting of N2 into the CM Cabin, on Day 2,8 hours of CM O2 Purging is required using the waste stowage vent valve to avoid having to purge during the Joint Phase. After the Joint Phase 2 hours per day of CM O2 purging is required.

D. Guidance and Navigation

1. Refsmmat definitions

(a) Launch: The X-axis is along the flight azimuth at launch, the Z-axis is along the negative radius vector. At launch, the FDAI will display R = 90° + flt az., P = 90°, Y = 0°.

(b) Rendezvous: The X-axis is aligned with the S/C X-axis, the Z-axis is in the plane formed by the X-axis and the radius vector with the positive direction toward the earth for heads up attitude at TPI time. At TPI, R = 0°, P = 29°, Y = 0° (FDAI).

(c) UVA: This REFSMMAT is obtained by performing the following rotations from a local horizontal, heads up attitude at the ascending node of rev 59. Y = 45°, P = 90°, R = 180°.

(d) Orbital: The X-axis is aligned with the S/C body X-axis, the Z-axis is in the plane formed by the X-axis and the radius vector, positive direction towards the earth for heads up attitude. At orbital noon on rev. 110 the FDAI will read P = 0°, Y = 0°, R = 0°.

(e) Deorbit: The X-axis is aligned with the S/C X-axis at the vehicle attitude for SPS deorbit ignition with the thrust directed through the CG. The Z-axis is in the plane formed by the X-axis and the radius vector, positive direction away from earth for a heads down attitude. At deorbit, R = 0°, P = 180°, Y = 0°.

2. The G/N optics power and B-MAG 1 power will be cycled on and off per table 2-1 to conserve power.

E. Propulsion Systems

1. The SPS is started, using a single bank of ball valves. Bank A and bank B are sheduled separately for checkout, (ACM-bank A, NCL-bank B) then all remaining burns are scheduled on bank A (except ADM which is a Duel Bank burn).

2. The mission burn/event schedule is shown in Table 2-8.

3. During all SIM BAY experiments the S/C will be in single jet control (D1,B2,A3,C4,B3,D4 enabled).

4. During docked phase, docked DAP control is used. The -X jets are inhibited so as not to impinge on Soyuz, and +X jets are inhibited because a thruster or failure could not be detected due to mass and short moment arm.

III. DOCKING MODULE SYSTEMS

A. Environmental Control Life Support System

1. The DM is launched with a 60% O2, 40% N2 atmosphere at 15.2 psia max and is vented to 11 psia during boost. Prior to entry from the CSM, the DM is further vented to 5.6 psia, and then is equalized to CM pressure.

2. Prior to entry from the Soyuz, CM hatch 2 must be closed and the DM pressurized to 10 psia which is maintained at all times when hatches to the Soyuz are open. The Soyuz pressure regulation system controls DM cabin pressure in this mode.

3. During periods between transfers, the CM is open to the DM, both pressurized at 5.0 psia and isolated from the Soyuz which is pressurized at 10 psia. DM cabin pressure is controlled by the CM pressure regulation system in this mode.

B. Electrical Power

1. The DM has no power generation or storage capability. CSM AC & DC power are provided to the DM through four umbilical connectors which are mated immediately after CSM/DM docking.

2. The MA 089 Doppler Tracking experiment has internal batteries for powering operations while undocked from the CSM.

3. Power for Apollo equipment used in the Soyuz vehicle is provided by a J-box which is powered from the CSM. All Apollo equipment used in the DM or Soyuz are powered from the CSM EPS.

4. Power for Soyuz equipment used in the DM or CM is provided by a DM J-box which is powered from the Soyuz. Soyuz equipment used in the CM is powered from drag-through cables from the DM J-box. All Soyuz equipment used in the DM or CM is powered from the Soyuz spacecraft.

C. Voice Communication

1. Umbilical connectors between the CM and DM and between the CM and Soyuz will provide hardline audio communications in conjunction with the CSM audio centers and three Skylab-type speaker boxes. One speaker box will be mounted in the CM and a second box will be mounted in the DM. The third speaker box will be launched in the DM and will be transferred to Soyuz during the first crew transfer. The crewman communications umbilical (CCU) may be connected to the Soyuz or DM hardline receptacles in place of the speaker boxes for headset communication if so desired. Switching operations at the CM audio center will provide facilities for intercommunication between all three modules and/or transmission/reception capability via the VHF-FM, VHF-AM, or S-band equipments. The VHF-FM and VHF-AM transceivers will provide redundant communication links with Soyuz during docked operations.

2. A junction box (Panel 861) will be hardline connected to Soyuz through two DM/Soyuz umbilical connectors. The visiting cosmonaut will connect a crewman umbilical to this J-box to obtain intercom and transmit/receive facitlites via Soyuz telecommunications equipment. The crewman umbilical will be long enough to enable the cosmonaut to enter and work in the CM while retaining hardline contact with Soyuz. No Soviet telecommunications equipment will be connected to the DM or CSM power or telecommunications circuits.

IV. EXPERIMENTS

A. Table 2-9 shows the requirements and implementation of experiments requiring crew activity during the ASTP mission. Three other, MA 031 Cellular Immune Response, MA 032 Leukocyte (white corpuscles), and MA 151 crystal require prelaunch and post-splashdown blood samples and have no activities and have no impact on crew activity or the mission timeline.

B. Six experiments: MA 010 Multipurpose Electric Furnace (FURN or AS-3), MA 059 UV Absorption (UVA or AS-5), MA 147 Zone Forming Fungi (ZFF or AS-1), MA 148 Artificial Solar Eclipse (AS-4), AR 002 Microbial Exchange (AS-2), and Earth observations (MA 136) are performed during the joint U.S.A.- U.S.S.R. phase of the mission. Hardware for MA 010 and MA 059 are located in the Docking Module. These experiments are scheduled in accordance with current Mission Requirements Document (MRD) requirements for each experiment.

C. Three experiments: MA 048 X-Ray Observation (X-Ray), MA 083 Extreme UV Telescope (EUV), and MA 088 Helium Glow (HeG), are located in Sector 1 of the Service Module and have a line of sight of Phi = 37.75°, Theta = 90°.

These experiments are scheduled entirely during Apollo-only phases of the mission and in accordance with their respective MRD requirements and Operational Data Book (ODB) test conditions and constraints. Table 2-10 shows MA 048, MA 083 and MA 088 targets. The x-ray pass on rev 78 is a R/T science pass only (no HBR available).

D. Four experiments: MA 007 Stratospheric Aerosol Measurement (SAM), MA 089 Doppler Tracking (DOPP), MA 128 Geodynamics (GEO), and MA 136 Earth Observations & Photography (EARTH OBS), have specific attitude/pointing and ground track location requirements but are operated from within the Apollo or Apollo/DM spacecraft. These experiments are scheduled in accordance with their respective MRD and ODB test conditions and constraints. MA 136 Earth Observation photo sites are shown in Table 2-11.

E. Five experiments: MA 011 Electrophoresis Technology (U.S.A.) (ETE), MA 014 Electrophoresis (EPE), MA 028 Crystal Growth (CGE), MA 106 Light Flash (LFE), and MA 107 Biostack (BIOS) require orbital phenomena such as zero-G or cosmic radiation for their operation. These experiments are located within the Apollo spacecraft and are performed entirely during Apollo-only phases of mission and in accordance with their respective MRD and ODB test conditions and constraints.

F. Astronomy experiment pads: The astronomy experiment pads are included in Section VI, but in onboard documents are contained in the Flight Plan Supplement. These pads must be used for these experiment operations since DET ops, DSE-ON/OFF, etc. are not repeated in the flight plan timeline. An explanation of these pads is contained in Section III.

V. PROCEDURES

A. Joint Phase

1. Apollo and Soyuz crew procedures called out in the Flight Plan for use in the CSM or DM vehicles may be found in the Joint Operations Checklist or DM Checklist, respectively.

2. Apollo and Soyuz crew procedures called out in the Flight Plan for use in the Soyuz vehicle may be found in the Onboard Joint Operations Instructions document, ASTP 40600, and are carried in the Soyuz flight data file. Checklists are not transferred between the Apollo and Soyuz vehicles.

B. Apollo-only Phases

Apollo crew procedures called out in the Flight Plan for use during Apollo-only mission phases may be found in the referenced checklists.

VI. SATURN LIFTOFF TIME UPDATE REQUIREMENTS

A. At 7:50 PET from Apollo launch, an update will be performed to synchronize to Soyuz elapsed time (GET). The affect of this update will be to add approximately 7 1/2 hours to Apollo time.

B. At 108:50, at the end of the last joint activity day, there may be an update to synchronize the flight plan down track position with the actual down track position when the difference between these two is greater than ±2 minutes.

C. At 216:05, the morning of entry day an update will be performed to change from Soyuz elapsed time to entry phase elapsed time (PET). The PET is set to count up so that the ADM TIG occurs at 100:00:00 PET.

SECTION 2 - CHARTS AND TABLES

Table 2-1

G/N OPTICS/BMAG-1 POWER SCHEDULE

G/N Power Optics-On	Off	Δ T (On)
00:10	7:42	7:32
25:35	25:40	0:10
31:40	32:25	0:45
46:34	53:47	7:13
58:15	58:22	0:07
70:05	70:10	0:05
80:30	80:35	0:05
95:03	95:08	0:05
96:33	96:40	0:07
107:15	107.23	0:08
119:05	119:10	0:05
144:25	144:30	0:05
158:43	158:48	0:05
171:00	171:05	0:05
179:40	179:45	0:05
194:30	194:35	0:05
199:42	200:22	0:40
204:05	206:15	2:10
220:58	Splash	

TABLE 2-1(CONT'D)

BMAG-Off	BMAG-Warmup	BMAG-On
15:20	31:00	31:40
32:28	47:34	48:14
58:21	94:00	94:40
103:14	196:17	198:29
204:37	220:10	220:58 (96:40 PET)

TABLE 2-2

BIOMED HARNESS WEARING SCHEDULE

GET (HR:MIN) (SOYUZ)	AC	CP	DP
LAUNCH	ON	ON	ON
11:20 (03:50 PET)	OFF	OFF	OFF
29:40	ON		ON
30:40		ON	
31:25	OFF	OFF	OFF
129:45	ON		
130:30	OFF		
149:00		ON	
149:50		OFF	
176:15			ON
177:00			OFF
95:19 (ENTRY-PET)	ON	ON	
96:25 (ENTRY-PET)			ON

TABLE 2-3

APOLLO TV SCHEDULE

DAY	CDT	GET (SOYUZ)	SCENE DESCRIPTION	COVERAGE	R/T/DUMP
7/15	1450 - 1458	07:30 - 07:38	LAUNCH	MIL	R/T
	1600 - 1614	08:40 - 08:54	CSM/SIVB SEP and CM/DM DOCKING	VTR	---
	1640 - 1655	09:20 - 09:34	VTR PLAYBACK OF CSM/SIVB SEP, CM/DM DOCKING	ATS	DUMP
	1655 - 1704	09:35 - 09:44	CREW ACTIVITIES IN CM	ATS	R/T
	1720 - 1726	10:00 - 10:06	DM EXTRACTION / AEM	VTR	---
	1806 - 1812	10:46 - 10:52	VTR PLAYBACK OF DM EXTRACTION/AEM	ATS	DUMP
7/16	1000 - 1030	26:40 - 27:10	DM CHECKOUT	ATS	R/T
	1130 - 1150	28:10 - 28:30	DM CHECKOUT CONTINUATION/FURNACE PREP	ATS	R/T
7/17	0630 - 0658	47:10 - 47:38	ZFF PHOTOS, FURNACE SHUTDOWN, DM CLOSEOUT & HATCH 1 INSTALLATION	ATS	R/T
	0810 - 0820	48:50 - 49:00	CREW ACTIVITIES DURING RENDEZVOUS	ATS	R/T
	0932 - 0942	50:12 - 50:22	CREW ACTIVITIES DURING RENDEZVOUS	ATS	R/T
	1046 - 1051	51:26 - 51:31	BRAKING and STATION KEEPING	VTR	---
	1108 - 1129	51:48 - 52:09	APPROACH & DOCKING, HATCH 1 REMOVAL, and DP TRANSFER TO DM	ATS	R/T
	1129 - 1135	52:09 - 52:15	VTR DUMP of BRAKING and STATION KEEPING	ATS	DUMP
	1249 - 1256	53:29 - 53:36	CREW ACTIVITIES IN CM	ATS	R/T
	1359 - 1406	54:39 - 54:46	CREW ACTIVITIES IN DM	MIL	R/T

TABLE 2-3

APOLLO TV SCHEDULE (CONT)

DAY	CDT	GET (SOYUZ)	SCENE DESCRIPTION	COVERAGE	R/T/DUMP
7/17	1410 - 1456	54:50 - 55:36	INITIAL GREETINGS, AC & DP TRANSFER TO SOYUZ, EXCHANGE OF FLAGS & LETTERS AND COMM CABLE HOOKUP	ATS	R/T
	1413 - 1423	54:53 - 55:03	VTR REDUNDANT COVERAGE OF INITIAL GREETINGS	VTR	---
	1542 - 1629	56:22 - 57:09	EATING IN SOYUZ, JOINT EXP EXCHANGE, FURN PREP PREPARATIONS FOR RETURN TO CM	ATS	R/T
	1700 - 1705	57:40 - 57:45	CREW ACTIVITIES IN DM	GDS	R/T
	1714 - 1725	57:54 - 58:05	AC & CP IN CM, FURNACE PREP, RELOCATION OF DROGUE & LOCKER D4	ATS	R/T
	1900 - 1910	59:40 - 59:50	VTR PLAYBACK OF INITIAL GREETINGS (IF REQ'D)	ATS	DUMP
7/18	0424 - 0506	69:05 - 69:46	CREW OPERATIONS IN DM and CP TRANSFER TO SOYUZ	ATS	R/T
	0552 - 0639	70:32 - 71:19	SC TRANSFER TO CM, EQUIPMENT TRANSFER TO CM, AC TRANSFER TO CM, and JOINT ACTIVITIES	ATS	R/T
	0725 - 0814	72:05 - 72:54	JOINT ACTIVITIES, and TV TOUR OF USSR	ATS	R/T
	0915 - 0951	73:55 - 74:30	JOINT ACTIVITIES, AC GREETINGS TO SOVIET PEOPLE and EAT PERIOD	ATS	R/T
	1010 - 1025	74:59 - 75:05	SC TRANSFER TO DM	VTR	---
	1038 - 1041	75:18 - 75:21	HATCH 2 CLOSING	ATS	R/T
	1041 - 1047	75:21 - 75:27	VTR PLAYBACK OF SC TRANSFER TO DM	ATS	DUMP
	1047 - 1130	75:27 - 76:10	CREW ACTIVITIES IN DM, SC & AC TRANSFER TO SOYUZ, CP & FE TRANSER TO DM, and HATCH 3 CLOSING	ATS	R/T
	1216 - 1300	76:56 - 77:40	JOINT ACTIVITIES	ATS	R/T
	1341 - 1348	78:21 - 78:28	TV TOUR OF FLORIDA & USA EAST COAST	MIL	R/T

TABLE 2-3

APOLLO TV SCHEDULE (CONT)

DAY	CDT	GET (SOYUZ)	SCENE DESCRIPTION	COVERAGE	R/T/DUMP
7/18	1352 - 1438	78:32 - 79:18	SC GREETINGS TO AMER PEOPLE, MICROBIAL EXCHANGE - CM & OM SAMPLING, DP & FE TRANSFER TO DM, and HATCH 2 CLOSING.	ATS	R/T
	1530 - 1611	80:10 - 80:51	CREW FAREWELLS, HATCH 3 CLOSING, CREW ACT. IN DM	ATS	R/T
	1530 - 1541	80:10 - 80:21	VTR REDUNDANT COVERAGE OF CREW FAREWELLS	VTR	---
	2003 - 2018	84:43 - 84:58	VTR PLAYBACK OF CREW FAREWELLS (IF REQ'D)	ATS	DUMP
7/19	0430 - 0448	93:10 - 93:28	CREW EAT PERIOD	ATS	R/T
	0600 - 0620	94:40 - 95:00	CREW ACTIVITIES IN CM	ATS	R/T
	0701 - 0707	95:41 - 95:47	UNDOCKING and SOLAR ECLIPSE EXPERIMENT	VTR	---
	0707 - 0748	95:47 - 96:28	STATION KEEPING, APPROACH, and TEST DOCKING	ATS	R/T
	0748 - 0754	96:28 - 96:34	VTR PLAYBACK OF UNDOCKING and SOLAR ECLIPSE EXPERIMENT	ATS	DUMP
	1020 - 1029	99:00 - 99:09	TEST UNDOCKING	ATS	R/T
	1204 - 1219	100:44 - 100:59	APOLLO STATION KEEPING 50 M BEHIND SOYUZ, and APOLLO MNVR OUT-OF-PLANE OF SOYUZ	ATS	R/T
	1336 - 1348	102:16 - 102:28	APOLLO SEP	ATS	R/T
	1712 - 1720	105:52 - 106:00	WICKING DEMO	VTR	---
	1731 - 1742	106:11 - 106:22	LIQUID SPREADING	VTR	---
	1745 - 1752	106:25 - 106:32	FOAMING DEMO	VTR	---
7/20	0342 - 0407	116:22 - 116:52	VTR PLAYBACK OF MSFC DEMOS	ATS	DUMP

TABLE 2-3

APOLLO TV SCHEDULE (CONT)

DAY	CDT	GET (SOYUZ)	SCENE DESCRIPTION	COVERAGE	R/T/DUMP
	0903 - 0908	121:43 - 121:48	EUV DSKY WORK	VTR	---
	1735 - 1745	130:15 - 130:25	AC EXERCISE PERIOD	VTR	---
	2005 - 2015	132:45 - 133:00	DM HEIGHT MEAS.	VTR	---
7/21	0321 - 0351	140:01 - 140:31	VTR PLAYBACK OF DSKY WORK, EXERCISE AND HEIGHT MEAS	ATS	DUMP
	1655 - 1705	153:35 - 153:45	FISH EXP	VTR	---
	1755 - 1805	154:35 - 154:45	SAM INSTL	VTR	---
7/22	0310 - 0330	163:50 - 164:10	VTR PLAYBACK OF FISH EXP, AND SAM INSTL	ATS	DUMP
7/23	0723 - 0805	192:03 - 192:45	TV PRESS CONFERENCE	ATS	R/T

TABLE 2-4

ASTP

FUEL CELL PURGE AND
WASTE WATER, & URINE DUMP SCHEDULE

DUMP NO.	H2 F.C. PURGE (GET)	ΔT (HR:MIN)	02 F.C. PURGE (GET)	ΔT (HR:MIN)	WASTE WATER & URINE(*) (GET)	ΔT (HR:MIN)
1	-----	-----	25:50	-----	25:50	-----
2	48:00	-----	48:00	22:10	48:00	22:10
3	-----	-----	69:35	21:35	69:35	21:35
4	92:25	44:25	92:25	22:50	83:45	14:10
5	-----	-----	117:55	25:30	103:30*	19:45
6	143:15	50:50	143:15	25:20	117:55*	14:25
7	-----	-----	168:25	25:10	143:15*	25:20
8	194:00	50:45	194:00	25:35	168:30*	25:15
9	-----	-----	218:00	24:00	193:55	23:25
10					217:45	23:50

*SCHEDULED URINE DUMPS

TABLE 2-5

CRYO MANAGEMENT SCHEDULE

Time Soyuz GET	O_2		H_2	
07:00 Liftoff	TK1 Auto	TK2 Auto	TK1 Auto	TK2 Auto
01:34 PET or 80% *	OPEN 50W cb	OPEN 50W cb	↑	↑
176:20 or 50% **	CLOSE 50W OPEN 100W cb	CLOSE 50W OPEN 100W cb	↓	↓

* 76:00 GET or 80% quantity which ever occurs first

** 176:20 GET or 50% quantity which ever occurs first

TABLE 2-6

CSM BATTERY CHARGE SCHEDULE

BATT	GET
BATT A CHARGE	24:30 - 31:20
BATT B CHARGE	31:20 - 36:30
BATT A CHARGE	*52:30
BATT B CHARGE	*67:44
BATT A CHARGE	*191:30
BATT B CHARGE	*216:18 (92:00 PET)

* Charge terminated on STDN cue

TABLE 2- 7

LiOH CANISTER CHANGE SCHEDULE

ASTP

CHG NO.	APPROX GET (HR:MIN)	APPROX ΔT (HR)	INSTALL		REMOVE & STOW	
			CAN NO.	ECU POS.	CAN NO.	STOW LOC.
1	24:15		4	B	2	A-4
		10				
2	34:25		5	A	1	A-4
		13				
3	46:55		6	B	4	A-4
		12				
4	58:25		*7	A	5	D-4
		11				
5	69:40		*8	B	6	D-4
		14				
6	83:30		*9	A	7	D-4
		10				
7	93:55		*10	B	8	D-4
		15				
8	108:40		*11	A	9	D-4
		11				
9	119:30		*12	B	10	D-4
		12				
10	131:50		*13	A	11	D-4
		13				
11	144:30		*14	B	12	D-4
		14				
12	158:05		*15	A	13	D-4
		12				
13	169:50		*16	B	14	D-4
		13				
14	183:25		17	A	15	B-6
		10				
15	193:45		18	B	16	B-6
		14				
16	207:30		19	A	17	B-6
		12				
17	95:32		20	B	18	B-6

NOTE: CANISTER 3 IS NOT USED UNLESS MISSION IS EXTENDED TO 10 DAYS

*LAUNCHED IN DM

TABLE 2-8

MISSION BURN/EVENT SCHEDULE

BURN OR EVENT	GETI (HR:MIN) /BURN DURATION	THRUSTER	TOTAL ΔV ft/sec (m/sec)	RESULTANT HA/HP NM (Km)	REFSMMAT	DATE/ CDT (1975)
SOYUZ LIFTOFF	00:00 /09 min 07 sec	NA	NA	123/101 (228/188)	NA	JULY 15 07:20
APOLLO LIFTOFF	07:30 (0:00 PET) /09 min 42 sec	SATURN	NA	90/81 (167/150)	LAUNCH	JULY 15 14:50
APOLLO EVASIVE MNVR	10:04 (2:34 PET) /8.7 sec	4-JET RCS	3.0 (0.9)	90/82 (167/152)	LAUNCH	JULY 15 17:24
APOLLO CIRC MNVR	11:15 (3:45 PET) /0.9 sec	SPS	20.6 (6.3)	89/88 (165/163)	LAUNCH	JULY 15 18:35
APOLLO PHASING 1 (NC1)	13:11 (5:41 PET) /3.1 sec	SPS	66.3 (20.2)	126/91 (233/169)	LAUNCH	JULY 15 20:32
SOYUZ CIRC MNVR	24:26 /28.4 sec	NA	40.4 (12.3)	121/121 (225/225)	NA	JULY 16 07:46
APOLLO PHASING 2 (NC2)	48:34 /1.6 sec	SPS	36.4 (11.1)	100/89 (186/165)	RENDEZVOUS	JULY 17 07:54
APOLLO CORR COMB (NCC)	49:18 /1.8 sec	SPS	40.1 (12.2)	111/100 (205/186)	RENDEZVOUS	JULY 17 08:38
APOLLO COELLIPTIC (NSR)	49:55 /1.2 sec	SPS	27.2 (8.3)	111/110 (205/204)	RENDEZVOUS	JULY 17 09:15
APOLLO TERM PHASE (TPI)	50:54 /0.8 sec	SPS	21.9 (6.7)	121/111 (225/205)	RENDEZVOUS	JULY 17 10:14
APOLLO BRAKING	51:26 /NA	RCS	62.1 (18.9)	120/119 (222/220)	RENDEZVOUS	JULY 17 10:46
DOCKING 1	51:55 /NA	NA	NA	NA	RENDEZVOUS	JULY 17 11:15
APOLLO 1ST UNDOCK	95:42 /NA	NA	NA	118/118 (218/218)	ORBITAL	JULY 19 07:02
DOCKING 2	96:20 /NA	NA	NA	NA	ORBITAL	JULY 19 07:40

TABLE 2-8 (CONT)

BURN OR EVENT	GETI (HR:MIN) /BURN DURATION	THRUSTER	TOTAL ΔV ft/sec (m/sec)	RESULTANT HA/HP NM (Km)	REFSMMAT	DATE/ CDT (1975)
APOLLO FINAL UNDOCK	99:08 /NA	NA	NA	118/118 (218/218)	UVA	JULY 19 10:28
APOLLO SEPARATION FROM SOYUZ	102:16 /5.8 sec	4-JET RCS	2.3 (0.7)	119/118 (221/218)	UVA	JULY 19 13:36
SOYUZ DEORBIT MNVR	141:46 /149.7 sec	NA	214.8 (65.4)	116/0 (215/0)	NA	JULY 21 05:11
SOYUZ LANDING	142:31 /NA	NA	NA	NA	NA	JULY 20 05:51
APOLLO DOCKING MODULE JETT	199:21 /NA	PYRO	1.5 (0.4)	116/113 (215/210)	ORBITAL	JULY 23 14:41
APOLLO DM1 MANEUVER	199:56 /0.8 sec	SPS	20.7 (6.3)	126/114 (233/211)	ORBITAL	JULY 23 15:16
APOLLO DM2 MANEUVER	204:23 /0.8 sec	SPS	20.2 (6.2)	115/114 (213/211)	ORBITAL	JULY 23 19:43
APOLLO DEORBIT MANEUVER	100:00 PET 224:18 GET /7.4 sec	SPS	191.6 (58.4)	114/8 (211/5)	ENTRY	JULY 24 15:38
APOLLO SPLASHDOWN	224:58 /NA	NA	NA		ENTRY	JULY 24 16:18

TABLE 2-9

ASTP EXPERIMENT SUMMARY

OCTOBER 25, 1974

M.R. NO.	EXPERIMENT TITLE	EXPERIMENT REQUIREMENTS	IMPLEMENTATION
AR-002	MICROBIAL EXCHANGE	1) SAMPLES FROM EACH CREWMAN: DP CP FE SC AC 2) SAMPLE SELECTED AREAS IN EACH SC: DP TAKE APOLLO SC SAMPLES SC TAKE SOYUZ SC SAMPLES	77:44 77:49 77:54 79:42 79:47 78:00 78:00
MA-007	STRATOSPHERIC AEROSOL MEASUREMENT	1) MEASURE SOLAR EXTINCTION AT SUNSET: PHOTOMETER DATA PHOTOS OF SETTING SUN 2) MEASURE SOLAR EXTINCTION @ SUNRISE PHOTOMETER DATA PHOTOS OF THE RISING SUN 3) ALIGN - C/O 4) PHOTOS OF PHOTOMETER MOUNTED IN SC	•155:44 157:13 GET •156:23 157:52 •156:23 157:52 155:13 •155:25
MA-010	MULTIPURPOSE FURNACE	1) HEAT/COOL THE FOLLOWING SAMPLES: MA-041 MA-150 (USSR) MA-070 MA-131 MA-085 MA-060 MA-044	•32:45 GET •57:55 GET •83:00 GET •108:05 GET •127:05 GET •157:30 GET •175:00 GET
MA-011	ELECTROPHORESIS TECHNOLOGY	1) TEST ZONAL CELL ELECTROPHORESIS: FIXED RED BLOOD CELL SAMPLES (1,5) LIVE LYMPHOCYTES SAMPLES (2,6) LIVE KIDNEY SAMPLES (3,7) 2) FIXED RED BLOOD CELL SAMPLES (4,8)	•147:30, 170:30 GET •149:45, 172:50 GET •152:15, 175:50 GET • •155:00, 178:10 GET
MA-014	ELECTROPHORESIS-GERMAN	1) TEST THREE NON-FROZEN SAMPLES PLUS ONE FROZEN SAMPLE (FROM MA-011 FREEZER)	•32:40-34:25 GET
MA028	CRYSTAL GROWTH	1) ACTIVATE SIX EXPERIMENT CONTAINERS INSPECT CONTAINERS AND PHOTOGRAPH AT 12 HOUR INTERVALS	•107:50, 120:30, 132:25, 144:40 157:30, 169:45, 183:15, 194:10 205:10 GET •218:03 (93:45 PET)
MA048	SOFT X-RAY		•SEE TABLE 2-10
MA-059	UV ABSORPTION	1) BURN-IN INSTRUMENT LAMPS 2) COAS/STAR CAL 3) SOYUZ RETRO-REFLECTOR DATA: @150 METERS SIDE @500 METERS SIDE @1000 METERS TOP 4) ONE REV OF OUT-OF-PLANE DATA 5) 360° ROLL DATA 6) 90° PITCH DATA	27:15-29:52 28:30 99:42 101:11 102:39 105:14 106:55 102:50
MA-083	EXTREME UV SURVEY		•SEE TABLE 2-10

MA-088	HELIUM GLOW		• SEE TABLE 2-10
MA-089	DOPPLER TRACKING	1) PHOTOGRAPH DM AFTER JETTISON 2) POST-JETTISON DOPPLER DATA RECEIVER - OPERATE TRANSMITTER - OPERATE	• 199:20-199:23 GET • 204:40 GET - 94:12 PET • 195:00 GET • 196:10 GET
MA-106	LIGHT FLASH	1) 90 MINUTES UN-MANNED DATA 2) 20 MINUTES DARK-ADAPT & DATA 3) 90 MINUTES MANNED DATA	• 179:13 GET • 180:23-180:43 GET • 180:43-182:13 GET
MA-107	BIOSTACK	1) 12 HOURS PRE-DOCKING DATA 2) 24 HOURS POST-DOCKING DATA 3) INDICATOR STATUS CHECKS: @ 28 HOURS OPERATING TIME @ 32 HOURS OPERATING TIME	• 04:55 PET-25:45 GET • 132:00-154:25 GET • 146:30 GET • 150:23 GET
MA-128	GEODYNAMICS	1) PRIMARY REVS OF DATA 2) SUPPLEMENTAL REVS OF DATA	REV: • 7,8,16,22,23,24,37,52,53,54,67, 68,69,82,83,91,98,113,119,120,121, 128,134,135,136 REV: • 6,20,35
MA-136	EARTH OBSERVATIONS		• SEE TABLE 2-11
MA-147	ZONE FORMING FUNGI	1) PHOTOGRAPH SAMPLES EVERY 12 ± 3 HOURS 2) EXCHANGE SAMPLES WITH SOYUZ	• 05:00 PET,25:55,36:50,47:10,58:25, 67:30,81:45,94:30,107:35,120:40, 132:40,144:50,157:20,170:10,179:35, 194:15, 205:20 & 93:52 PET • 56:40 GET
MA-148	ARTIFICIAL SOLAR ECLIPSE	1) PERFORM SOLAR ECLIPSE 2) PHOTOGRAPH SOYUZ FOR SHADOW ANALYSIS	• 95:42-95:48 GET • 95:41-95:49
MED DTO	LEG VOLUME	MEASURE CREW LEG BLOOD VOLUME	CP - 13:30 (6:00 PET) ALL - 34:30, 105:10 131:20, 147:40, 205:30
MED DTO	HEIGHT MEAS.	1) CM HEIGHT MEAS. 2) DM HEIGHT MEAS.	CP - 13:15 (5:45 PET) ALL - 95:04 PET ALL - 35:00, 132:45 171:15, 194:40
INFLIGHT DEMO'S	MSFC DEMONSTRATIONS	1) CAPILLARY WICKING IN ZERO G 2) LIQUID SPREADING IN ZERO G 3) CHEMICAL FOAMS IN ZERO G	• 105:44 • 106:09 • 106:23
MA-161	KILLIFISH HATCHING & ORIENTATION		• 26:30, 123:40, 153:30, 171:40, 194:10

TABLE 2-10

ASTP ASTRONOMY EXPERIMENTS; DATA SUMMARY

	MA 048 SOFT XRAY				MA 083-EXTREME UV SURVEY			MA 088-HELIUM GLOW		
REV	ON	TARGETS	OFF		ON	TARGETS	OFF	ON	SCANS (X-AXIS POSITION)	OFF
15	30:00	PURGE,C/O,CAL	30:30		30:00	CHECKOUT	30:30	30:00	CHECKOUT	30:30
17	34:47	SUPPL. DATA	34:53		34:47	RASTER SCAN	34:53			
65	108:24	SUPPL. DATA	108:30		108:24	RASTER SCAN	108:30			
72	120:14	SUPPL. DATA	120:51		120:14	357,198,356, 340	120:51			
73	121:43	SUPPL. DATA	122:17		121:43	351,362,358, 354	122:17			
74	123:28	SUPPL. DATA	123:42		123:28	SUPPL DATA	123:42	123:28	140°,100°,120°	
75	124:43	SUPPL. DATA	124:51		124:43	SUPPL DATA	124:51			124:51
76	126:09	301,304,302 256,257,259 260,263,261 262	126:47		126:09	SUPPL DATA	126:47			
76 – 77	127:40	SUPPL. DATA	128:14		127:40	SUPPL DATA	128:14	127:01	80°,60°,40°, 140°	128:46
78	129:07	249,252,253, 251,219,222, 221,220,218, 217,215,216, 214,211	129:43							
79	130:36	191,192,207 (SCANS)	131:10		130:36	SUPPL DATA	131:10			
80	132:05	SUPPL. DATA	132:30		132:05	387,328,327, 384	132:30			
88	145:25	SUPPL. DATA	145:50		145:25	348,368,364,343	146:02			
89	146:53	SUPPL. DATA	147:30		146:53	365,352,353, 338,902	147:30			
90	148:22	SUPPL. DATA	148:59		148:22	355,361,901 JUPITER	148:59			
92	151:36	SUPPL. DATA	151:42		151:36	SUPPL DATA	151:42	151:36	340°,0°,20°	
93	152:53	SUPPL. DATA	153:09		152:53	SUPPL DATA	153:09			153:55
94	154:18	224,223,213 212	154:55	TGT 223 IS CRISS-CROSS SCAN	154:18	SUPPL DATA	154:55			
104	170:35	250,254,225, 229,227,231, 267,269	171:00		170:35	SUPPL DATA	171:00	170:35	SUPPL DATA	171:00
105	172:03	232,230,228 233,237,246, 245,322,243, 236,234,238, 240,235,242	172:40		172:03	SUPPL DATA	172:40	172:03	SUPPL DATA	172:40
106	173:32	201,202,203 (SCANS)	174:09		173:32	SUPPL DATA	174:09	173:32	SUPPL DATA	174:09
108	176:30	SUPPL. DATA	177:07		176:30	347,350,344, 341,338	177:07	176:30	SUPPL DATA	177:07
109	177:59	SUPPL. DATA	178:40		177:59	367,383,195 382,193	178:40	177:59	SUPPL DATA	178:40

ASTP ASTRONOMY EXPERIMENTS: DATA SUMMARY SUPPL. DATA

	MA 048 SOFT XRAY				MA 083 EXTREME UV SURVEY				MA 088 HELIUM GLOW	
	ON	TARGETS	OFF		ON	TARGETS	OFF	ON	SCANS (X-AXIS POSITION)	OFF
112 - 119	183:15	SUPPL. DATA	193:45		183:15	SUPPL. DATA	193:45	183:15	SUPPL DATA	193:45
114								185:50	(EARTH)	186:20
115								187:20	(EARTH)	187:50
119 - 121	194:25	SUPPL. DATA	197:20		194:25	SUPPL. DATA	197:20	194:25	SUPPL. DATA	197:20
134 - 136	94:12 PET	SUPPL. DATA	96:52 PET		94:12 PET	SUPPL. DATA	96:52 PET	94:12 PET	SUPPL. DATA	96:52 PET

TABLE 2-11

MA136 EARTH OBS. SCHEDULE

GET	REV	TYPE	MAPPING SITE	VIS. OBS. SITES
31:02-31:15	15/16	MAPPING/VISUAL	M1	5A,B,C
33:36-34:21	17	MAPPING/VISUAL	M2,M3	12A,1,3A,2A, 4C,5C
67:41-68:10	39	MAPPING	M4	
69:14-69:30	40	MAPPING	M5	
72:05-72:30	42	VISUAL		8A,3A,9H,I,J
78:19-78:32	45/46	VISUAL		5D,A,E,F,C
79:50-80:00	46	VISUAL		2E,4D
107:40-107:54	64	MAPPING/VISUAL	M6	11C,B,3A
118:12-118:26	71	MAPPING/VISUAL	M7	9C,D,E,F,G
119:25-119:54	72	MAPPING/VISUAL	M8,M9	12A,8A,9H,I,J
121:05-121:27	73	VISUAL		3A,9K,L
122:34-123:08	74	VISUAL		7B,C,6A,B
130:08-130:22	78	VISUAL		3C,4A
131:22-131:39	79	VISUAL		11A,B,3A
144:37-145:05	88	VISUAL		8B,8C,8D,8E, 3A,9K,9L
149:22-149:55	90/91	VISUAL		5D,A,E,G,F C,6A,9P
169:53-170:06	104	VISUAL		7A,D,E
174:31-174:45	106/107	VISUAL		3B,2B,E,4D
176:04-176:12	107	MAPPING/VISUAL	M10	2C,2D
177:30-177:42	108	VISUAL		3C,4B
200:52-200:58	123	VISUAL		11D
202:35-203:05	124	VISUAL		4A,C,D
PET				
94:20-95:12	134/135	VISUAL		7F,G,6A,B, 9M,N,P
96:01-96:39	135/136	MAPPING/VISUAL	M11	3B,5A,G,F,6A 9L,O,P

TABLE 2-11 (CONT'D)
MA136 EARTH OBS. IDENT.

MAPPING SITES	VIS. OBS. SITES
M1 - GULF STREAM	1 - NEW ZEALAND
M2 - NEW ZEALAND	2A - SO. CALIF.
M3 - SO. CALIF.	2B - BAJA, CALIF.
M4 - HIMALAYAS	2C - CALIFORNIA CURRENT
M5 - ARAB, DESERT	2D - GREAT SALT LAKE
M6 - AUSTRALIA	2E - GUADALAJARA
M7 - AFRICAN DROUGHT	3A - CLOUD FEATURES
M8 - FALKLAND CURRENT	3B - TROP. STORMS
M9 - SAHARA DESERT	3C - HAWAII
M10 - NO. CALIF.	4A - SNOW PEAKS
M11 - NEW ENGLAND	4B - PUGET SOUND
	4C - SUPERIOR IRON
	4D - SUDBURY NICKEL
	5A - GULF OF MEX.
	5B - GULF STREAM
	5C - LABRADOR CURRENT
	5D - CENT. AMER. STRUCTURES
	5E - FLA. RED TIDE
	5F - NEW ENG. RED TIDE
	5G - CHESAPEAKE BAY

TABLE 2-11 (CONT'D)

VIS. OBS SITES	VIS. OBS. SITES
6A - OIL SLICKS	9I - ALGERIAN DESERT
6B - LONDON	9J - TRIPOLI
7A - HUMBOLDT CURRENT	9K - STRAIT OF GIBRALTAR
7B - NAZCA PLAIN	9L - ALPS
7C - INTERNAL WAVES	9M - DANUBE DELTA
7D - PERUVIAN DESERT	9N - ANATOLIAN FAULT
7E - ORINOCO RIVER DELTA	9O - VOLCANICS
7F - GALAPAGOS ISLANDS	9P - BIOILLUMINESCENCE
7G - CARIBBEAN SEA	10A - GREAT DIKE
8A - FALKLAND CURRENT	10B - SOMALI CURRENT
8B - CHILEAN ANDES	10C - ARABIAN SEA
8C - DUNE FIELD	10D - HIMALAYAS
8D - PARANA RIVER	10E - TAKLA MAKAN DESERT
8E - CIRCULAR STRUCTURES IN BRAZIL	11A - PLAYAS
9A - AFAR TRIANGLE	11B - CORAL SEA
9B - ARABIAN PENINSULA	11C - SIMPSON DESERT
9C - GUINEA CURRENT	12A - ICEBERGS
9D - DESERT COLORS	
9E - OWEINOT MTS.	
9F - NILE DELTA	
9G - LEVANTINE RIFT	
9H - NIGER RIVER	

Table 2-12

Primary Evaporator Deactivation

Deactivate	Activate	Time Off Δ T
28:10	28:40	0:30
29:40	30:30	0:50
32:30	33:05	0:35
95:26	95:55	0:29
99:15	100:00	0:45
100:45	101:27	0:42
102:21	103:05	0:44
104:55	107:15	2:20
107:55	108:40	0:45
119:55	120:55	1:00
121:25	122:20	0:55
123:10	124:55	1:45
125:50	129:45	3:45
130:20	131:15	0:55
131:50	132:32	0:42
145:09	146:05	0:56
146:33	147:35	1:02
148:07	149:02	0:55
151:20	154:57	3:37
155:10	156:25	1:15
156:45	157:55	1:10

Table 2-12

Primary Evaporator Deactivation

Deactivate	Activate	Time Off Δ T
170:15	171:00	0:45
171:43	172:42	0:59
173:12	174:12	1:00
176:15	177:08	0:53
177:44	178:50	1:06

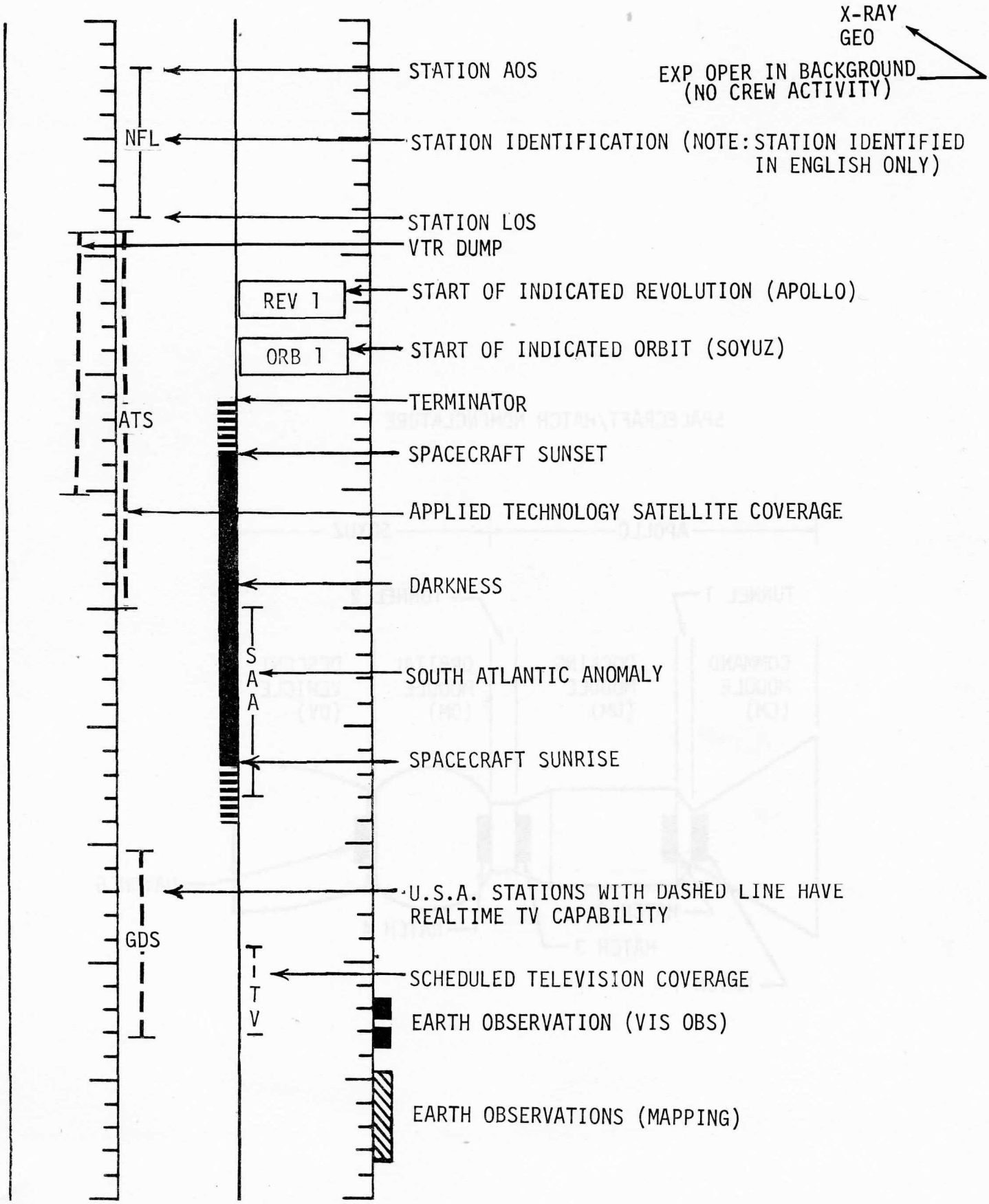
TABLE 2- 13

ASTP RETURN TO EARTH BLOCK DATA SCHEDULE

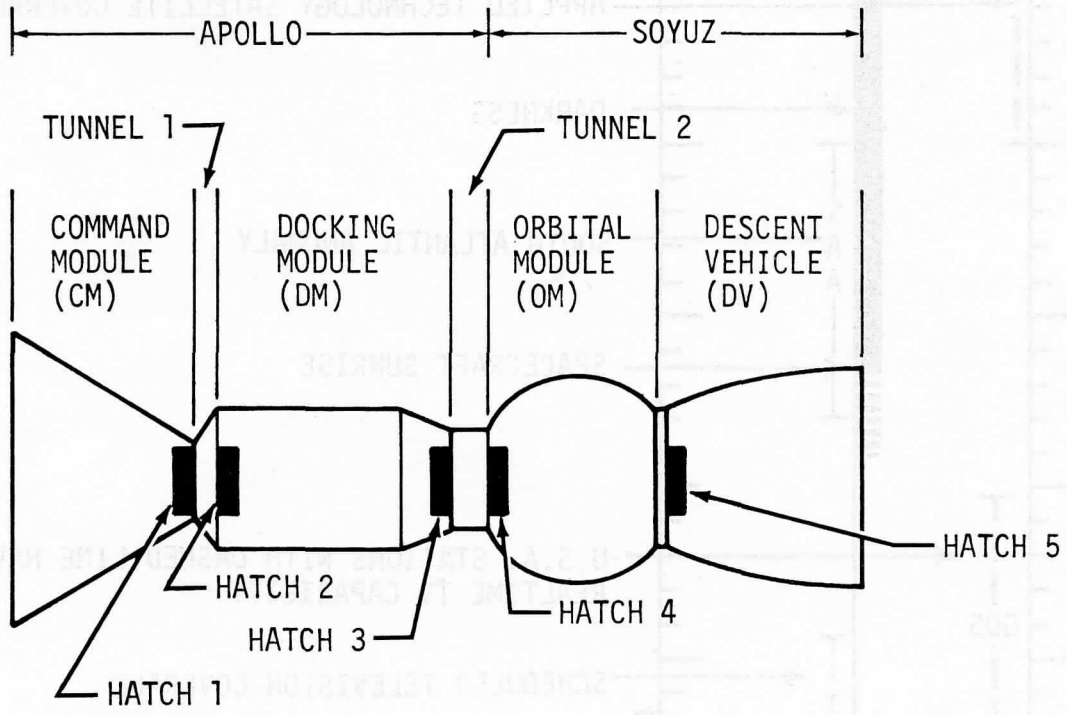
GET UPDATE (HR:MIN)	GET I (HR:MIN)	DEORBIT REV
29:50	57:50/81:30	33/48
53:15	105:10	63
75:35	128:55	78
97:45	152:35	93
126:55	176:15	108
149:30	199:56	123
173:07	223:35	138

SECTION 3 - NOMENCLATURE

FLIGHT PLAN SYMBOL NOMENCLATURE



SPACECRAFT/HATCH NOMENCLATURE



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EUV Pad Rev 72 Example

1st Row	Blank space provided to update DET time in R/T
2nd Row	Set DET so that it will count up through 00:00 at sunset (120:14:16 GET)
3rd Row	At 35:00 on DET do X-Ray Cal/Background over ATS per the procedure on the cue card.
At 41:00	Start mnvr to R 248.4, P 250.1, Y 000. This maneuver will take 11 min. 33 sec. (to get to target 357A). The A & B notations on the target specifies that they are background measurements and are located 3° in roll from the target itself.
	Note: In all cases the crewman loads the V49 maneuver in the DSKY during the previous data take so that he can <u>begin</u> the maneuver at the indicated DET time.
At 55:00	Open the doors & activate X-Ray & EUV experiments.
At 00:00 (Sunset)	HBR DSE is turned on for a 1 min. data take on the background (A) of target 357.
	Note: If ATS were available the DSE action would not have been required and HGA angles would have been provided.
At 1:00	Roll 3° to target 357 itself for a 1:45 data take. The roll takes 15 sec.
At 3:00	Roll 3° to background (B) of target 357 for a 1 min. data take. The roll takes 15 sec.
	Note: The V48's change the maneuver rate when time available and angular distance traversed necessitate a faster rate.

NOTE: On rev 75, x-ray data will be R/T science data only, no PCM data obtained due to DSE playback of other science data.

5/15/75

EUV PAD - REV 72

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				120 14 16 (SS)					
35:00				X-RAY CAL/BACKGROUND (CUE CARD) (THRU ATS)					
41:00	248.40	250.10	000				11:33		357A
55:00				X-RAY, EUV - OPS					
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET				1:00	357A
1:00	245.40						:15	1:45	357
3:00	242.40	---	---				:15	1:00	357B
4:15	245.40						:15	2:00	357
6:30	248.40	---	---				:15		357A
6:45				V48,V21N46 (61102)				1:00	
7:45	289.50	189.60	---				2:25		198A
10:10				V48,V21N46 (61101)				1:15	
11:25	292.50	---	---				:15	2:30	198
14:10	295.50	---	---				:15		198B
14:25				V48,V21N46 (61102)				1:15	
15:40	297.30	149.20	---				1:22		356A
17:02				V48,V21N46 (61101)				1:00	
18:02	294.30	---	---				:15	2:15	356
20:32	291.30	---	---				:15	1:55	356B
22:42	294.30	---	---				:15	2:15	356
25:12	297.30	---	---				:15		356A
25:27				V48,V21N46 (61102)				1:00	
26:27	294.20	092.70	050.00				2:32		340A
(CON'T)									

HeG Scan Rev 74/75 Example

General HeG & X-Ray Scans consists of V49 maneuvers to specified attitudes followed by P20 rotations. To save time the crewman loads the V49 or P20 information via the DSKY while the previous activity is still in progress.

1st Row	Start DET counting up so that it reads 00:00 at sunset + 16 min. (123:28:00). A space is provided to update this number in R/T.
At 40:00	On DET load and execute the V49 mnvrs for the 140° scan.
At 55:00	Open doors & activate X-Ray, HeG & EUV experiments.
At 55:00	Also load P20 rotation axis (N78's), deadband and rotation rate and direction of rotation (N79's)
At 00:00	Start P20 (Using N34 PRO) and turn on HBR DSE. Then load next V49 for next attitude (V25N22). Next change DAP maneuver rate to .5°/sec. (V48 info).
At 6:10	Stop P20 (by calling POO). Start V49 maneuver (V49E,PRO,PRO) and stop DSE.
	Since this is a standard pad the next entry is blank & is provided for calling out shutting down the experiments which is not required in this case.
At 7:45	Load the P20 data to change the direction of rotation (N79) for the 100° scan.
At 10:30	Start P20 using N34 PRO and turn on HBR DSE. Then load next V49 for next attitude (V25N22). Next change DAP maneuver rate to .2°/sec. (V48 info)
At 14:30	Stop P20 (by calling POO). Start V49 maneuver (V49E,PRO,PRO) and stop DSE.
At 14:50	Power down EUV & X-Ray (entering sunlight)

SET DET COUNTING UP TO ___ : __ : __ (123:28:00 (55+16))

DET	DATA
40:00	V49 MNVR + 2 2 5 . 0 0 + 1 8 1 . 0 0 + 3 5 6 . 0 0
55:00	X-RAY, HeG, EUV - OPS
55:00	LOAD P20 OPT 2: 140° SCAN N78 (R1 & R2) N79 + 0 0 0 . 0 0 + 0 . 5 0 0 0 + 0 0 0 . 0 0 + 0 0 0 . 5 0
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 0 4 4 . 0 0 + 1 7 2 . 0 0 + 3 1 7 . 0 0 V48E, V21N46E 6 1 1 0 2
06:10	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
07:45	LOAD P20 OPT 2: 100° SCAN N78 (R1 & R2) N79 + 0 0 0 . 0 0 - 0 . 5 0 0 0 + 0 0 0 . 0 0 + 0 0 0 . 5 0
10:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 3 1 4 . 0 0 + 1 7 7 . 0 0 + 3 3 7 . 0 0 V48E, V21N46E 6 1 1 0 1
14:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)

DET	DATA
14:50	EUV, X-RAY - PWR DWN
17:35	LOAD P20 OPT 2: 120° SCAN N78 (R1 & R2) N79 + 0 0 0 . 0 0 + 0 . 5 0 0 0 + 0 0 0 . 0 0 + 0 0 0 . 5 0
20:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 0 3 4 . 0 0 + 1 7 2 . 0 0 + 3 1 7 . 0 0
24:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
29:20	LOAD P20 OPT 2: 100° SCAN N78 (R1 & R2) N79 + 0 0 0 . 0 0 + 0 . 5 0 0 0 + 0 0 0 . 0 0 + 0 0 0 . 5 0
37:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 0 7 4 . 0 0 + 1 7 7 . 0 0 + 3 3 7 . 0 0
42:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	CONTINUE WITH PAD ON NEXT PAGE

NASA-JSC

SECTION 4 - DETAILED FLIGHT PLAN

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	0-1

GET 7:30

MCC	CDT	PET		
	14:50	00:00	CSM LAUNCH CHECKLIST APOLLO LIFT-OFF (00:00 PET)	
CMD: DSE RECORD/LBR	15:00	:10	ORBIT INSERTION (00:09:52 PET) POST INSERTION CONFIGURATION	AT SECO +20 SEC, SIVB MNVRS TO LH AND INITIATE ORB RATE (HEADS DWN) SIVB MNVR TO POSIGRADE LH (00:10:02 PET)
			DOFF HELMET AND GLOVES	
	:10	:20	OPTICS DUST COVER JETTISON	SIVB MNVR TO RETROGRADE LH (00:21:22 PET) MNVR COMPLETE AT 00:35:22
			SYSTEMS CHECKS (Pg L/3-1) EXTEND DOCKING PROBE	
	:20	00:30	O2 MAIN REGULATOR CHECK SEC RAD LEAK CHECK ECS POST INSERTION CONFIGURATION	
	15:30	:40	P52 (OPTION 3) (LAUNCH ORIENT) RECORD: GYRO TORQUING ANGLES POO GDC ALIGN EMS ΔV TEST & NULL BIAS CHECK RCS PURGE BURN RCS/C&W/EPS/ECS/SPS CHECKS UNSTOW AND SETUP CAMERA	
	:40	(11103) (01111) :50	CSM/SIVB SEPARATION PREP	SIVB MNVR TO SEP ATT (00:49:52) (359,196,001) MNVR COMPLETE AT 00:59:39
	:50	01:00		
	16:00	:10	TV/VTR-ON CSM/SIVB SEP (01:14 PET)	
	:10	(11102) (01111) :20	CSM MNVR TO DOCKING ATT (BY 01:16:30 PET) (001,016,359) VISUALLY INSPECT & PHOTOGRAPH SIVB AND DM DOCK (01:24 PET) TV/VTR-OFF	
			CM/DM PRESSURE/INTEGRITY CHECK GDC ALIGN START SCS DRIFT CHECK (BMAG 2)	
	16:20	01:30		

MIL, BDA, SP1, NFL, MAD, USR, ATS, ARIA, VAN, TV

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-1

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	1-2

MCC	CDT	GET 9:00 PET	
	16:20	01:30	TUNNEL HATCH REMOVAL (DECAL)
		(11102) (01111)	DOCKING LATCH VERIFICATION (DECAL)
			DM UMBILICAL CONNECTIONS (DECAL)
	ROS	REV 2	
	16:30	:40	
	SP1		
	NFL		REPORT: DOCKING STATUS, GYRO TORQUING ANGLES, EMS TEST RESULTS
			HATCH INSTALLATION (DECAL)
CMD: DSE STOP	:40	:50	
	MAO		
CMD: DSE RECORD/LBR			
	:50	02:00	END SCS DRIFT CHECK (BMAG 2)
	ATS		
	17:00	:10	
	TGN		REPORT: GDC/IMU COMPARISON RESULTS
	TAN		
	:10	:20	SIVB MNVR TO AEM ATT (02:21:52 PET) (359,251,000) MNVR TO COMPLETE AT 02:29:01
			V48 (LOAD WEIGHTS) P30: LOAD AEM TIG AND ΔVX P41 GDC ALIGN TV/VTR - ON/DSE RECORD HBR PHOTOGRAPH DM EXTRACTION
	:20	02:30	
	ARIA		
		TV	DM EXTRACTION/AEM (02:34 PET) P00 TV/VTR - OFF/DSE REWIND
	17:30	:40	
CMD: DSE PLAYBACK			PSM ACTIVATION (AFTER VAN AOS)
	VAN		REPORT: DM EXTRACTION/AEM STATUS
CMD: DSE STOP			CSM RENDEZVOUS BOOK (Pg 1-3)
	:40	:50	V49 MNVR TO ACM ATT (BY 03:05 PET) (179,213,001) SNACK PERIOD
	17:50	03:00	

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	2-3

MCC	CDT		GET 10:30 PET	
CMD: DSE PLAYBACK VTR REWIND UPLINK: CSM & SOYUZ S.V. PIPA BIAS UPDATE: ACM PAD (PREL) CMD: DSE REWIND ATS PWR AMP - ON	17:50 18:00	GDS	03:00 (11102) (01111) :10	
UPDATE: BACKUP GDC ALIGN PAD STAR ACQUISITION PAD CMD: VTR DUMP DSE RECORD/LBR		NFL SP1	REV 3	HGA ACTIVATION ACQ ATS HGA: MAN, WIDE P -78, Y 34 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
UPLINK: ACM TARGET LOAD UPDATE: ACM PAD (FINAL)	:10	MAD	:20	P52 (OPTION 3) (LAUNCH ORIENT) REPORT: GYRO TORQUING ANGLE P00, CMC MODE AUTO GDC ALIGN
	:20		(11002) (01111) 03:30	V48 (11002) (01111) (LOAD WEIGHTS)
CMD: VTR REWIND		ATS		P30, VERIFY ACM TIG AND ΔV'S GO TO SPS BURN-RNDZ CUE CARD (BANK A)
	18:30		:40	P40
				ACM (03:45 PET) (TRIM ΔVGX ±.2)
CMD: DSE DUMP (8:00)	:40		:50	REPORT: BURN STATUS P00 VTR POWER - OFF
CMD: DSE RECORD/LBR	:50	ARIA ORR	04:00	
	19:00		:10	DOFF PGA'S & OBS (RENDZ BOOK Pg, 1-5)
UPDATE: NCT PAD (PREL) NPC ADVISORY UPLINK: CSM S.V. GYRO COMP	:10	HAW HAW	:20	
	19:20		04:30	

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	3-4

MCC | CDT | GET 12:00 PET

19:20 — 04:30 (11002) (01111)

DOFF PGA'S & OBS (RENDZ BOOK, Pg 1-5)

19:30 — :40

ACQ ATS HGA: MAN, WIDE P -55, Y 45
S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW

REV 4

UPDATE:
NC1 PAD (FINAL)
NPC PREL PAD
(IF REQD)
UPLINK:
NC1 TARGET LOAD
CMD:
DSE DUMP (12:00)

NFL — SP1

:40 — :50

REPORT: DM/CM ΔP
V48 (LOAD WEIGHTS)

BIOSTACK - ON (R1)
RECORD GET & INDICATOR STATUS
(RENDZ BOOK, Pg 1-5)

:50 — 05:00

JOINT OPS CHECKLIST

ZFF PHOTOS, Pg J/10-1

P52 (OPTION 3)
(LAUNCH ORIENT)

ZFF

RECORD: GYRO TORQUING ANGLES
POO, CMC MODE AUTO
GDC ALIGN

20:00 — :10

ATS

SAA

:10 — :20

MNVR TO NC1 PAD PITCH ATT (BY 05:28 PET)

NOTE: COMM THRU ATS LOST AT 05:28 PET

CMD:
DSE RECORD/LBR

:20 — 05:30

P30, VERIFY NC1 TIG AND ΔV'S

GO TO SPS BURN-RNDZ CUE CARD (BANK B)

BIOS

P40

ORR

20:30 — :40

NC1 (05:41 PET)
(TRIM ΔVGX +.2)

EXPERIMENT CHECKLIST
CM HEIGHT MEASUREMENTS, Pg 1-59

RECORD: BURN STATUS
POO
IF NPC NOT REQD:
V49 MNVR TO SI +X FWD SLEEP ATT (BY 06:05 PET)
(012,014,332)

* IF NPC REQ'D* * *
* MNVR TO P38 ATT *
* (180,160,000) *
* * * * * * * * * *

:40 — :50

CM HEIGHT MEASUREMENTS (CP ONLY)

NOTE: IF TIME PERMITS PERFORM HT. MEAS ON ALL THREE CREWMEN

UPDATE:
CSM ALONE WT

HAW

REPORT: NC1 BURN STATUS, GYRO TORQUING ANGLES

20:50 — 06:00

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-1	JUNE 30, 1975	4.1-4

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	4-5

MCC	CDT	GET 13:30 PET			
	20:50	06:00	EXPERIMENT CHECKLIST LEG VOLUME MEASUREMENT, Pg 1-51		
		(11002) (01111)			
			* *IF NPC REQD: DELETE P52 (OPT 3) & DELAY * *P52 (OPT 1) TO 15:20 GET *		
	21:00	:10		LEG VOLUME MEASUREMENTS (CP ONLY) NOTE: IF TIME PERMITS, PERFORM LIMB VOL MEAS ON ALL THREE CREWMEN	
CMD: DSE DUMP (10:00) UPLINK: RNDZ REFSMMAT (IF NPC NOT REQ'D)		REV 5	ACQ ATS HGA: MAN, WIDE P -54, Y 265 S-BD ANT >1/3 SCALE, HGA: REACQ, NARROW		
	:10	:20	P52 (OPTION 3) (LAUNCH ORIENT) RECORD: GYRO TORQUING ANGLES		*****IF NPC REQD***** *ACQ ATS HGA: MAN, WIDE * * P -51, Y 96 * *S-BD ANT IND >1/3 SCALE * * HGA: REACQ, NARROW * *STDN UPLINK (CSM S.V.) * * NPC FINAL PAD (COPY) * * * *V48 (11103) (01111) * * (LOAD WT) * *ENTER P38 20 MIN PRIOR TO TIG * *LOAD NPC TIG & ΔV * *GO TO SPS-RNDZ BURN CUE CARD * * (BANK A) * * * * * *P40 MNVR TO BURN ATT * * * *NPC (06:48 PET) * * (TRIM ΔVGY +.2) * * RECORD: BURN STATUS * *GDC ALIGN AFTER P38 IMU TORQUE * *V48 (61011) (01111) * *N47 (LOAD CSM & DM WT) * *V49 MNVR TO SI ATT +X FWD SLEEP * *ATT (012,014,332) * *****
			P52 (OPTION 1) (RNDZ ORIENT) (018,170,330)		
	:20	06:30	P00, CMC MODE - AUTO GDC ALIGN V48 (61011)		
		(61011) (01111)	(01111) N47 (LOAD CSM & DM WEIGHTS)		
			REPORT: GYRO TORQUING ANGLES (OPT 3 & 1)		
	21:30	:40			
	:40	:50			BIOS
	:50	07:00			
CMD: DSE RECORD/LBR	22:00	:10		EAT PERIOD	
	:10	:20			*****IF NPC EXECUTED***** *UPLINK: * *RNDZ REFSMMAT * *REPORT: NPC BURN STATUS * *****
	22:20	07:30			

NFL BDA SP1 ACN ATS SAA GWM

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-5

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	5-6

MCC | CDT | GET 15:00 PET

22:20 — 07:30 — (61011) (01111)

22:30 — :40

CMD:
DSE DUMP (1:00)

UPLINK:
LIFT-OFF TIME
JET ON MONITOR LOADS
HI GAIN ANT EMP
ATS S.V.

GET

RDS — MIL — REV 6

:40 — MIL BDA — 15:20

:50 — 15:30

23:00 — :40 — SAA

:10 — ATS — :50

:20 — 16:00

23:30 — :10

CMD:
DSE RECORD/HBR

CMD:
DSE RECORD/LBR

:40 — GWM — :20

23:50 — USR — 16:30

OPTICS ZERO-ZERO
G/N POWER OPTICS-OFF
DIRECT O2 VLV - CLOSED
BMAG POWER 1-OFF
CSM SYSTEMS CHECKLIST
PRE-SLEEP CHECKLIST, Pg S/1-49
SET HGA: MAN, P -29, Y 259
HGA: REACQ, NARROW
FDAI SCALE - 5/1 (VERIFY)

EAT PERIOD

```
*********************************
* IF NPC PERFORMED:             *
* P52 (OPT 1)                   *
*  (RENDZ ORIENT)               *
* REPORT: GYRO TORQUING ANGLES  *
* P00, CMC MODE - AUTO          *
* GDC ALIGN                     *
*********************************
```

*SYNCHRONIZE MISSION TIMER TO CMC CLOCK (V16N65)
UPON STDN CUE

*LIFT-OFF TIME WILL BE UPDATED
TO SYNC APOLLO PET TO SOYUZ GET

EPE CRYO FREEZER
TRANSFER TO TUNNEL 1

WASTE WATER DUMP TO 60%, Pg S/1-25

PRESLEEP

GEO

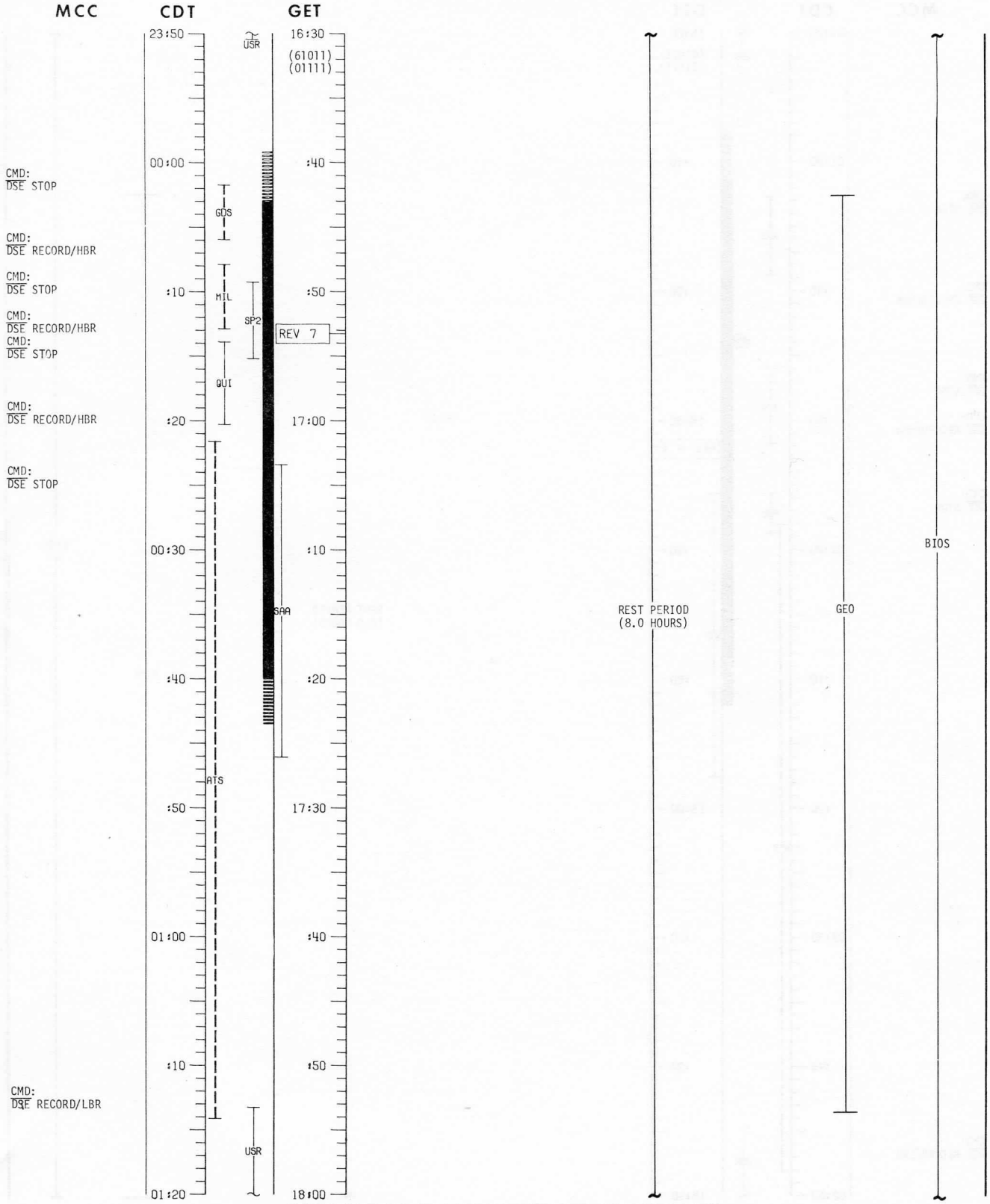
BIOS

REST PERIOD
(8.0 HOURS)

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.1-6

FLIGHT PLAN

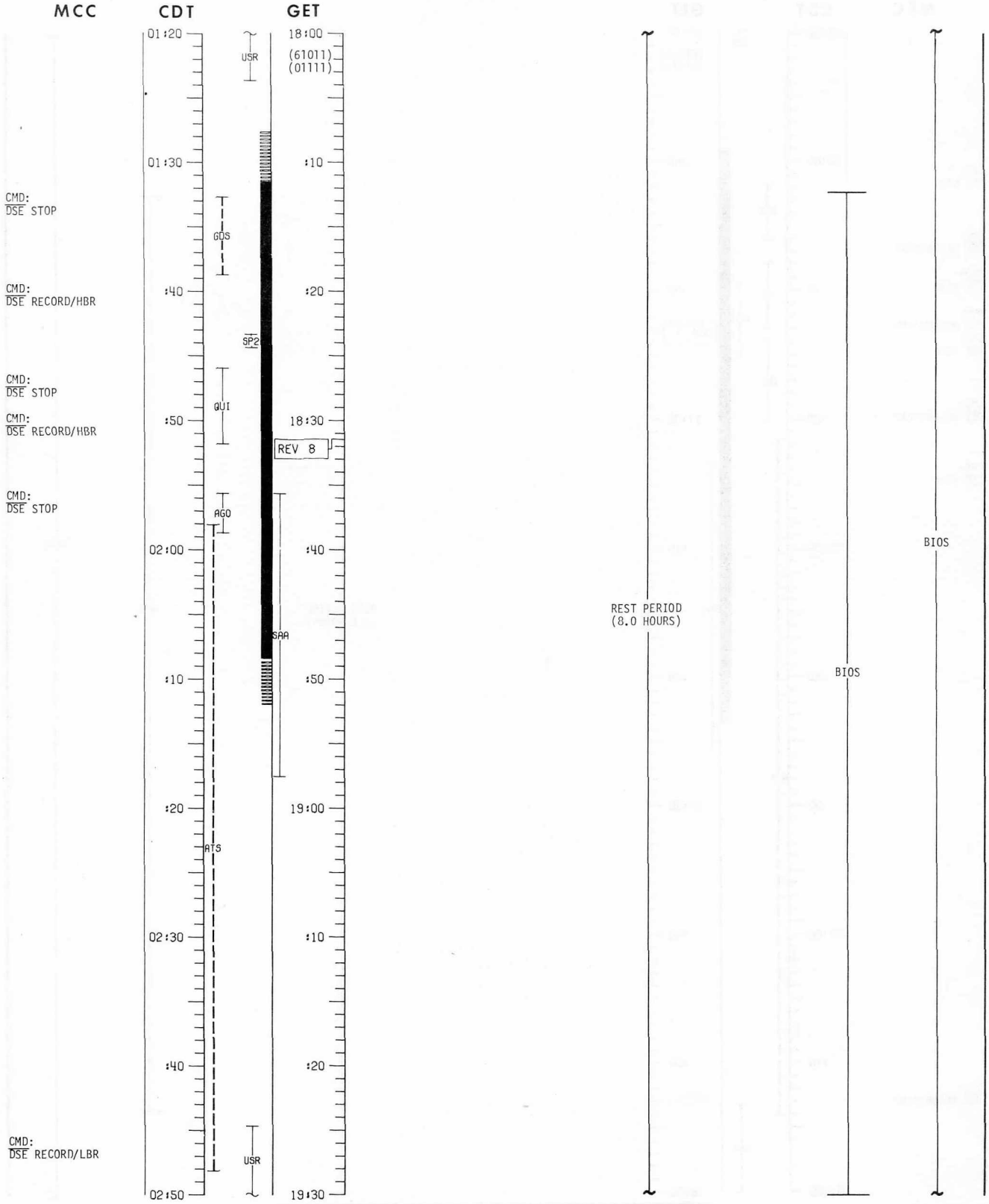
HOUSTON DATE	REV
JULY 15, 1975	6-7



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-7

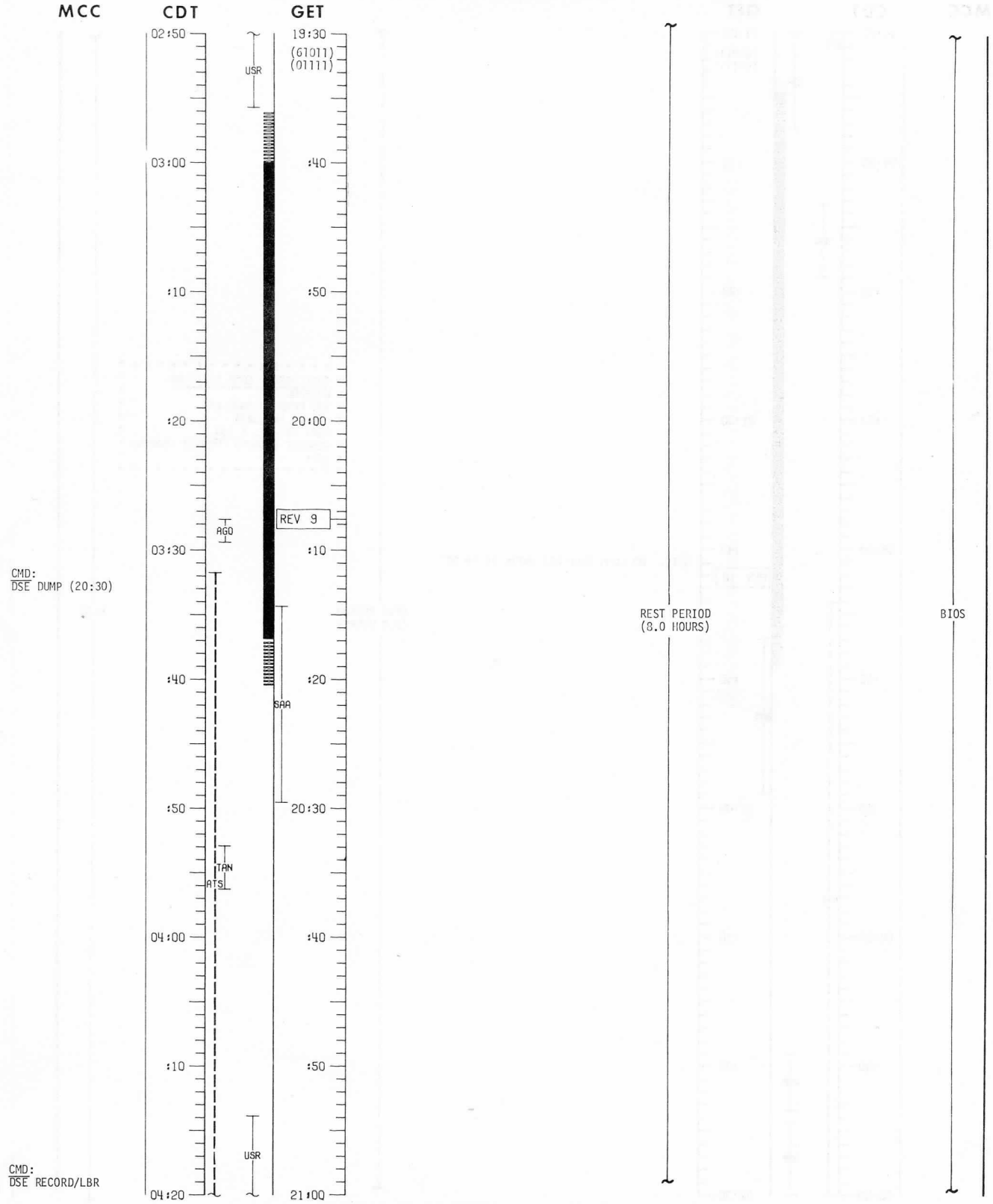
FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	7-8



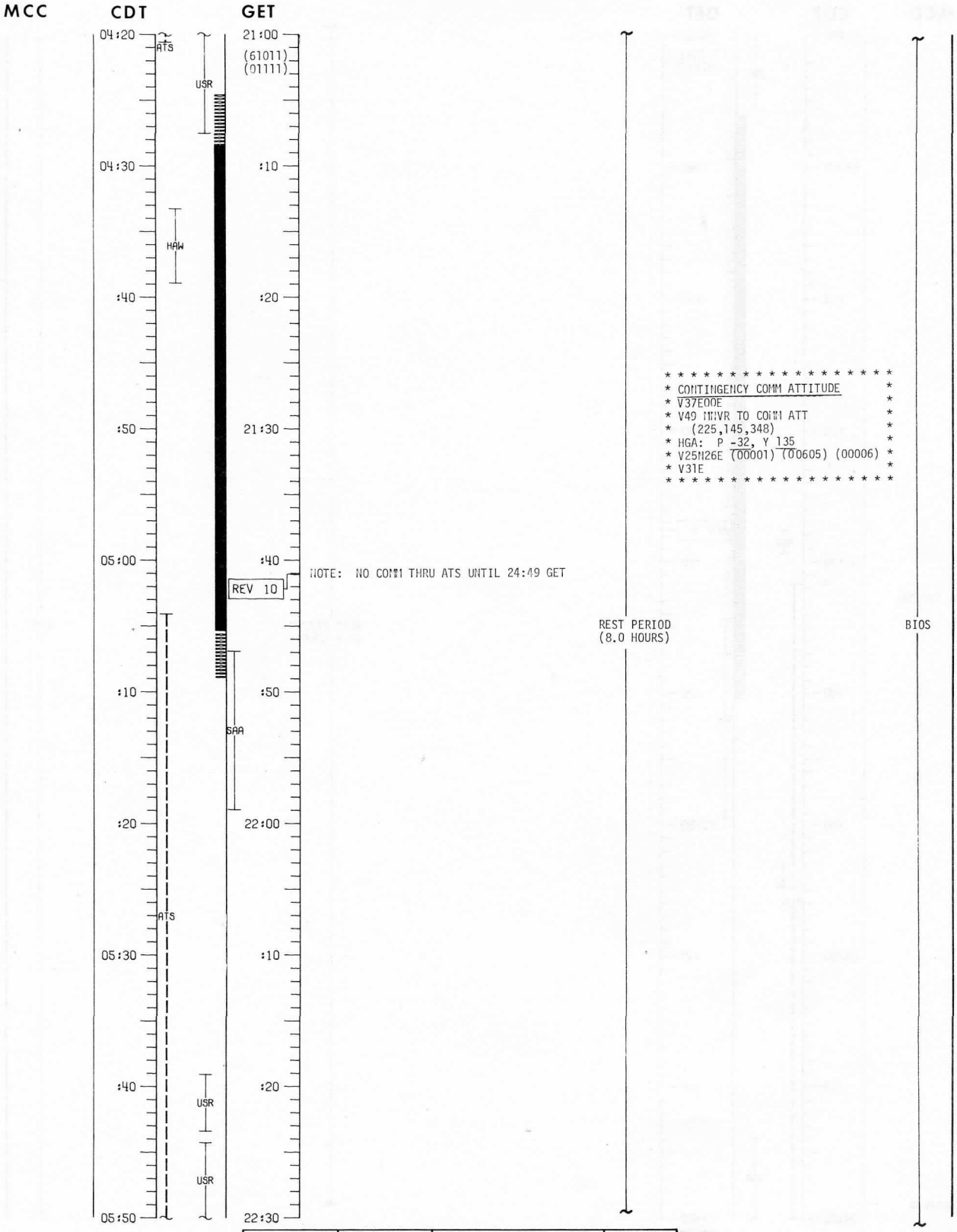
FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	8-9



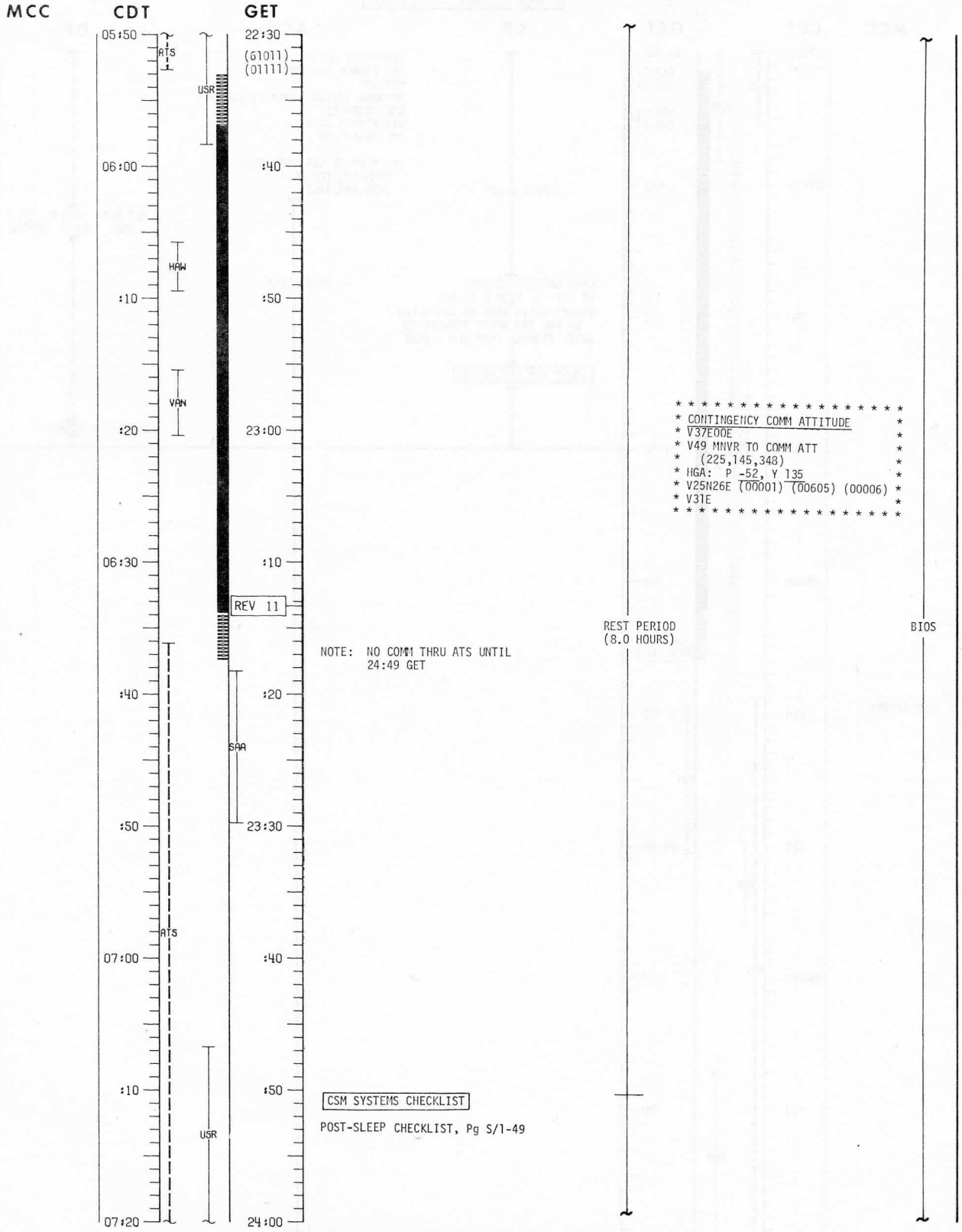
FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	9-10



FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	10-11



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.1-11

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	11-12

MCC | CDT | GET | CP | AC | BIOS DP

07:20 — 24:00

ATS, USR

(61011) (01111)
(61001) (01111)

TERMINATE JET ON MONITOR
AND ENABLE HGA EMP
V37E00E
V25N26E (10001) (01412) (06105)
CMC MODE-FREE
V43(61001) (01111)
CMC MODE-AUTO

V49 MNVR TO UVA COAS CAL/
COMM ATT (BY 24:15)
(225,145,348)

POST SLEEP

07:30 — :10

POST SLEEP

POST SLEEP

SET HGA: MAN P -76, Y 130
HGA: REACQ, NARROW

LiOH CANISTER CHANGE
(4 INTO B, STOW 2 IN A4)
VERIFY CABIN VENT QD INSTALLED
ON PNL 251 WASTE STOWAGE QD
WASTE STOWAGE VENT VLV - VENT

:40 — :20

POST SLEEP

SOYUZ SCH (24:26:20)

BATTERY A CHARGE

:50 — 24:30

VAN

UNSTOW TODAY'S FILM MAGS & STOW IN F2:
HDC: CX13 (CAMR/B3), CT02 (U1)
HRC: CX10 (U1)
HK: 1 MAG (CAMR)

08:00 — :40

REV 12

CMD:
DSE DUMP (7:00)

:10 — :50

SAA

EAT

:20 — 25:00

ACN

08:30 — :10

ATS

:40 — :20

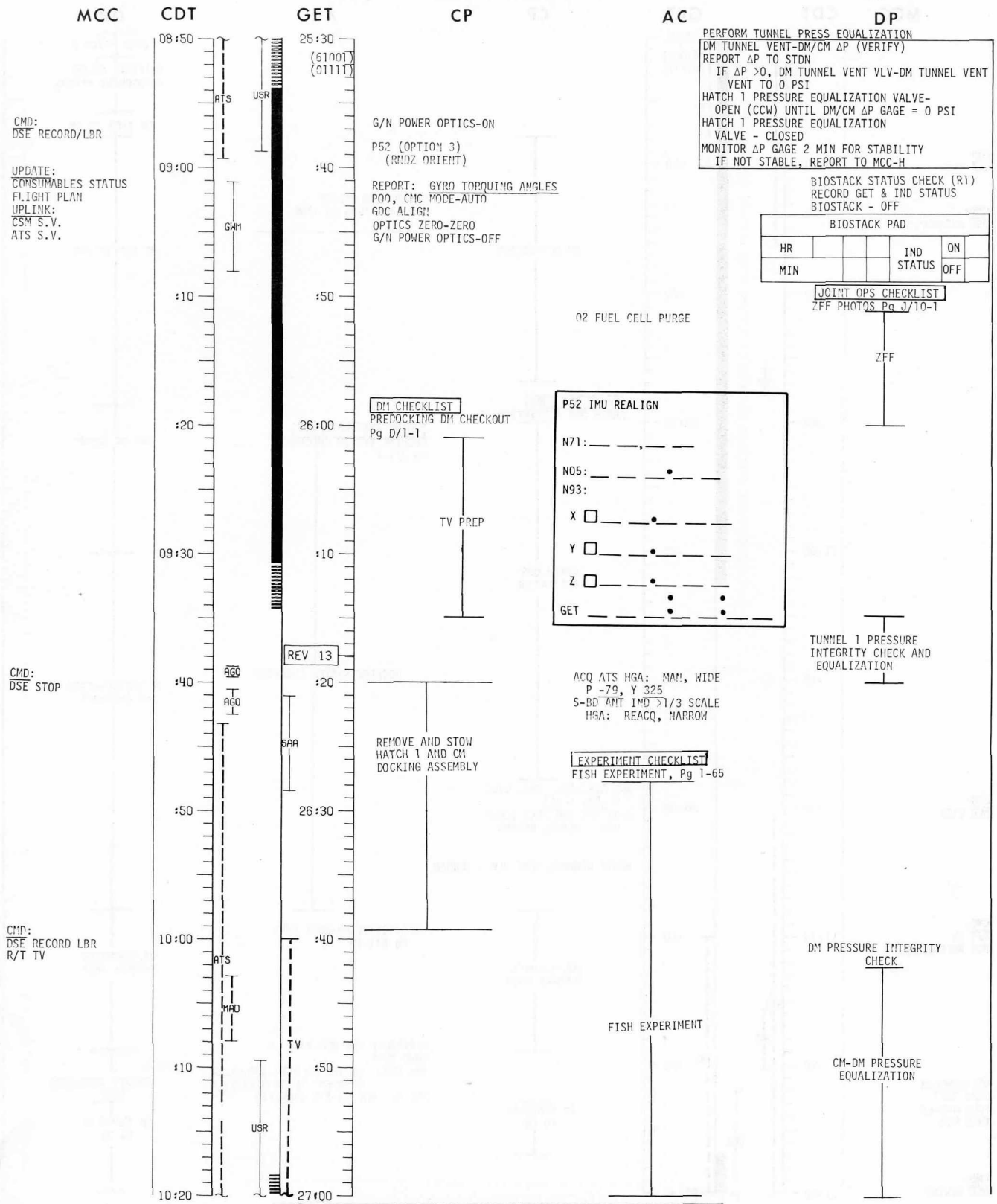
USR

08:50 — 25:30

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-4	JULY 10, 1975	4.1-12

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	12-13



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.1-13

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	13-14

MCC	CDT	GET	CP	AC	DP
	10:20	27:00			OPEN HATCH 2
		(61001) (01111)			INITIATE CM-DM ATMOSPHERE MIXING
					DP XFER TO DM
CMD: DSE STOP	10:30	:10			
CMD: DSE RECORD/LBR				RECORD AND REPORT UVA LAMP TURN ON TIME ___:___:___	
			DM ACTIVATION		DM ACTIVATION
	:40	:20			
	:50	27:30	EARTH OBS BOOK EARTH OBS ACTIVATION, Pg 6	JOINT OPS CHECKLIST DOCKING SYSTEM CHECKOUT Pg J/1-1	DAC O2 SETUP
			XFER LIFE VESTS FROM ~~EF~~ FI TO U2		
	11:00	:40	EARTH OBS ACTIVATION		
	:10	:50		DOCKING SYSTEM CHECKOUT	TV INSTALLATION AND CHECKOUT
		REV 14			
CMD: DSE STOP	:20	28:00	ACQ ATS HGA: MAN, WIDE P -53, Y 317 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW		
			WASTE STOWAGE VENT VLV - CLOSED		
CMD: R/T TV DSE RECORD/LBR	11:30	:10	MULTIPURPOSE FURNACE PREP	DEACTIVATE PRIMARY EVAP Pg S/1-18	MULTIPURPOSE FURNACE PREP
	:40	:20		CONFIGURE FOR MCC-H/MCC-M COMM TEST: PNL 815: cb VHF FM XCVR DMA-CLOSE (REQUEST DP TO VERIFY) PNL 6: VHF FM-T/R (VERIFY)	
MCC-H/MCC-M COMM TEST THRU APOLLO THRU USR			DP TRANSFER TO CM		DAC/TV VIBRATION TEST
					DP TRANSFER TO CM
CMD: DSE REWIND	11:50	28:30			

ATS, ORR, MAD, USR, TV

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	~~REVISION A~~ PCN 3	~~JUNE 18, 1976~~ 7-8-75	4.1-14

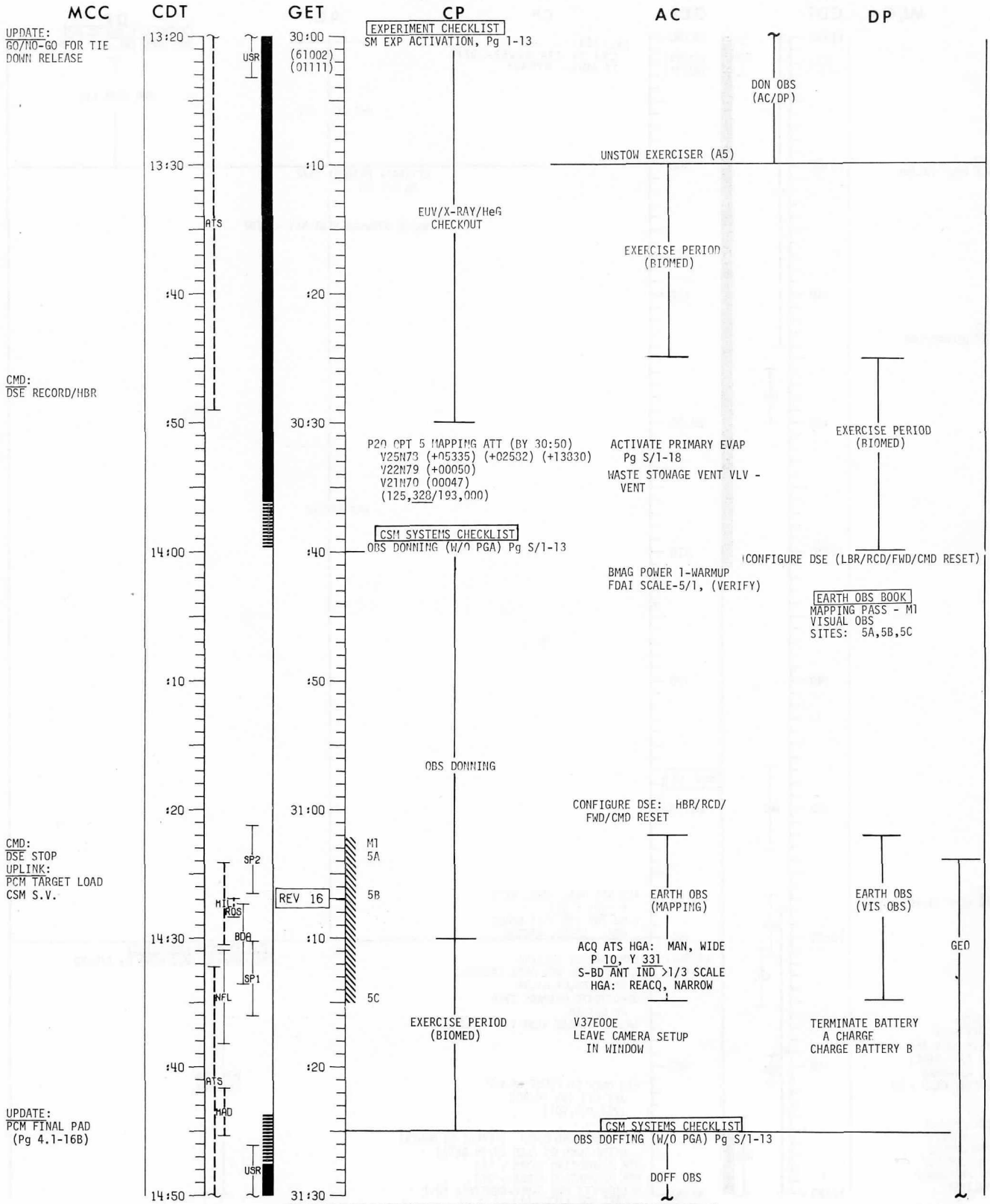
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	14-15

MCC	CDT	GET	CP	AC	DP
	11:50	28:30	PNL 181: CM1 TV STA POWER- OFF TV AMPL- BYPASS		UVA LAMP BURN IN JOINT OPS CHECKLIST UVA COAS CAL, Pg J/10-5
	USR	(61001) (01111)		UVA COAS CAL	UVA COAS CAL
CMD: DSE DUMP (4:30)	12:00	:40	ACTIVATE PRIMARY EVAP Pg S/1-18		
	ATS		WASTE STOWAGE VENT VLV - VENT		
	:10	:50			
CMD: DSE RECORD/LBR					
	ORR				
	:20	29:00			
				EAT PERIOD	
	12:30	:10			
	:40	:20			
		REV 15			
	:50	29:30			
CMD: DSE DUMP (1:10)			ACQ ATS HGA: MAN, WIDE P -29, Y 315 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW		
	BDA				
	13:00	:40			CSM SYSTEMS CHECKLIST OBS DONNING (W/O PGA) Pg S/1-13
	NFL	(61002) (01111)	V48 (61002) (01111) INHIBIT ALL RCS JETS EXCEPT: D1,B2,A3,C4,B3,D4 DEACTIVATE PRIMARY EVAP Pg S/1-18 WASTE STOWAGE VENT VLV - CLOSED		
UPDATE: BLOCK DATA (REVS 33 & 48) PCM PAD (PREL) (Pg 4.1-16B) MAPPING PASS - M1	ATS MAD				
	:10	:50	V49 MNVR TO FIRST SM EXP ACT ATT (BY 30:00) (255,001,001)		DON OBS (AC/DP)
MCC-H/MCC-M COMM TEST WITH APOLLO THRU USR (IF NOT PERFORMED EARLIER)	USR		UVA LAMPS SHUTDOWN: (VERIFY >2 HOURS) AFTER TURN ON (SEE 27:15 GET)) UVA ABSORPTION LAMPS - OFF UVA ABSORPTION POWER - OFF DISCONNECT UVA CABLE-REATTACH DUST CAPS AND STOW (A1)		
	13:20	30:00			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	15-16



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.1-16

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PCM PAD DATA

		PRELIMINARY						FINAL					
N33 TIG PCM	HR	+						+					
	MIN	+						+					
	SEC	+						+					
N81 ΔV PCM	ΔV_X												
	ΔV_Y												
	ΔV_Z												
N22 PCM	R	+				0	0	+				0	0
	P	+				0	0	+				0	0
	Y	+				0	0	+				0	0
	ΔV_C												
	BT												

ΔVC AT IGN	+					
ΔVC TAILOFF	-					

WT	+					

PT				

YT				

BURN ATT CHECK

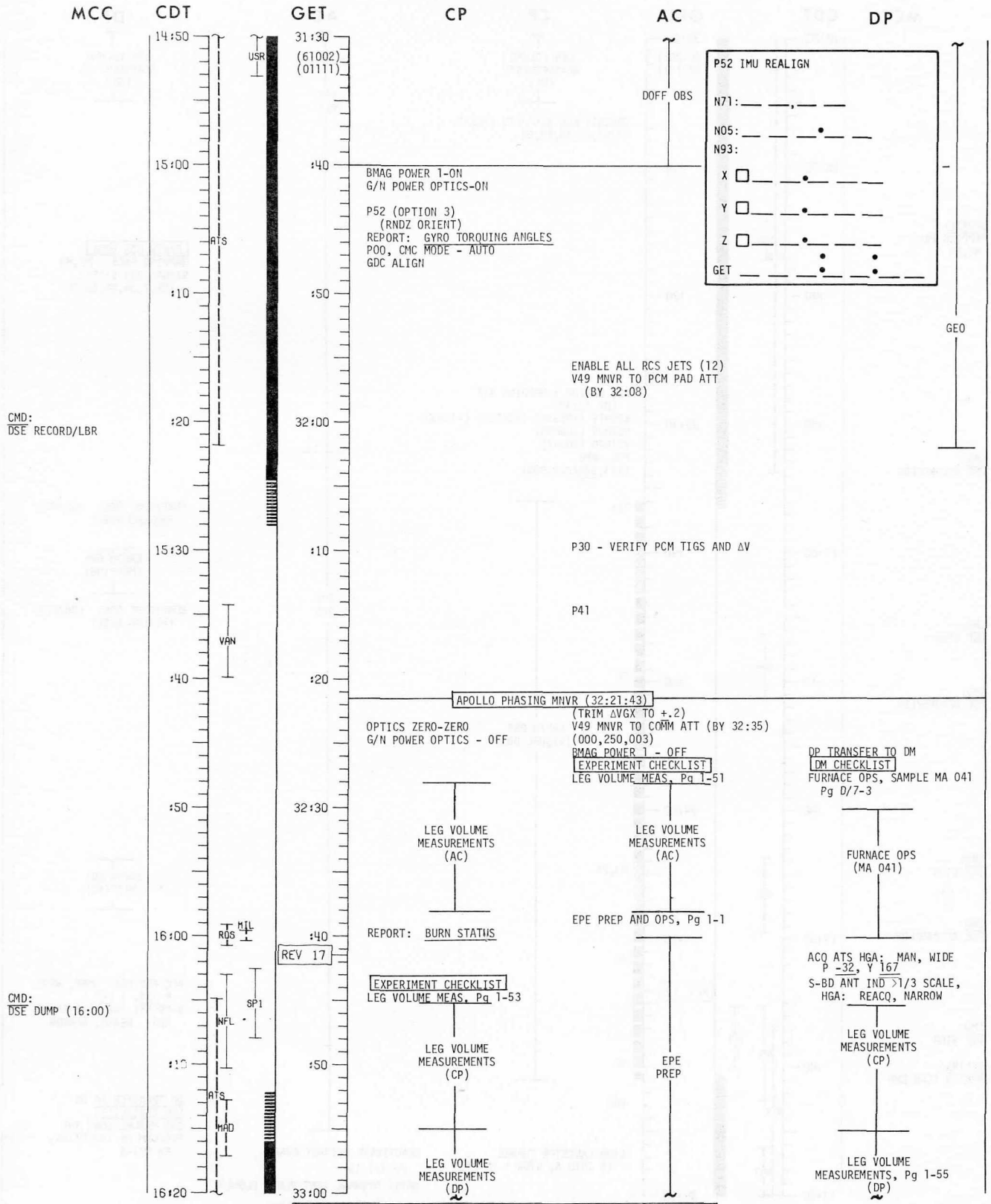
STAR						
SA	+					0
TA	+			0	0	

SPS BURN STATUS

ΔTIG						
AFTER TRIM						
ΔVC						
FDAI (IF ATTITUDE NOT NOMINAL) R	+					
P	+					
Y	+					
N85 (IF VG >.2) VGX		0	0			
VGY		0	0			
VGZ		0	0			
TRANSMIT N81 APPLIED						

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	16-17



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-17

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	17-18

FURN (MA 041)

MCC	CDT	GET	CP	AC	DP
	16:20	33:00	LEG VOLUME MEASUREMENTS (DP)	EPE PREP	LEG VOLUME MEASUREMENTS (DP)
		(61002) (01111)	INHIBIT ALL RCS JETS EXCEPT D1,B2,A3,C4,B3,D4		
	16:30	:10			
UPDATE: MAPPING PASS - M2,M3	TAN ATS				EARTH OBS BOOK MAPPING PASS - M2,M3 ~~VISUAL OBS SITES:~~ 12A,1,3A,2A,4C,5C
	:40	:20			
	:50	33:30	P20 OPTION 5 MAPPING ATT (BY 33:33) V25N78 (+05335) (+02582) (+13830) V22N79 (+00050) V21N70 (00947) PRO, PRO (123,328/252,003)		
CMD: DSE RECORD/LBR					
			12A		CONFIGURE DSE: HBR/RCD/ FWD/CMD RESET
	17:00	:40	M2, 1		EARTH OBS (MAPPING)
CMD: DSE STOP				EPE OPS	CONFIGURE DSE: LBR/RCD/ FWD/CMD RESET
	VAN :10	:50	3A		
CMD: DSE RECORD/LBR			EARTH OBS (VISUAL OBS)		
	:20	34:00			
CMD: DSE STOP			M3,2A		EARTH OBS (MAPPING)
	GDS				
CMD: DSE RECORD/LBR	17:30	:10			
		REV 18			ACQ ATS HGA: MAN, WIDE P -14, Y 348 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
CMD: DSE STOP	SP1				
UPLINK: RASTER SCAN EMP	:40 NFL	:20			
UPDATE: RASTER SCAN TIME	ATS		P00		DP TRANSFER TO DM DM CHECKLIST END MANUAL SOAK AND PERFORM He INJECTION, Pg D/7-5
	MAD		LiOH CANISTER CHANGE (5 INTO A, STOW 1 IN A4)	DEACTIVATE PRIMARY EVAP Pg S/1-18 WASTE STOWAGE VENT VLV - CLOSED	
	17:50	34:30			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-4	~~JUNE 30, 1975~~ 7-10-75	4.1-18

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	18-19

FURN (MA 041)

MCC	CDT	GET	CP	AC	DP
	17:50 HAD	34:30 (61002) (01111)			
CMD: DSE RECORD/LBR	18:00	:40	V05N26E (00001) (01622) (74007) V24N79 (+01000) (+00010) V49 MNVR TO EUV RASTER SCAN ATT (BY 34:44) (002.50, 016.20, 001.40) NOTE: COMM THRU ATS LOST AT 34:41		
	ATS TAN :10	:50	V31E-RASTER SCAN START TIME (SS +22:30) __:__:__(34:47:00) RASTER SCAN	EUV OPS (CUE CARD) X-RAY OPS (CUE CARD)	CONFIGURE DSE: (HBR/RCD/FWD/CMD RESET)
		(61011) (01111)	ENABLE ALL JETS (12) V48 (61011) (01111) V49 MNVR TO SI +X FWD SLEEP ATT (BY 35:08) (019,170,330)	EUV - PWR DWN (CUE CARD) X-RAY - PWR DWN (CUE CARD)	CONFIGURE DSE: (LBR/RCD/FWD/CMD RESET) ACTIVATE PRIMARY EVAP Pg S/1-18 WASTE STOWAGE VENT VLV - VENT
	:20	35:00		DM HEIGHT MEASUREMENTS	
	18:30 ORR	:10			
	:40	:20			
CMD: DSE STOP	HAW				
CMD: DSE RECORD/LBR	:50 HAW	35:30		EAT PERIOD	
CMD: DSE STOP CMD: DSE RECORD/LBR	GDS 19:00	:40			
CMD: DSE STOP		REV 19			ACQ ATS HGA: MAN, WIDE P -81. Y 309 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
	:10 NFL SP1 ATS	:50			
	19:20	36:00			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-1	JUNE 30, 1975	4.1-19

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	19-20

FURN (MA 041)

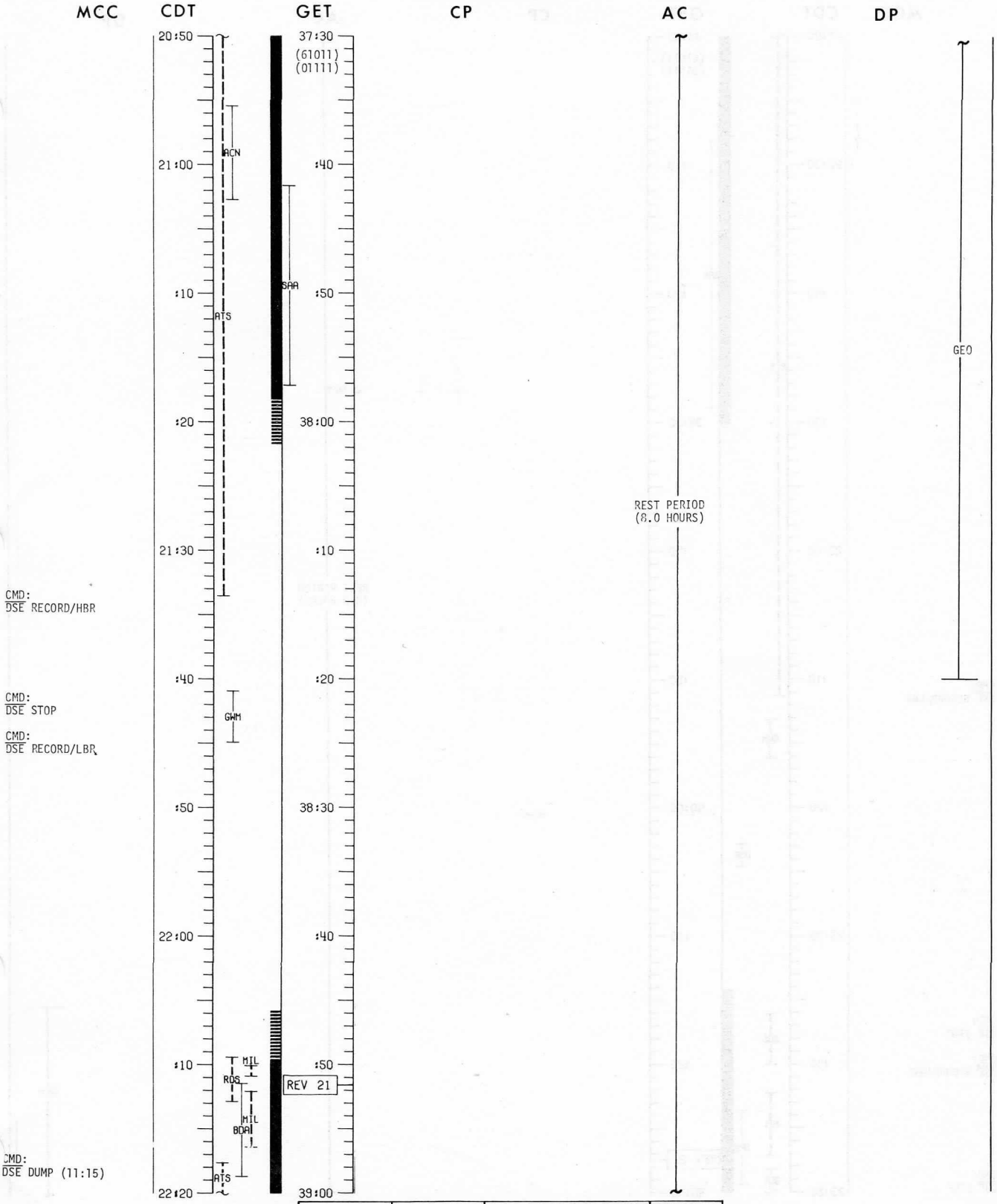
MCC	CDT	GET	CP	AC	DP
UPLINK: JET ON MONITOR LOAD CSM S.V.	19:20	36:00 (61011) (01111)		EAT PERIOD	
	19:30	:10			
			CSM SYSTEMS CHECKLIST PRE-SLEEP CHECKLIST, Pg S/1-49		
	:40 ATS	:20 SAA			SET HGA: P -60, Y 267
	:50	36:30		PRE-SLEEP	TERMINATE BATTERY B CHARGE
CMD: DSE RECORD/LBR			PRE-SLEEP		PRE-SLEEP
	20:00 ORR	:40			
			JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1		DP TRANSFER TO DM SET UP SLEEP STATION
	:10	:50	ZFF		
				FDAI SCALE - 5/1 (VERIFY)	
	:20 HAW	37:00			NOTE: DP WILL SLEEP IN DM
	20:30	:10		REST PERIOD (8.0 HOURS)	
CMD: DSE STOP		REV 20			
	:40 INFL BDA SP1	:20			GEO
	ATS				
	20:50	37:30			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-20

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	20-21

FURN (MA 041)

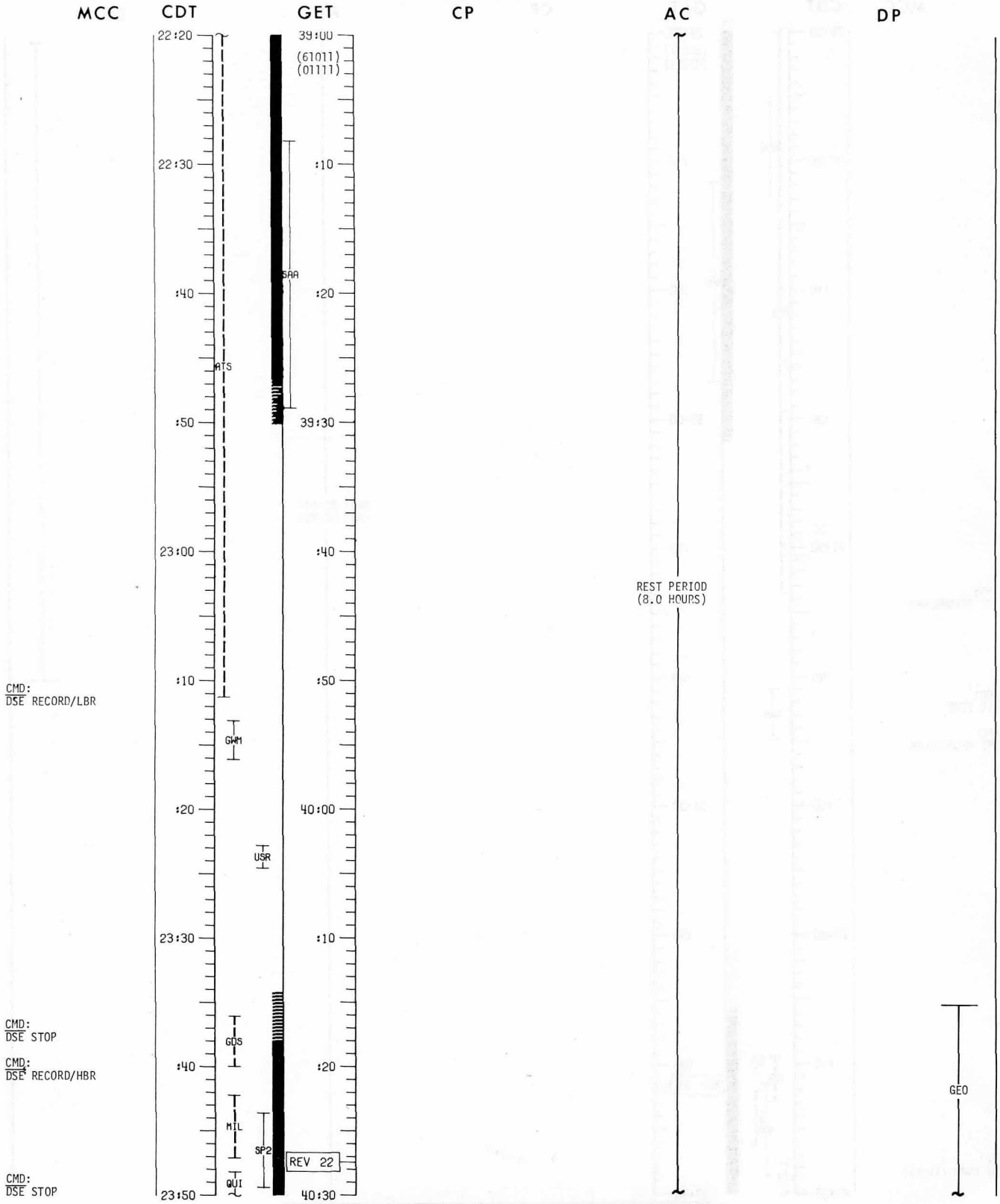


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-21

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	21-22

FURN (MA 041)

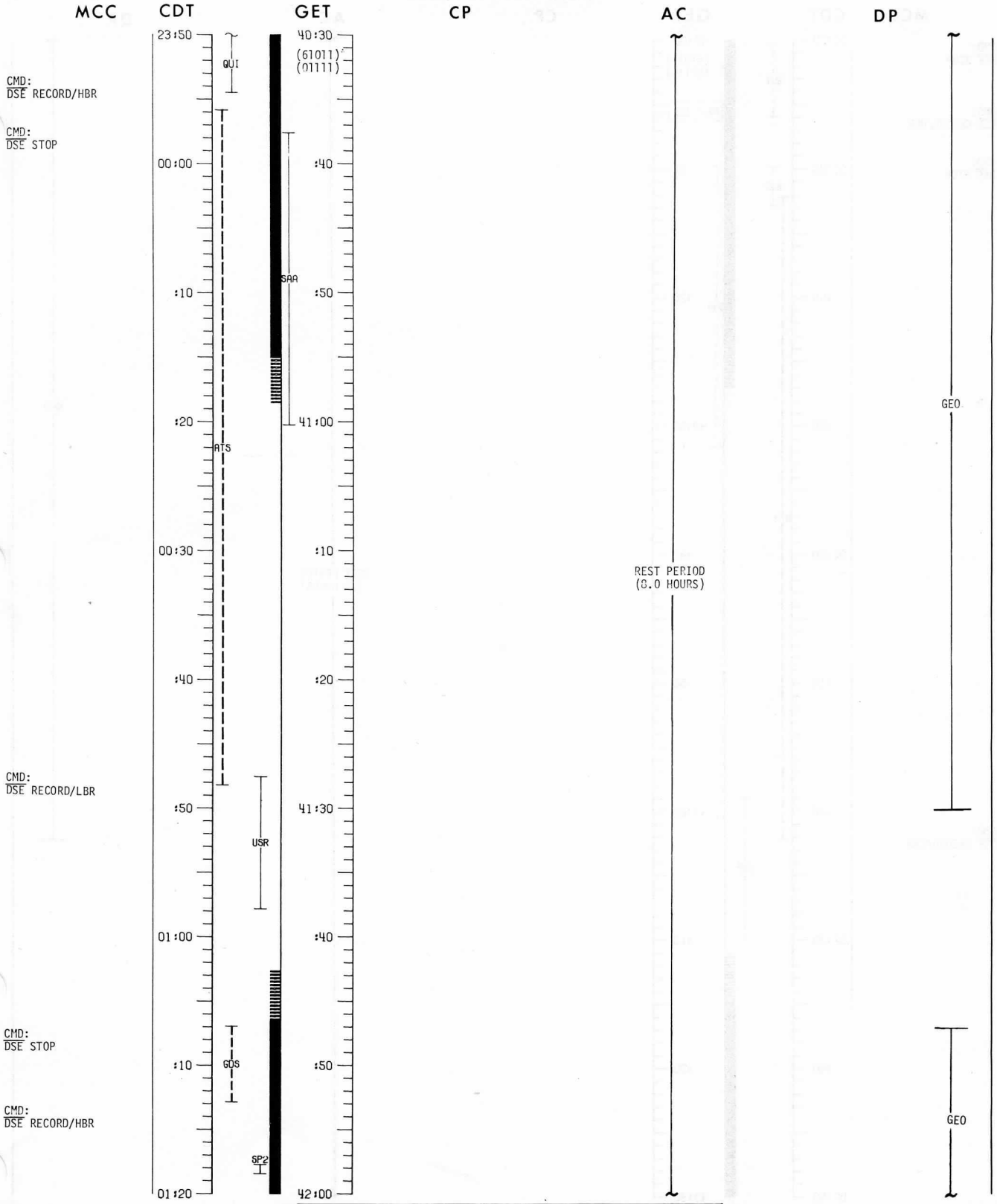


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-22

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	22

FURN (MA 041)

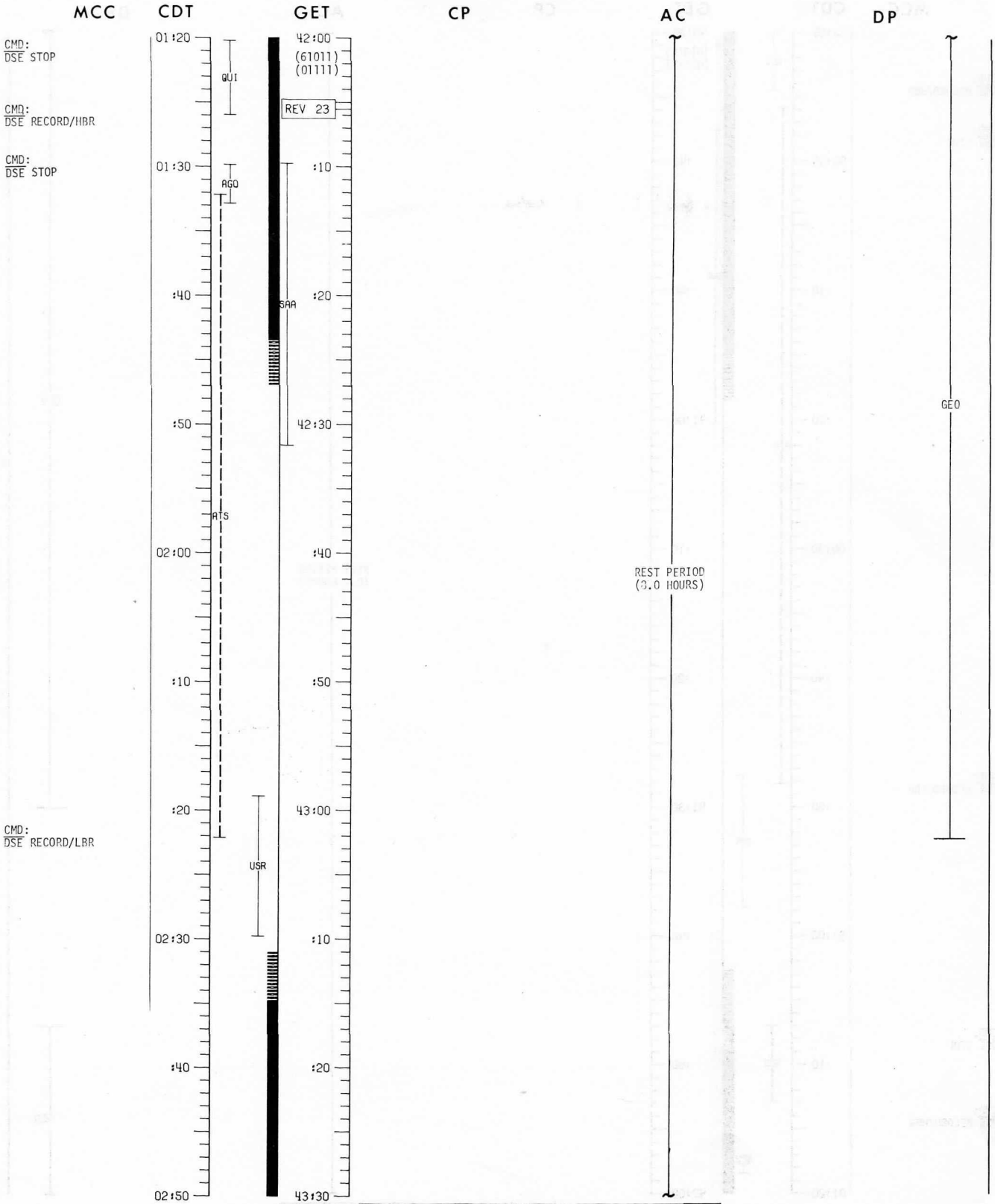


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-23

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	22-23

FURN (MA 041)

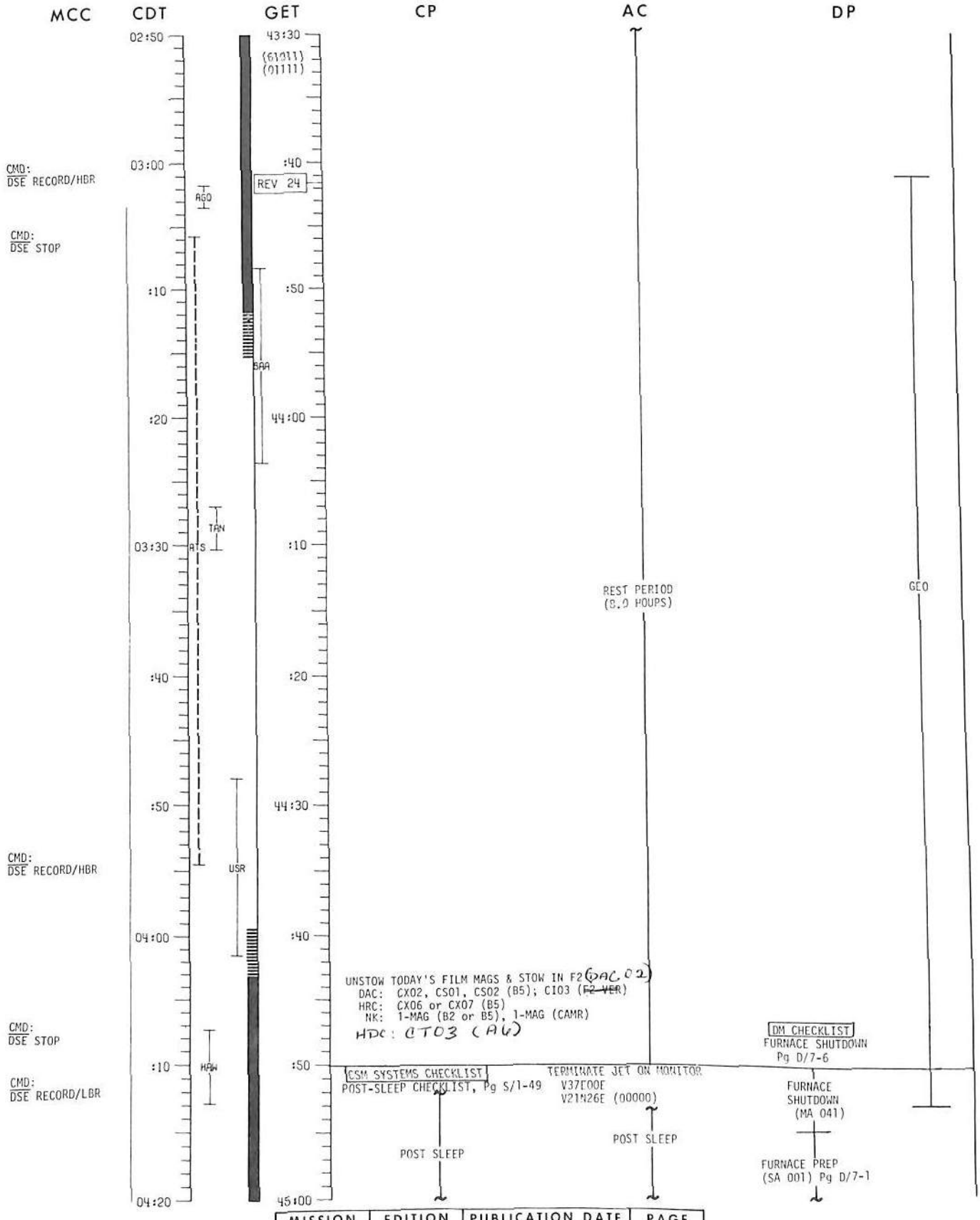


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-24

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	23-24

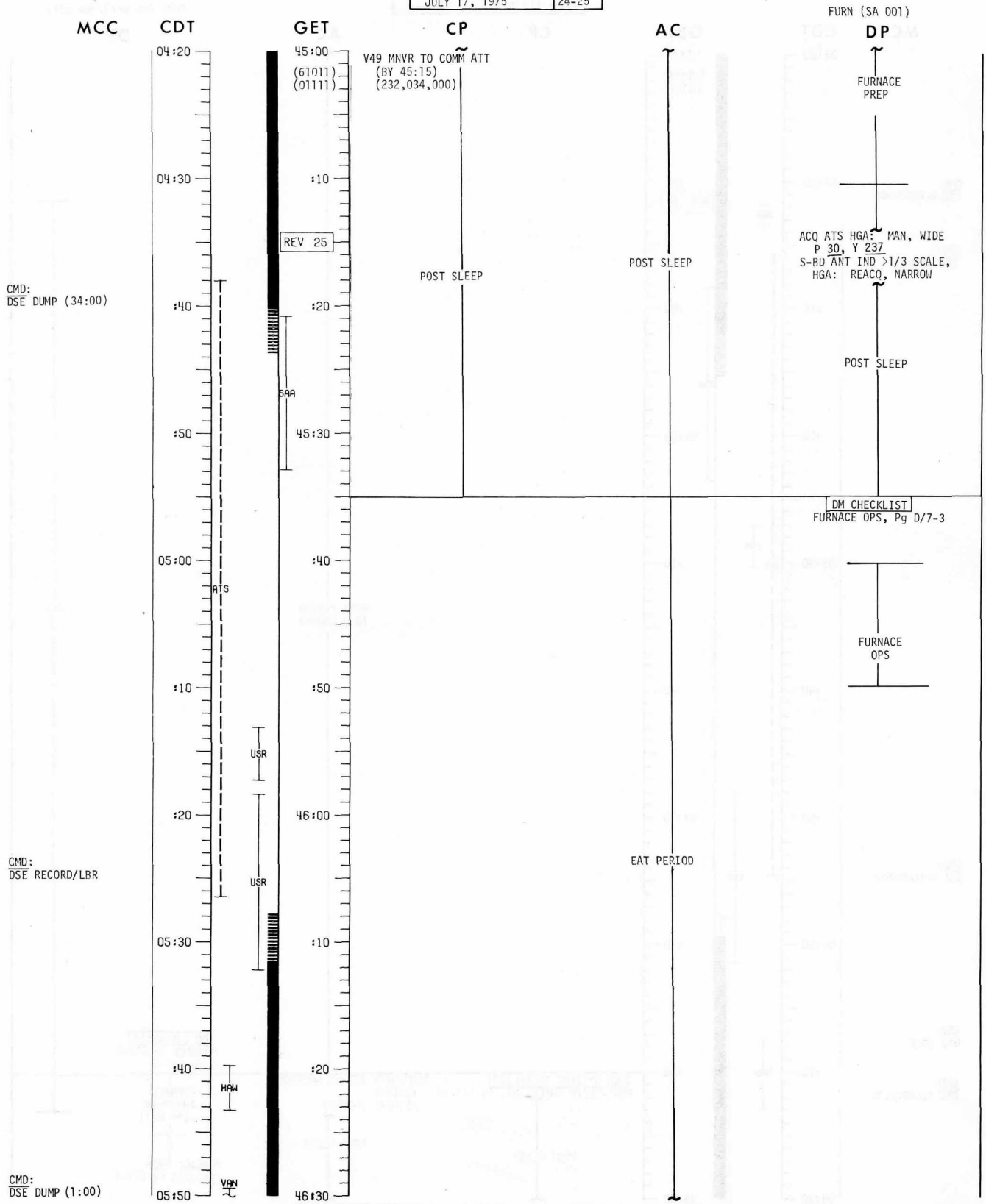
FURN (MA 041)/ (SA 001)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	~~PCN-1~~ PCN 3	~~JUNE 30, 1975~~ July 8, 1975	4.1-25

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	24-25



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.1-26

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	25-26

FURN (SA 001)

MCC	CDT	GET	CP	AC	DP
UPLINK: CSM & SOYUZ S.V. RNDZ REFSMMAT (IF REQ'D) UPDATE: NC2 PREL PAD TPI TIG BACKUP GDC ALIGN (IF REQ'D) STAR ACQ PAD (IF REQ'D) RNDZ/RNDZ REALIGN PAD (IF REQ'D) CMD: DSE RECORD/LBR	05:50 06:00	46:30 (61011) (01111) :40	G/N POWER OPTICS-ON P52 (OPTION 3) (RNDZ ORIENT) RECORD: GYRO TORQUING ANGLES P00, CMC MODE - AUTO GDC ALIGN * * * * * * * * * * * * * * * * * IF REFSMMAT REALIGN REQ'D * * AFTER P52 (OPT 3), PERFORM * * P52 (OPT 1) (RNDZ ORIENT) * * P00, CMC MODE - AUTO * * GDC ALIGN * * * * * * * * * * * * * * * * *	EAT PERIOD GO TO CSM RENDEZVOUS BOOK Pg 1-9	
CMD: DSE STOP	:10	:50			ACQ HGA: MAN, WIDE P 13, Y 230 S-BD ANT IND > 1/3 SCALE HGA: REACQ, NARROW
	:20	47:00	LiOH CANISTER CHANGE (6 INTO B, STOW 4 IN A4) CONFIGURE VTR/DAC/TV (RNDZ & DOCK)		
CMD: DSE RECORD/LBR R/T TV	06:30	:10	JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1		
	:40	:20	ZFF		DM CHECKLIST END MANUAL HEAT SOAK AND PERFORM HELIUM INJECTION Pg D/7-5
	:50	47:30	BMAG POWER 1-WARMUP		DM CLOSEOUT TERMINATE CM-DM ATMOSPHERE MIXING INSTALL HATCH 1 (DECAL)
	07:00	:40	P32 - LOAD NC2 TIG		H2 PURGE LINE HTR-ON
	:10	(11002) (01111) :50	P00, CMC MODE - FREE V48 (11002) (01111) (LOADS WTS) V46E, CMC MODE - AUTO P52 (OPTION 3) (RNDZ ORIENT) RECORD: GYRO TORQUING ANGLES P00, CMC MODE - AUTO GDC ALIGN P52 COAS LOS DETERMINATION	WASTE WATER DUMP TO 60%, Pg S/1-25	H2 & O_2 FUEL CELL PURGE
CMD: DSE DUMP (2:00)	07:20	48:00	P00		

VAN, SAA, ATS, TV, USR, VAN

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.1-27

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JOINT ACTIVITIES PHASE

NOTE: THE JOINT CREW ACTIVITIES PLAN IS PUBLISHED IN 40301 AND IS NOT INCLUDED IN THIS DOCUMENT.

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	62-63

FURN (MA 070)
UVA

MCC	CDT	GET	CP	AC	DP
CMD: DSE STOP	16:20	105:00 (61112) (01111)	* IF 2ND LAUNCH OPPORTUNITY: INHIBIT ALL SM/RCS JETS EXCEPT: D1, B2, A3, C4, B3, D4		VHF FM XCVR DMA - OPEN (PNL 815) VHF FM - OFF (PNLS 9,10,6) PNL 10: MODE-INTERCOMM/PTT POWER-AUDIO TONE VHF AM-TR AUDIO CONTROL-NORM PHONE/MIC CONNECT-OFF THUMBWHEELS-AS DESIRED
CMD: ATS PWR AMP - ON DSE RCD/LBR	GOS		EXPERIMENTS CHECKLIST LEG VOLUME MEASUREMENTS, Pg 1-53		
	16:30	:10			UV ABSORPTION PWR - OFF UV COVER - OPEN UV ABSORPTION PWR - ON
		REV 63	LEG VOLUME MEASUREMENTS, Pg 1-53 (CP)	LEG VOLUME MEASUREMENTS (CP)	
CMD: DSE DUMP (02:00)	NFL SP1				ACQ ATS HGA: MAN, WIDE P 9, Y 280 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
	:40	:20	* IF 2ND LAUNCH OPPORTUNITY: EXPERIMENTS CHECKLIST SM ACTIVATION, Pg 1-13		
				LEG VOLUME MEASUREMENTS (DP)	LEG VOLUME MEASUREMENTS, Pg 1-55 (DP)
UPLINK: HGA EMP RASTER SCAN EMP DESIRED ORIENT (ORBITAL)	HAO				
	:50	105:30		LEG VOLUME MEASUREMENTS, Pg 1-51 (AC)	LEG VOLUME MEASUREMENTS (AC)
	17:00	:40			EXPERIMENTS CHECKLIST WICKING DEMONSTRATION, Pg 1-67
	ATS				
	:10	:50			WICKING DEMONSTRATION
		VTR	* IF 2ND LAUNCH OPPORTUNITY: ENABLE ALL SM/RCS JETS EXCEPT: A3, C4, B3, D4 UV ABSORPTION PWR - OFF UV COVER - OPEN UV ABSORPTION PWR - ON		
	:20	106:00			
CMD: DSE RCD/HBR ATS PWR AMP - OFF					
CMD: DSE STOP					
	17:30 ORR	:10	SET UP TSB FOR STOWING USED FILM		LIQUID SPREADING DEMONSTRATION, Pg 1-69
CMD: DSE RCD/HBR		VTR			
	:40	:20			LIQUID SPREADING
		VTR			FOAMING DEMONSTRATION, Pg 1-71
CMD: DSE STOP	HAW				
	17:50	106:30			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	~~REVISION A~~ PCN 3	~~JUNE 18, 1975~~ 7-8-76	4.3-1

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	63-64

MCC	CDT	GET	CP	AC	DP
CMD: DSE RCD/HBR ATS PWR AMP - ON	17:50 HAW GDS 18:00	106:30 (61112) (01111) :40			FURN (MA 070/MA 131) UVA FOAMING DEMO
CMD: DSE STOP	:10 NFL SP1	REV 64 :50	P20, OPT 2 (UVA 360° ROLL SCAN) V24N78 (+00000) (+00000) V24N79 (+05000) (+00050) V25N34 (00106) (00055) (00000) PRO	ACQ ATS HGA: MAN, WIDE P 23, Y 299 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW	DM CHECKLIST FURNACE SHUTDOWN, Pg D/7-6 FURNACE PREP, Pg D/7-1 (MA 131 SAMPLES) FURN PREP
CMD: DSE RCD/HBR (PRIOR TO DATA LOSS)	:20	107:00	UVA ROLL SCAN	NOTE: NO COMM THRU ATS FROM 107:01 TO 107:06	
CMD: DSE REWIND(2:30) DSE PLAYBACK(20:00) DSE REWIND(2:00)	ACN 18:30	:10	P00 AT R = 278° ENABLE ALL SM RCS JETS (12) P20, OPT 5, MNVR TO MAPPING ATT (BY 107:15) V25N78 (+05335) (+02582) (+13830) V22N79 (+00050) V21N70 (00047) (344,328/341,344) CMC MODE - FREE G/N POWER OPTICS - ON P52 (OPTION 3) (UVA ORIENT)	JOINT OPS CHECKLIST UVA SHUTDOWN AND STOW, Pg J/10-7 ACTIVATE PRIMARY EVAP Pg S/1-18	P52 IMU REALIGN N71: __ __, __ __ N05: __ __ __•__ __ N93: X ☐ __ __•__ __ __ Y ☐ __ __•__ __ __ Z ☐ __ __•__ __ __ GET __ __ __•__ __•__ __
UPDATE: MAPPING PASS - M6 RASTER SCAN START TIME(108:24)	ATS :40	SAA :20	REPORT: GYRO TORQUING ANGLES P52 (OPTION 1) (ORBITAL ORIENT) (128,092,011) ON ORBITAL ORIENT	EARTH OBS BOOK MAPPING PASS - M6 VISUAL OBS SITES 11C, 11B, 3A	
		(61101) (01111) :50 107:30	GDC ALIGN V48 (61101) (01111) P20, CMC MODE - AUTO OPTICS ZERO - ZERO G/N POWER OPTICS - OFF		
CMD: ATS PWR AMP - OFF			NOTE: COMM THRU ATS LOST AT 107:36		JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1 ZFF PHOTOS
CMD: DSE STOP CMD: DSE RCD/HBR	19:00 ORR :10	:40 M6 11C 11B :50 3A	EARTH OBS (VIS OBS)	CONFIGURE DSE (HBR/RCD/FWD/CMD RESET) EARTH OBS (MAPPING) CONFIGURE DSE (STOP/CMD RESET) LEAVE CAMERA SETUP IN WINDOW DEACTIVATE PRIMARY EVAPORATOR, Pg S/1-18	EXPERIMENTS CHECKLIST CRYSTAL GROWTH ACTIVATION Pg 1-37 CRYSTAL GROWTH PHOTOS Pg 1-37 CGE PHOTOS
	19:20	108:00			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	64-65

MCC	CDT	GET	CP	AC	DP
	19:20	108:00 (61101) (01111)		V49 MNVR TO EUV RASTER SCAN ATTITUDE (BY 108:10) (159.1,017.7,359.3)	FURN (MA 131) DM CHECKLIST FURNACE OPS, Pg D/7-3
	19:30	:10		INHIBIT ALL RCS JETS EXCEPT: D1,B2,A3,C4,B3,D4 X-RAY OPS (CUE CARD) EUV OPS (CUE CARD)	FURN OPS PROBE AND DROGUE STOWAGE CHECKLIST
	:40	REV 65 :20	NOTE: NO COMM THRU ATS UNTIL 108:50	V05N26 (00001) (01622) (74007) V24N79 (+01000)(+00010) V31E START TIME 1 0 8 2 4 0 0	1. XFER PROBE & DROGUE TO DM 2. SECURE PROBE WITH ROPE (D1) USING D4/D5 FOOD PADS (CAPTURE LATCHES FACING HATCH 3) 3. SECURE DROGUE TO D-RINGS (3) ON DM WALL NEXT TO AUDIO PANEL 811 USING THE THREE DROGUE STRAPS (SMALL END OF DROGUE AGAINST WALL)
CMD: DSE RCD/HBR	:50	108:30	EUV PWR DOWN (CUE CARD) X-RAY PWR DOWN (CUE CARD) CONFIGURE DSE (STOP/REWIND/CMD RESET)	EUV RASTER SCAN	
		(61111) (01111)	V48 (61111) (01111) V49 MNVR TO SI +X FWD SLEEP ATT (BY 108:50) (047,009,324) FDAI SCALE - 5/1 (VERIFY)	ACTIVATE PRIMARY EVAPORATOR, Pg S/1-18	
CMD: ATS PWR AMP - ON	20:00	:40	LiOH CANISTER CHANGE (11 INTO A, STOW 9 IN D4) CSM SYSTEMS CHECKLIST PRE-SLEEP CHECKLIST, Pg S/1-49	VERIFY CABIN VENT QD INSTALLED ON PNL 251 WASTE STOWAGE QD WASTE STOWAGE VENT VLV - VENT	
UPLINK: CSM & ATS S.V. LIFT-OFF TIME (IF REQ'D) JET-ON MONITOR LOADS	:10	:50	VTR PWR - ON TELEMETRY PWR - ON SYNCHRONIZE MISSION TIMER TO CMC CLOCK (IF REQ'D) NOTE: LIFT OFF TIME WILL BE UPLINKED IF REV 72 START TIME DIFFERS FROM 119:22:48.5 BY MORE THAN ± 2 MINUTES	NOTE: DON'T CLOSE WASTE STOWAGE VENT VLV UNTIL 109:29	ACQ ATS HGA: MAN, WIDE P -64 Y 292 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW SET HGA: P -48, Y 258
	:20	109:00		PRE-SLEEP	
CMD: ATS PWR AMP - OFF	20:30	:10			
	:40	:20			
CMD: DSE RCD/LBR	20:50	109:30			

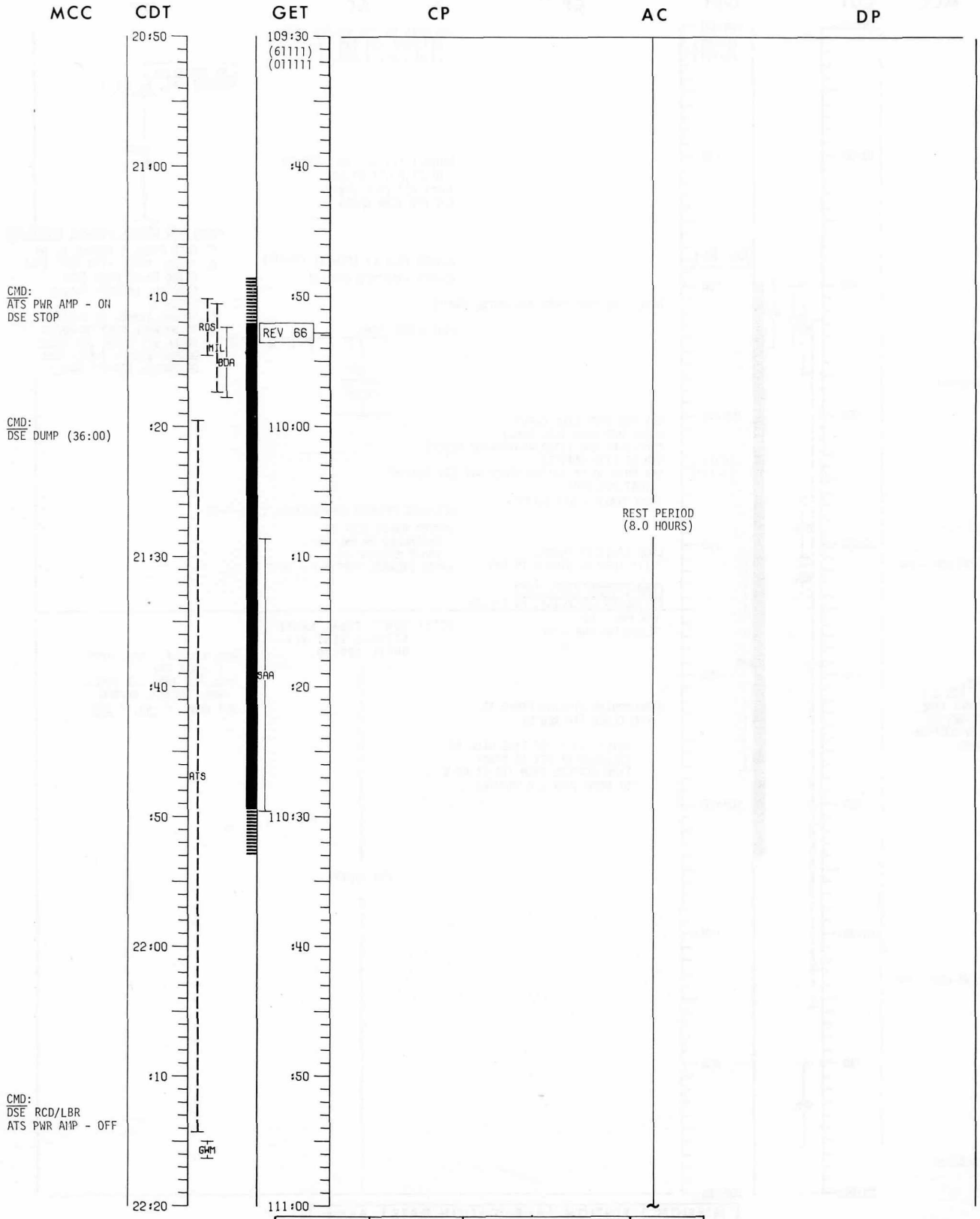
NFL SP1 BDA ACN ACN ATS GWM SAA

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-3

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	65-66

FURN (MA 131)

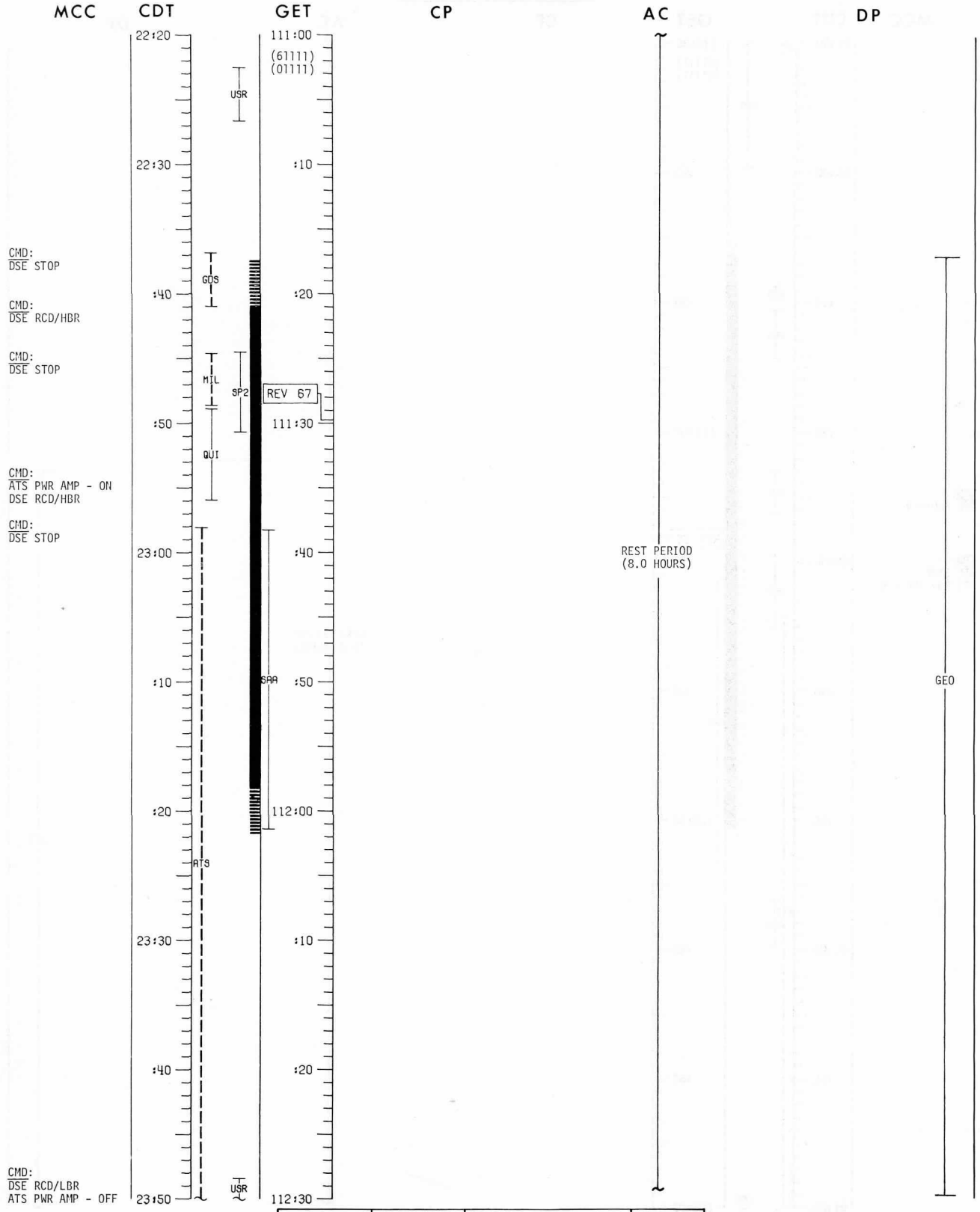


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-4

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	66-67

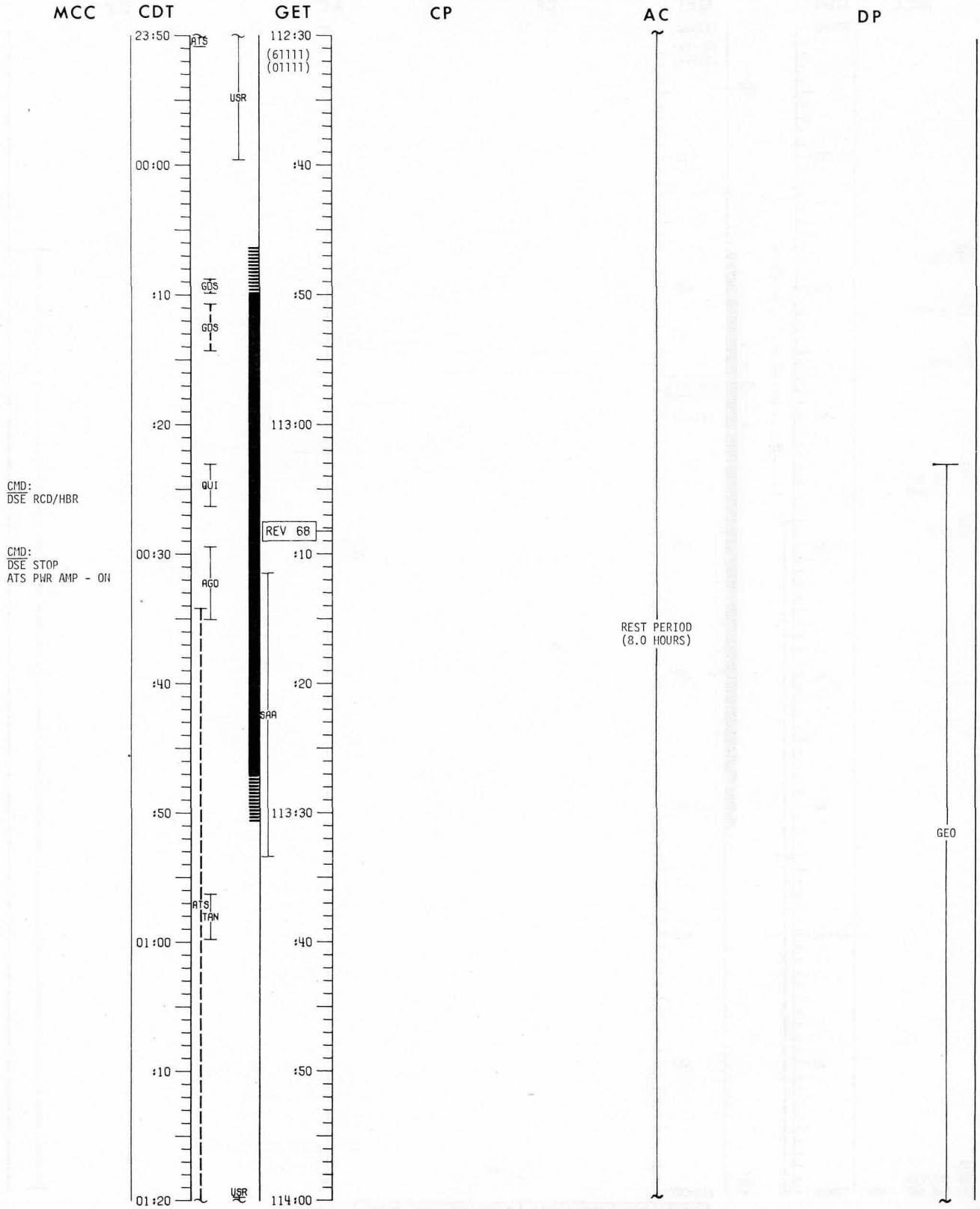
FURN (MA 131)



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	67-68

FURN (MA 131)

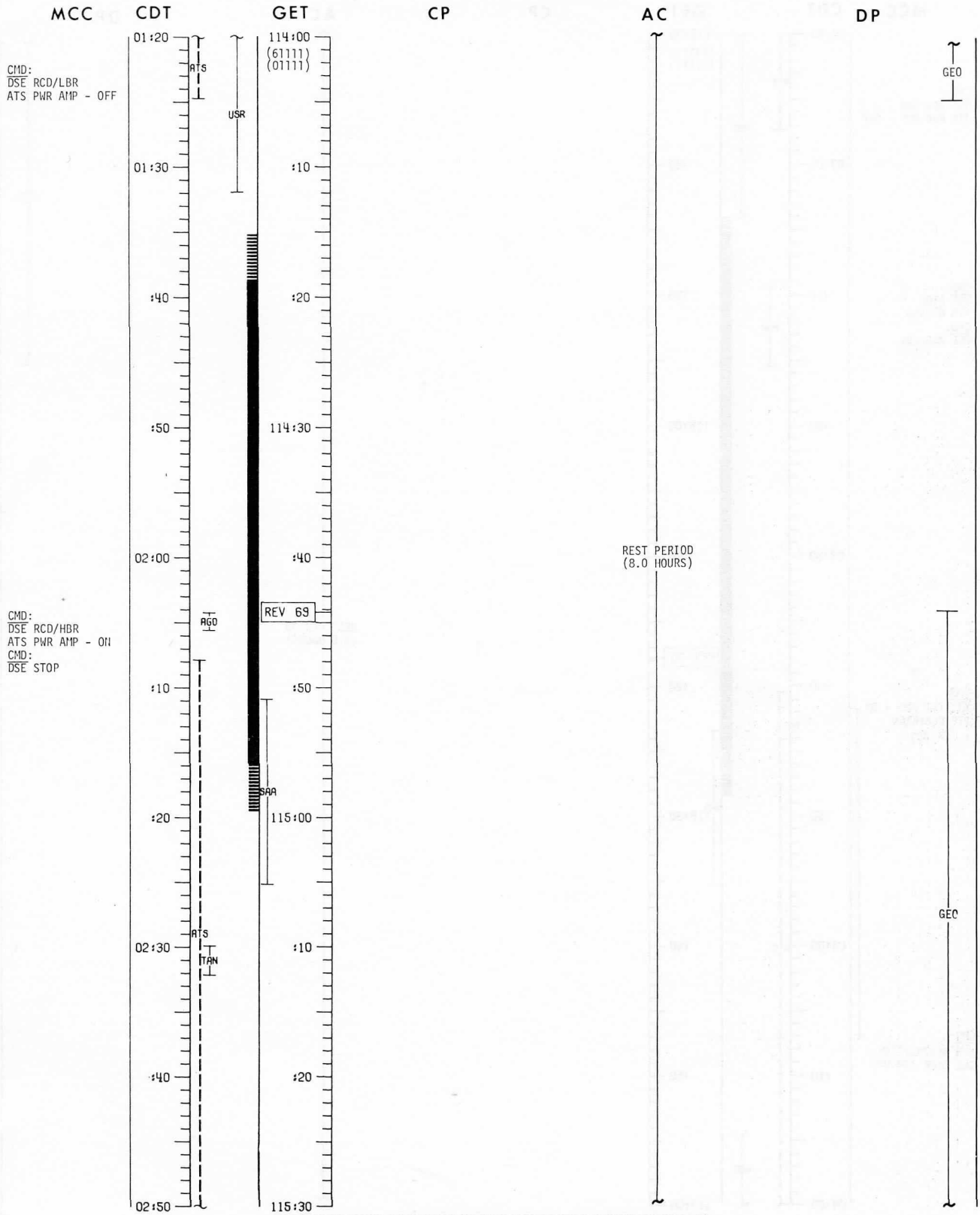


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-6

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	68-69

FURN (MA 131)

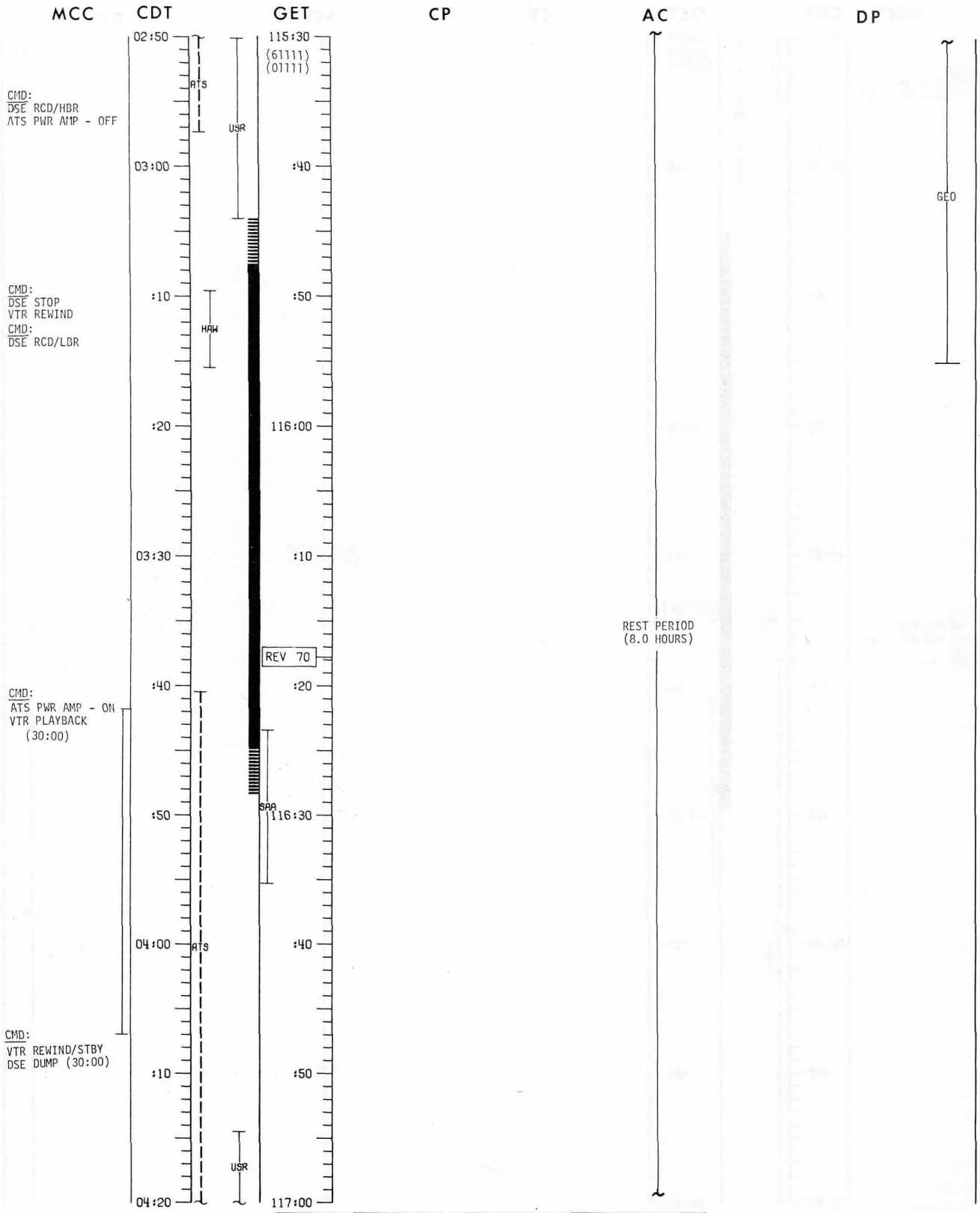


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-7

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	69-70

FURN (MA 131)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-8

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	70-71

FURN (MA 131)

MCC	CDT	GET	CP	AC	DP
	04:20	117:00			
		(61111) (01111)			
	ATS				
		USR			
CMD: DSE STOP ATS PWR AMP - OFF	04:30	:10			
				REST PERIOD (8.0 HOURS)	
	:40	:20			
			UNSTOW TODAY'S FILM MAGS & STOW IN F2: DAC: CT01 & CI28 (F2 VERIFY) HDC: CT04 (CAMR), CX13 (U1), CT05 (A6) HRC: CX12 (CAMR), CX14 (A6) NK: 1 MAG (CAMR) (VERIFY >12 FR REMAINING)		
	:50	117:30	CSM SYSTEMS CHECKLIST POST-SLEEP CHECKLIST, Pg S/1-49	TERMINATE JET-ON MONITOR & ENABLE HGA EMP V37E00E V25N26E (10001) (01412) (66105) CMC MODE - FREE V48 (61101) (01111) CMC MODE - AUTO	
CMD: DSE PLAYBACK UPDATE: MAPPING PASS-M7					PREP FOR URINE DUMP, Pg S/1-28
	VAN	(61101) (01111)	VTR PWR - OFF TELEMETRY PWR - OFF		
CMD: DSE STOP					
	05:00	:40		P20 OPT 5 MNVR TO MAPPING ATT (BY 117:52) V25N78 (+05335) (+02582) (+13830) V22N79 (+00050) V21N70 (00047) (129,328/030,008)	
					POST SLEEP
			POST SLEEP		
	:10	:50		POST SLEEP	
		REV 71			
CMD: ATS PWR AMP - ON DSE PLAYBACK					ACQ ATS HGA: MAN, WIDE P 0, Y 336 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
			O2 FUEL CELL PURGE		
			WASTE WATER DUMP TO 60%, Pg S/1-25		URINE DUMP, Pg S/1-28
CMD: DSE REWIND	:20	118:00	EARTH OBS BOOK MAPPING PASS - M7 VISUAL OBS SITES: 9C,9D,9E,9F,9G		
		BAA			
UPLINK: CSM S.V. ATS S.V.					
	ACN				
	05:30	:10			
	ATS				
			M7 9C		
			9D		
					EARTH OBS (MAPPING)
			EARTH OBS (VISUAL OBS)		
	:40	:20	9E	EAT PERIOD	
			9F		
			9G		
		USR			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	05:50	118:30	EAT PERIOD		EAT PERIOD

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	71-72

FURN (MA 131)

MCC	CDT	GET	CP	AC	DP
	05:50	118:30	NOTE: COMM THRU ATS LOST AT 118:31		
		(61101) (01111)			
	ATS	USR			
	06:00	:40			
				EAT PERIOD	P52 IMU REALIGN N71: __ __, __ __ N05: __ __ __•__ __ N93: X ☐ __ __•__ __ __ Y ☐ __ __•__ __ __ Z ☐ __ __•__ __ __ GET __ __ __•__ __•__ __
	:10	:50			
	:20	119:00			
UPDATE: CONSUMABLES STATUS FLIGHT PLAN MAPPING PASS - M8,M9	VAN		G/N POWER OPTICS - ON CMC MODE - FREE P52 (OPTION 3) (ORBITAL ORIENT)		
	06:30	:10	REPORT: GYRO TORQUING ANGLES		
			OPTICS ZERO-ZERO G/N POWER OPTICS - OFF	P20, CMC MODE - AUTO GDC ALIGN	
					EARTH OBS BOOK MAPPING PASS - M8,M9 VISUAL OBS SITES: 12A,8A,9H,9I,9J
	:40	:20			
		REV 72			
				CONFIGURE DSE: (HBR/RCD/FWD/CMD RESET)	
CMD: ATS PWR AMP - ON DSE REWIND			M8,12A 8A ACQ ATS HGA: MAN, WIDE P 10, Y 330 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW UPTLM - RELAY LiOH CANISTER CHANGE (12 INTO B, STOW 10 IN D4)	EARTH OBS (MAPPING)	
	:50	119:30			
		SAA	DM CHECKLIST HELIUM INJECTION, Pg D/7-5		EARTH OBS (VISUAL OBS)
UPDATE: EUV PAD (REV 72)					
	07:00	:40			
	ACN ATS				
			M9 FLIGHT PLAN SUPPLEMENT EUV PAD - REV 72		
			9H	EARTH OBS (MAPPING)	
	:10	:50	9I		
			9J		
				DEACTIVATE PRIMARY EVAP Pg S/1-18	
CMD: DSE PLAYBACK (4:00)					
		USR			
	07:20	120:00			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	72-73

FURN (MA 131)

MCC	CDT	GET	CP	AC	DP
CMD: DSE REWIND	07:20	120:00 (61101) (01111)			
	07:30 (ATS, USR)	:10	NOTE: TLM THRU ATS LOST AT 120:14		
CMD: ATS PWR AMP - OFF	:40 (GMM)	:20			
	:50	120:30	EUV (X-RAY)		EXPERIMENT CHECKLIST CRYSTAL GROWTH PHOTOS, Pg 1-37
					CGE PHOTOS
	08:00	:40			JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1
					ZFF PHOTOS
	:10	:50			
CMD: DSE PLAYBACK (37:00) ATS PWR AMP - ON		(61102) (01111) REV 73	V43 (61102) (01111) P20 OPT 5 MNVR TO VIS OBS ATT (BY 121:01) V25N78 (+00000) (+09000) (+18000) V22N79 (+00050) V21N70 (00047) (189,000/067,006)	EARTH OBS BOOK VIS OBS SITES: 3A,9K,9L	ACTIVATE PRIMARY EVAP Pg S/1-18
	:20 (AGO)	121:00 (SAA)			ACQ ATS HGA: MAN, WIDE P 17, Y 311 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
					TV CAMR SETUP FOR DSKY WORK TV PREP - TV 2.2 SET CAMERA - MASTER
	08:30	:10			Relocate TV CAMR FROM 11 to 231
UPDATE: EUV PAD (REV 73)	(ATS)	3A	FLIGHT PLAN SUPPLEMENT EUV PAD - REV 73	EARTH OBS (VISUAL OBS)	
	:40 (MAO)	:20			
		9K			DEACTIVATE PRIMARY EVAP Pg S/1-18
		9L			
	08:50 (USR)	121:30			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	~~FINAL~~ PCN 3	~~MAY 15, 1975~~ 7-8-75	4.3-11

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	73-74

FURN (MA 131)

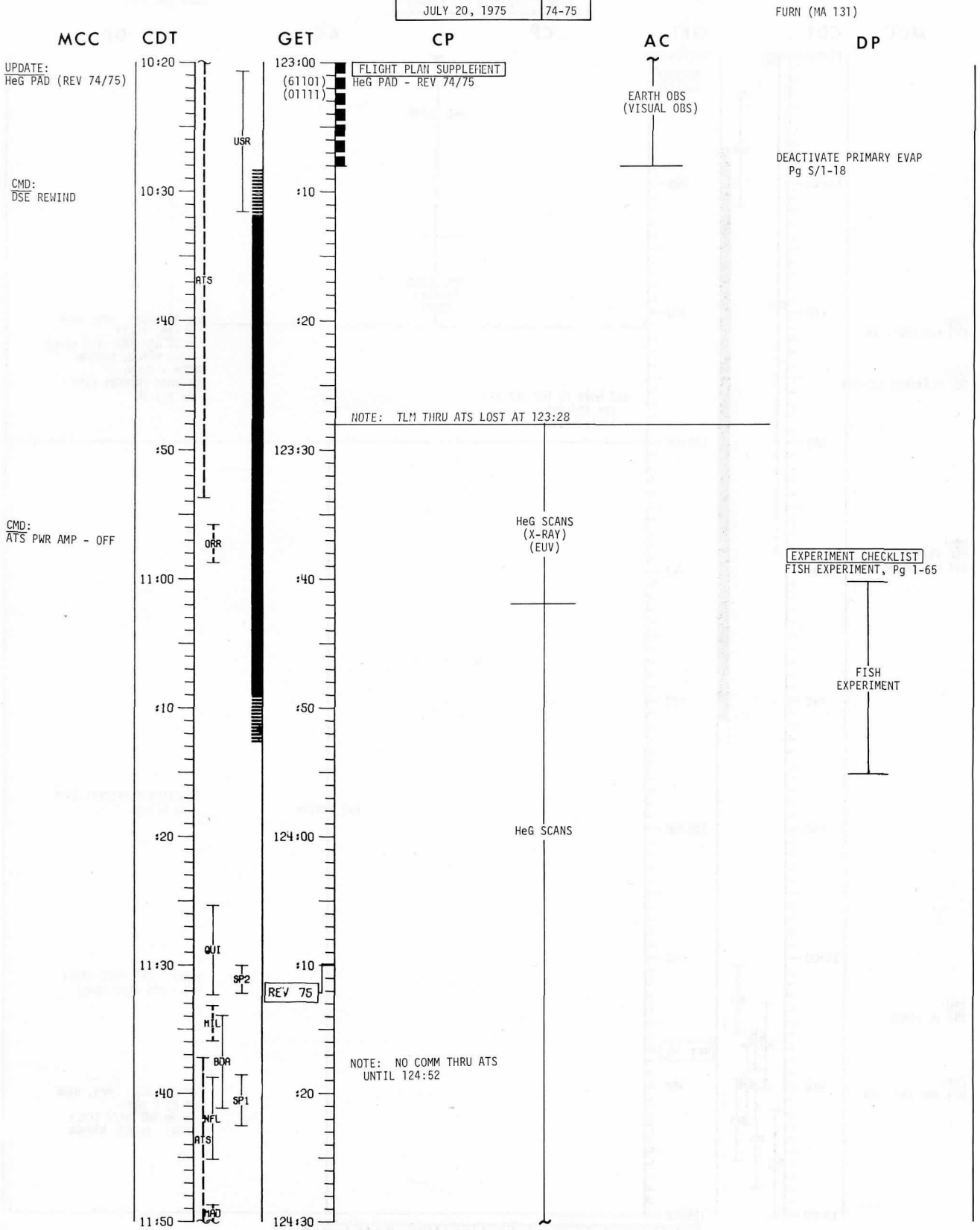
MCC	CDT	GET	CP	AC	DP
	08:50	121:30			TV PREP VTR POWER(3) - ON (PNL 400) TV STATION SEL - CM/CM1 (PNL 181) CM1 TV STA PWR - ON (PNL 181)
		(61102) (01111)			
	09:00	:40			
CMD: DSE REWIND (SS-1)					HEAD WHEEL DRIVE MOTOR - ON MODE - RECORD
					5 MINUTES
	:10	:50			HEAD WHEEL DRIVE MOTOR - OFF VTR POWER(3) - OFF CM1 TV STA PWR - OFF RELOCATE TV CAMERA FROM 231 TO 11
CMD: DSE RECORD/HBR ATS PWR AMP - OFF			EUV (X-RAY)		
	:20	122:00			
		(61101) (01111)			
	09:30	:10			
	:40	:20	P20 OPT 5 MNVR TO VIS OBS ATT (BY 122:33) V25N78 (+00000) (+09000) (+18000) V22N79 (+00050) V21N70 (00047) (190,000/055,004)	EARTH OBS BOOK VISUAL OBS SITES: 7B,7C,6A,6B	ACTIVATE PRIMARY EVAP Pg S/1-18
	:50	122:30	UNSTOW EXERCISER (U2)		
		REV 74			
CMD: DSE REWIND ATS PWR AMP - ON		7B	EXERCISE PERIOD		
	10:00	:40	7C		ACQ ATS HGA: MAN, WIDE P 14, Y 308 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
CMD: DSE PLAYBACK (23:00)				EARTH OBS (VISUAL OBS)	
	:10	:50			
		6A			EXERCISE PERIOD
		6B			
	10:20	123:00			

USR, ATS, VTR, ORR, QUI, ATS, MAD

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-12

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	74-75



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	75-76

FURN (MA 131)

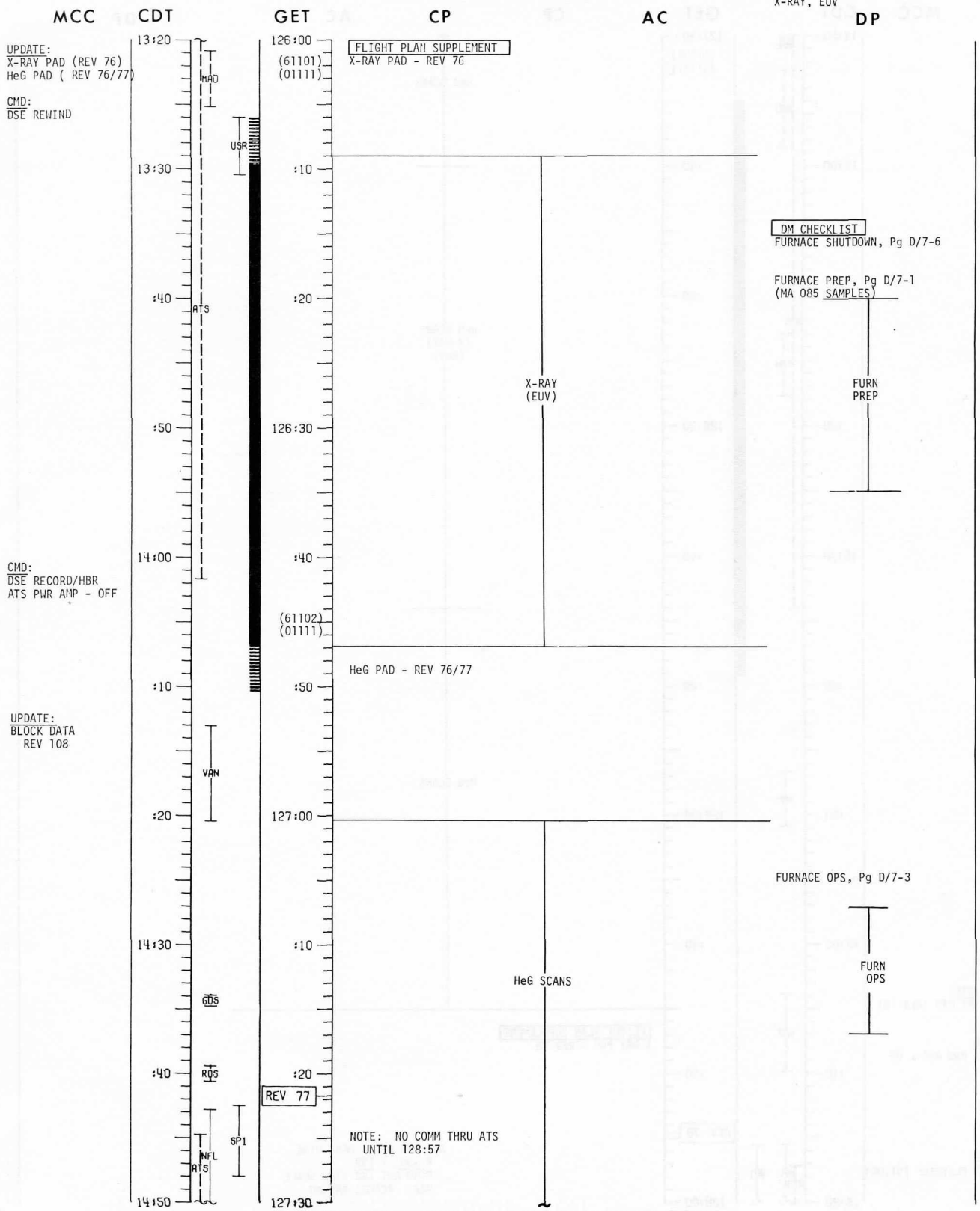
MCC	CDT	GET	CP	AC	DP
	11:50	124:30			
		(61101) (01111)			
			HeG SCANS		
	12:00	:40			
			HeG SCANS (X-RAY) (EUV)		
CMD: ATS PWR AMP - ON	:10	:50			ACQ ATS HGA: MAN, WIDE P -25, Y 177 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
CMD: DSE PLAYBACK (33:00)					UPTLM - RELAY ACTIVATE PRIMARY EVAP Pg S/1-18
			V49 MNVR TO TGT 301 ATT (BY 125:40) (211,118,000)		
	:20	125:00			
CMD: DSE STOP ATS PWR AMP - OFF	12:30	:10			
	:40	:20			
				EAT PERIOD	DEACTIVATE PRIMARY EVAP Pg S/1-18
	:50	125:30			
	13:00	:40			
CMD: DSE PLAYBACK					X-RAY - OPS (CUE CARD) EUV - OPS (CUE CARD)
CMD: ATS PWR AMP - ON	:10	:50			ACQ ATS HGA: MAN, WIDE P 0, Y 202 S-BD ANT >1/3 SCALE HGA: REACQ, NARROW
	13:20	126:00			

MAD
USR
ATS
SP2
ROS
MIL
REV 76
BDA
SP1
NFL
ATS

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-14

APOLLO DETAILED CREW ACTIVITIES PLAN

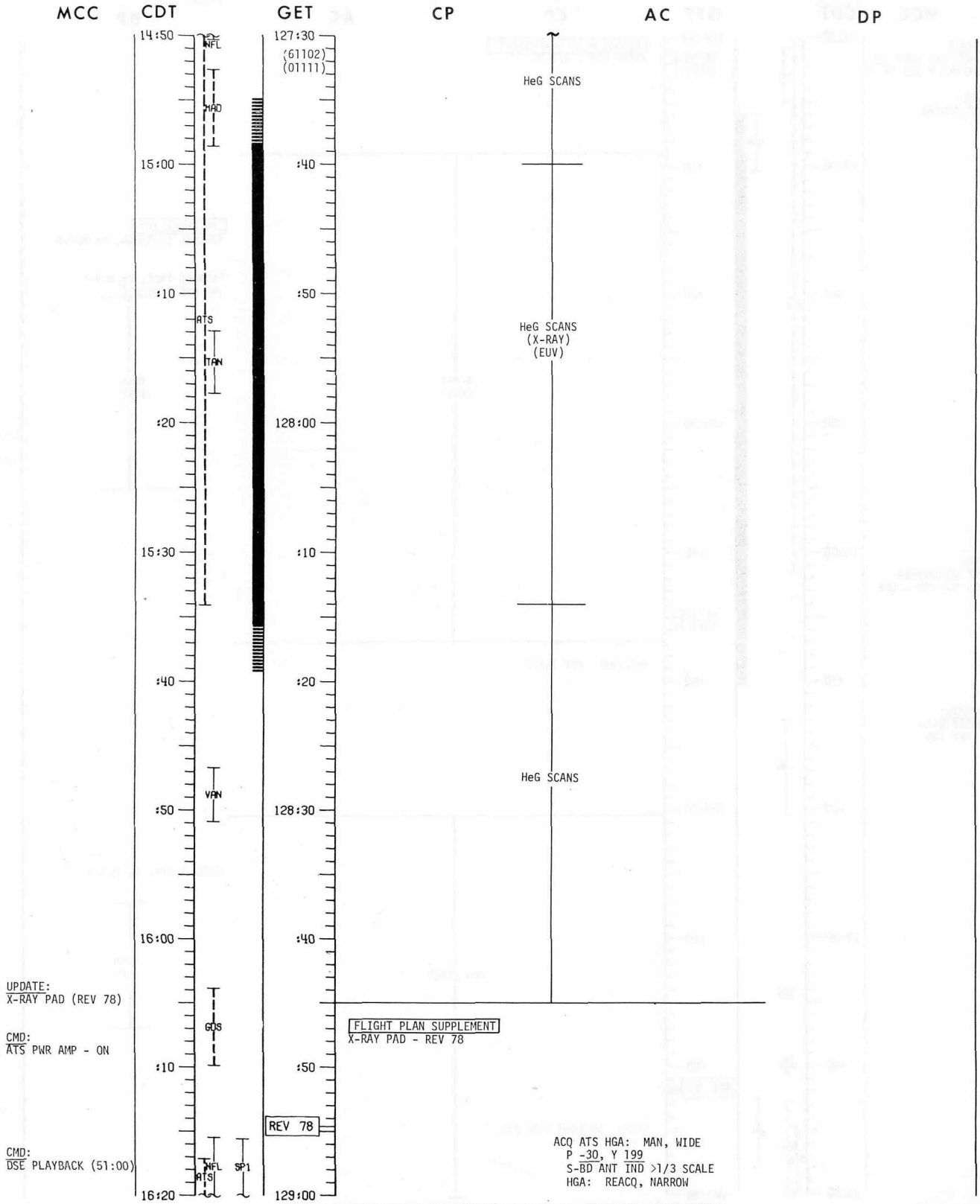
HOUSTON DATE	REV
JULY 20, 1975	76-77



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	77-78

FURN (MA 085)



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	78-79

FURN (MA 085)

MCC	CDT	GET	CP	AC	DP
	16:20	129:00			
		(61102) (01111)			
		(61101) (01111)			TV CAMR SETUP TV INSTALLED AT 871 (X=80, Y=170,Z=60) (F,ZOOM,FOC) - 3.5,9,10 SET CAMERA - MASTER
	16:30	:10			
	:40	:20	X-RAY		
					TV PREP VTR POWER(3) - ON (PNL 400) TV STA SEL - REMOTE (PNL 181) TV STA SEL - DM/DM2 (PNL 808) DM2 TV STA PWR - ON (PNL 808)
	:50	129:30			
	17:00	:40			
		(61102) (01111)	CSM SYSTEMS CHECKLIST OBS DONNING (W/O PGA), Pg S/1-13		
CMD: DSE STOP ATS PWR AMP - OFF			V48 (61102) (01111) P20 OPT 5 MNVR TO VIS OBS ATT (BY 130:05) V25N78 (+00000) (+09000) (+18000) V24N79 (+00050) V21N70 (00047) (189,000/023,358)		ACTIVATE PRIMARY EVAP Pg S/1-18
CMD: DSE PLAYBACK UPDATE: X-RAY SCAN PAD (REV 79) EUV PAD (REV 80) CMD: DSE REWIND	:10	:50			
					EARTH OBS BOOK VISUAL OBS SITES: 3C,4A
				DON OBS	
	:20	130:00			
			FLIGHT PLAN SUPPLEMENT X-RAY SCAN PAD - REV 79		
	17:30	:10	DEACTIVATE PRIMARY EVAP, Pg S/1-18) 3C		
				UNSTOW EXERCISER (U2) CONFIGURE DSE: (HBR/RCD/FWD/CMD RESET)	
			HEAD WHEEL DRIVE MOTOR - ON MODE - RECORD		EARTH OBS (VISUAL OBS)
	:40	:20	4A		
				EXERCISE PERIOD (BIOMED)	
			REV 79		HEAD WHEEL DRIVE MOTOR - OFF
	17:50	130:30		DSE: STOP/CMD RESET	

Activities: NFL, SP1, MAD, ATS, ORR, HAW, VTR, NFL, ATS, SP1

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-17

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	79-80

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
	17:50	130:30	NOTE: NO COMM THRU ATS UNTIL 132:18	CSM SYSTEMS CHECKLIST OBS DOFFING (W/O PGA), Pg S/1-13	
		(61102) (01111)			
	18:00	:40		DOFF OBS	
	:10	:50	X-RAY SCANS (EUV)		X-RAY SCANS (EUV)
	:20	131:00			
	18:30	:10			
			P20 OPT 5 MNVR TO VIS OBS ATT (BY 131:20) V25N78 (+00000)(+09000)(+18000) V22N79 (+00050) V21N70 (00047) (186,000/079,006)	ACTIVATE PRIMARY EVAP Pg S/1-18	EARTH OBS BOOK VISUAL OBS SITES 11A,11B,3A
	:40	:20		EXPERIEMENT CHECKLIST LEG VOLUME MEASUREMENTS, Pg 1-51	
		11A	LEG VOLUME MEASUREMENTS (AC)	LEG VOLUME MEASUREMENTS (AC)	
		11B			
	:50	131:30			EARTH OBS (VISUAL OBS)
		3A	LEG VOLUME MEASUREMENTS, Pg 1-53 (CP)	LEG VOLUME MEASUREMENTS (CP)	
	19:00	:40	FLIGHT PLAN SUPPLEMENT EUV PAD - REV 80		
		(61101) (01111)		LEG VOLUME MEASUREMENTS (DP)	LEG VOLUME MEASUREMENTS, Pg 1-55 (DP)
	:10	:50	LiOH CANISTER CHANGE (13 INTO A, STOW 11 IN D4)	DEACTIVATE PRIMARY EVAP Pg S/1-18	
		REV 80			
	19:20	132:00			

NFL, SP1, ACN, ATS, SAA, ORR

BIOSTACK PAD						
HR				IND STATUS	ON	
MIN					OFF	

BIOSTACK - ON R1
RECORD GET & IND STATUS

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-18

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	80

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
CMD: ATS PWR AMP - ON	19:20	132:00	NOTE: NO COMM THRU ATS UNTIL 132:18		
		(61101) (01111)			
	19:30	:10	EUV (X-RAY)	EUV (X-RAY)	ACQ ATS HGA: MAN, WIDE P -32, Y 130 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
	:40	:20			EXPERIMENT CHECKLIST CRYSTAL GROWTH PHOTOS, Pg 1-37
CMD: DSE PLAYBACK (50:00) (SS+26)	:50	132:30			CGE PHOTOS
			ACTIVATE PRIMARY EVAP Pg S/1-18 WASTE STOWAGE VENT VLV - VENT V48 (61111) (01111) V49 MNVR TO SI +X FWD SLEEP ATT (BY 132:47) (048,008,326) FDAI SCALE - 5/1 (VERIFY) EXPERIMENT CHECKLIST DM HEIGHT MEASUREMENTS, Pg 1-61		JOINT OBS CHECKLIST ZFF PHOTOS, Pg J/10-1
		(61111) (01111)			
	20:00	:40		HEAD WHEEL DRIVE MOTOR - ON MODE - RECORD	ZFF PHOTOS
	:10	:50		DM HEIGHT MEASUREMENTS	
CMD: DSE REWIND (1.5 MIN) CMD: DSE RECORD/LBR ATS PWR AMP -OFF		VTR			
	:20	133:00			HEADWHEEL DRIVE MOTOR - OFF VTR POWER(3) - OFF DM2 TV STA POWER - OFF
CMD: DSE STOP UPLINK: CSM & ATS S.V. CMD: DSE RECORD/LBR			SET HGA: MAN P -52, Y 257 HGA: REACQ, NARROW		
	20:30	:10		EAT PERIOD	
	:40	:20			
	20:50	133:30			

Bars: NFL, SPL, BDA, RCN, ATS, GWM, SAR

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-19

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	80-81

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
UPLINK: JET-ON MONITOR LOADS CMD: DSE REWIND (1.5 MIN) CMD: ATS PWR AMP - ON	20:50	133:30 (61111) (01111) REV 81			
CMD: DSE PLAYBACK (32:00)	21:00	:40		EAT PERIOD	
	:10	:50			
	:20	SA034:00	CSM SYSTEMS CHECKLIST PRE-SLEEP CHECKLIST, Pg S/1-49 VTR POWER - ON TELEMETRY POWER - ON		SET HGA: P -27, Y 255
	21:30	:10		PRE-SLEEP	
CMD: DSE REWIND	:40	:20			
	:50	134:30			
CMD: DSE RECORD/LBR ATS PWR AMP -OFF	22:00	:40			
	:10	:50		REST PERIOD (8.0 HOURS)	
CMD: DSE STOP	22:20	135:00			

ROS, MIL, BDA, ATS, USR, GDS, GEO

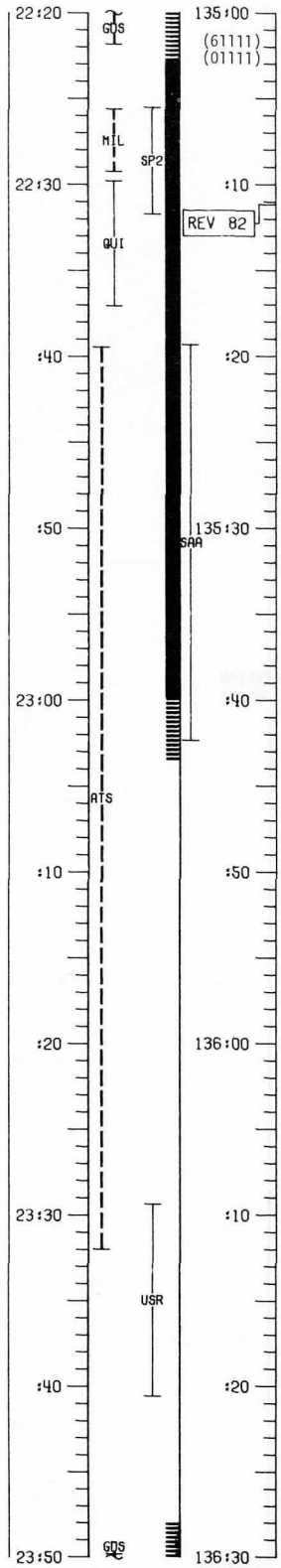
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-20

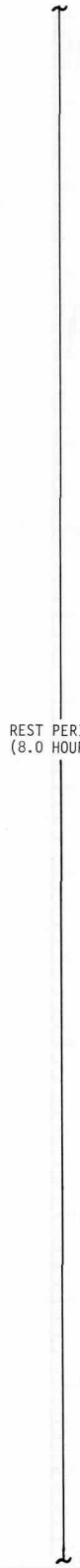
APOLLO DETAILED CREW ACTIVITIES PLAN

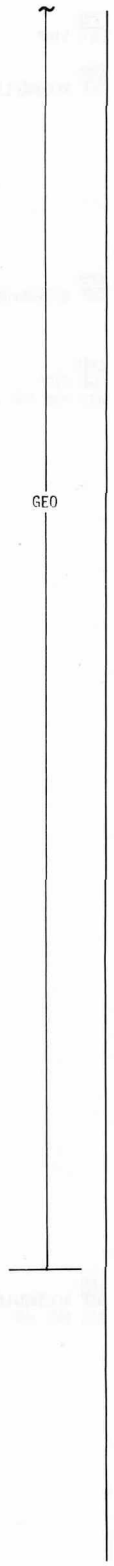
HOUSTON DATE	REV
JULY 20, 1975	81-82

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
CMD: DSE RECORD/HBR	22:20	135:00			
CMD: DSE STOP					
CMD: DSE RECORD/HBR					
CMD: DSE STOP	22:30	:10			
CMD: ATS PWR AMP - ON DSE RECORD/HBR					
CMD: DSE STOP	:40	:20			
	:50	135:30			
	23:00	:40			
	:10	:50			
	:20	136:00			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	23:30	:10			
	:40	:20			
	23:50	136:30			



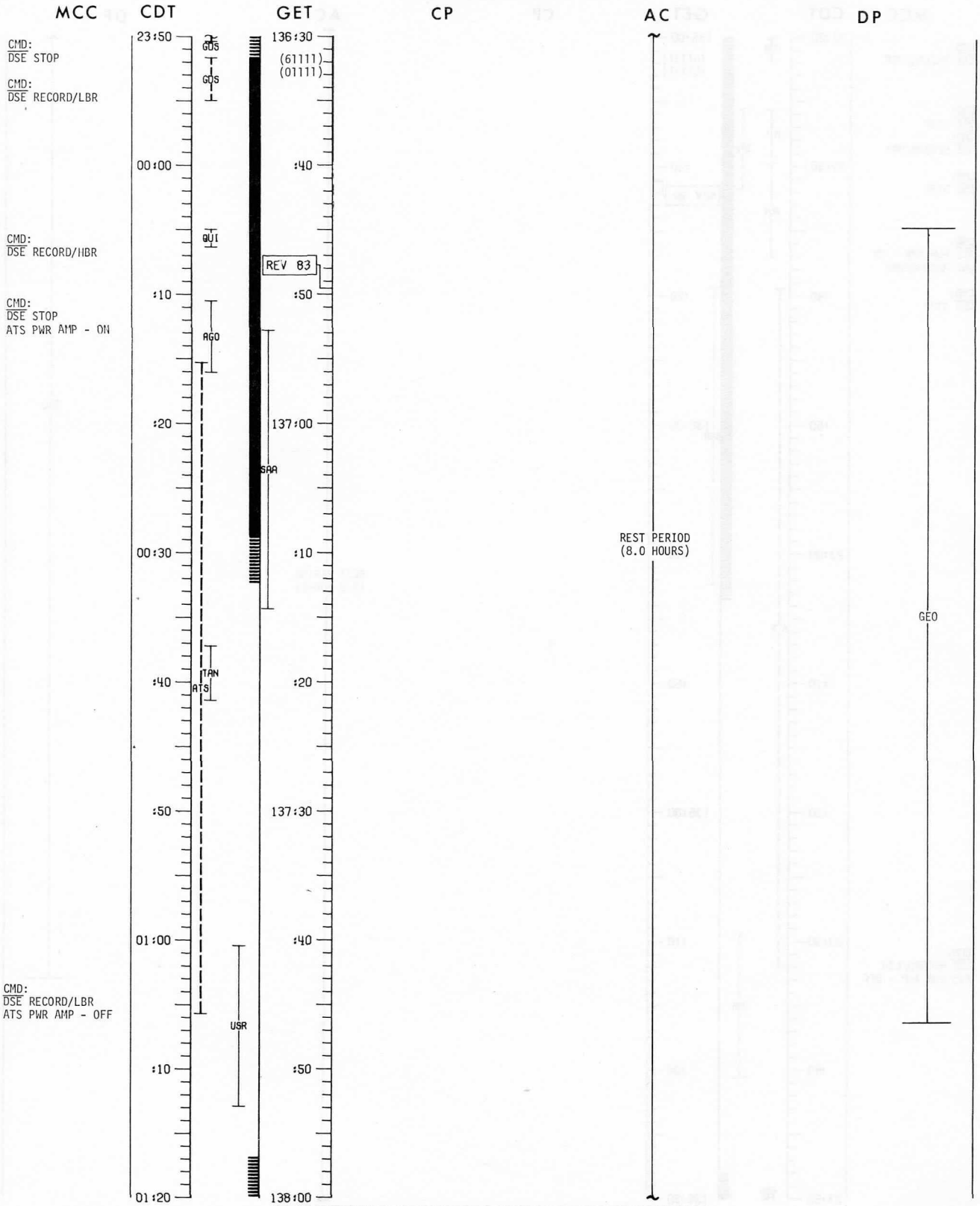




APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	82-83

FURN (MA 085), BIOS

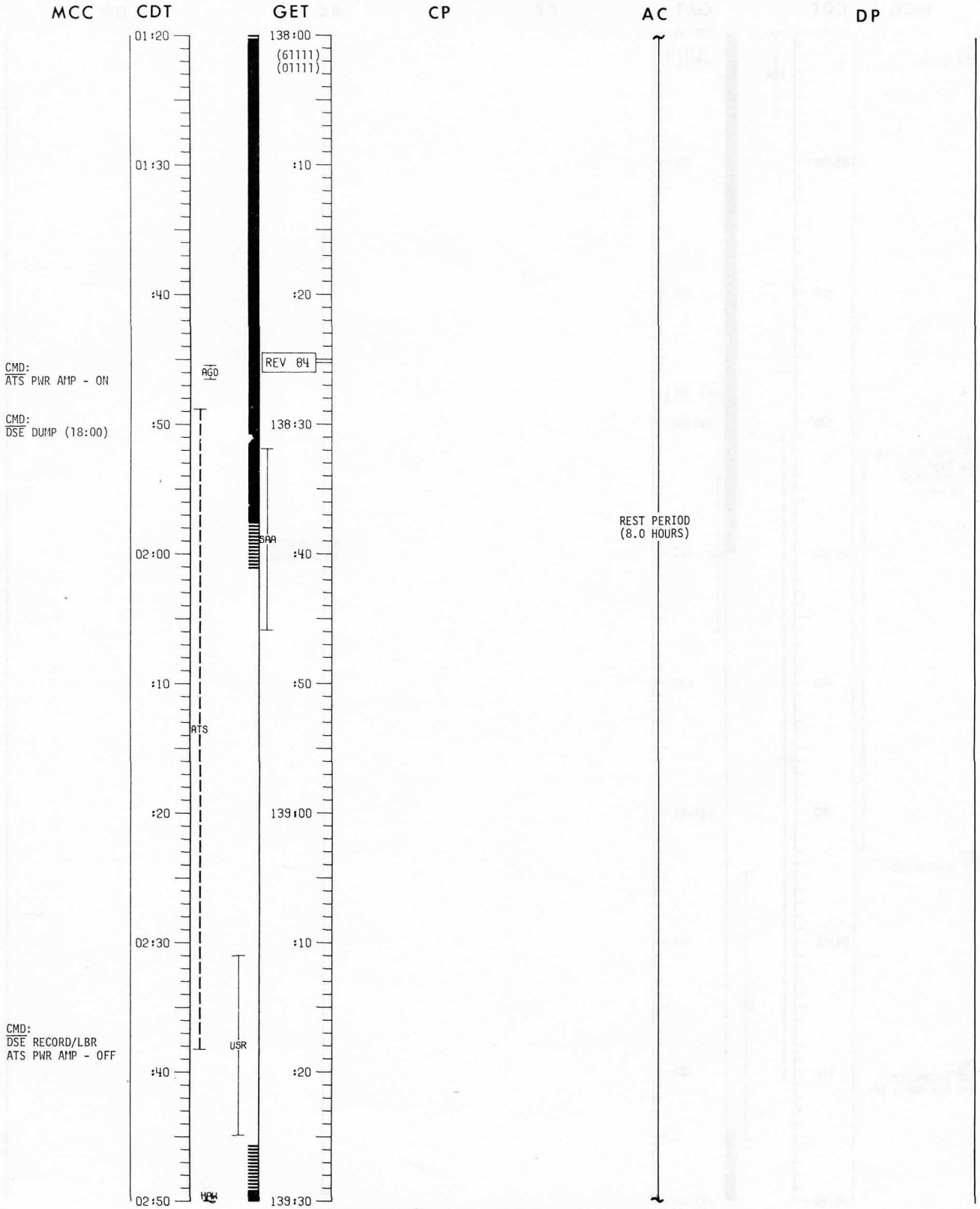


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-22

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	83-84

FURN (MA 085), BIOS

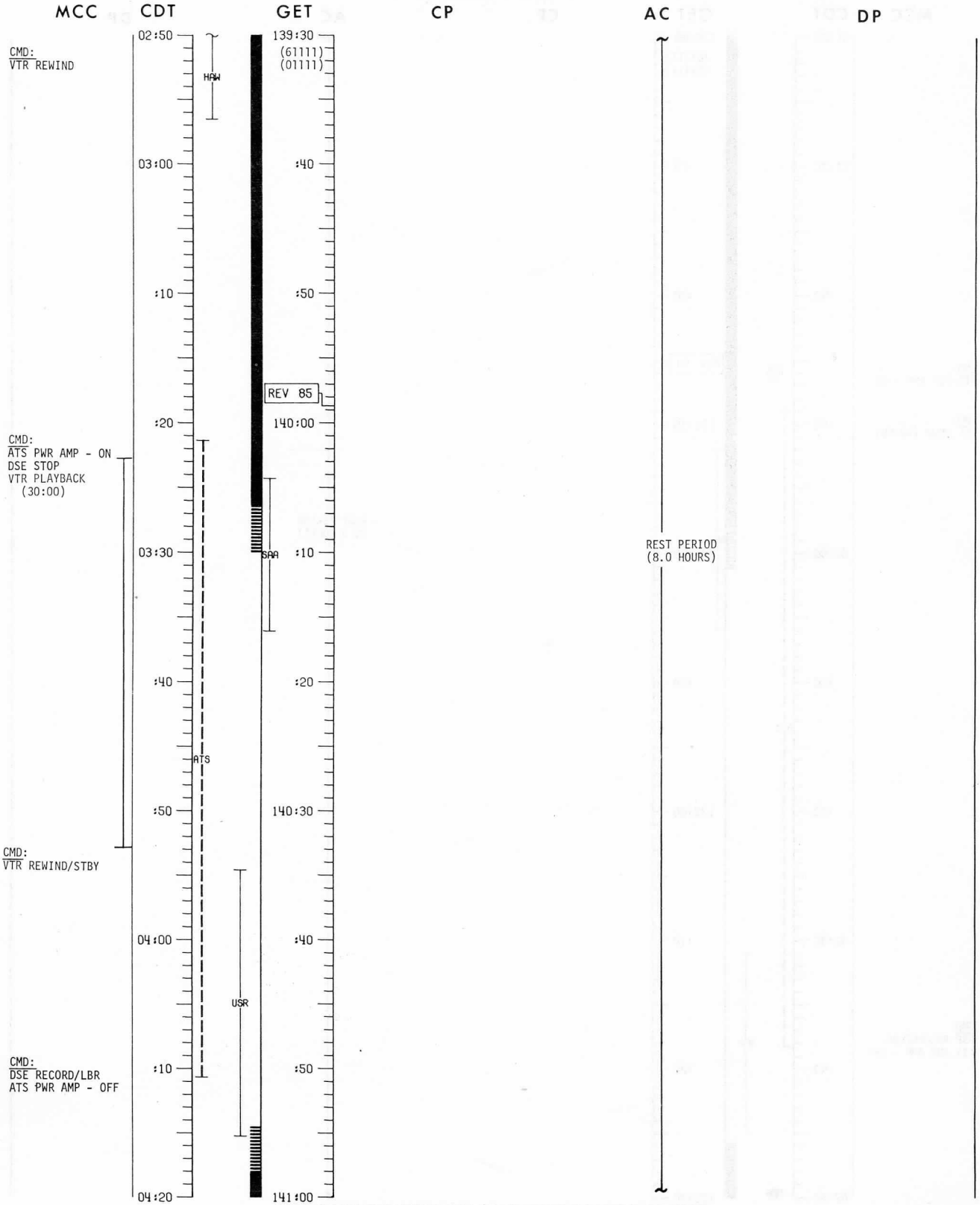


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-23

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	84-85

FURN (MA 085), BIOS



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	85-86

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
	04:20	141:00 (61111) (01111)			
	04:30	:10			
CMD: DSE STOP	VAN				
CMD: DSE RECORD/LBR	:40	:20			* * *

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	86-87

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
	05:50	142:30 (61111) (01111)			
				REST PERIOD (8.0 HOURS)	
	06:00	:40	UNSTOW TODAY'S FILM MAGS & STOW IN F2: DAC: C128 (F2 VERIFY) HRC: CX15 & IF02 (A6); IR01 & IR02 (U1) HDC: CX19 (U1) MK: 1 MAG (CAMR) (VERIFY >18 FR REMAINING) TAPE LARGE ORANGE FILTER (B5) TO MAG IF02 TAPE BLOCK FILTER (B5) TO MAG IR01		
CMD: DSE STOP			CSM SYSTEMS CHECKLIST POST-SLEEP CHECKLIST, Pg S/1-49	TERMINATE JET-ON MONITOR & ENABLE HGA EMP V37E00E V25N26E (10001) (01412) (66105)	PREP FOR URINE DUMP, Pg S/1-28
			VTR POWER - OFF TELEMETRY POWER - OFF	CMC MODE - FREE V48 (61101) (01111) CMC MODE - AUTO P20 OPT 5 MNVR TO VIS OBS ATT (BY 143:04) V25N78 (+00000) (+09000) (+18000) V22N79 (+00050) V21N70 (00047) (182,000/106,006)	
CMD: DSE RECORD/LBR	:10	:50 (61101) (01111)			
			H2 PURGE LINE HEATERS - ON		
	:20	143:00			POST-SLEEP
		REV 87	POST-SLEEP		ACQ ATS HGA: MAN, WIDE P 15, Y 323 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
CMD: ATS PWR AMP - ON DSE DUMP (06:30) UPDATE: EUV PAD (REV 88) EUV PAD (REV 89)	06:30	:10		POST-SLEEP	
			WASTE WATER DUMP TO 60%, Pg S/1-25 H2 & O2 FUEL CELL PURGE		URINE DUMP, Pg S/1-28
	:40	:20			
	:50	143:30	H2 PURGE LINE HEATERS - OFF		
	07:00	:40		EAT PERIOD	
	:10	:50			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	07:20	144:00			

VAN, RCN, RCN, ATS, USR, GMM, SAA

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-2	JULY 3, 1975	4.3-26

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	87-88

FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
CMD: DSE STOP	07:20	144:00 (61101) (01111)			P52 IMU REALIGN N71: __ __, __ __ N05: __ __ __ • __ __ N93: X ☐ __ __ • __ __ __ Y ☐ __ __ • __ __ __ Z ☐ __ __ • __ __ __ GET __ __ __ • __ __ • __ __
CMD: DSE RECORD/LBR					
	07:30	:10		EAT PERIOD	
	:40	:20			
	:50	144:30	G/N POWER OPTICS - ON CMC MODE - FREE P52 (OPTION 3) (ORBITAL ORIENT) RECORD: GYRO TORQUING ANGLES P20, CMC MODE - AUTO GDC ALIGN OPTICS ZERO-ZERO G/N POWER OPTICS - OFF LiOH CANISTER CHANGE (14 INTO B, STOW 12 IN D4)	EARTH OBS BOOK VISUAL OBS SITES: 8B,8C,8D,8E,3A,9K,9L	EXPERIMENT CHECKLIST CRYSTAL GROWTH PHOTOS, Pg 1-37
CMD: DSE STOP ATS PWR AMP - ON UPLINK: CSM S. V. ATS S. V.	08:00	REV 88 :40	8B 8C ACQ ATS HGA: MAN, WIDE P 14, Y 311 S-BD ANT IND >1/3 SCALE 8D HGA: REACQ, NARROW 8E		CGE PHOTOS
UPDATE: CONSUMABLE STATUS FLIGHT PLAN					JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1
	:10	:50	FLIGHT PLAN SUPPLEMENT EUV PAD - REV 88 3A	EARTH OBS	ZFF PHOTOS
CMD: DSE DUMP (01:00) UPDATE: ATM PAD	:20	145:00	9K		
CMD: DSE RECORD/LBR ATS PWR AMP - OFF			9L		DEACTIVATE PRIMARY EVAP Pg S/1-18
	08:30	:10	NOTE: COMM THRU ATS LOST DURING MNVR TO EUV ATTITUDE		
	:40	:20			
	08:50	145:30		EUV (X-RAY)	

GWM
AGO
SAA
KAD
ATS
USR

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-27

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	88-89

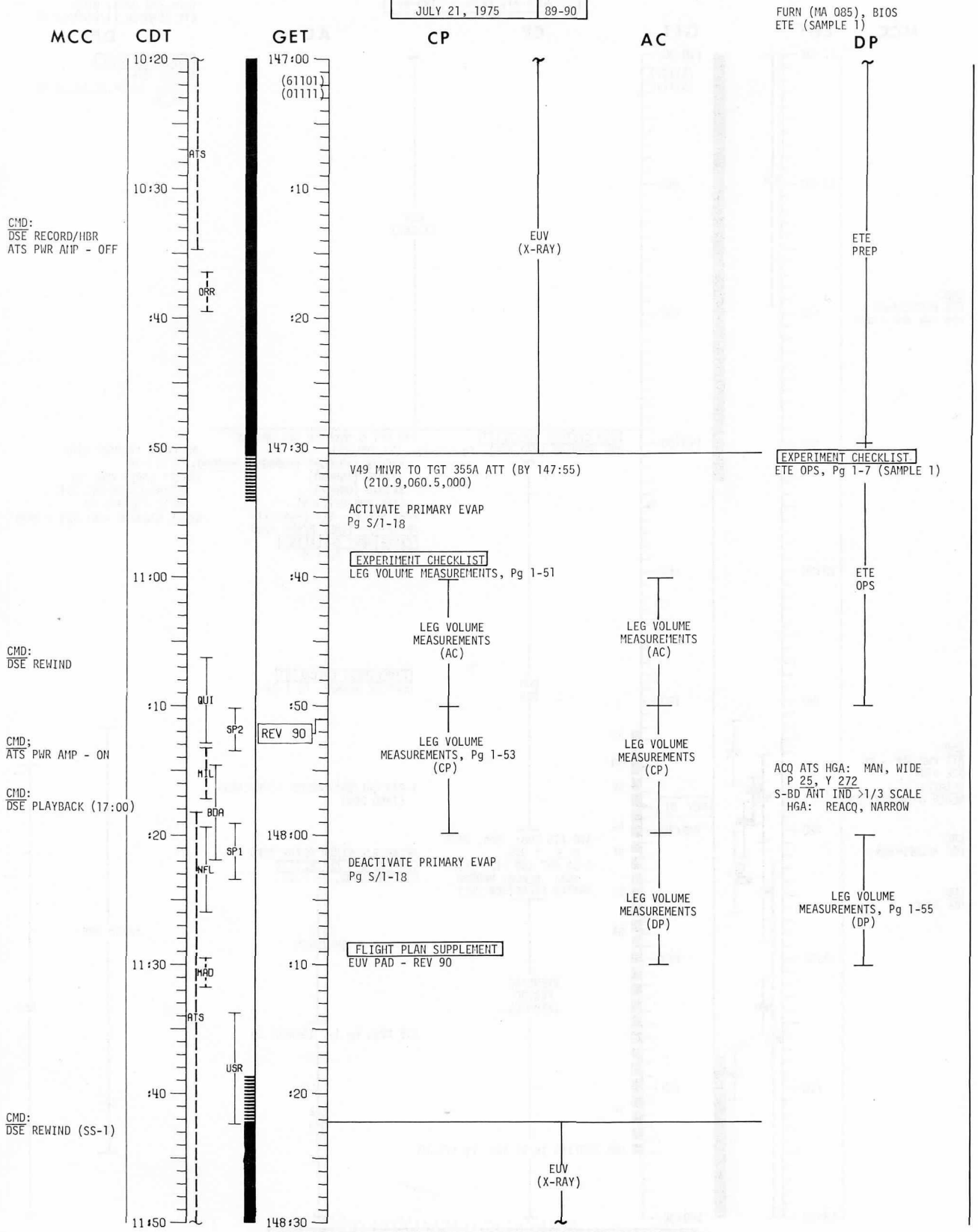
FURN (MA 085), BIOS

MCC	CDT	GET	CP	AC	DP
	08:50	145:30			
		(61101) (01111)			
	ATS				
	09:00	:40	EUV (X-RAY)		
	ORR				
	:10	:50			
			EUV		
	:20	146:00			
		(61102) (01111)			DM CHECKLIST He INJECTION, Pg D/7-5
			ACTIVATE PRIMARY EVAP Pg S/1-18	V48 (61102) (01111) V49 MNVR TO TGT 365A ATT (BY 146:19) (178.10,037.60,000)	
	09:30	:10		IF ATM REQ'D: ENABLE ALL RCS JETS (16) P30: LOAD ATM TIG & ΔV'S P41: BYPASS AUTO MNVR MAN ATT (3) - RATE CMD (VERIFY)	
		REV 89			
CMD: DSE PLAYBACK (32:00) ATS PWR AMP - ON	QUI				
			ACQ ATS HGA: MAN, WIDE P 27, Y 308 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW		
CMD: DSE STOP CMD: DSE PLAYBACK UPDATE: EUV PAD (REV 90)	:40	:20			
				ATM (146:25) - IF REQ'D	
		(61101) (01111)	V48 (61101) (01111) INHIBIT ALL JETS EXCEPT: D1,B2,A3,C4,B3,D4		
	:50	146:30			BIOSTACK STATUS CHECK (R1) RECORD GET & IND STATUS
			DEACTIVATE PRIMARY EVAP Pg S/1-18 FLIGHT PLAN SUPPLEMENT EUV PAD - REV 89		
	MAD				
	10:00	:40			
	ATS				
	USR				
	:10	:50			
CMD: DSE REWIND (SS-1)					
			EUV (X-RAY)		EXPERIMENT CHECKLIST ETE PREP, Pg 1-5
	10:20	147:00			

BIOSTACK PAD						
HR				IND STATUS	ON	
MIN					OFF	

APOLLO DETAILED CREW ACTIVITIES PLAN

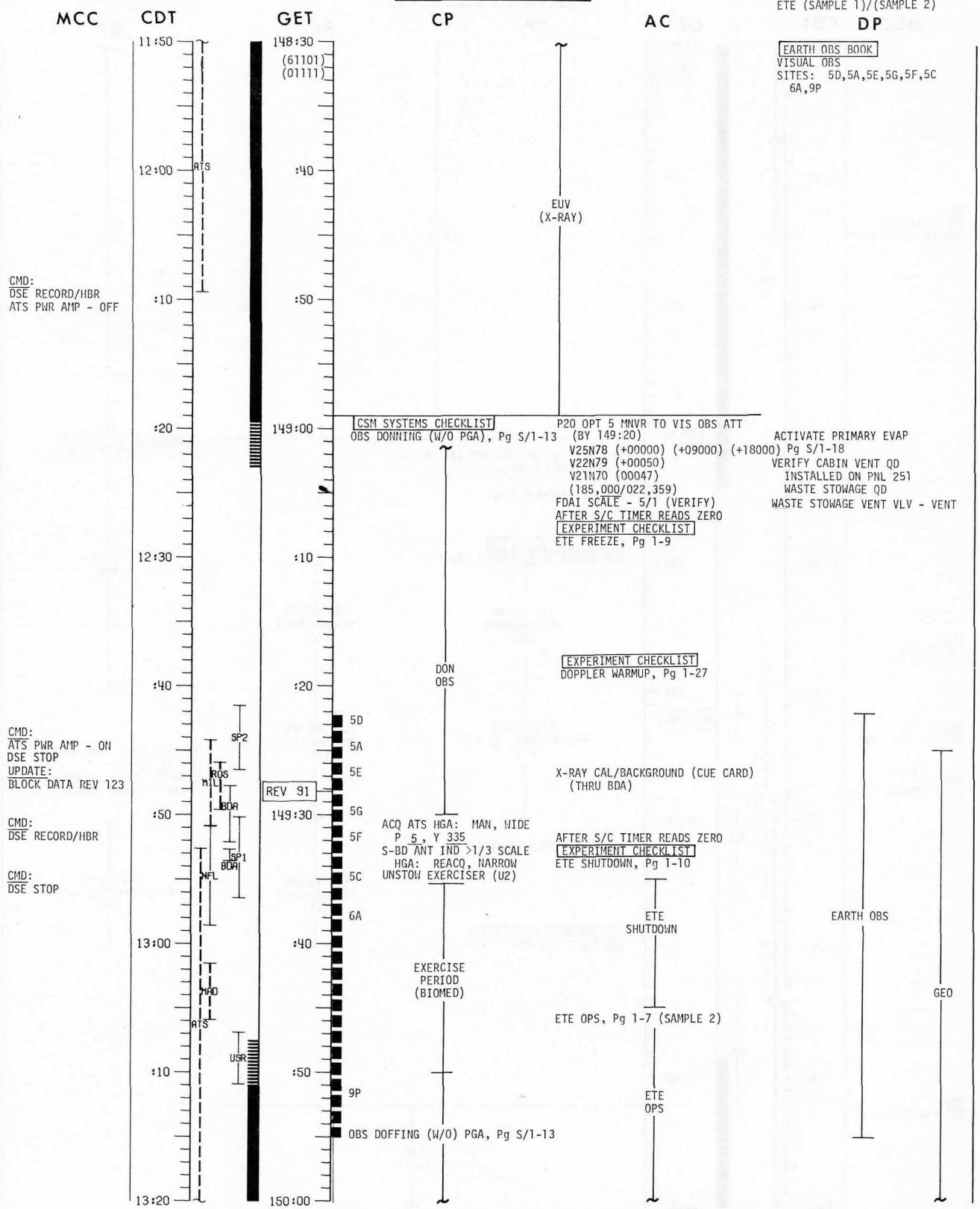
HOUSTON DATE	REV
JULY 21, 1975	89-90



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-29

APOLLO DETAILED CREW ACTIVITIES PLAN

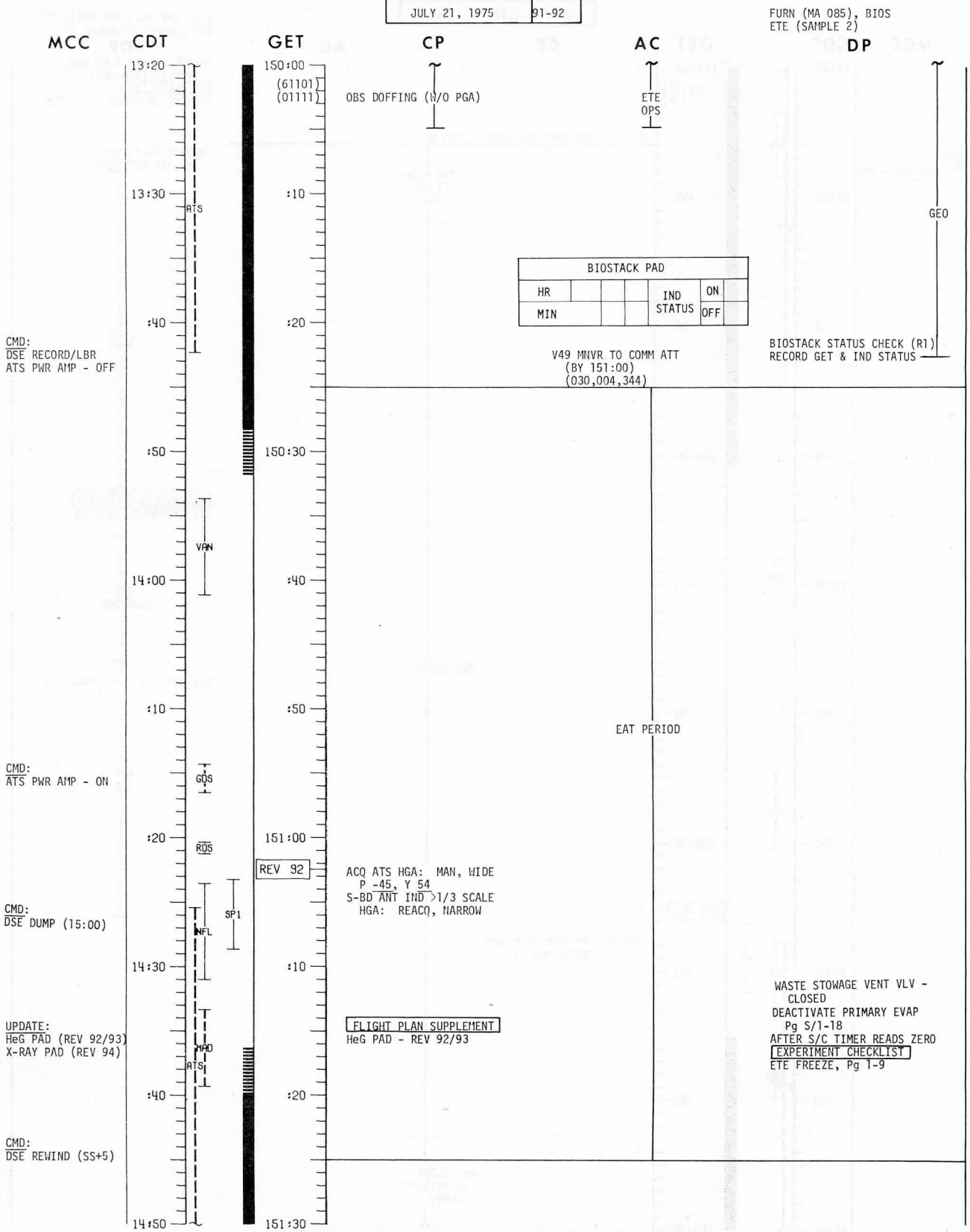
HOUSTON DATE	REV
JULY 21, 1975	90-91



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-30

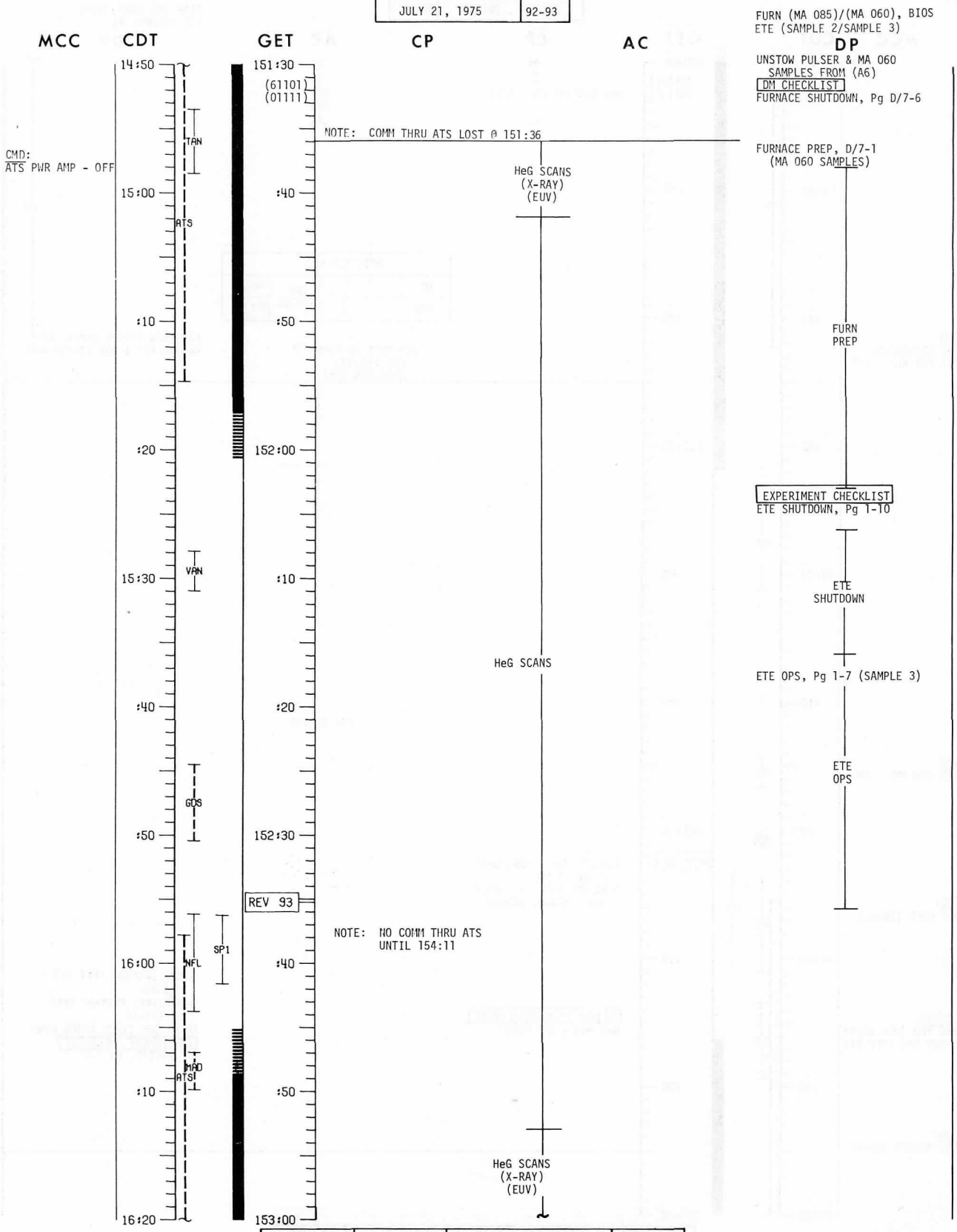
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	91-92



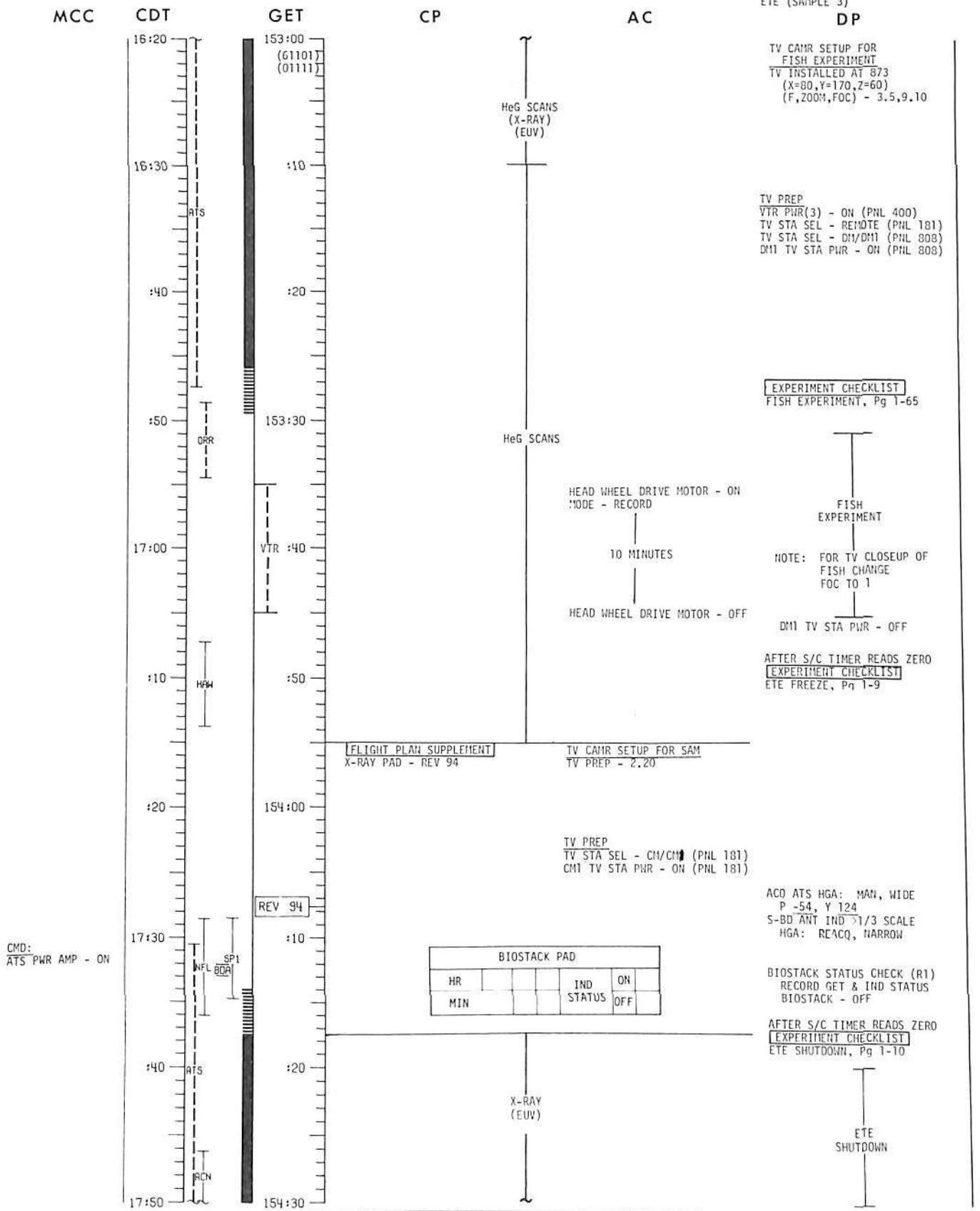
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	92-93



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	93-94



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	94-95

MCC	CDT	GET	CP	AC	DP
	17:50	154:30			EXPERIMENT CHECKLIST SAM INSTALLATION & CALIB, Pg 1-31
		(61101) (01111)		HEAD WHEEL DRIVE MOTOR - ON MODE - RECORD	
		VTR			
	18:00	:40	X-RAY (EUV)	10 MINUTES	SAM INSTALLATION CALIBRATION
		SAA			
				HEAD WHEEL DRIVE MOTOR - OFF CM1 TV STA POWER - OFF VTR PWR(3) - OFF	
	ATS				
UPDATE: SAM START TIME (155:45 & 156:10)	:10	:50			SAM WINDOW 5 PHOTOS, Pg 1-35 (STEP 2, CAMERA SETUP ONLY)
			ENABLE ALL RCS JETS (12) V49 MNVR TO SAM ATT (BY 155:08) (112,149,007)		ACTIVATE PRIMARY EVAP Pg S/1-18
CMD: ATS PWR AMP - OFF	:20	155:00		EXPERIMENT CHECKLIST ETE OPS, Pg 1-7 (SAMPLE 4)	
			INHIBIT ALL RCS JETS EXCEPT: D1,B2,C3,A4,D3,B4	ETE OPS	SAM OPERATIONS (SUNSET & SUNRISE) (STEP 3, PHOTO SETUP), Pg 1-33
	18:30	:10	P20 OPT 1 V24N78 (+05335)(+02583) V22N79 (+00050) V21N70 (00046) PRO, PRO RELOAD N78 UPDATE FROM DP, V24N78		DEACTIVATE PRIMARY EVAP Pg S/1-18 SAM ALIGNMENT C/O, Pg 1-32
	:40	:20			
				SET HGA: MAN P -65, Y 258 HGA: REACQ, NARROW	SAM WINDOW 5 PHOTOS, Pg 1-35
	:50	155:30	SET DET COUNTING UP TO SAM START TIME		
	19:00	:40			
CMD: ATS PWR AMP - ON NOTE: DSE OPERATED BY CREW FOR SAM CMD: DSE DUMP (SS+1) (47:00)		REV 95			SAM OPERATIONS (SUNSET), Pg 1-33 (WITH PHOTOGRAPHY)
	:10	:50			
	ATS				
	19:20	156:00			

SAM PAD (SS-02:26)

START TIME	HR	1	5	5			
	MIN		4	4			
	SEC		0	1			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-34

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	95-96

FURN (MA 060)
ETE (SAMPLE 4)

MCC	CDT	GET	CP	AC	DP
	19:20	156:00			
		(61101) (01111)			
	19:30	SAA :10	SET DET COUNTING UP TO SAM START TIME	SAM PAD (SR-00:34) START TIME HR 1 5 6; MIN 2 2; SEC 5 1	
				AFTER S/C TIMER READS ZERO EXPERIMENT CHECKLIST ETE TERMINATE, Pg 1-11	
	:40	:20		ETE TERMINATE	SAM OPERATIONS (SUNRISE), Pg 1-34 (WITH PHOTOGRAPHY)
CMD: DSE STOP (SAM START TIME)					
CMD: DSE PLAYBACK (SAM START TIME +3MIN)			* NOTE: IF SUN IS CENTERED IN RETICLE ACTIVITIES FROM 156:28 TO 156:42 CAN BE SKIPPED		ACTIVATE PRIMARY EVAP Pg S/1-18
	:50	156:30	* P00 * V49 MNVR TO SAM ATT (BY 156:32) * (112,149,007) * P20, OPT 1 * N78 (USE VALUES COMPUTED PREVIOUSLY ON PAGE 1-32 OF EXPERIMENT CHECKLIST) * V22N79 (+00050) * V21N70 (00046) * PRO, PRO		SAM OPERATIONS (SUNSET & SUNRISE) CAMERA SETUP, Pg 1-33 (NEW MAG)
CMD: ATS PWR AMP - OFF					
	20:00	:40	* RELOAD N78 UPDATE FROM DP, V24N78		SAM ALIGNMENT C/O, Pg 1-32
CMD: DSE PLAYBACK UPDATE: SAM START TIME (157:15 & 157:45)				DEACTIVATE PRIMARY EVAP, Pg S/1-18	
CMD: DSE REWIND					
	:10	:50			
	:20	157:00		SET HGA: MAN P -68, Y 330 HGA: REACQ, NARROW	
			SET DET COUNTING UP TO SAM START TIME		
NOTE: DSE OPERATED BY CREW FOR SAM	20:30	:10		SAM PAD (SS-02:26) START TIME HR 1 5 7; MIN 1 2; SEC 5 0	SAM OPERATIONS (SUNSET) WITH PHOTOGRAPHY, Pg 1-33
		REV 96			
CMD: ATS PWR AMP - ON			JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1		
	:40	:20	ZFF PHOTOS		
CMD: DSE DUMP (3:00)					DM CHECKLIST FURNACE OPS, Pg D/7-3
	20:50	SAA 157:30			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-35

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	96-97

FURN (MA 060)

MCC | CDT | GET | CP | AC | DP

CDT: 20:50, 21:00, :10, :20, 21:30, :40, :50, 22:00, :10, 22:20

GET: 157:30, :40, :50, 158:00, :10, :20, :30, :40, :50, 158:30, :40, :50, 159:00

(61101)
(01111)

SAA

ATS

(61111)
(01111)

USR

GDS

MIL

SP2

REV 97

GUI

SAA

EXPERIMENT CHECKLIST
CRYSTAL GROWTH PHOTOS, Pg 1-37

CGE PHOTOS

SET DET COUNTING UP TO SAM START TIME

SAM PAD (SR-00:34)							
START TIME	HR	1	5	7			
	MIN		5	1			
	SEC		4	0			

FURN OPS

SAM OPERATIONS (SUNRISE), Pg 1-34 (WITH PHOTOGRAPHY)

ACTIVATE PRIMARY EVAP, Pg S/1-18

INHIBIT ALL RCS JETS EXCEPT:
D1,B2,A3,C4,B3,D4
V48 (61111) (01111)
V49 MNVR TO SI +X FWD SLEEP ATT (BY 158:15)
(048,007,328)
FDAI SCALE - 5/1 (VERIFY)

LiOH CANISTER CHANGE
(15 INTO A, STOW 13 IN B6)

SAM SHUTDOWN, Pg 1-35

PNL 815:
cb DOPPLER TRANSMITTER - CLOSE (VERIFY)
DOPPLER TRANSMITTER - WARMUP (VERIFY)
PNL 274:
cb UV/DOPPLER - CLOSE (VERIFY)
PNL 230:
DOPPLER RECEIVER - WARMUP (VERIFY)

CMD:
DSE RECORD/LBR
ATS PWR AMP - OFF

UPLINK:
CSM S. V.
ATS S. V.

CMD:
ATS PWR AMP - ON

EAT PERIOD

G/N POWER OPTICS - ON
P52 (OPTION 3)
(ORBITAL ORIENT)

REPORT: GYRO TORQUING ANGLES
P00, CMC MODE - AUTO
GDC ALIGN
OPTICS ZERO-ZERO
G/N POWER OPTICS - OFF

P52 IMU REALIGN

N71: __ __, __ __

N05: __ __ __•__ __

N93:

X ☐ __ __•__ __ __

Y ☐ __ __•__ __ __

Z ☐ __ __•__ __ __

GET __ __ __•__ __•__ __

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	97

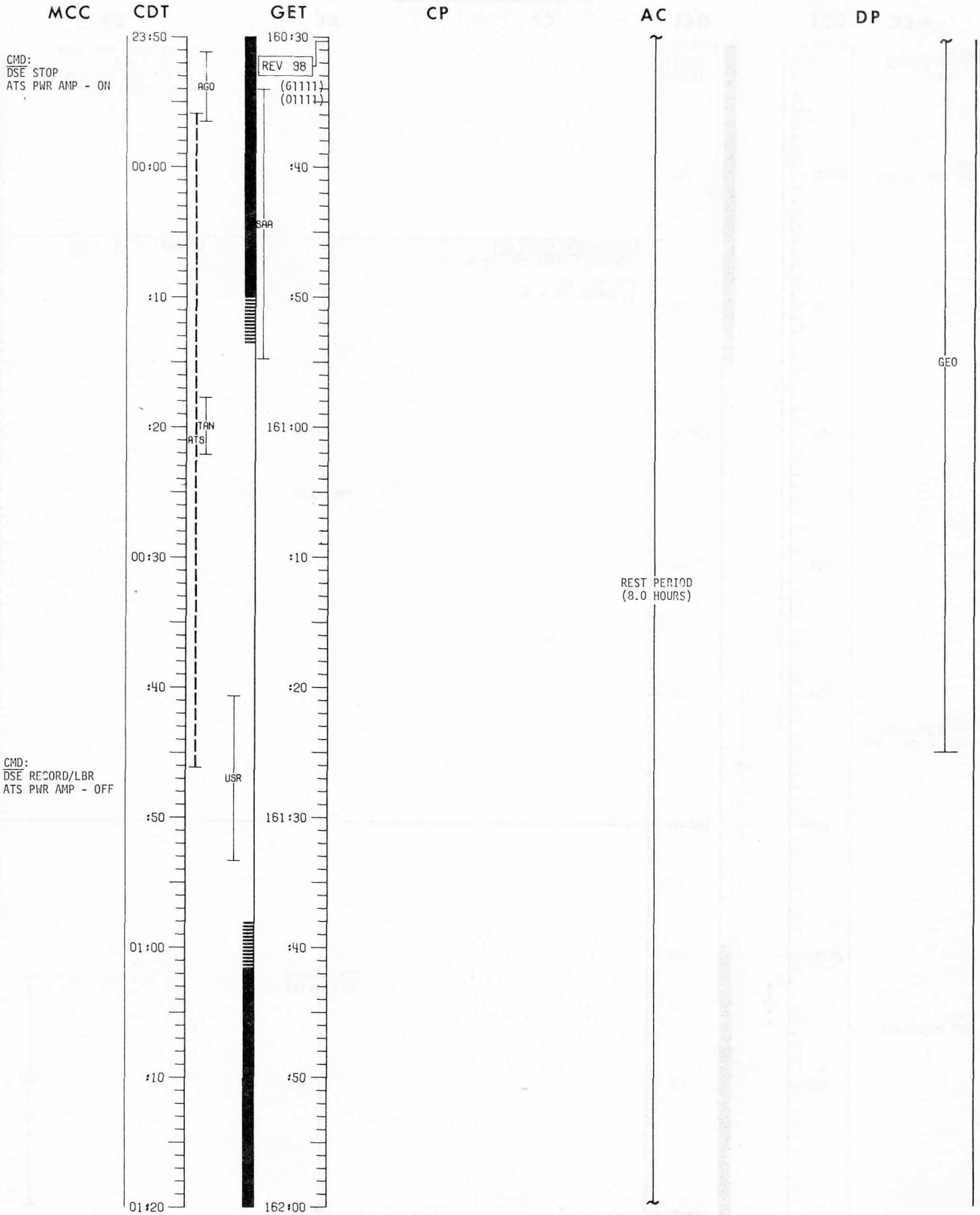
FURN (MA 060)

MCC	CDT	GET	CP	AC	DP
UPLINK: JET-ON MONITOR LOADS	22:20	159:00 (61111) (01111)		EAT PERIOD	ACQ ATS HGA: MAN, WIDE P -32, Y 254 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
CMD: DSE DUMP (1:00)	22:30	:10 SAA			
			CSM SYSTEMS CHECKLIST PRE-SLEEP CHECKLIST, Pg S/1-49 VTR PWR - ON TELEMETRY PWR - ON		SET HGA: P -9, Y 252
	:40 ATS	:20			
	:50	159:30		PRE-SLEEP	
	23:00	:40			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	:10 USR	:50			
	:20	160:00			
	23:30 GDS	:10		REST PERIOD (8.0 HOURS)	
CMD: DSE RECORD/HBR	:40	:20			GEO
	23:50	160:30			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	97-98

FURN (MA 060)

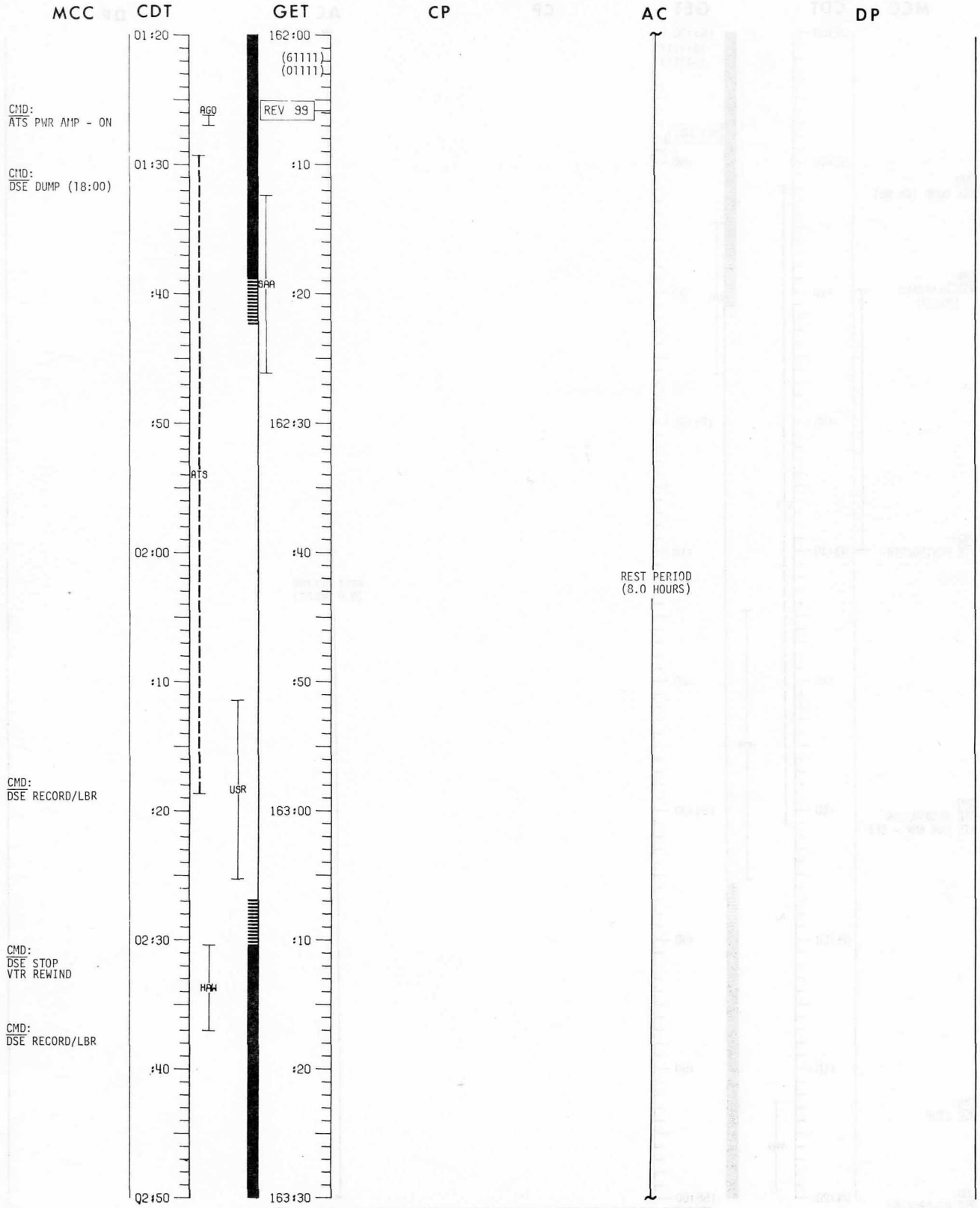


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-38

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	98-99

FURN (MA 060)

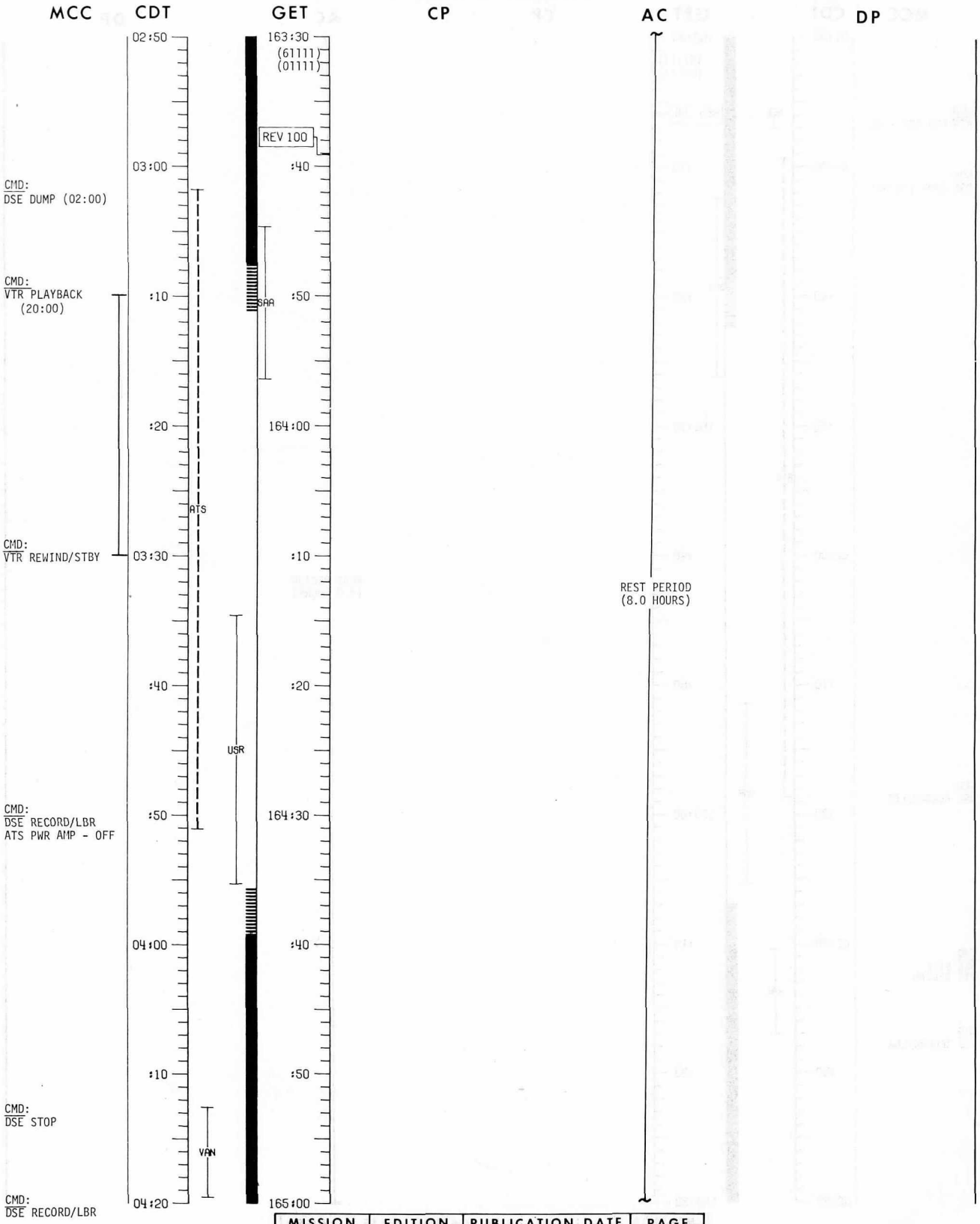


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-39

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	99-100

FURN (MA 060)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-40

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	100-101

FURN (MA 060)

MCC	CDT	GET	CP	AC	DP
	04:20	165:00			* * *

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	101-102

FURN (MA 060)

MCC	CDT	GET	CP	AC	DP
CMD: DSE RECORD/LBR	05:50	166:30			
	VAN				
	06:00	:40			* CONTINGENCY COMM ATTITUDE * V37E00E * V49 MNVR TO COMM ATTITUDE * (148,007,328) * HGA: P -15, Y 265 * V25N26E (00001) (00605) (00006) * V31E *
		REV 102			
	AGO		NOTE: NO COMM THRU ATS UNTIL 168:23		
	:10	:50			
		SAA			
	:20	167:00			
	ACN				
	06:30	:10			
	ATS			REST PERIOD (8.0 HOURS)	
	:40	:20			
	USR				
	:50	167:30			
CMD: DSE STOP	07:00	:40			
	GHM				
CMD: DSE RECORD/LBR	:10	:50			
	07:20	168:00			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	102-103

FURN (MA 060)

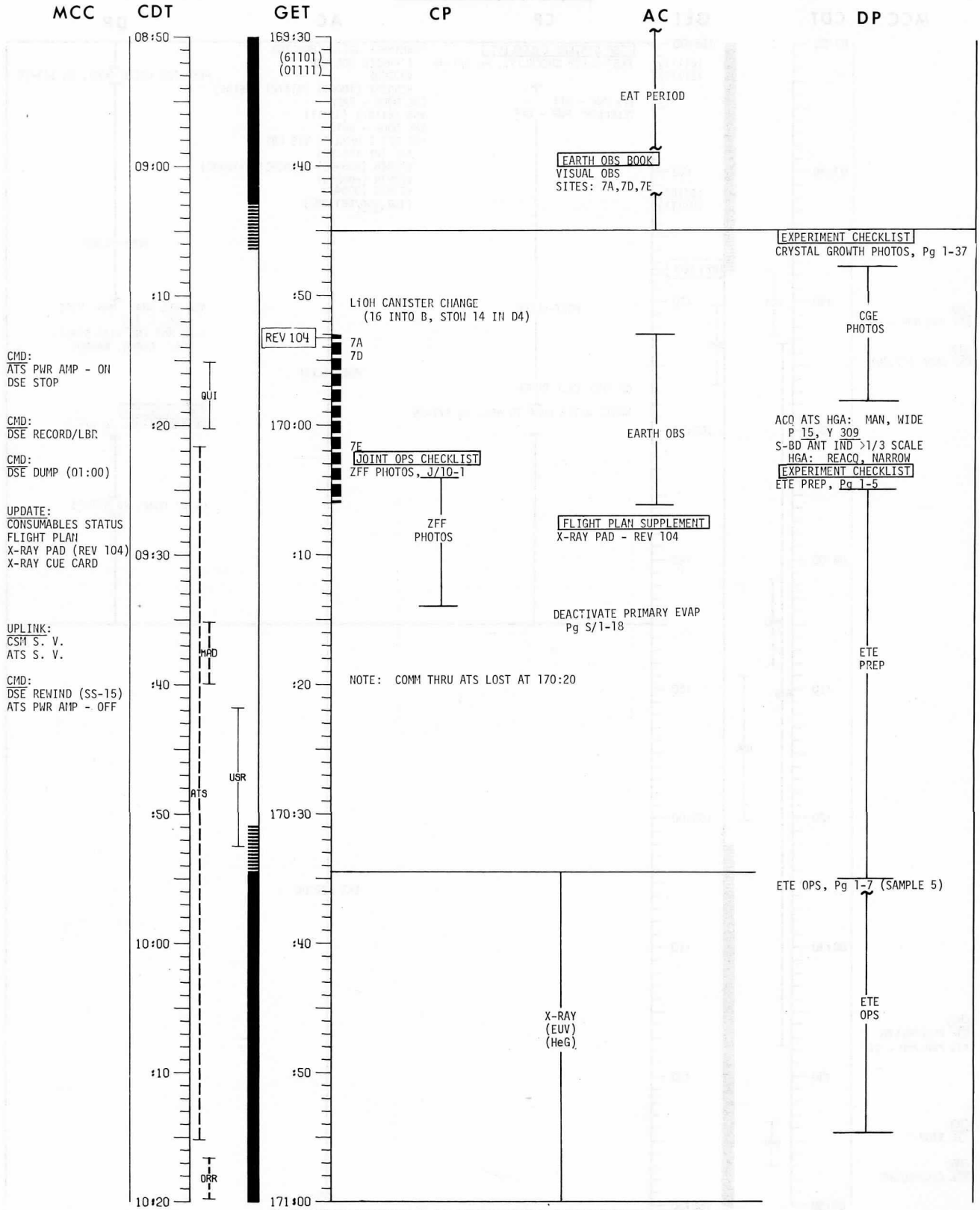
MCC	CDT	GET	CP	AC	DP
	07:20	168:00	CSM SYSTEMS CHECKLIST POST-SLEEP CHECKLIST, Pg S/1-49 (61111) (01111)	TERMINATE JET-ON MONITOR & ENABLE HGA EMP V37E00E V25N26E (10001) (01412) (66105)	PREP FOR URINE DUMP, Pg S/1-28
			VTR PWR - OFF TELEMETRY PWR - OFF	CMC MODE - FREE V48 (61101) (01111) CMC MODE - AUTO P20 OPT 5 MNVR TO VIS OBS ATT (BY 168:20) V25N78 (+00000) (+09000) (+18000) V22N79 (+00050) V21N70 (00047) (102,000/081,002)	
	07:30	:10			
			(61101) (01111)		POST-SLEEP
		REV 103			
CMD: ATS PWR AMP - ON CMD: DSE DUMP (07:00)	:40 AGO	:20	POST-SLEEP		ACQ ATS HGA: MAN, WIDE P 14, Y 310 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
		SAA		POST-SLEEP	
			O2 FUEL CELL PURGE WASTE WATER DUMP TO 60%, Pg S/1-25		DM CHECKLIST He INJECTION, Pg D/7-5
	:50	168:30			
					URINE DUMP, Pg S/1-28
			WRITEUP TODAY'S FILM MAGS & STOW IN F2: DAC: CI28 (F2 VERIFY) HRC: CX15 (F2 VERIFY) & CX16 (AG) HDC: CX20 (U1) HK: 1 MAG (CAMR) (VERIFY >18 FR REMAINING)		
	08:00	:40			
	MAD				
	:10 ATS	:50			
	USR				
	:20	169:00			
				EAT PERIOD	
	08:30	:10			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF					
	:40	:20			
CMD: DSE STOP CMD: DSE RECORD/LBR	ORR				
	08:50	169:30			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-2	JULY 3, 1975	4.3-43

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	103-104

FURN (MA 060)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-44

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	104-105

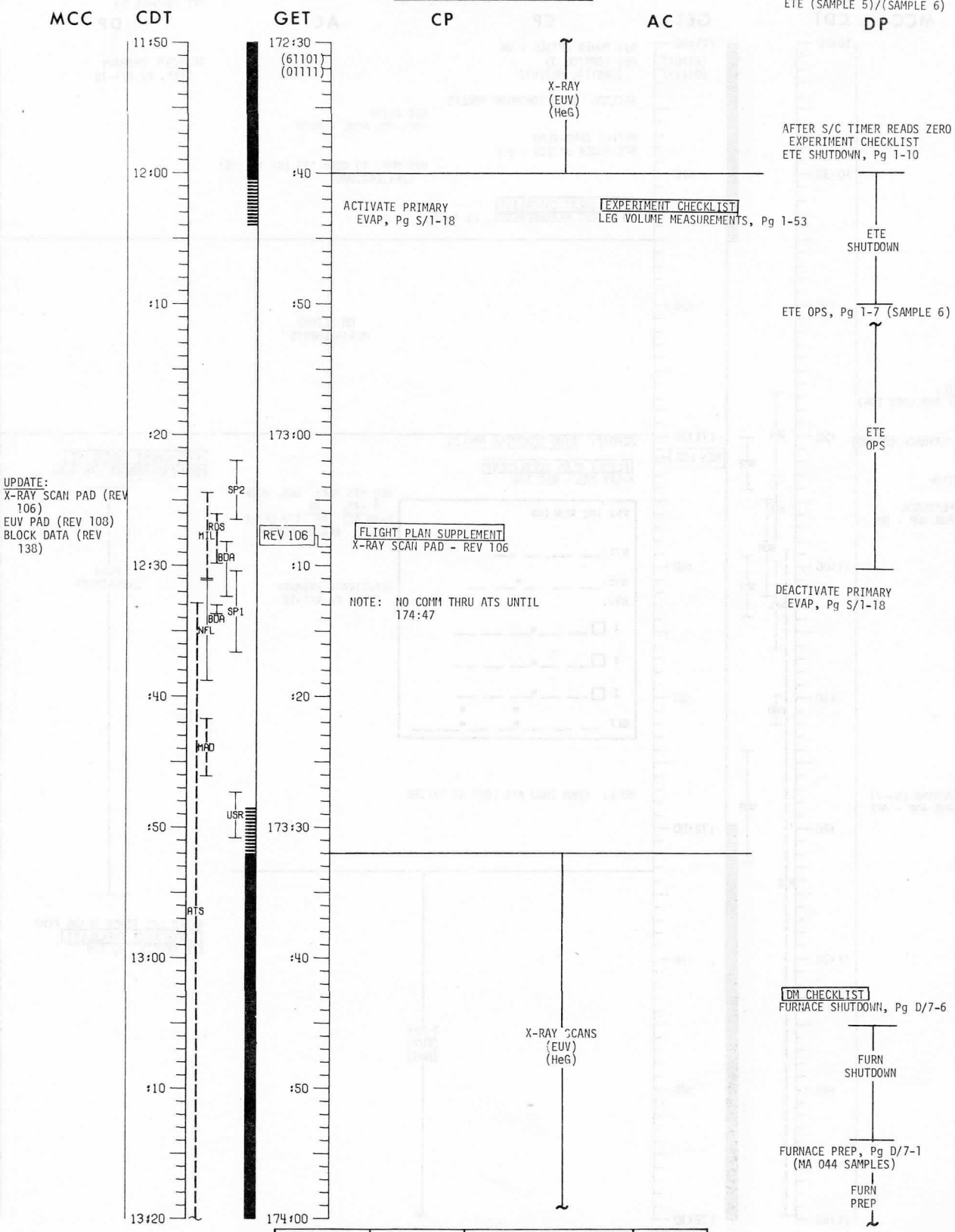
MCC	CDT	GET	CP	AC	DP
	10:20	171:00	G/N POWER OPTICS - ON P52 (OPTION 3) (ORBITAL ORIENT) (61101) (01111)		FURN (MA 060) ETE (SAMPLE 5) ACTIVATE PRIMARY EVAP, Pg S/1-18
			RECORD: GYRO TORQUING ANGLES	GDC ALIGN POO, CMC MODE - AUTO	
			OPTICS ZERO-ZERO G/N POWER OPTICS - OFF		
	10:30	:10		V49 MNVR TO COMM ATT (BY 171:35) (261,260,000)	
			EXPERIMENT CHECKLIST DM HEIGHT MEASUREMENTS, Pg 1-61		
	:40	:20		DM HEIGHT MEASUREMENTS	
UPDATE: X-RAY PAD (REV 105)					
CMD: DSE PLAYBACK (26:00)	:50	171:30	REPORT: GYRO TORQUING ANGLES		
CMD: DSE STOP		REV 105	FLIGHT PLAN SUPPLEMENT X-RAY PAD - REV 105		EXPERIMENT CHECKLIST FISH EXPERIMENT, Pg 1-65
CMD: DSE PLAYBACK ATS PWR AMP - ON			P52 IMU REALIGN N71: N05: N93: X Y Z GET	ACQ ATS HGA: MAN, WIDE P -46, Y 74 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW DEACTIVATE PRIMARY EVAP, Pg S/1-18	FISH EXPERIMENT
	11:00	:40			
	:10	:50			
CMD: DSE REWIND (SS-7) ATS PWR AMP - OFF	:20	172:00	NOTE: COMM THRU ATS LOST AT 171:58		
					AFTER S/C TIMER READS ZERO EXPERIMENT CHECKLIST ETE FREEZE, Pg 1-9
	11:30	:10		X-RAY (EUV) (HeG)	
	:40	:20			
	11:50	172:30			

QUI, SP2, MIL, BOA, SP1, NFL, MAD, USR, ATS

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-45

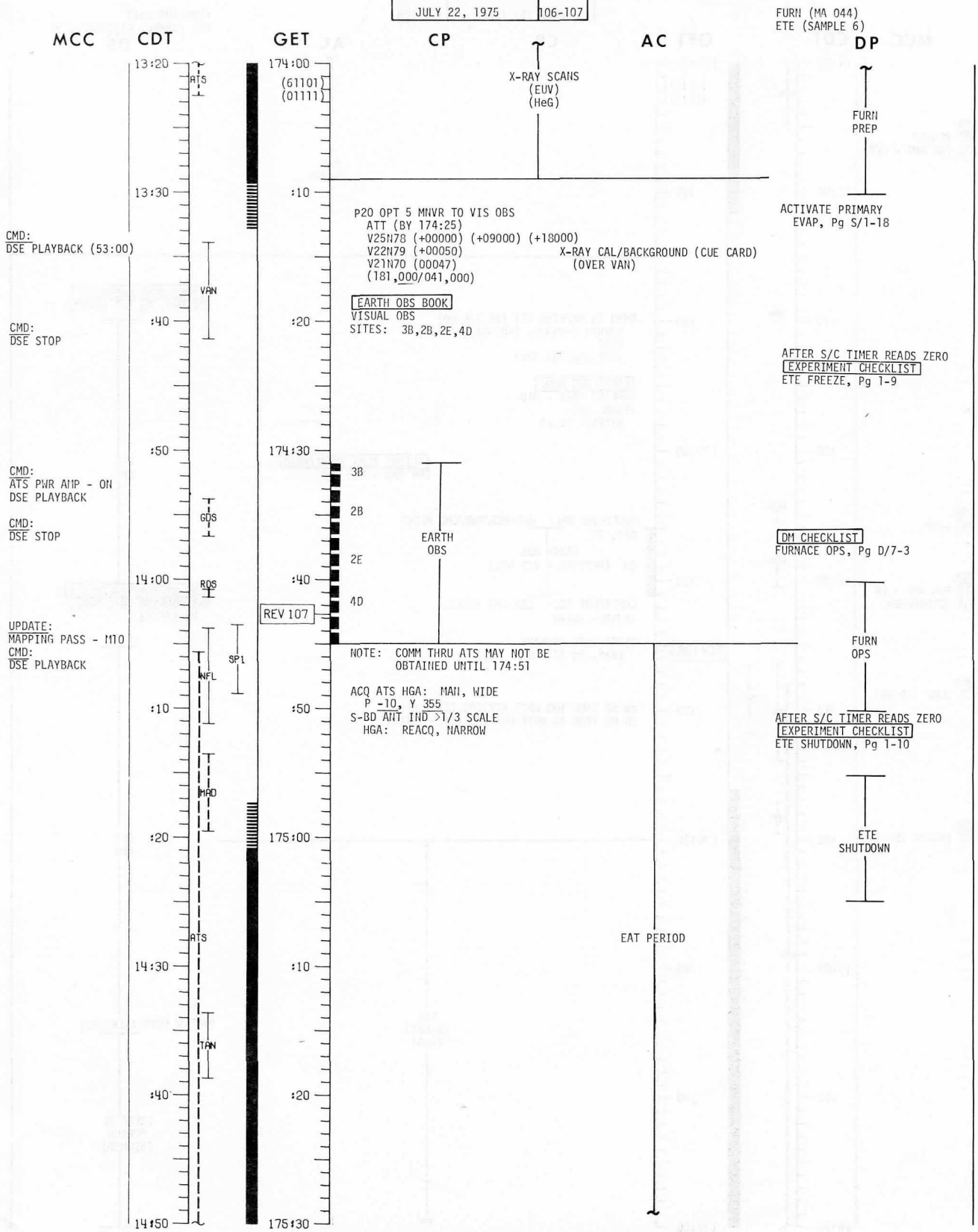
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	105-106



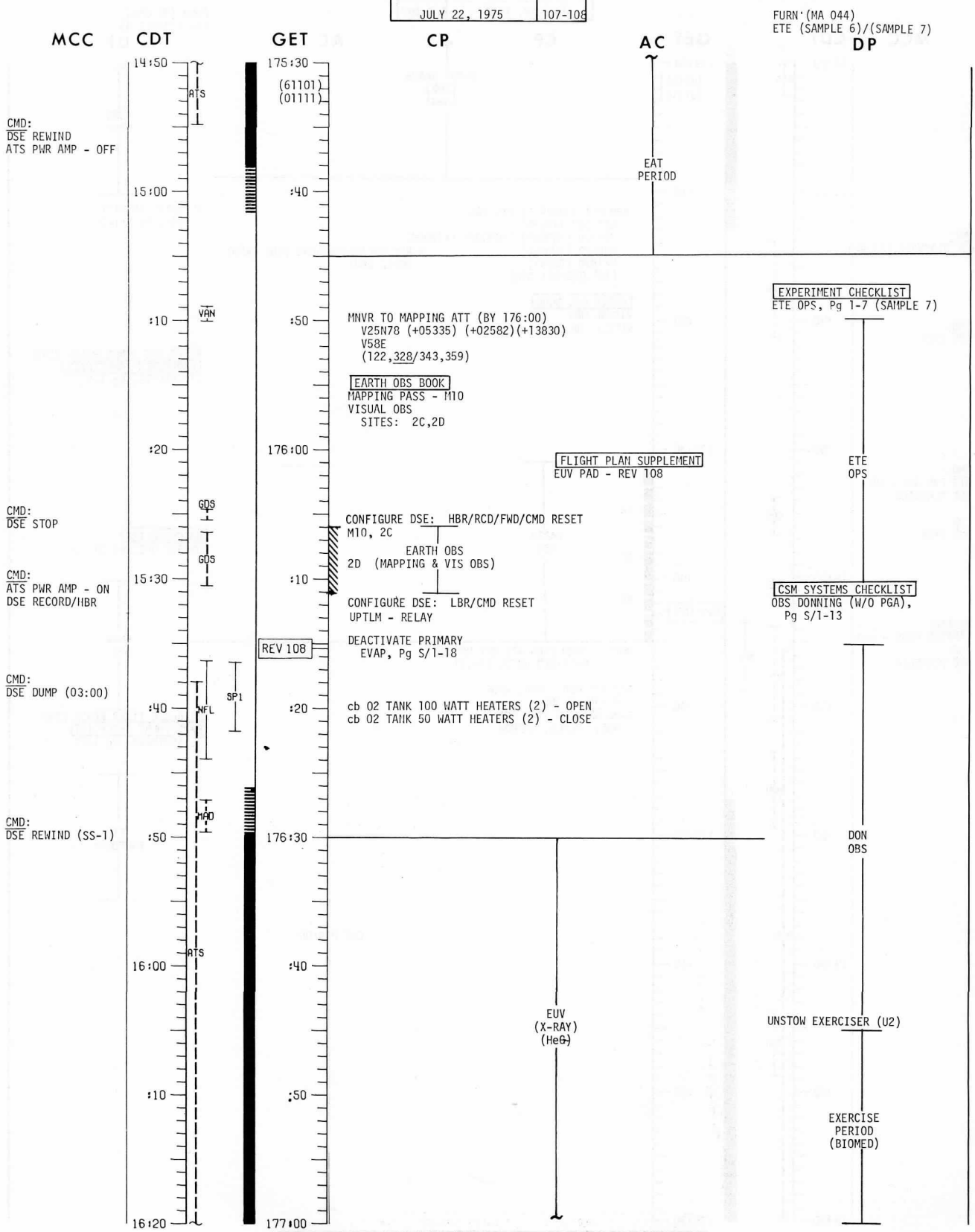
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	106-107



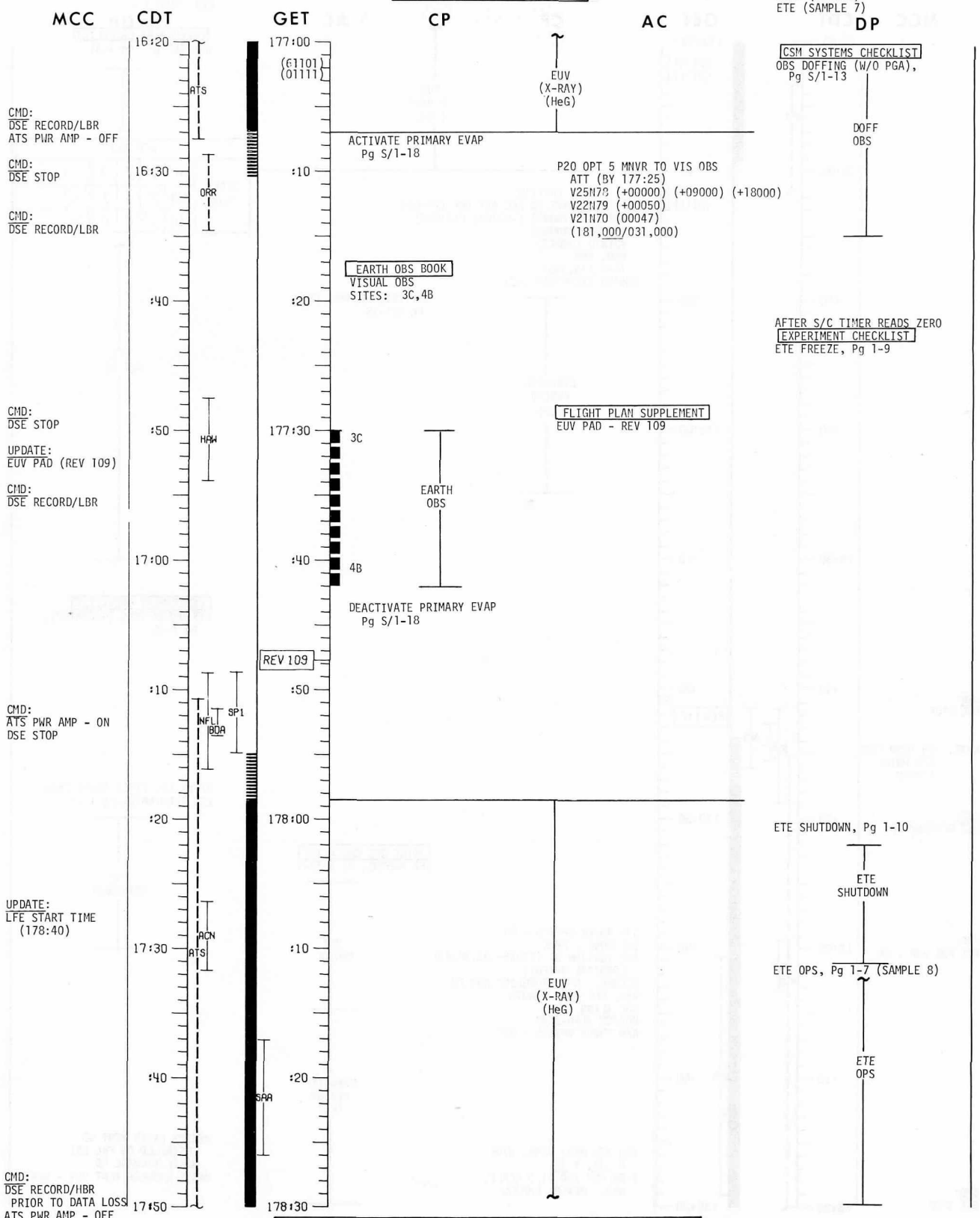
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	107-108



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	108-109



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-49

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	109-110

MCC | CDT | GET | CP | AC | DP

17:50 — 178:30
(61101)
(01111)
ATS
EUV (X-RAY) (HeG)

LFE (UNMANNED)
FURN (MA 044)
ETE (SAMPLE 8)

EXPERIMENT CHECKLIST
LFE SET UP, Pg 1-41

18:00 — :40

LFE PAD

START TIME						
HR	1	7	9			
MIN		1	3			
SEC		0	0			

(61102)
(01111)
V48 (61102) (01111)
P20 OPT 5 MNVR TO LFE ATT (BY 178:48)
V22N78 (+18000) (-03000) (+21500)
V22N79 (+00050)
V21N70 (00047)
PRO, PRO
(149,170,343)
UNSTOW EXERCISER (U2)

:10 — :50

ACTIVATE PRIMARY EVAP
Pg S/1-18

EXERCISE PERIOD (CP)

LFE SET UP

:20 — 179:00

18:30 — :10

EXPERIMENT CHECKLIST
LFE OPERATIONS (OPERATOR), Pg 1-45

:40 — :20

CMD: DSE STOP

REV 110

NOTE: NO COMM THRU ATS UNTIL 179:58

BOM
WFL
SP1

AFTER S/C TIMER READS ZERO
ETE TERMINATE, Pg 1-11

CMD: DSE RECORD/LBR

:50 — 179:30

JOINT OPS CHECKLIST
ZFF PHOTOS, Pg J/10-1

ETE TERMINATE

CMD: ATS PWR AMP - ON

19:00 — :40

ACN
ATS

G/N POWER OPTICS - ON
CMC MODE - FREE
P52 (OPTION 3) (STARS- 03,36,43)
(ORBITAL ORIENT)
RECORD: GYRO TORQUING ANGLES
P20, CMC MODE - AUTO
GDC ALIGN
OPTICS ZERO-ZERO
G/N POWER OPTICS - OFF

ZFF PHOTOS

:10 — :50

SAA

EXERCISE PERIOD (AC)

ACQ ATS HGA: MAN, WIDE
P -35, Y 33
S-BD ANT IND >1/3 SCALE
HGA: REACQ, NARROW

VERIFY CABIN VENT QD
INSTALLED ON PNL 251
WASTE STOWAGE QD
WASTE STOWAGE VENT VLV - VENT

CMD: DSE STOP

19:20 — 180:00

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	110-111

FURN (MA 044)
LFE (UNMANNED)

MCC	CDT	GET	CP	AC	DP
	19:20	180:00 (61102) (01111)	REPORT: GYRO TORQUING ANGLES		P52 IMU REALIGN N71: __ __, __ __ N05: __ __ __•__ __ N93: X ☐ __ __•__ __ __ Y ☐ __ __•__ __ __ Z ☐ __ __•__ __ __ GET __ __ __•__ __•__ __
	19:30 ATS	:10	EXPERIMENT CHECKLIST LFE OPERATION (SUBJECTS), Pg 1-43		
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	:40	:20			
CMD: DSE STOP	GWM				
CMD: DSE RECORD/LBR	:50	180:30	LFE DARK ADAPTION	LFE DARK ADAPTION	
	20:00	:40			
	:10	:50			
CMD: DSE REWIND (2 MIN) DSE PLAYBACK (2 MIN) DSE REWIND (2 MIN)	ROS	REV 111			LFE (OPERATOR)
CMD: DSE RECORD/LBR	:20	181:00	NOTE: NO COMM THRU ATS UNTIL 181:35		
			LFE (SUBJECT)	LFE (SUBJECT)	
	20:30 ATS	:10			
	:40	SAA :20			
	20:50	181:30			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	111-112

FURN (MA 044)
LFE (MANNED)

MCC	CDT	GET	CP	AC	DP
	20:50	181:30			
CMD: ATS PWR AMP - ON; DSE STOP		(61102) (01111)			ACQ ATS HGA: MAN, WIDE P -35, Y 39; S-BD ANT IND >1/3 SCALE; HGA: REACQ, NARROW
	21:00	:40			
	:10	:50	LFE (SUBJECT)	LFE (SUBJECT)	LFE (OPERATOR)
CMD: DSE RECORD/LBR; ATS PWR AMP - OFF	:20	182:00			
	21:30	:10			EXPERIMENT CHECKLIST; LFE SHUTDOWN, Pg 1-48
		(61111) (01111)		P00; V48 (61111) (01111); V49 MNVR TO SI +X FWD ATT (BY 182:30) (049,007,331); FDAI SCALE - 5/1 (VERIFY)	
CMD: DSE STOP; CMD: DSE RECORD/LBR	:40	:20	SET HGA: MAN P -36, Y 251; HGA: REACQ, NARROW		
CMD: DSE STOP; UPLINK: JET-ON MONITOR LOADS; CSM S. V.; ATS S. V.; CMD: ATS PWR AMP - ON; DSE RECORD/LBR	:50	182:30			
CMD: DSE DUMP (17:00)	22:00	:40		EAT PERIOD	
	:10	:50			
	22:20	183:00			

Events: SAA; ATS; USR; GDS; SP2; QUI; REV 112

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-52

APOLLO DETAILED CREW ACTIVITIES PLAN

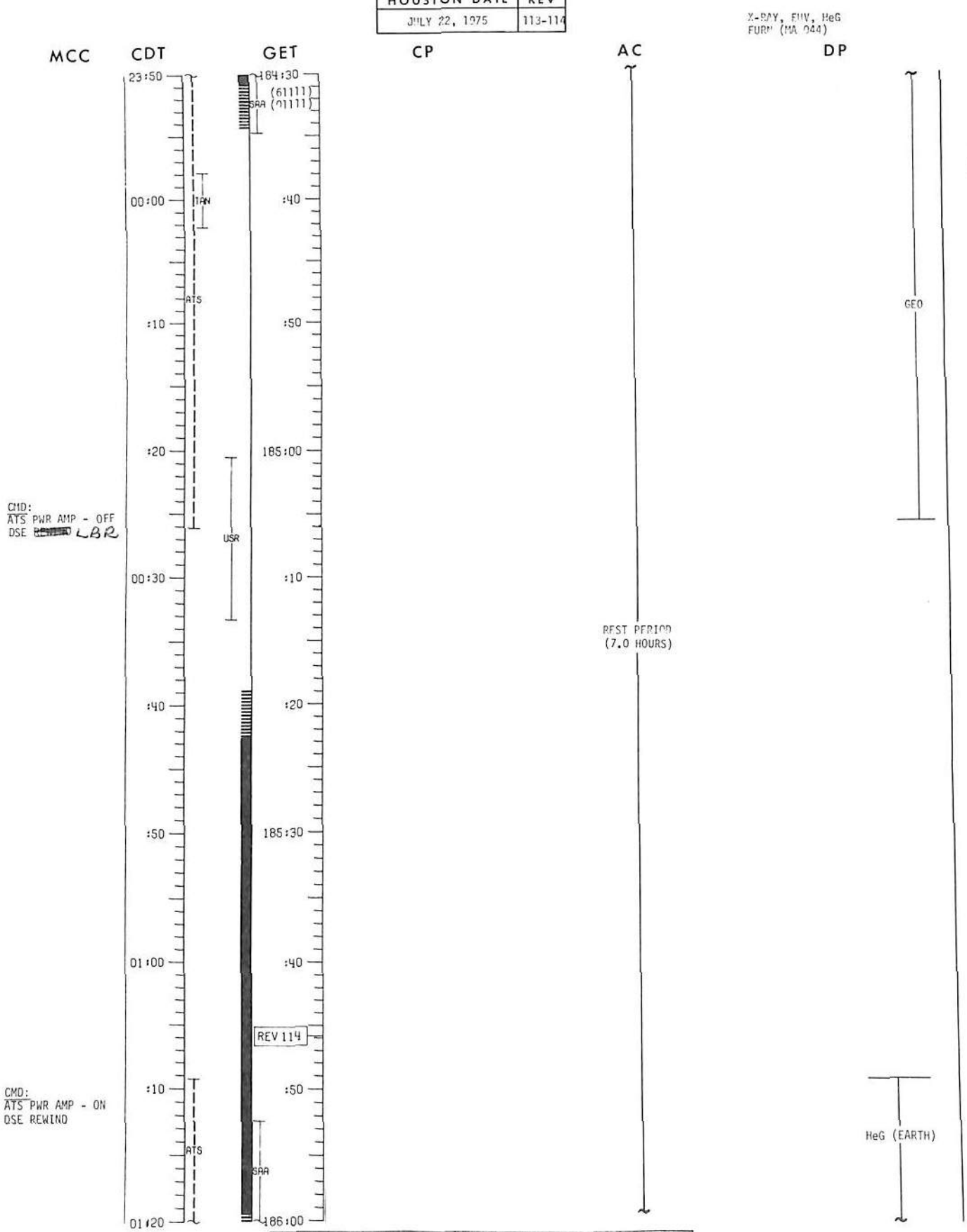
HOUSTON DATE	REV
JULY 22, 1975	112-113

FURN (MA 044)

MCC	CDT	GET	CP	AC	DP
	22:20	183:00			
		SAA (61111) (01111)			
				EAT PERIOD	
	22:30	:10			
				CSM SYSTEMS CHECKLIST PRE-SLEEP CHECKLIST, Pg S/1-49	
	ATS		EXPERIMENT CHECKLIST CRYSTAL GROWTH PHOTOS, Pg 1-37		X-RAY HeG, EUV - OPS (CUE CARD) SET HGA: P -13, Y 250
	:40	:20			
					REMOVE CABIN VENT QD (PNL 251) AND STOW (RHEB TSB)
			CGE PHOTOS	LiOH CANISTER CHANGE (17 INTO A, STOW 15 IN B6)	
	:50	183:30			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF				PRE-SLEEP	DM CHECKLIST He INJECTION, Pg D/7-5
		USR			
	23:00	:40			PNL 815: CB DOPPLER TRANSMITTER - CLOSE (VERIFY) DOPPLER TRANSMITTER - WARMUP (VERIFY) PNL 274: CB UV/DOPPLER - CLOSE (VERIFY) PNL 230: DOPPELR RECEIVER - WARMUP (VERIFY)
	:10	:50			
CMD: DSE STOP					
	GDS				
CMD: DSE RECORD/HBR					
	:20	184:00			
					GEO
	23:30	:10			
CMD: ATS PWR AMP - ON DSE STOP		REV 113		REST PERIOD (7.0 HOURS)	
	AGO				
	:40	:20			
	ATS	SAA			
	23:50	184:30			

APOLLO DETAILED CREW ACTIVITIES PLAN

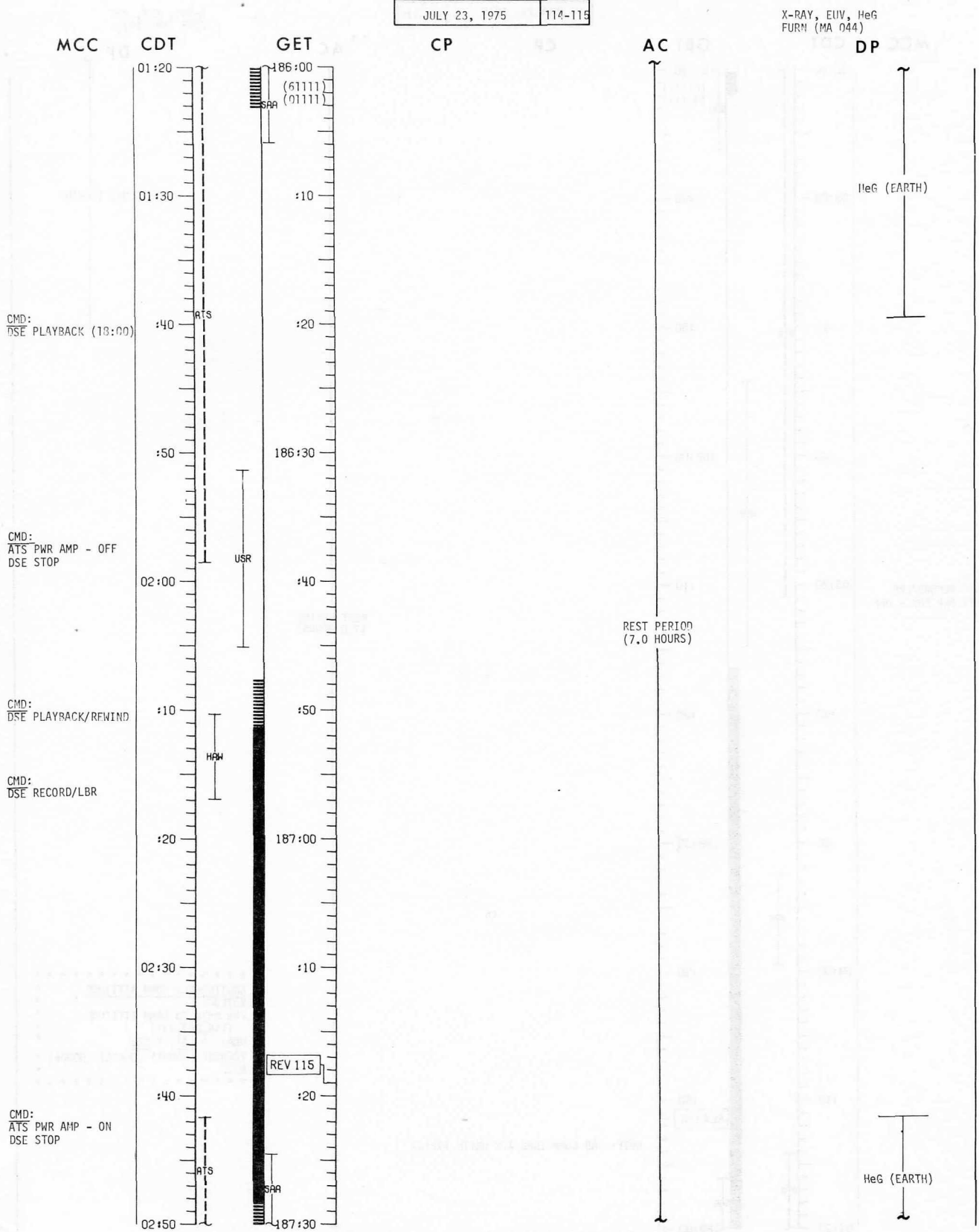
HOUSTON DATE	REV
JULY 22, 1975	113-114



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	~~FINAL~~ PCN 4	~~MAY 15,~~ 1975 7-10-75	4.3-54

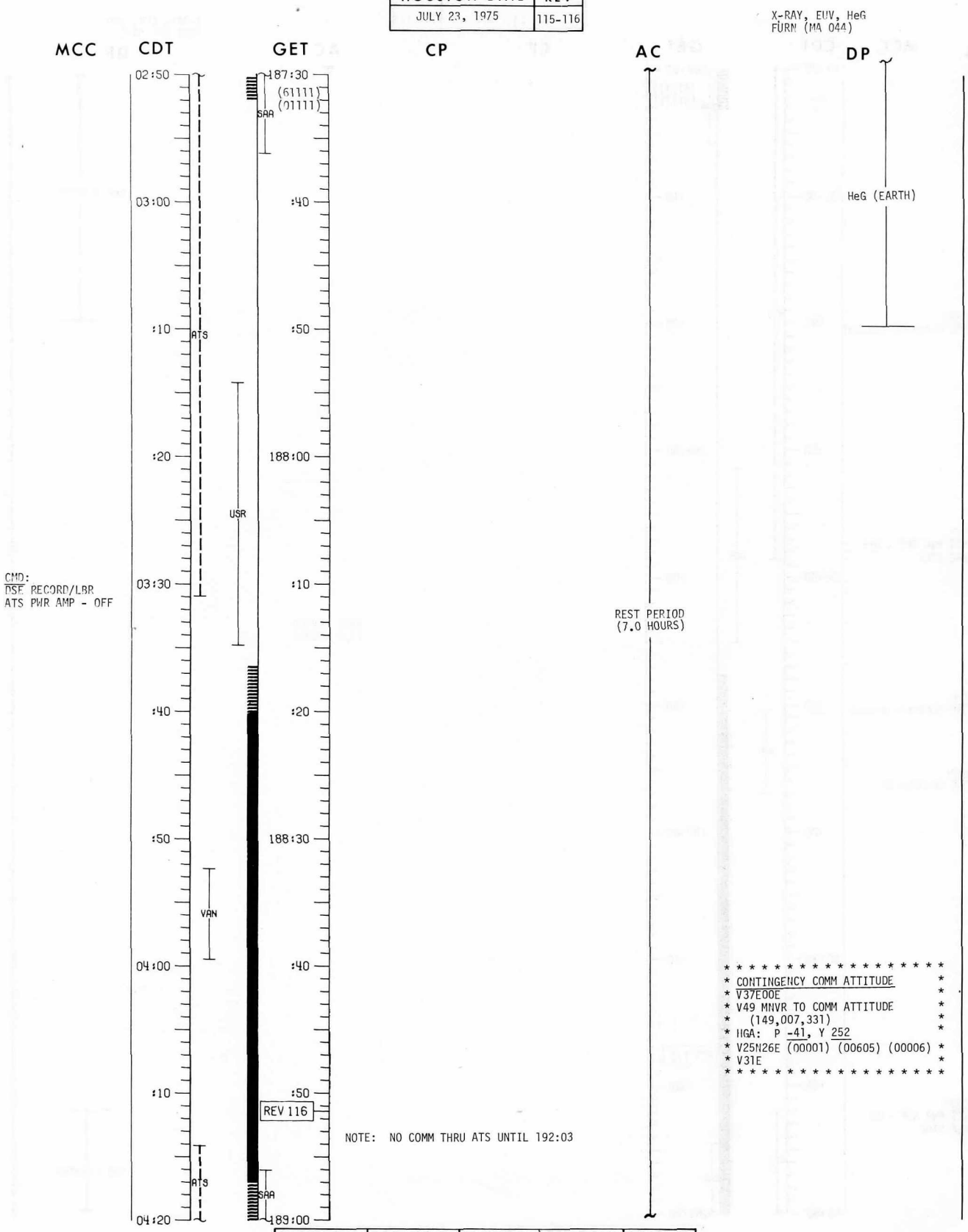
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	114-115



APOLLO DETAILED CREW ACTIVITIES PLAN

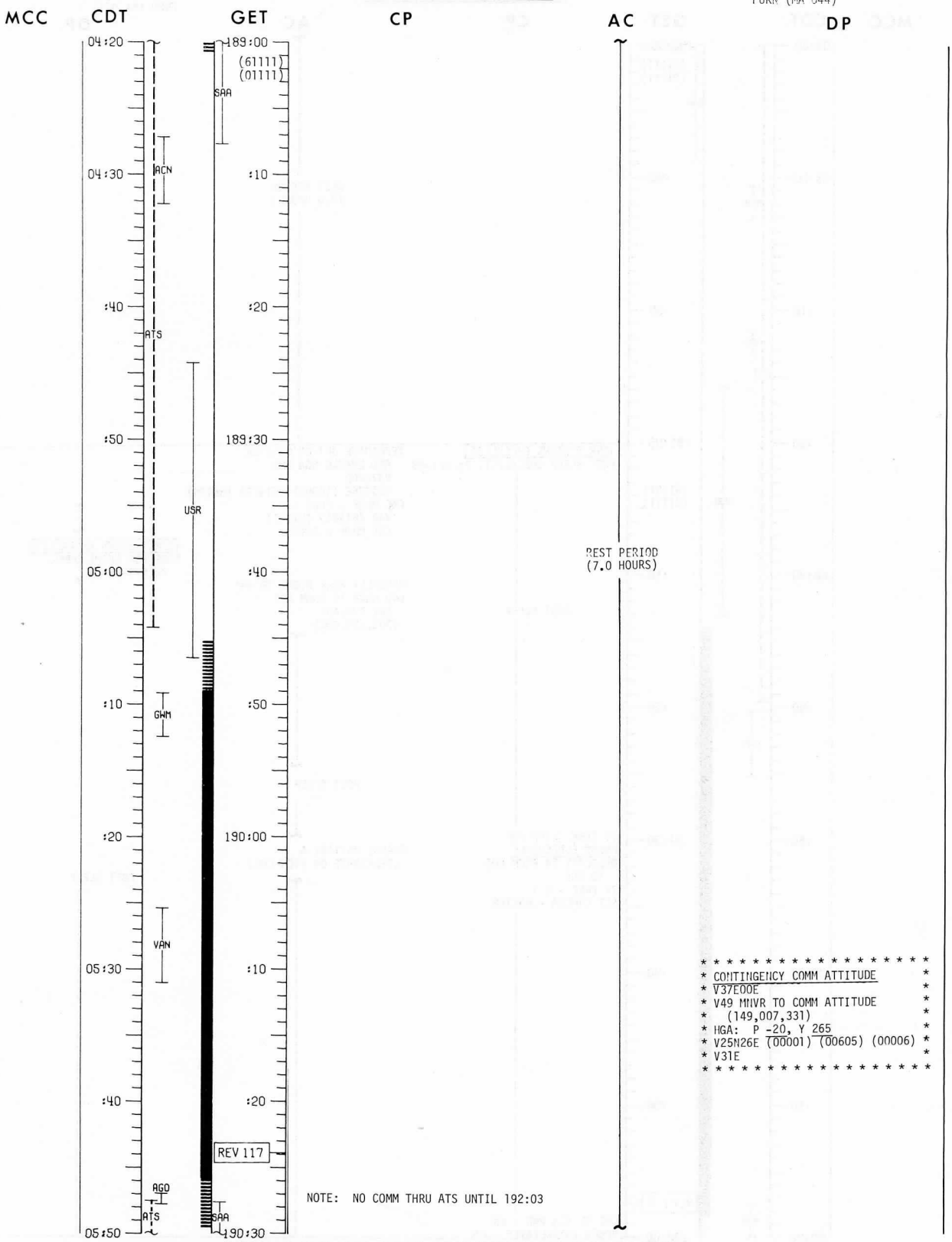
HOUSTON DATE	REV
JULY 23, 1975	115-116



APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	116-117

X-RAY, EUV, HeG
FURN (MA 044)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-57

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	117-118

X-RAY, EUV, HeG
FURN (MA 044)

MCC	CDT	GET	CP	AC	DP
	05:50	190:30			
		(61111) (01111)			
		SAA			
	06:00	:40		REST PERIOD (7.0 HOURS)	
	RCN				
	:10	:50			
	MAD				
	ATS				
	:20	191:00	CSM SYSTEMS CHECKLIST POST SLEEP CHECKLIST, Pg S/1-49	TERMINATE JET-ON MONITOR AND ENABLE HGA EMP V37E00E V25N26E (10001) (01412) (66105) CMC MODE - FREE V48 (61101) (01111) CMC MODE - AUTO	
	USR	(61101) (01111)			
					CSM SYSTEMS CHECKLIST PREP FOR URINE DUMP, Pg S/1-28
	06:30	:10	POST SLEEP	MANUALLY ROLL RIGHT TO 99° V49 MNVR TO COMM ATT (BY 191:45) (203,180,000)	
	:40	:20		POST SLEEP	
	GMN				
	:50	191:30	TV CAMR SETUP FOR PRESS CONFERENCE RELOCATE TV FROM 606 TO 605 TV PREP - 2.1 SET CAMERA - MASTER	CHARGE BATTERY A (TERMINATE ON STDN CUE)	POST SLEEP
	07:00	:40	UNSTOW TODAY'S FILM MAGS & STOW IN F2: DAC: CT01 & CI28 (F2 VERIFY) HRC: CX16 (CAMR) NK: 1 MAG (CAMR) (VERIFY >12 FR REMAINING)		
	:10	:50			
		REV 118	TV STA SEL - CM/CM2 (PNL 181) CM2 TV STA PWR - ON POWER INTERLEAVER - ON		
	RGO				
	07:20	192:00			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	PCN-R 3	JULY 8, 1975	4.3-58

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	118

FURN (MA 044), X-RAY, HeG, EUV

MCC	CDT	GET	CP	AC	DP
CMD: ATS PWR AMP - ON	07:20	192:00 (61101) (01111)			
		AGO			
		SAA			
					ACQ ATS HGA: MAN, WIDE P 10, Y 244 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW
	07:30	:10			
CMD: DSE REWIND	:40	:20			
		MAD		PRESS CONF	
		TV			
	:50	192:30			
		ATS			
		USR			
	08:00	:40			
CMD: DSE PLAYBACK (9:00)			CM2 TV STA PWR - OFF POWER INTERLEAVER - OFF		
	:10	:50			
CMD: DSE REWIND					
CMD: DSE RECORD/LBR ATS PWR AMP - OFF					
	:20	193:00			
		ORR			
				EAT PERIOD	
	08:30	:10			
	:40	:20			
	08:50	193:30			

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	118-119

FURN (MA 044), EUV, HeG, X-RAY

MCC	CDT	GET	CP	AC	DP
	08:50	193:30 (61101) (01111) REV 119	P52 IMU REALIGN N71: __ __, __ __ N05: __ __ __•__ __ N93: X ☐ __ __•__ __ __ Y ☐ __ __•__ __ __ Z ☐ __ __•__ __ __ GET __ __ __•__ __•__ __		FDAI SCALE - 5/1 (VERIFY)
CMD: DSE STOP				EAT PERIOD	H2 PURGE LINE HTR - ON
CMD: DSE RECORD/HBR ATS PWR AMP - ON CMD: DSE STOP	09:00	:40			ACQ ATS HGA: MAN, WIDE P -11, Y 229 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
					EUV PWR DWN (CUE CARD) HeG PWR DWN (CUE CARD) X-RAY PWR DWN (CUE CARD)
	:10	:50	CSM SYSTEMS CHECKLIST URINE DUMP, Pg S/1-38	LiOH CANISTER CHANGE (18 INTO B, STOW 16 IN B6)	DM CHECKLIST DM/CM O2 PURGE, Pg D/15-1
UPDATE: CONSUMABLES STATUS FLIGHT PLAN UPLINK: CSM & ATS S. V.				WASTE WATER DUMP TO 60% Pg S/1-25	
	:20	194:00		H2 & O2 FUEL CELL PURGE	
			EXPERIMENT CHECKLIST CRYSTAL GROWTH PHOTOS, Pg 1-37		DM/CM O2 PURGE
			CGE	H2 PURGE LINE HTR - OFF	GEO
	09:30	:10			
			JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1	EXPERIMENT CHECKLIST FISH EXPERIMENT, Pg 1-65	
	:40	:20	ZFF		DM CHECKLIST FURNACE SHUTDOWN, Pg D/7-6
			X-RAY - OPS (CUE CARD) HeG - OPS (CUE CARD) EUV - OPS (CUE CARD)	FISH EXPERIMENT	
	:50	194:30	G/N POWER OPTICS - ON P52 (OPTION 3) (ORBITAL ORIENT) REPORT: GYRO TORQUING ANGLES POO, CMC MODE - AUTO GDC ALIGN OPTICS ZERO - ZERO G/N POWER OPTICS - OFF		
CMD: DSE RECORD/HBR CMD: DSE STOP CMD: DSE RECORD/LBR ATS PWR AMP - OFF	10:00	:40	EXPERIMENT CHECKLIST DM HEIGHT MEAS. Pg 1-61	DM HEIGHT MEASUREMENTS	
	:10	:50			
	10:20	195:00			

QUI, MAD, ATS, USR, ORR

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-60

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	119-120

X-RAY, HeG, EUV

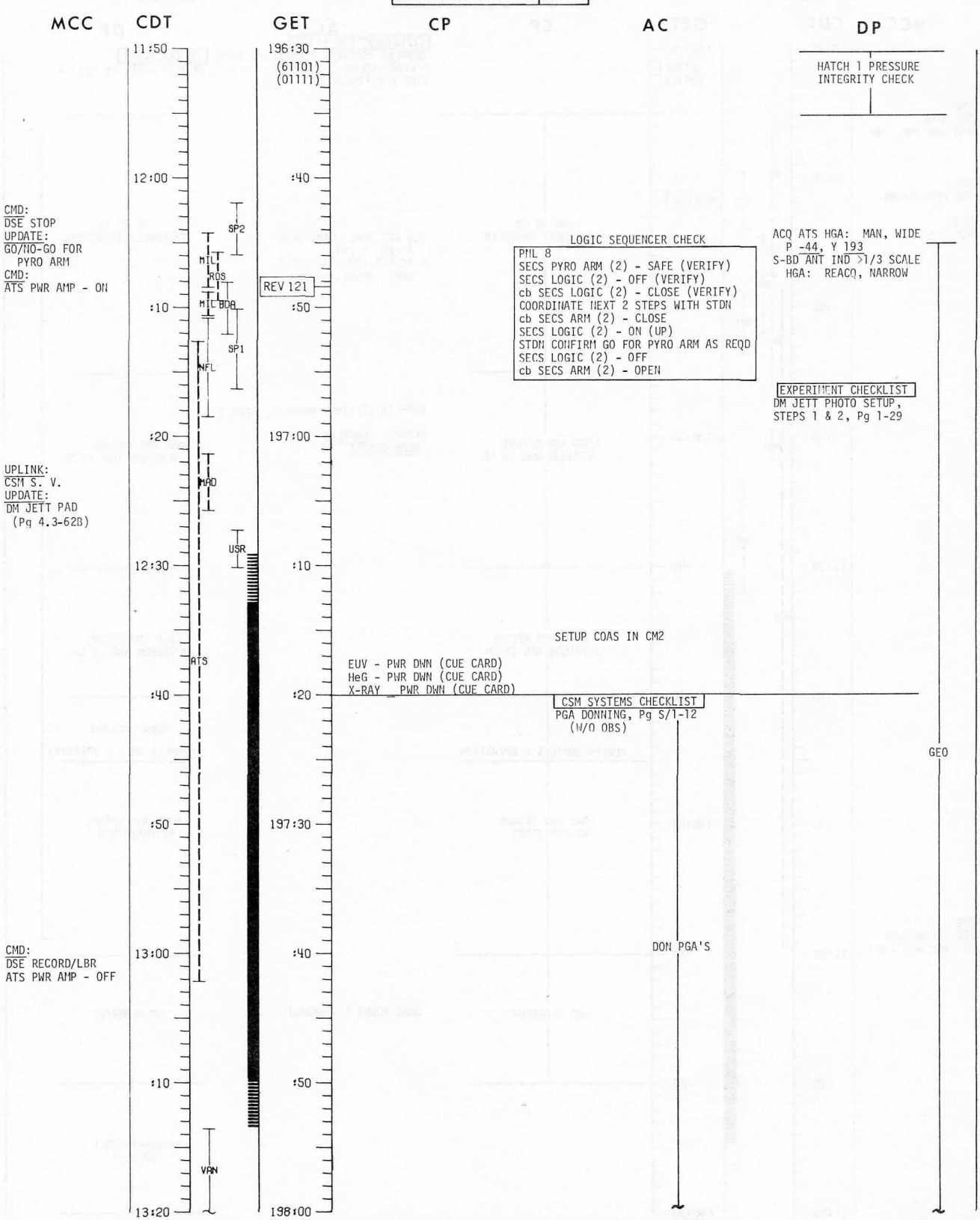
MCC	CDT	GET	CP	AC	DP
	10:20	195:00		EXPERIMENT CHECKLIST DOPPLER RECEIVER OPERATE Pg 1-28 PERFORM STEPS 1 & 2 STEP 1 @ 195:03:00	DM CHECKLIST DM JETT PREP, Pg D/13-1
CMD: DSE STOP ATS PWR AMP - ON		(61101) (01111)			
CMD: DSE RECORD/HBR CMD: DSE STOP	10:30	:10 REV 120	DM TO CM EQUIPMENT TRANSFER	ACQ ATS HGA: MAN, WIDE P -29, Y 214 S-BD ANT IND >1/4 SCALE HGA: REACQ, NARROW	DM TO CM EQUIPMENT TRANSFER
	:40	:20			
	:50	195:30	LOAD AND SECURE JETTISON BAG IN DM	DOPPLER RECEIVER OPERATE, STEP 3 REPORT: DOPPLER RCDR STATUS	LOAD AND SECURE JETTISON BAG IN DM
	11:00	:40	LOAD AND SECURE JETTISON BAG IN CM		LOAD AND SECURE JETTISON BAG IN CM
	:10	:50	VERIFY DOPPLER - OPERATION		PROBE STOWAGE (DOPPLER XMTR - OPERATE)
	:20	196:00	LOAD AND SECURE A2 CONTAINER		LOAD AND SECURE A2 CONTAINER
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	11:30	:10	DM CLOSEOUT	BMAG POWER 1 - WARMUP	DM CLOSEOUT
	:40	:20			UNSTOW/INSTALL HATCH 1
	11:50	196:30			

QUI, SP2, MIL, BDA, SP1, NFL, MAD, USR, ATS, GEO

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-61

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	120-121



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-62

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DM JETTISON PAD							
+	0	0					HRS
+	0	0	0				MIN N34
+	0						SEC
+				0	0		R (089)N22
+				0	0		P (349)
+				0	0		Y (003)
+	0	0					HRS
+	0	0	0				MIN JETT
+	0						SEC

PRE-JETTISON CHECKLIST

SET DET COUNTING UP TO JETT TIME
BMAG MODE (3) - RATE 2
FDAI SCALE - 5/5
SC CONT - CMC/AUTO (VERIFY)
RHC PWR DIR #2 - MNA/MNB
RHC #2 - ARMED
cb CSM/DM FINAL SEP (2) - CLOSE
COORDINATE NEXT 2 STEPS WITH STDN (IF POSS)
cb SECS ARM (2) - CLOSE
SEC LOGIC (2) - ON (UP)
STDN CONFIRM GO FOR PYRO ARM (AS REQ'D) (IF POSS)
CAMERA UTILITY PWR - ON (VERIFY)
ENABLE ALL RCS JETS (12)
V48 (61102) (01111)
V62E

JETTISON CHECKLIST

40:00 V49 MNVR TO DM JETT PAD ATT
45:00 P20 (OPTION 2)
V24N78 (+00000) (+27000)
V24N79 (+50000) (+00050)
V25N34 ( ) ( ) ( )
(+00199) (+00019) (+04800)
50:00 INITIALIZE ORDEAL TO 340°
55:00 SET ORDEAL OPR/SLOW
58:00 SECS PYRO ARM (2) - ARM
58:50 CONFIGURE DSE: (HBR/RCD/FWD/CMD RESET)
[DM JETTISON]
WHEN YAW ERROR NEEDLES CROSS 0° - (00:00)
CSM/DM FNL SEP (2) - ON (UP)
00:15 CMC MODE - HOLD, FDAI SCALE - 5/1
TRACK DM IN COAS FOV FOR 5 DM ROTATIONS
01:00 DAC-ON (VOICE MARK)
08:00 CONFIGURE DSE: (LBR/RCD/FWD/CMD RESET)
DAC - OFF, COVER LENS AND RUN DAC FOR 10 SECS
LOG PHOTO DATA: GET ___ ___ ___:___ ___,
MAG ID ___ ___ ___ ___, % REM ___ ___ ___ ___
SECS PYRO ARM (2) - SAFE
SECS LOGIC (2) - OFF
cb SECS ARM (2) - OPEN
cb CSM/DM FINAL SEP (2) - OPEN
08:30 V48 (11002) (01111)
CMC MODE - AUTO
V49 MNVR TO DM1 PAD ATT (Pg 4.3-64A)
GO TO FLIGHT PLAN, Pg 4.3-64, 199:30 GET

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	121-122

MCC	CDT	GET	AC	DP
	13:20 VAN	198:00 (61101) (01111)		
			DON PGA'S	
	13:30	:10		
CMD: ATS PWR AMP - ON	GDS			
	:40	:20		
		REV 122	SUIT CIRCUIT/PGA INTEGRITY CHECK, Pg S/1-15 STEP 8	ACQ ATS HGA: MAN, WIDE P -53, Y 162 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
CMD: DSE DUMP (8:40)	SP1 NFL		SUIT CKT/PGA INTEGRITY CHECK	
	:50	198:30	BMAG POWER 1 - ON	
UPLINK: DM 1 TARGET LOAD UPDATE: DM 1 PAD (FINAL) (Pg 4.3-64A)	MAD			
	14:00	:40 (61102) (01111)		
	:10 ATS	:50		
	TAN		PRE-JETTISON CHECKLIST (Pg 4.3-62B)	
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	:20	199:00	NOTE: COMM THRU ATS LOST AT 199:05	
			JETTISON CHECKLIST (Pg 4.3-62B)	
	14:30	:10		
	:40	:20	DM JETTISON (199:21 GET)	
		(11002) (01111)		
	14:50	199:30		

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	122-123

MCC	CDT	GET	CP	AC	DP
	14:50	199:30			
		(11002) (01111)			
				CABIN PRESS IND - VERIFY > 4.7 PSIA EMERG CAB PRESS SEL - BOTH SUIT CKT RET - VLV - OPEN (PULL) DOFF AND STOW HELMET & GLOVES	
	15:00	:40			
				G/N POWER OPTICS - ON P30 - VERIFY DM 1 TIG & ΔV	
	GDS				
	:10	:50		GO TO SPS BURN - RNDZ CUE CARD (BANK A)	
				P40	
		REV 123			
			NOTE: NO COMM THRU ATS UNTIL 200:18	DM 1 MNVR (199:56) (TRIM ALL AXES + 0.2 REPORT: BURN STATUS	
	SP1				
	NFL				
	:20	200:00		P00 OPTICS ZERO-ZERO G/N POWER OPTICS - OFF CSM SYSTEMS CHECKLIST PGA DOFFING, Pg S/1-20	
CMD: ATS PWR AMP - ON			P20 (OPTION 5) MNVR TO VISUAL OBS ATT (BY 200:18) V25N78 (+00000) (+09000) (+18000) V22N79 (+00050) V21N70 (00047) (184,000/223,000)		
	MAD				
	15:30	:10			
CMD: DSE STOP					
	:40	:20		ACQ ATS HGA: MAN, WIDE P -62, Y 49 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW	
	ATS				
	:50	200:30		DOFF PGA'S	
				EARTH OBS BOOK VISUAL OBS SITE: 11D	
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	16:00	:40	NOTE: COMM THRU ATS LOST AT 200:41		
	:10	:50			
	ORR		11D		
					EARTH OBS (VIS OBS)
	16:20	201:00			

DM1 PAD

		NOMINAL	FINAL
N33 TIG DM1	HR	+ 1 9 9	+
	MIN	+ 5 6	+
	SEC	+ 0 0 . 0 0	+
N81 ΔV DM1	ΔV_X	+ 0 2 0 . 7	
	ΔV_Y	+ 0 0 0 . 0	
	ΔV_Z	+ 0 0 0 . 0	
N22 DM1	R	+ 1 8 0 . 0 0	+ . 0 0
	P	+ 3 1 0 . 0 0	+ . 0 0
	Y	+ 0 0 4 . 0 0	+ . 0 0
	ΔV_C	0 2 0 . 7	
	BT	0 0 : 0 1	:

ΔVC AT IGN	+
ΔVC TAILOFF	-

WT	+
PT	
YT	

BURN ATT CHECK

STAR		
SA	+	0
TA	+	0 0

SPS BURN STATUS

ΔTIG		:
AFTER TRIM		
ΔVC		.
FDAI (IF ATTITUDE NOT NOMINAL)	R	+ .
	P	+ .
	Y	+ .
N85 (IF VG >.2)	VGX	0 0 .
	VGY	0 0 .
	VGZ	0 0 .
TRANSMIT N81 APPLIED		

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APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	123-124

MCC	CDT	GET	CP	AC	DP
	16:20	201:00 (11002) (01111)		DOFF PGA'S	
	16:30	:10			
	:40	:20			
CMD: ATS PWR AMP - ON	:50	REV 124 201:30	NOTE: NO COMM THRU ATS UNTIL 201:43	EAT PERIOD	
	17:00	:40	P52 IMU REALIGN N71: __ __, __ __ N05: __ __ __•__ __ N93: X ☐ __ __•__ __ __ Y ☐ __ __•__ __ __ Z ☐ __ __•__ __ __ GET __ __ __•__ __•__ __		ACQ ATS HGA: MAN, WIDE P -35, Y 41 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
CMD: DSE DUMP (16:25)	:10	:50			
	:20	202:00			
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	17:30	:10	CMC MODE - FREE G/N POWER OPTICS - ON P52 (OPTION 3) (ORBITAL ORIENT) REPORT: GYRO TORQUING ANGLES GDC ALIGN P20, CMC MODE - AUTO OPTICS ZERO-ZERO G/N POWER OPTICS - OFF	NOTE: COMM THRU ATS LOST AT 202:11	
	:40	:20	EARTH OBS BOOK VISUAL OBS SITES: 4A,4C,4D		
	17:50	202:30			

HAW
BDA SP1
NFL
ACN
ATS
SAA

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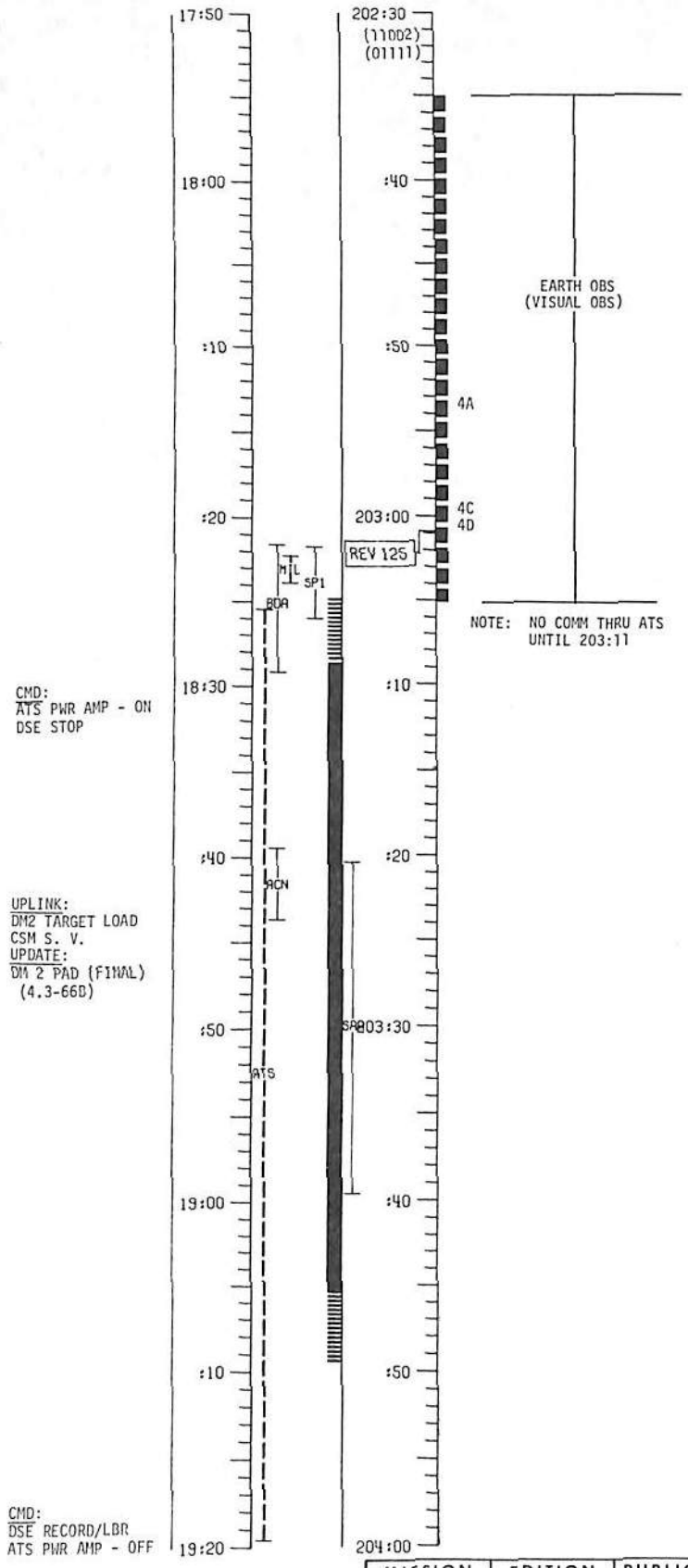
APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	124-125

MCC	CDT	GET	CP	AC	DP



NOTE: NO COMM THRU ATS UNTIL 203:11

V49 MNVR TO DM2 ATT BY (203:11) (000,133,355)

ACO ATS HGA: MAN, WIDE
P -34, Y 256
S-BD ANT IND >1/3 SCALE, REACQ, NARROW

CMD:
ATS PWR AMP - ON
DSE STOP

UPLINK:
DM2 TARGET LOAD
CSM S. V.
UPDATE:
DM 2 PAD (FINAL)
(4.3-66B)

CMD:
DSE RECORD/LBR
ATS PWR AMP - OFF

CSM PRELIMINARY STOWAGE FOR ENTRY
1. XFER ALL DAC MAGS FROM (F1) + TSB TO (D3) (14) & (B5) (5)
2. STOW 70mm MAGS FROM (F1) IN: + TSB
   U1 - 6 MAGS
   A6 - 11 MAGS
   D5 - 2 MAGS
3. STOW CM TV CAMERAS & ASSOCIATED EQUIP IN A5
4. XFER LIFE VESTS FROM ~~D3~~ TO F1
   U2

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DM2 PAD

NOMINAL								FINAL					
N33	HR	+			2	0	4	+					
TIG		+				2	2	+					
	SEC	+		5	5	3	0	+					
N81	ΔV_X	-		0	2	0	2						
ΔV	ΔV_Y	+		0	0	0	0						
	ΔV_Z	+		0	0	0	0						
N22	R	+	0	0	0	0	0	+				0	0
	P	+	1	3	3	0	0	+				0	0
	Y	+	3	5	5	0	0	+				0	0
	ΔV_C			0	2	0	2						
	BT			0	0	0	1						

ΔVC AT IGN	+					
ΔVC TAILOFF	-					

WT	+					
PT						
YT						

BURN ATT CHECK

STAR						
SA	+					0
TA	+				0	0

SPS BURN STATUS

ΔTIG						
AFTER TRIM						
ΔVC						
FDAI (IF ATTITUDE NOT NOMINAL) R	+					
P	+					
Y	+					
N85 (IF VG >.2) VGX		0	0			
VGY		0	0			
VGZ		0	0			
TRANSMIT N81 APPLIED						

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	125-126

MCC	CDT	GET	CP	AC	DP
	19:20	204:00			
		(11002) (01111)			
	GWM		G/N POWER OPTICS - ON		
				P30 - VERIFY DM2 TIG & ΔV'S	
	19:30	:10			
				GO TO SPS BURN - RNDZ CUE CARD (BANK A)	
				P40 (TRIM)	
	:40	:20			
				DM2 MNVR (204:22:55) (TRIM ALL AXES + 0.2) V48 (11001) (01111) P20 (OPTION 5) MNVR TO DOPPLER TRACKING ATT (BY 204:40) V25N78 (+21819)(+00592)(-04465) V22N79 (+00500) V21N70 (00047) (049,124/007,342)	
		(11001) (01111)			
	:50	204:30			
CMD: ATS PWR AMP - ON				REPORT: DM 2 BURN STATUS	
	ROS	REV 126			
	MIL				
	BDA			BMAG POWER 1 - OFF FDAI SCALE - 5/1 (VERIFY)	
	20:00	:40			ACQ ATS HGA: MAN, WIDE P -69, Y 226 S-BD ANT >1/3 SCALE, HGA REACQ, NARROW
CMD: DSE DUMP (11:20)					
	:10	:50			
	:20	205:00			
		SAA			
	ATS				EXPERIMENT CHECKLIST CRYSTAL GROWTH PHOTOS, Pg 1-37
	20:30	:10			CGE
	:40	:20			JOINT OPS CHECKLIST ZFF PHOTOS, Pg J/10-1
					ZFF
	20:50	205:30		EXPERIMENT CHECKLIST LEG VOLUME MEASUREMENTS, Pg 1-51	

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	126-127

DOPPLER TRK

MCC	CDT	GET	CP	AC	DP
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	20:50	205:30 (11001) (01111)	LEG VOLUME MEASUREMENTS (AC)	LEG VOLUME MEASUREMENTS (AC)	
	21:00	:40			
	:10	:50	LEG VOLUME MEASUREMENTS (CP) Pg 1-53	LEG VOLUME MEASUREMENTS (CP)	
	:20	206:00		LEG VOLUME MEASUREMENTS (DP)	LEG VOLUME MEASUREMENTS (DP) Pg 1-55
	21:30	:10			
	:40	:20			
CMD: ATS PWR AMP - ON DSE DUMP (1:10)	:50	206:30			
UPLINK: JET-ON MONITOR LOADS	22:00	:40			
	:10	:50			
	22:20	207:00			

ATS, USR, GDS, GDS, SP2, QUI, ATS, SAA

REV 127

CMC MODE - FREE
P52 (OPTION 3)
(ORBITAL ORIENT)

RECORD: GYRO TORQUING ANGLES
P20, CMC MODE - AUTO
GDC ALIGN

REPORT: GYRO TORQUING ANGLES
OPTICS ZERO - ZERO
G/N POWER OPTICS - OFF

P52 IMU REALIGN

N71: __ __, __ __

N05: __ __ __•__ __

N93:

X ☐ __ __•__ __ __

Y ☐ __ __•__ __ __

Z ☐ __ __•__ __ __

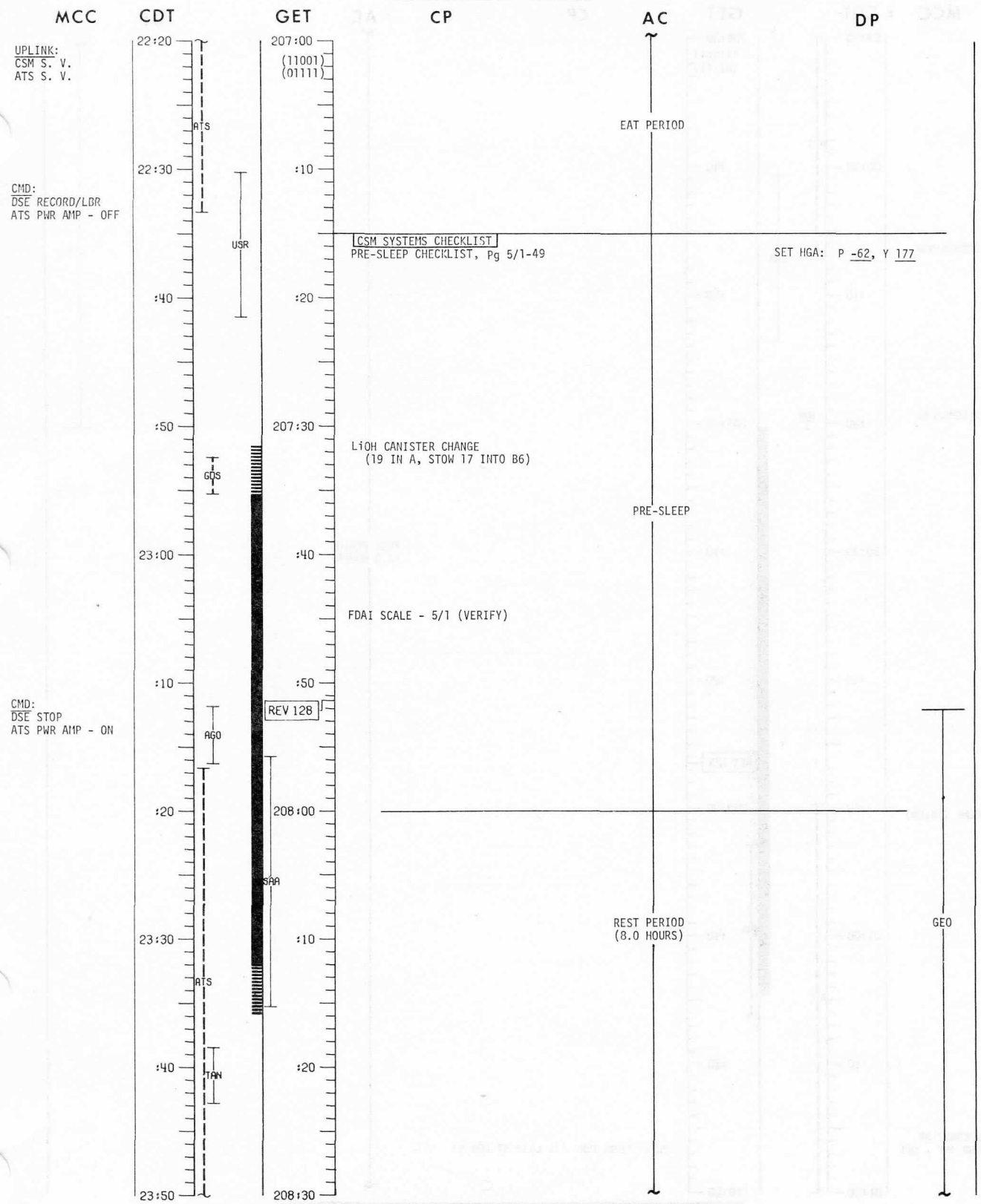
GET __ __ __•__ __•__ __

EAT PERIOD

ACQ ATS HGA: MAN, WIDE
P -69, Y 208
S-BD ANT IND >1/3 SCALE
HGA: REACQ, NARROW

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	127-128



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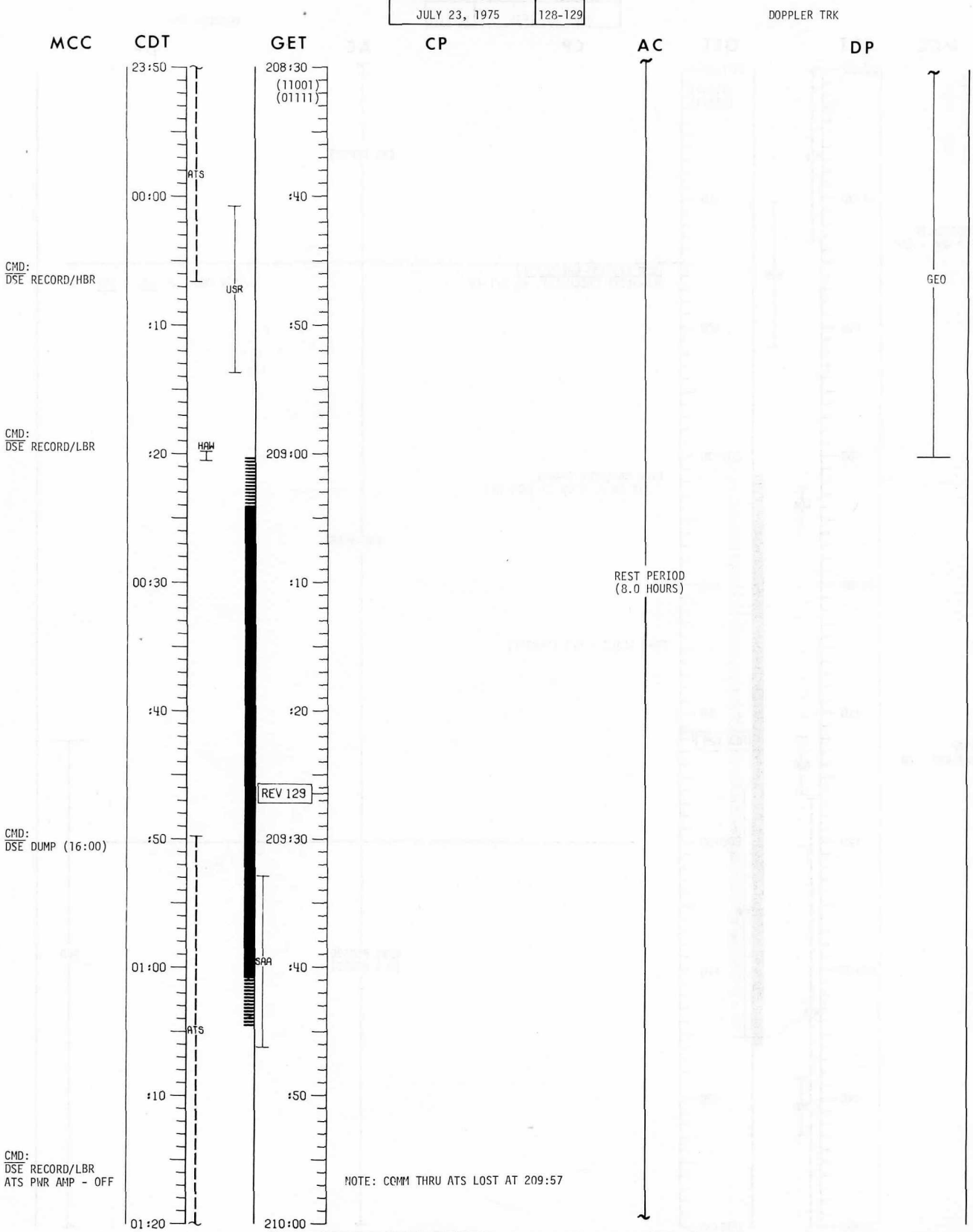
ASTP	REVISION A	JUNE 18, 1975	4.3-69

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	128-129



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-70

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	129-130

DOPPLER TRK

MCC	CDT	GET	CP	AC	DP
	01:20	210:00 (11001) (01111)			
	01:30 ATS	:10			
	:40 USR	:20			
CMD: DSE DUMP (1:00)	:50 HAW	210:30			
CMD: DSE RECORD/LBR	02:00	:40		REST PERIOD (8.0 HOURS)	
	:10	:50			
	:20	REV 130 211:00	NOTE: NO COMM THRU ATS UNTIL 92:10 PET		
	02:30 ATS	:10 SAA			
	:40	:20			
	02:50	211:30			

```
* * * * * * * * * * * * * * * * * * * *
* CONTINGENCY COMM ATTITUDE           *
* V37E30E                              *
* V37E20E                              *
* MNVR TO COMM/DOPPLER TRACKING        *
*   ATTITUDE                           *
*   V25N78 (-02825) (+01917) (+28855)  *
*   V58E                               *
* MONITOR MGA DURING MNVR              *
* HGA:  P -35, Y 33                    *
* V25N26E (00001) (00605) (00006)      *
* V31E                                 *
* * * * * * * * * * * * * * * * * * * *
```

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	130-131

DOPPLER TRK

MCC	CDT	GET	CP	AC	DP
	02:50	211:30 (11001) (01111)			
	03:00	:40			
	:10	:50			
	:20	212:00			
CMD: DSE DUMP (3:00)	03:30	:10		REST PERIOD (8.0 HOURS)	
CMD: DSE RECORD/LBR	:40	:20			
	:50	212:30			
		REV 131			
	04:00	:40	NOTE: NO COMM THRU ATS UNTIL 92:10 PET		
CMD: DSE DUMP (1:00)					
CMD: DSE RECORD/LBR	:10	:50			
	04:20	213:00			

ATS
USR
VAN
SAA
ATS
ACN

```
* * * * * * * * * * * * * * * * * * * *
* CONTINGENCY COMM ATTITUDE           *
* V37E30E                              *
* V37E20E                              *
* MNVR TO COMM/DOPPLER TRACKING        *
*   ATTITUDE                           *
*   V25N78 (-02825) (+01917) (+28855)  *
*   V58E                               *
* MONITOR MGA DURING MNVR              *
* HGA:  P -43, Y 21                    *
* V25N26E (00001) (00605) (00006)      *
* V31E                                 *
* * * * * * * * * * * * * * * * * * * *
```

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	131-132

DOPPLER TRK

MCC	CDT	GET	CP	AC	DP
	04:20	213:00 (11001) (01111)			
	04:30	:10			
	ATS				
	USR				
	:40	:20			
	:50	213:30			
	GWM				
	05:00	:40		REST PERIOD (8.0 HOURS)	
CMD: DSE DUMP (2:00)					
	VAN				
CMD: DSE RECORD/LBR	:10	:50			
	:20	214:00			
		REV 132			
	AGO				
	05:30	:10	NOTE: NO COMM THRU ATS UNTIL 92:10 PET		
		SAA			
	ATS				
	:40	:20			
	ACN				
	05:50	214:30			

```
* * * * * * * * * * * * * * * * * * * *
* CONTINGENCY COMM ATTITUDE           *
* V37E30E                              *
* V37E20E                              *
* MNVR TO COMM/DOPPLER TRACKING        *
*   ATTITUDE                           *
*   V25N78 (-02825) (+01917) (+28855)  *
*   V58E                               *
* MONITOR MGA DURING MNVR              *
* HGA:  P -52, Y 03                    *
* V25N26E (00001) (00605) (00006)      *
* V31E                                 *
* * * * * * * * * * * * * * * * * * * *
```

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	132-133

DOPPLER TRK

MCC	CDT	GET	CP	AC	DP
	05:50	214:30 (11001) (01111)			
	MAD				
	06:00	:40			
	ATS USR				
	:10	:50			
	:20	215:00		REST PERIOD (8.0 HOURS)	
	GWM				
	06:30	:10			
	:40	:20			
	:50	215:30			
CMD: DSE DUMP (3:15)		REV 133			
	07:00	:40			
CMD: DSE RECORD/LBR	AGO	SAA	NOTE: NO COMM THRU ATS UNTIL 92:10 PET		
	:10	:50			
	ATS				
	07:20	216:00			

```
* * * * * * * * * * * * * * * * * * * *
* CONTINGENCY COMM ATTITUDE           *
* V37E30E                              *
* V37E20E                              *
* MNVR TO COMM/DOPPLER TRACKING        *
*   ATTITUDE                           *
*   V25N78 (-02825) (+01917) (+28855)  *
*   V58E                               *
* MONITOR MGA DURING MNVR              *
* HGA:  P -56, Y 347                   *
* V25N26E (00001) (00605) (00006)      *
* V31E                                 *
* * * * * * * * * * * * * * * * * * * *
```

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	133-134

DOPPLER TRK

MCC	CDT	GET	CP	AC	DP
CMD: DSE DUMP (00:40) UPLINK: L. O. TIME UPDATE CSM S. V. ATS S. V.	07:20	216:00 (11001) (01111)	CSM SYSTEMS CHECKLIST POST-SLEEP CHECKLIST, Pg S/1-49		
CMD: DSE RECORD/LBR	MAO	PET	TERMINATE JET ON MONITOR AND ENABLE HGA EMP V37E00 V25N26E (10001)(01412)(66105) MANUALLY ROLL RIGHT TO 80° P20 (OPTION 5) TO DOPPLER ATT (BY 92:10) V25N78 (-02825) (+01917) (+28855) N79 (N/A) (+00500) (240,304/194,357)	SYNCHRONIZE MISSION TIMER TO CMC CLOCK V16N65 ON STDN CUE (LIFTOFF TIME WILL BE UPDATED SUCH THAT THE PET OF THE DEORBIT BURN WILL OCCUR AT 100:00:00 PET)	
	07:30	91:52			
	USR				CHARGE BATTERY B (TERMINATE ON STDN CUE) PREP FOR URINE DUMP Pg S1/28 NOTE: TERMINATE URINE COLLECTION
	ATS :40	92:02	POST SLEEP	POST SLEEP	
CMD: DSE STOP ATS PWR AMP - ON	:50	:12	POST SLEEP	ACQ ATS HGA: MAN, WIDE P -25, Y 242 S-BD ANT IND >1/3 SCALE: HGA: REACQ, NARROW	
CMD: DSE RECORD/LBR ATS PWR AMP - OFF			UNSTOW TODAY'S FILM MAGS & STOW IN F2: DAC: CX05 (F2 VERIFY) HDC: CT06 (U1) HRC: IF02 (F2 VERIFY) & CX17 (A6) NK: 1 MAG (CAMR) (VERIFY >6 FR REMAINING) TAPE SMALL ORANGE FILTER (B5) TO MAG IF02		POST SLEEP
	08:00	:22			
CMD: DSE DUMP	ORR				
CMD: DSE RECORD/LBR	:10	92:32			
	:20	:42	FDAI SCALE 5/1 (VERIFY)		
				EAT PERIOD	
	08:30	:52			
		REV 134			
CMD: DSE DUMP ATS PWR AMP - ON	QUI				
CMD: DSE RECORD/HBR	:40	93:02			ACQ ATS HGA: MAN, WIDE P -55, Y 346 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
CMD: DSE STOP	ATS				GEO
	08:50	:12			

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APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	134-135

GET 217:30

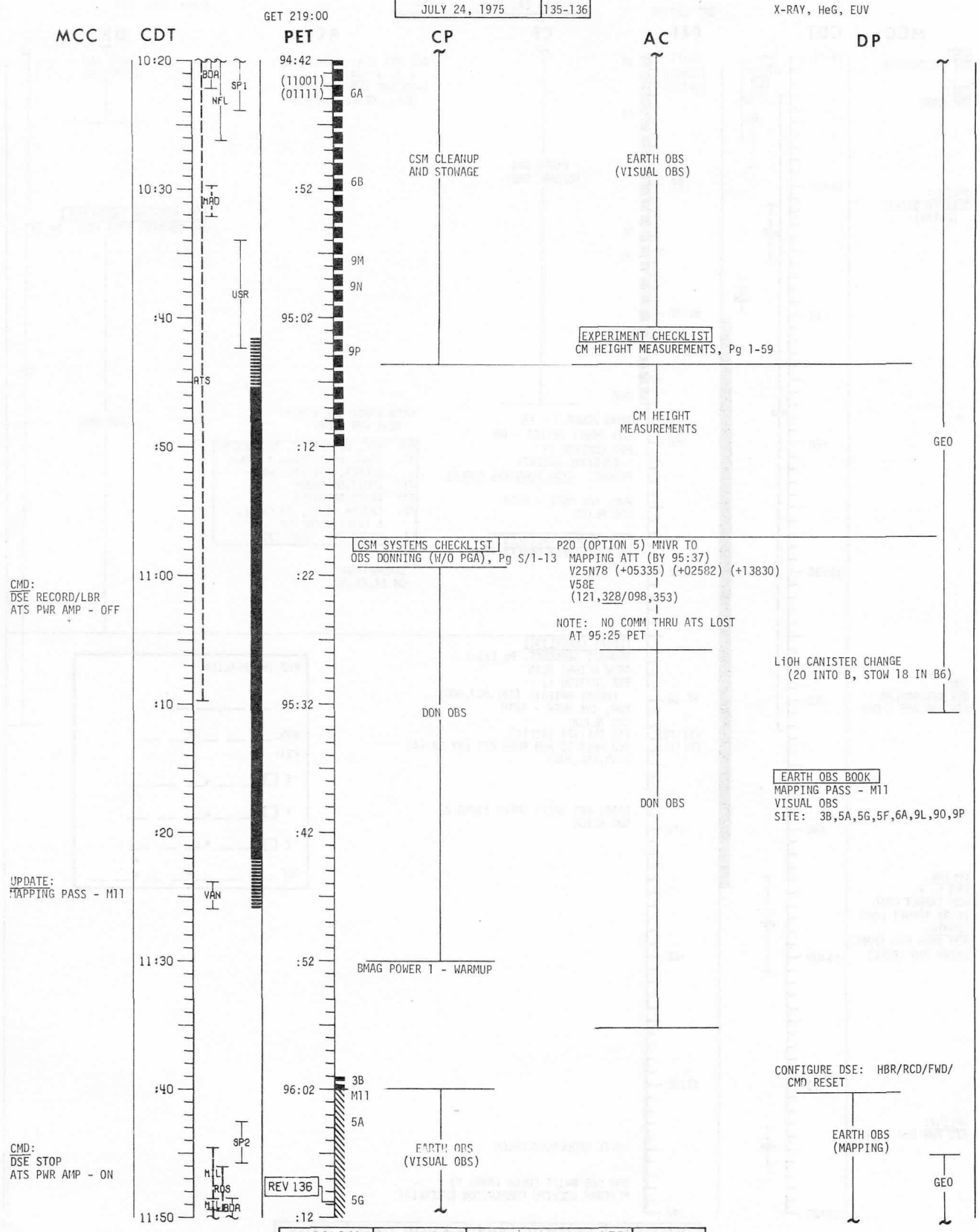
DOPPLER TRK

MCC	CDT	PET	CP	AC	DP
CMD: DSE STOP	08:50	93:12 (11001) (01111)			
UPDATE: CONSUMABLE STATUS FLIGHT PLAN	MAD			EAT PERIOD	
	09:00	:22			
	USR		WASTE WATER DUMP FOR ENTRY Pg 5/1-25	PERFORM RCS PRPLNT CONFIG CHECKLIST: SC CONT - CMC/FREE; SM RCS PSM HE - CLOSE, tb-bp; SM RCS PSM PRPNT (4) - CLOSE, tb (4) - bp; SM RCS QUAD HE (4) - OPEN, tb (4) - GRAY; SM RCS PRPLNT (4) - OPEN, tb (8) - GRAY; SC CONT - CMC/AUTO	CSM SYSTEMS CHECKLIST; URINE DUMP, Pg S/1-28
	:10	93:32			
	ATS				EXPERIMENT CHECKLIST; CRYSTAL GROWTH PHOTOS, Pg 1-37 GEO
			O2 FUEL CELL PURGE		
	:20	:42	CSM CLEANUP AND STOWAGE: STOW ALL LOOSE ITEMS IN A3 AND B1 (EXCEPT EARTH OBS EQUIP)		CGE PHOTOS
					JOINT OPS CHECKLIST; ZFF PHOTOS, Pg J/10-1
	09:30	:52			ZFF PHOTOS
CMD: DSE RECORD/HBR				P20 (OPTION 5) MNVR TO VIS OBS ATT (BY 94:12) V25N78 (+00000) (+09000) (+18000) V22N79 (+00050) V21N70 (00047) PRO, PRO (178,000/115,353)	REPORT: WHEN PHOTOS TAKEN
CMD: DSE RECORD/LBR; ATS PWR AMP -OFF	ORR				STOW ZFF IN R5 PARALLEL TO YZ PLANE, COVERS TOWARD +X. STOW CGE FRAMING DEVICE IN U1. STOW NIKON IN B2, PORTABLE LT. IN A5. X-RAY - OPS (CUE CARD) HeG - OPS (CUE CARD) EUV - OPS (CUE CARD)
	:40	94:02		EARTH OBS BOOK; VISUAL OBS SITES: 7F,7G,6A,6B,9M,9N,9P	
	:50	:12	CSM CLEANUP AND STOWAGE		DOPPLER SHUTDOWN: PNL 230: DOPPLER RECEIVER-OFF; PNL 274: cb UV/DOPPLER MNA-OPEN; DISCONNECT RECORDER CABLE AND STOW RECORDER AND CABLE IN A6 (STOW RECORDER WITH ROTATION AXES OF REELS LYING PARALLEL TO YZ PLANE
	10:00	:22			
CMD: DSE STOP			7F	EARTH OBS (VISUAL OBS)	
	:10	94:32	7G		
CMD: DSE RECORD/HBR; CMD: DSE STOP	QUI; SP2	REV 135			GEO
	MIL; BOA				ACQ ATS HGA: MAN, WIDE P 15, Y 322; S-BD ANT IND >1/3 SCALE,
CMD: ATS PWR AMP - ON	10:20 ATS; SP1	:42			

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	4.3-76

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	135-136



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-77

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	136

GET 220:30

X-RAY, HeG, EUV

MCC	CDT	PET	CP	AC	DP
CMD: DSE RECORD/HBR CMD: DSE STOP	11:50	96:12 (11001) (01111) 5F		ACQ ATS HGA: MAN, WIDE P 0, Y 334 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW	EARTH OBS (MAPPING)
		6A	EARTH OBS (VISUAL OBS)		
UPLINK: DESIRED ORIENT (ENTRY)	12:00	:22			CSM SYSTEMS CHECKLIST OBS DONNING (W/O PGA), Pg S/1-13
		9L			
		90			
	:10	96:32			
		9P			GEO
		P00			
			BMAG POWER 1 - ON G/N POWER OPTICS - ON P52 (OPTION 3) (ORBITAL ORIENT) REPORT: GYRO TORQUING ANGLES P00, CMC MODE - AUTO GDC ALIGN	STOW EARTH OBS EQUIPMENT FOR ENTRY	DON OBS
	:20	:42		B3: HDC, RINGSIGHT, SPOTMETER B5: 50mm, 60mm, 250mm & 100mm LENSES, FILTERS, HRC A1: SPOTTING SCOPE A4: VOICE RECORDER A6: CAMERA MOUNT, TM CABLE, & INTERVELOMETER U1: COLOR EXT. MAGS (7)	
			EXPERIMENT CHECKLIST SM EXPERIMENT DEACTIVATION, Pg 1-15		
	12:30	:52		SECURE PGA'S ON A4,A5,A6	
			ENTRY CHECKLIST DEORBIT SEQUENCE, Pg E/1-1 STOW FLIGHT PLAN P52 (OPTION 1) (ENTRY ORIENT) (121,053,000) P00, CMC MODE - AUTO GDC ALIGN		
CMD: DSE RECORD/LBR ATS PWR AMP - OFF	:40	97:02			
		(11112) (01111)	V48 (11112) (01111) V49 MNVR TO ADM BURN ATT (BY 97:15) (000,180,000)		
	:50	:12	START SCS DRIFT CHECK (BMAG 2) GDC ALIGN		
UPLINK: CSM S. V. ADM TARGET LOAD ENTRY TARGET LOAD UPDATE: ADM BURN PAD (PREL) ENTRY PAD (PREL)					
	13:00	:22	SNACK PERIOD		
	:10	97:32			
UPLINK: ATS PWR AMP - ON			LOGIC SEQUENCER CHECK		
	13:20	:42	END SCS DRIFT CHECK (BMAG 2) PERFORM GDC/IMU COMPARISON CHECKLIST		

P52 IMU REALIGN

N71: __ __.__ __

N05: __ __ __.__ __

N93:

X ☐ __ __.__ __ __

Y ☐ __ __.__ __ __

Z ☐ __ __.__ __ __

GET __ __ __.__ __.__ __

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	~~REVISION A~~	~~JUNE 18, 1975~~	4.3-78

PCN 3 9-5-75

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	136-137

GET 222:00

MCC	CDT	PET	
	13:20	97:42	ACQ ATS HGA: MAN, WIDE P -25, Y 4 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
		REV 137	
		(11112) (01111)	
	SP1		UNSTOW AND DON MAE WEST (F1) AND HEEL RESTRAINTS (B1) UNSTOW HEADRESTS (B1) INSTALL ENTRY CUE CARDS (R3)
CMD: DSE DUMP (25:00)	13:30	:52	
			PYRO BAT CHECK
	MAD		
	:40	98:02	
			P52 (OPTION 3) (ENTRY ORIENT)
			REPORT: GYRO TORQUING ANGLES POO, CMC MODE - AUTO GDC ALIGN
	:50 ATS	:12	
	TAN		
			EMS ENTRY CHECK EMS ΔV TEST AND NULL BIAS CHECK
	14:00	:22	
			TRANSMIT EMS NULL BIAS CHECK RESULTS
			RSI ALIGNMENT
			GDC ALIGN
			SECONDARY WATER EVAP ACTIVATION CM RCS PRE-HEAT CHECKLIST
	:10	98:32	
CMD: DSE RECORD/LBR ATS PWR AMP - OFF			FINAL STOWAGE CHECKLIST
			SETUP CAMERA FOR FIREBALL PHOTOGRAPHY
	:20	:42	
	14:30	:52	CM RCS PREHEAT TERMINATION CONFIGURE PANEL CB'S
	:40	99:02	
UPLINK: CSM S. V. SPS TARGET LOAD UPDATE: DEORBIT BURN (FINAL PAD) FINAL ENTRY PAD	GDS		
	14:50	:12	

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	137-138

GET 223:30

MCC	CDT	PET	
CMD: ATS PWR AMP - ON	14:50	99:12	
		(11112) (01111)	
		REV 138	
			ACQ ATS HGA: MAN, WIDE P -38, Y 342 S-BD ANT IND >1/3 SCALE, HGA: REACQ, NARROW
	15:00	:22	CM RCS ACTIVATION
			PRE-SEP CHECKLIST
CMD: DSE DUMP	:10	99:32	CYCLE CMC MODE SWITCH - FREE - AUTO V48E, (11102) (01111) (LOAD WTS & TRIM VALVES) P30, VERIFY ADM TIG & ΔV P00, V62E
		(11102) (01111)	
			V49E, MNVR TO DEORBIT BURN PAD ATT
			SXT BORESIGHT STAR CK
	:20	:42	
			GO TO SPS BURN-ENTRY CUE CARD (DUAL BANK)
	15:30	:52	
			P40
			ADM = 100:00 PET
	:40	100:00	V66E CM RCS CK YAW TO CM/SM SEP ATT
CMD: ATS PWR AMP - OFF			
CMD: DSE RECORD/LBR			CM/SM SEP
			YAW BACK TO 0° EMS INITIALIZATION PITCH TO 0.05G ATT
CMD: DSE RECORD/HBR UPDATE: ENTRY PAD (FINAL)	:50	:12	
	16:00	:22	
	:10	100:32	
	16:20	225:00	SPLASHDOWN = 100:40:33 PET 16:18 CDT

GDS
SP1
NFL
MAD
ATS
ORR

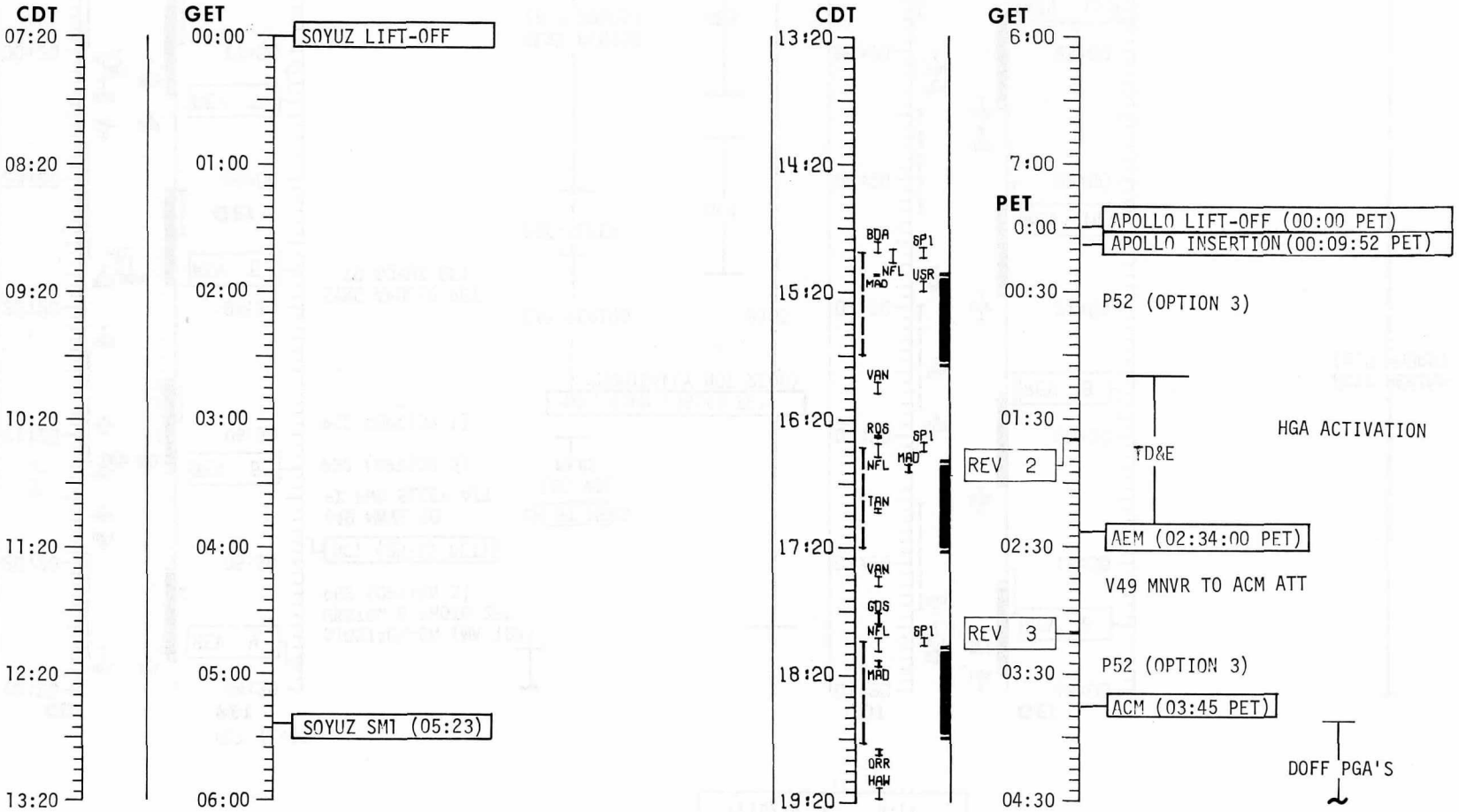
ENTRY SEQUENCE

100:20:14 - EI
100:25:10 - .05G
100:26:03 - S-BD BLACKOUT BEGINS
100:26:28 - P67
100:31:12 - EXIT S-BD BLACKOUT
100:35:05 - DROGUE CHUTE DEPLOY
100:35:48 - MAIN CHUTE DEPLOY
100:40:33 - SPLASHDOWN

SECTION 5 - SUMMARY FLIGHT PLAN

SUMMARY FLIGHT PLAN

DATE	REV
7/15/75	0-3

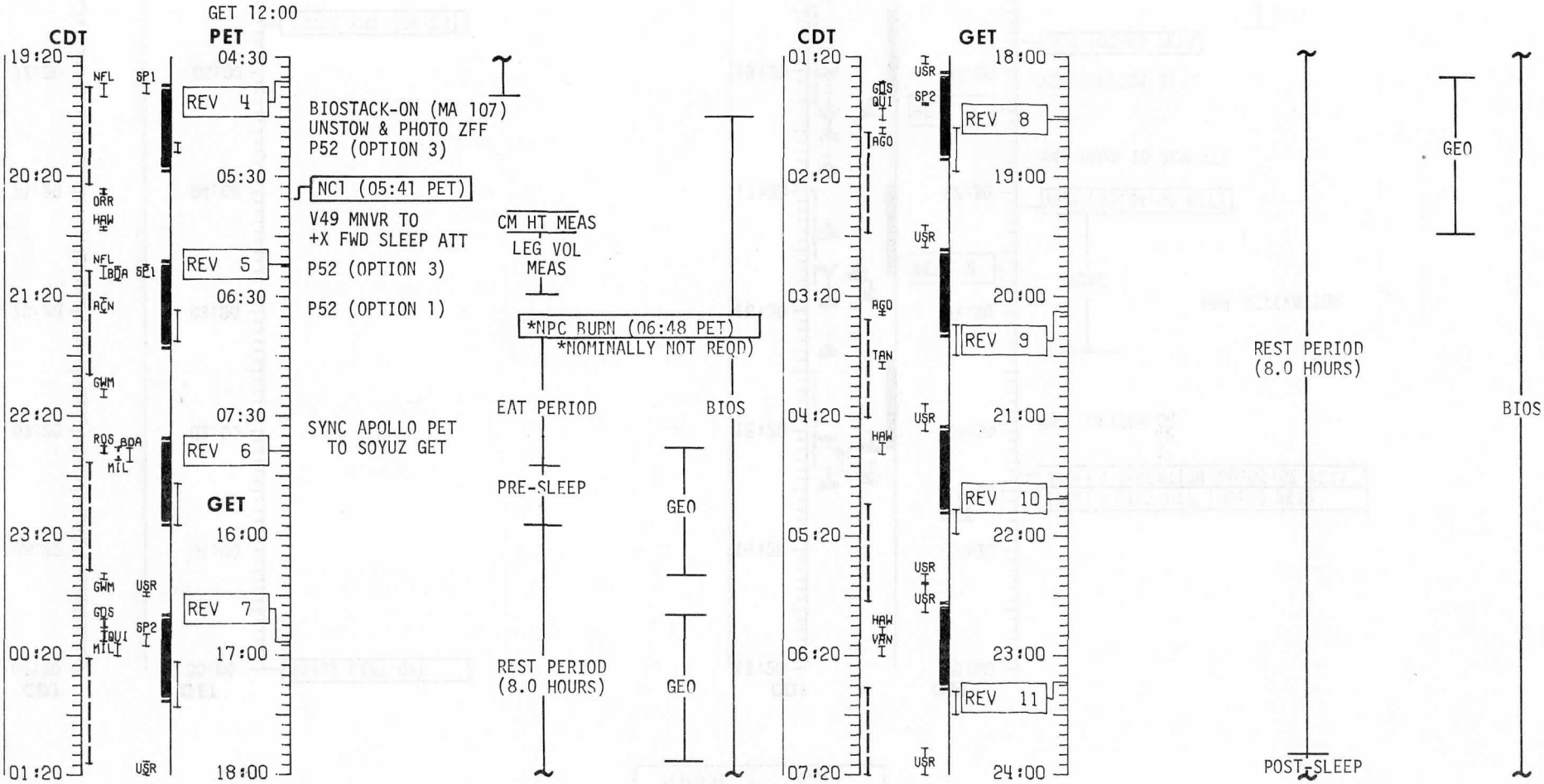


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-1

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/15/75	3-11

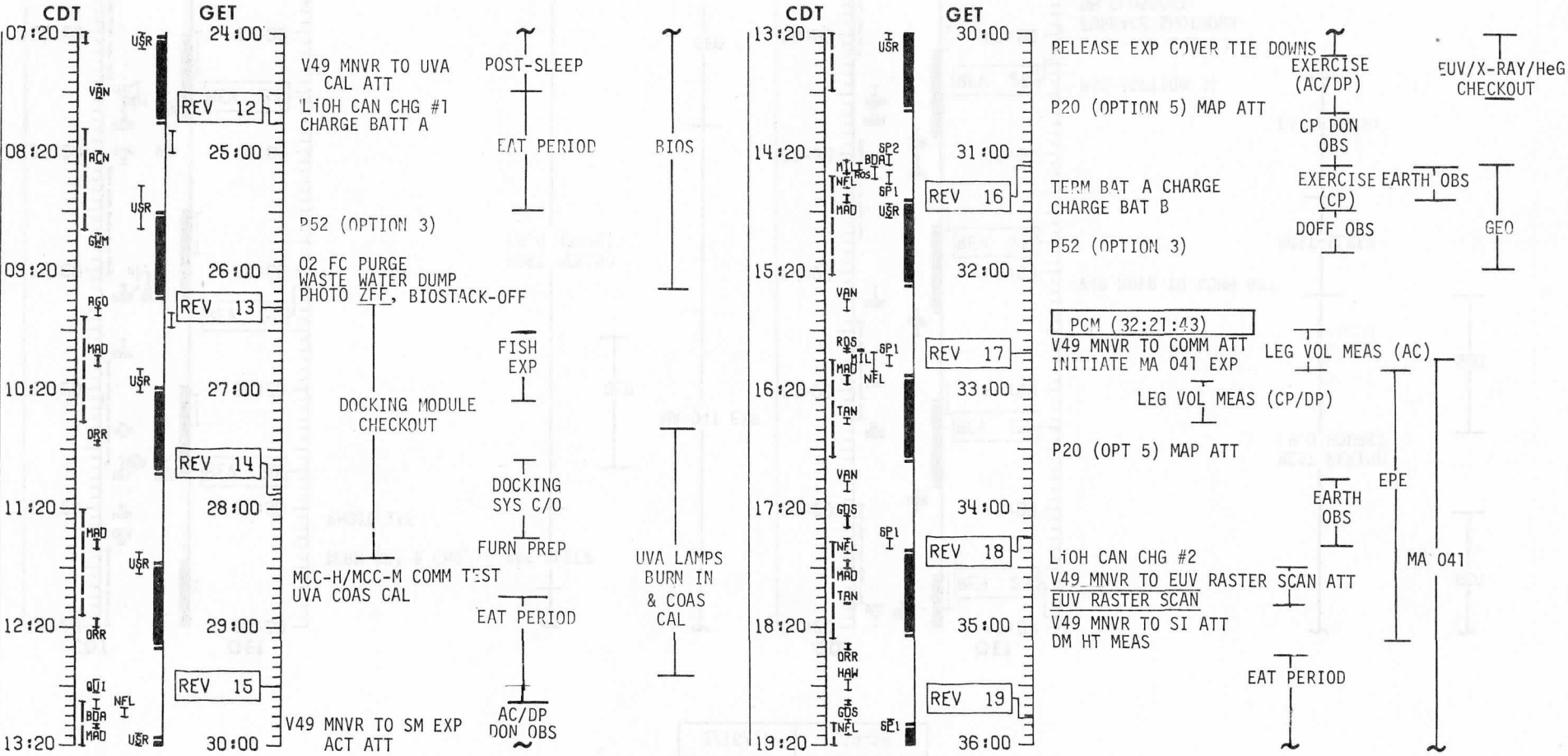


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-2

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

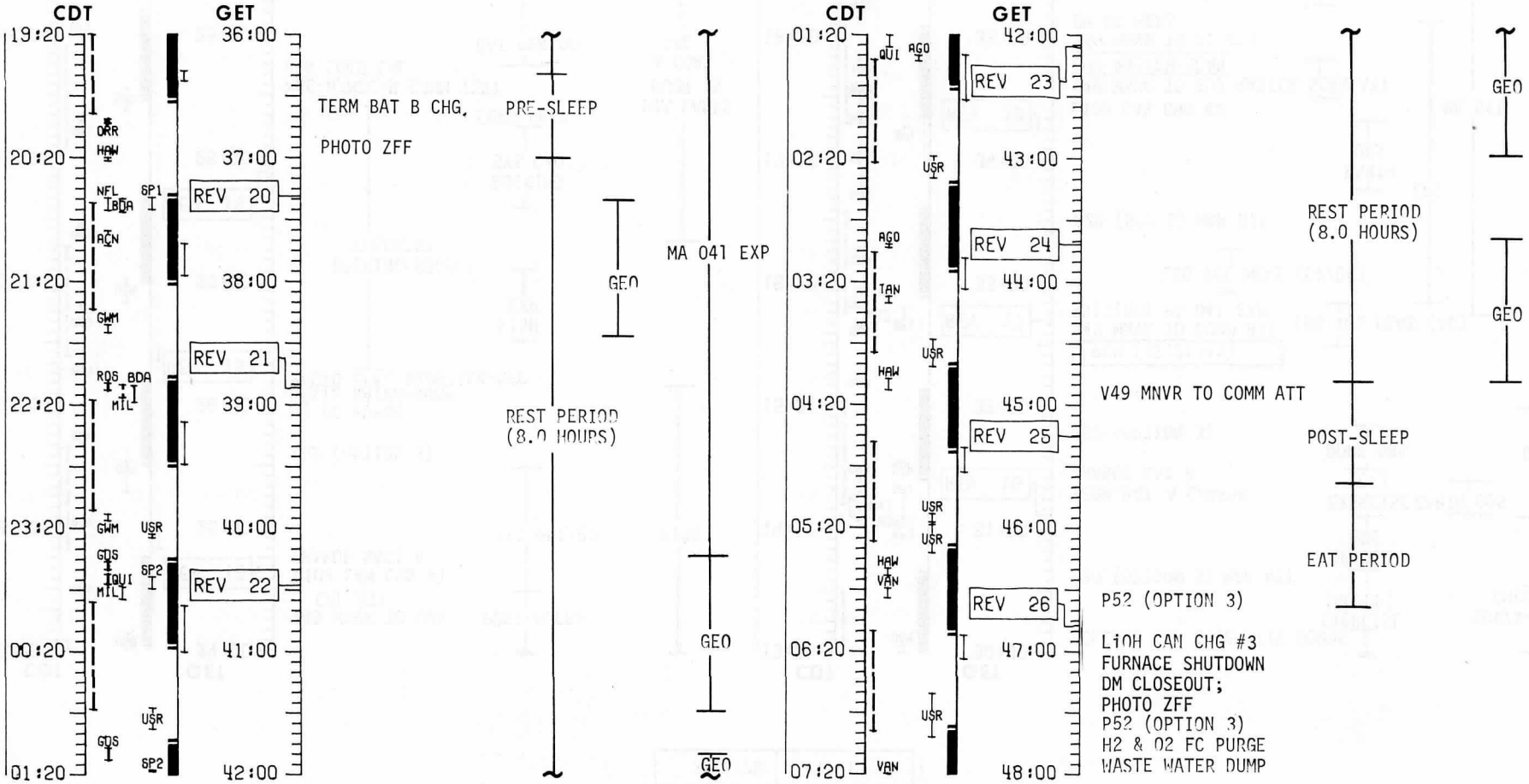
DATE	REV
7/16/75	11-19



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-3

SUMMARY FLIGHT PLAN

DATE	REV
7/16/75	19-26



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-4

FLIGHT PLANNING BRANCH

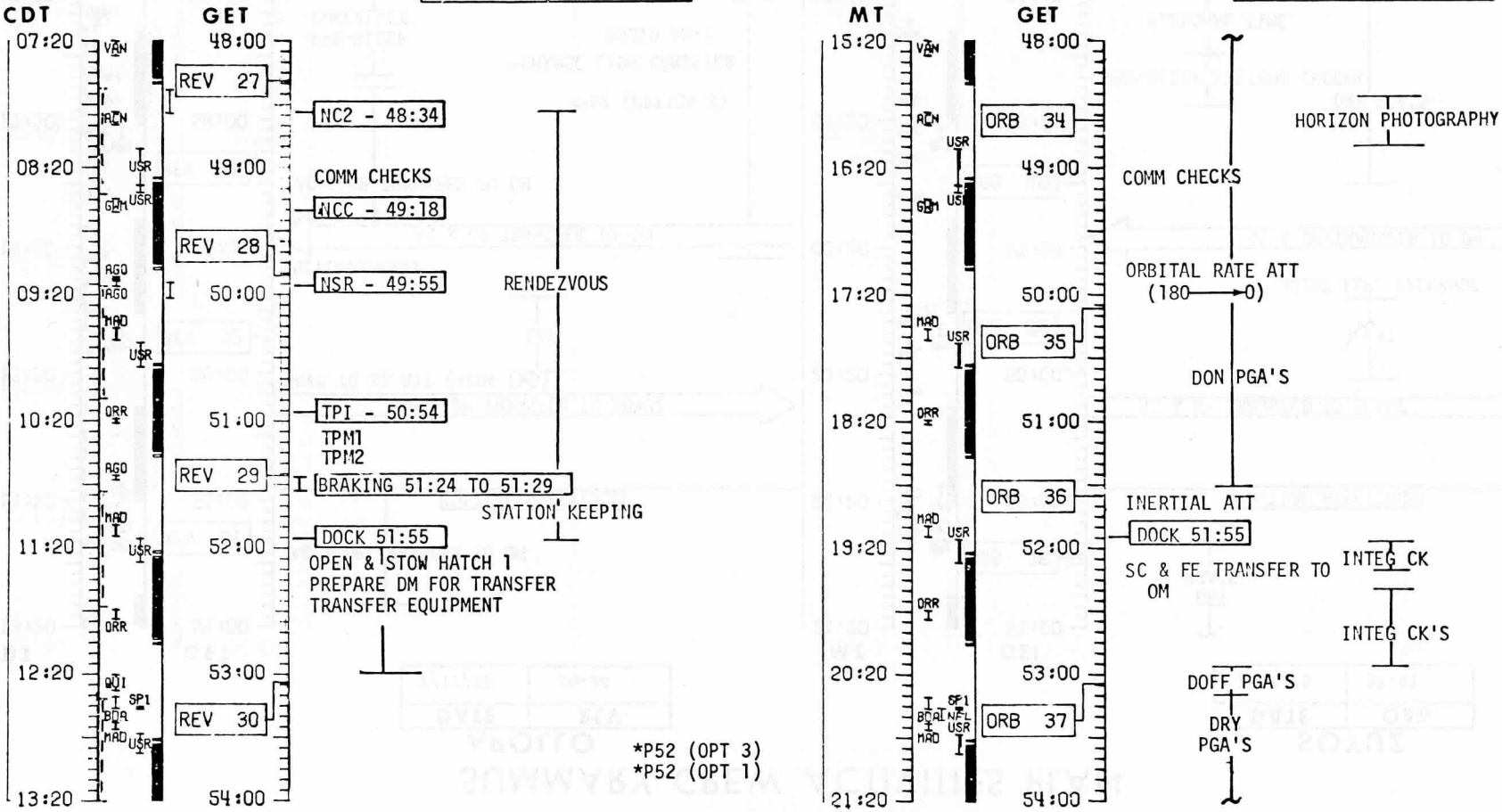
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/17/75	26-30

SOYUZ

DATE	ORB
7/17/75	33-37



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-5

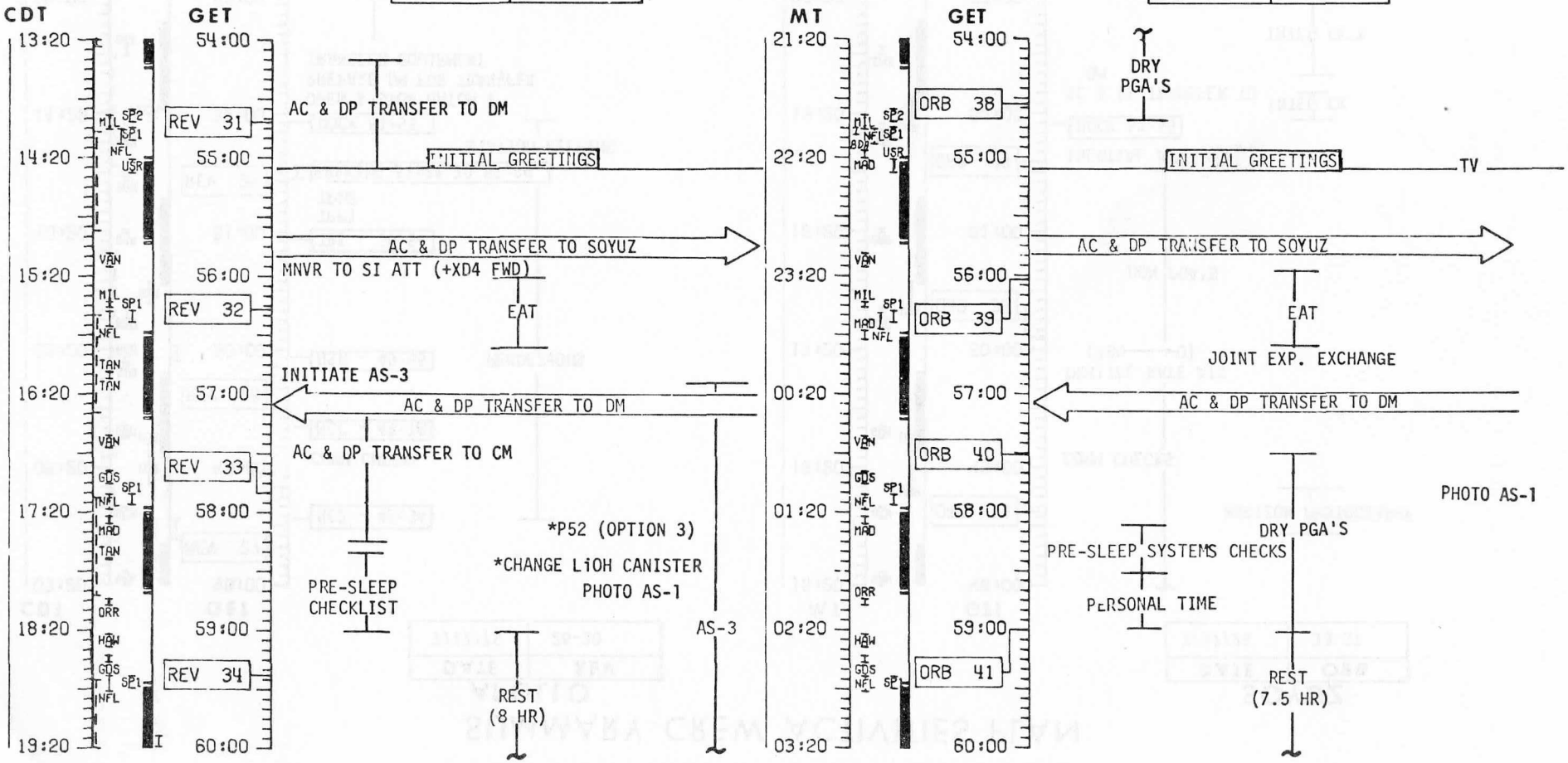
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/17/75	30-34

SOYUZ

DATE	ORB
7/17/75	37-41



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-6

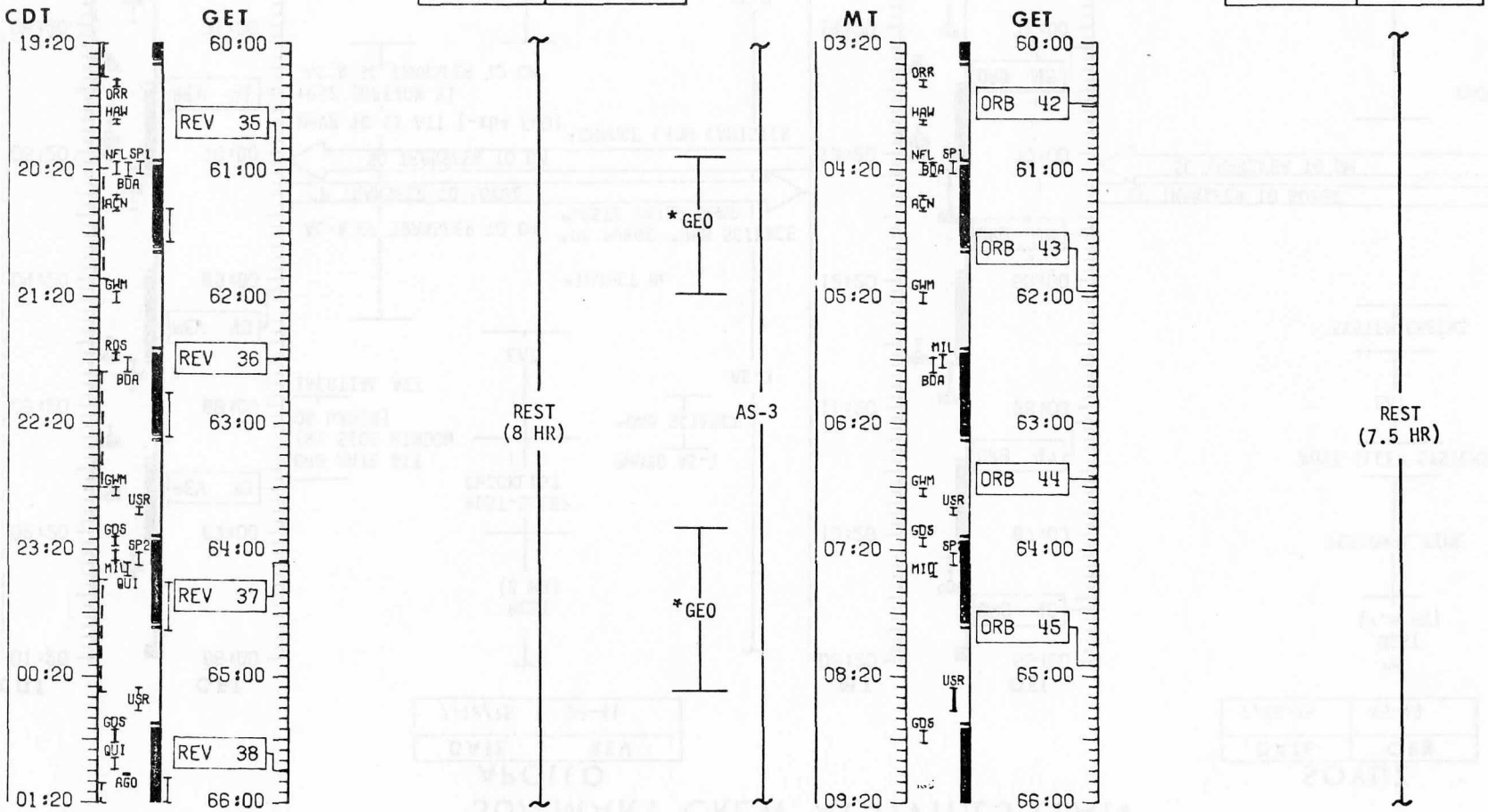
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/17/75	34-38

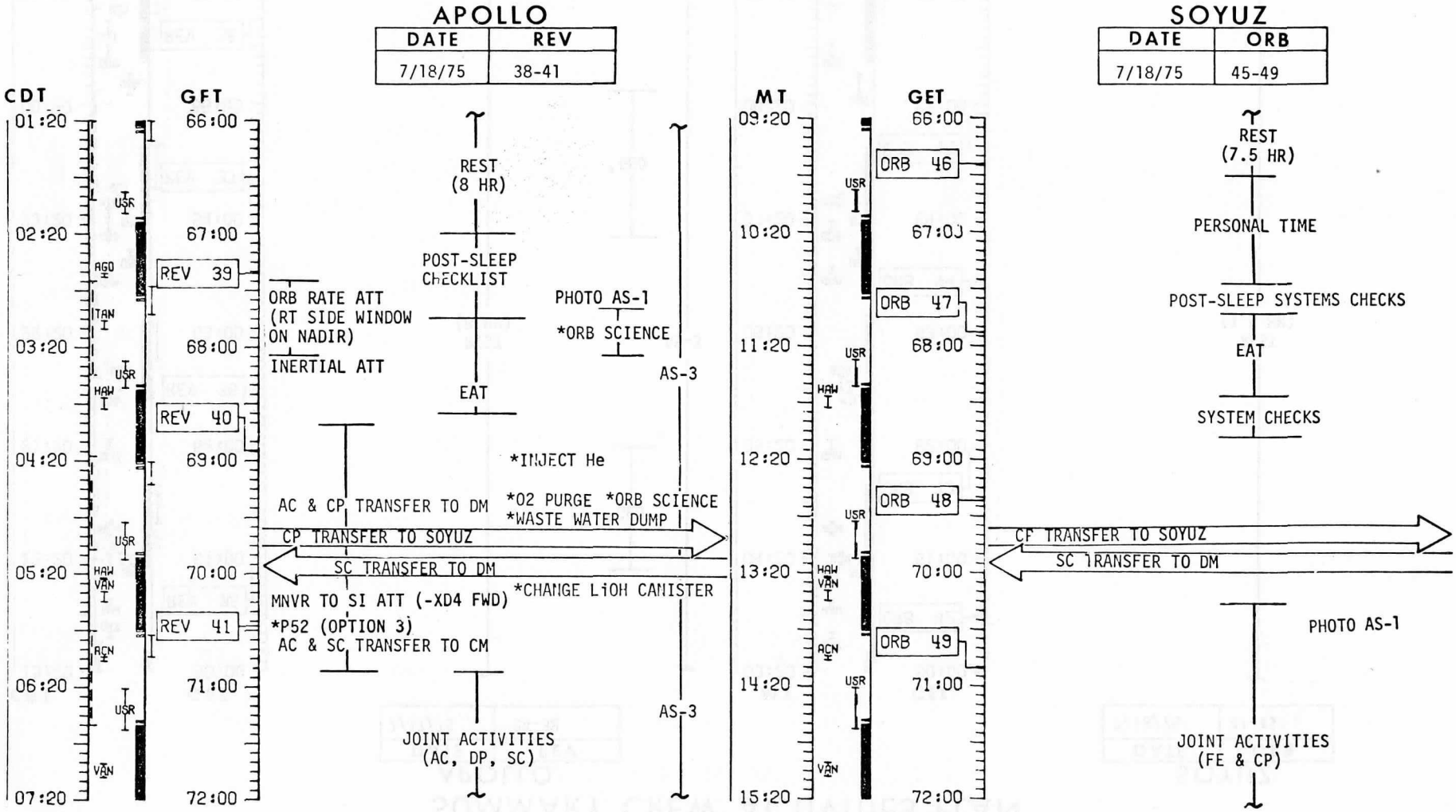
SOYUZ

DATE	ORB
7/18/75	41-45



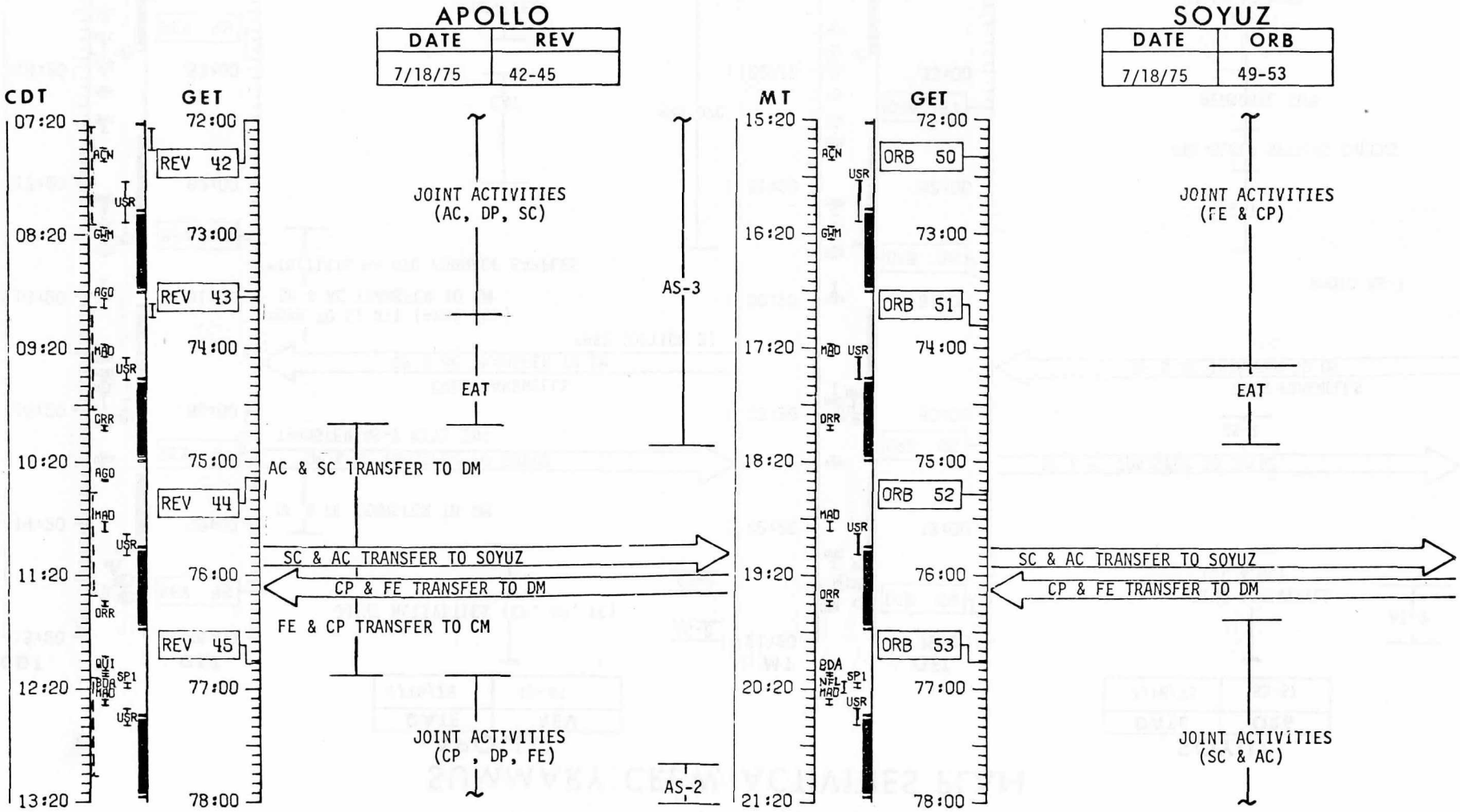
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-7

SUMMARY CREW ACTIVITIES PLAN



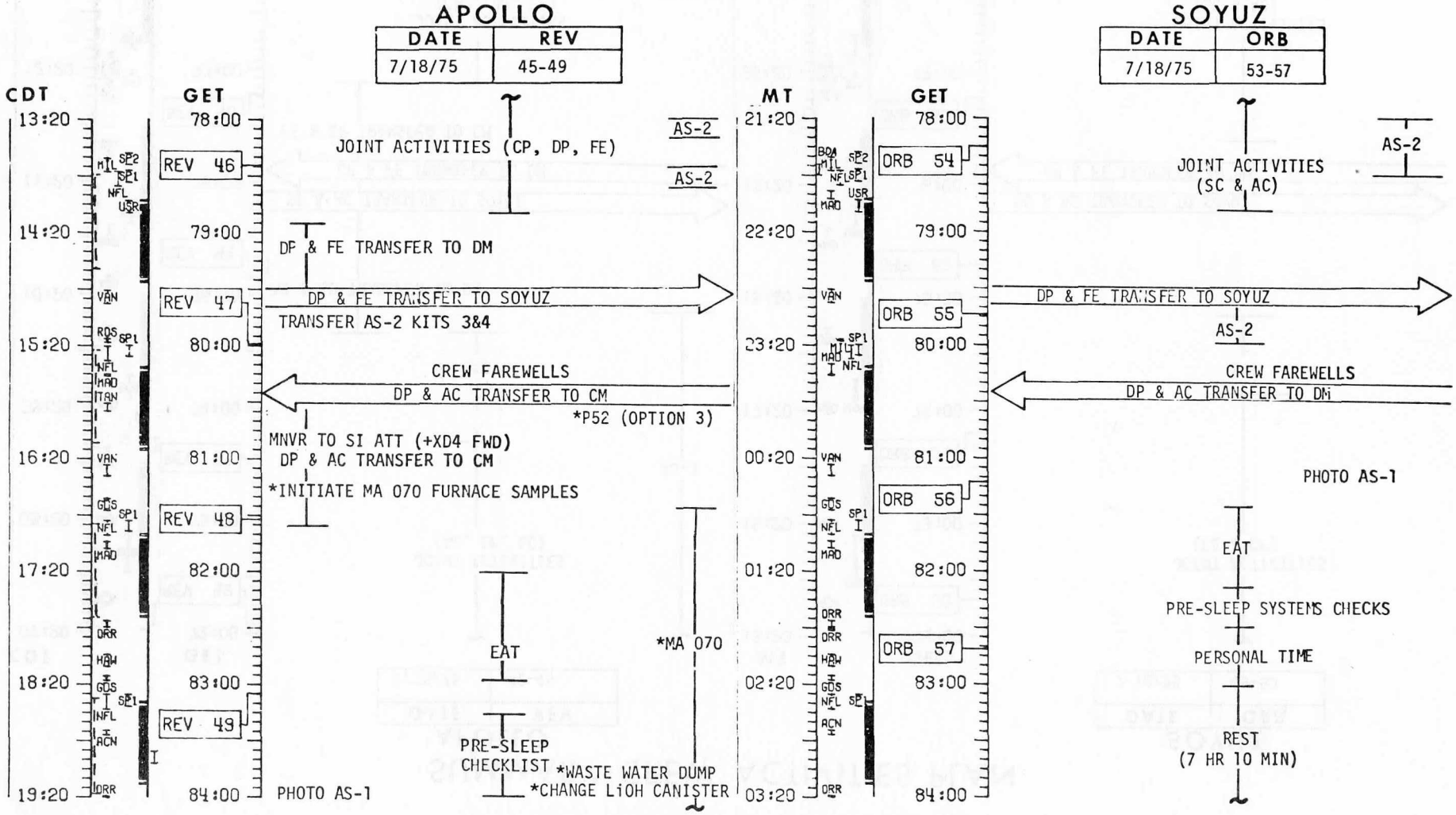
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-8

SUMMARY CREW ACTIVITIES PLAN



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-9

SUMMARY CREW ACTIVITIES PLAN



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-10

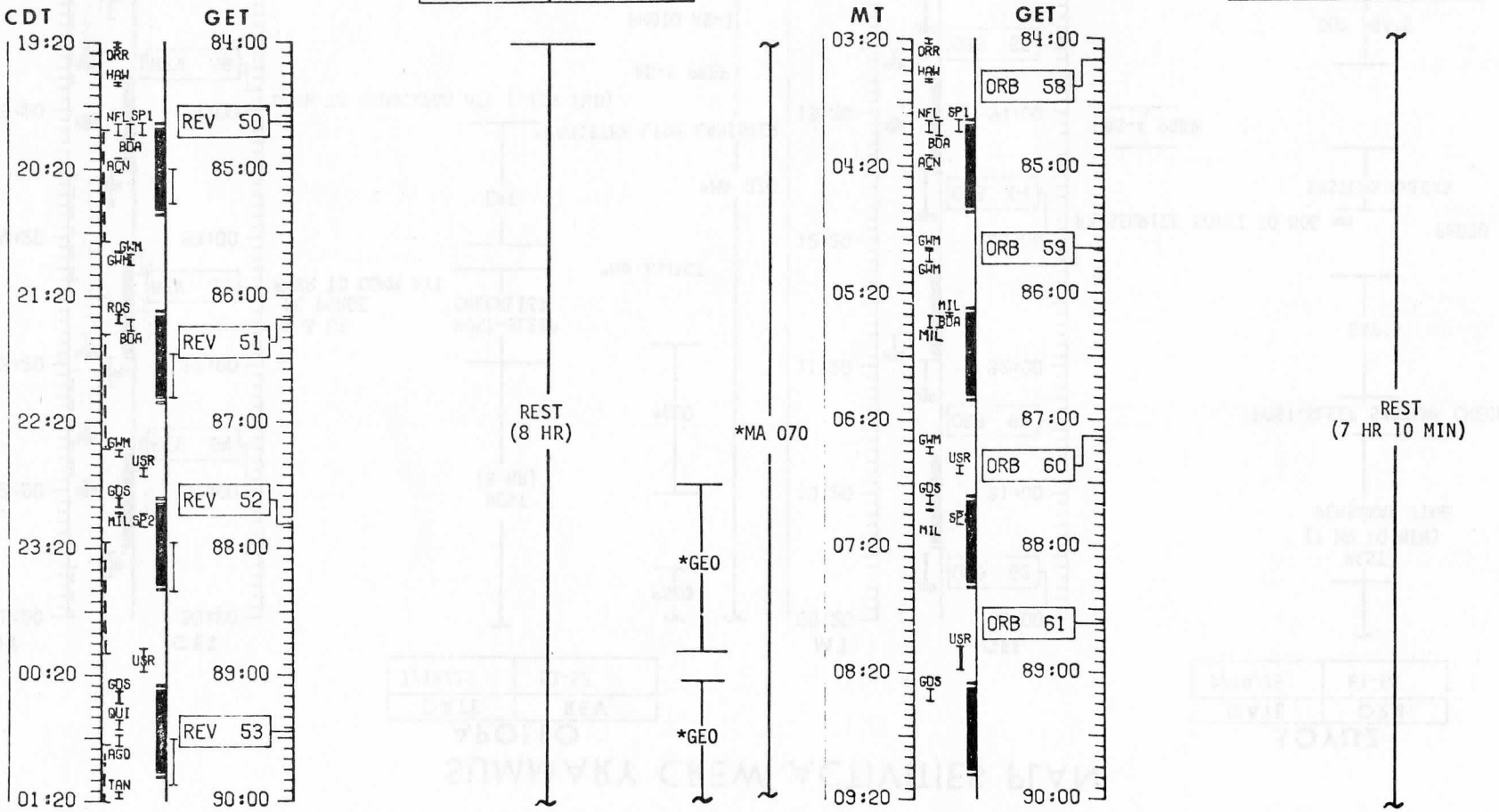
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/18/75	49-53

SOYUZ

DATE	ORB
7/19/75	57-61



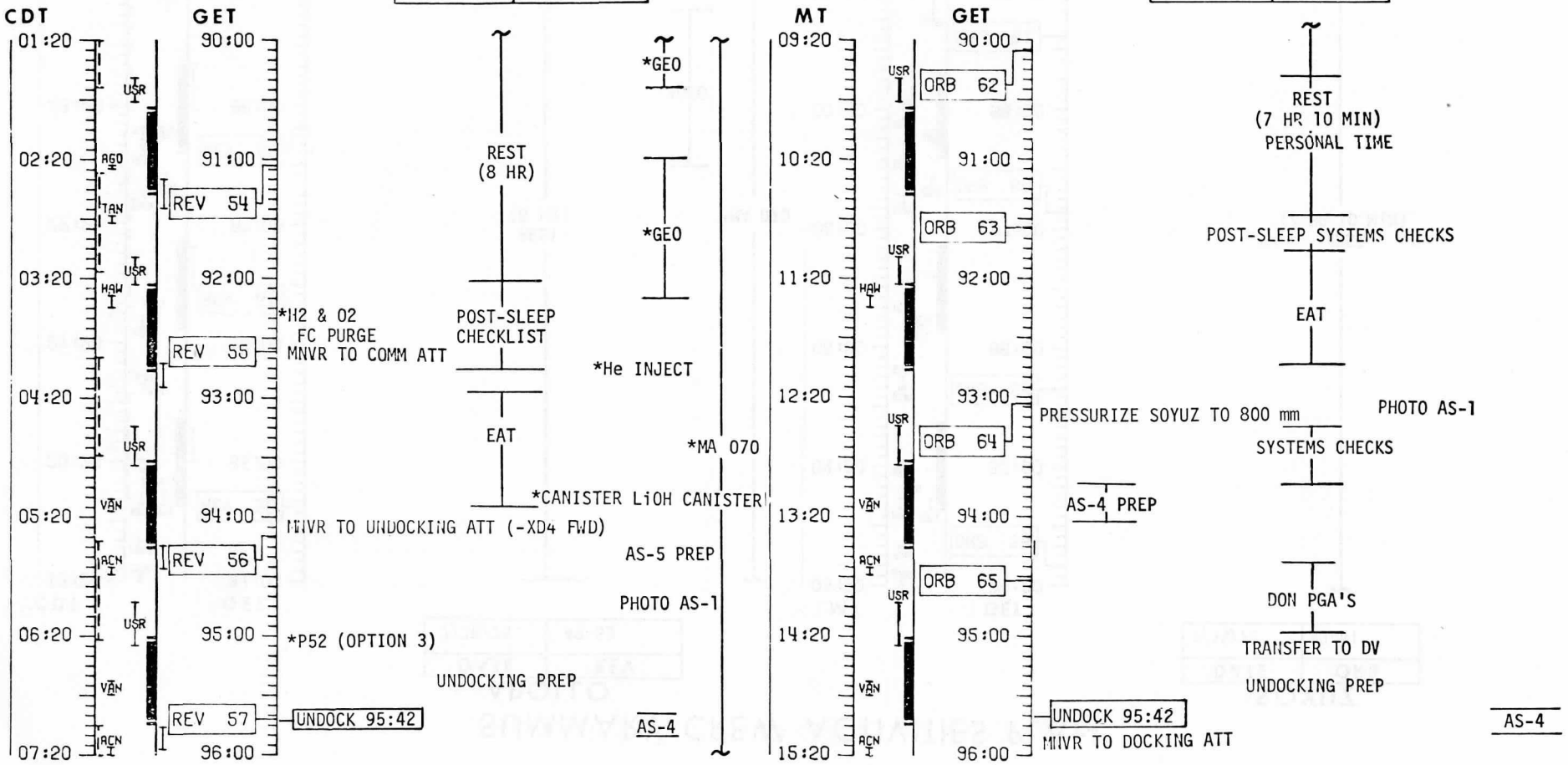
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/18/75	53-57

SOYUZ

DATE	ORB
7/19/75	61-65



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-12

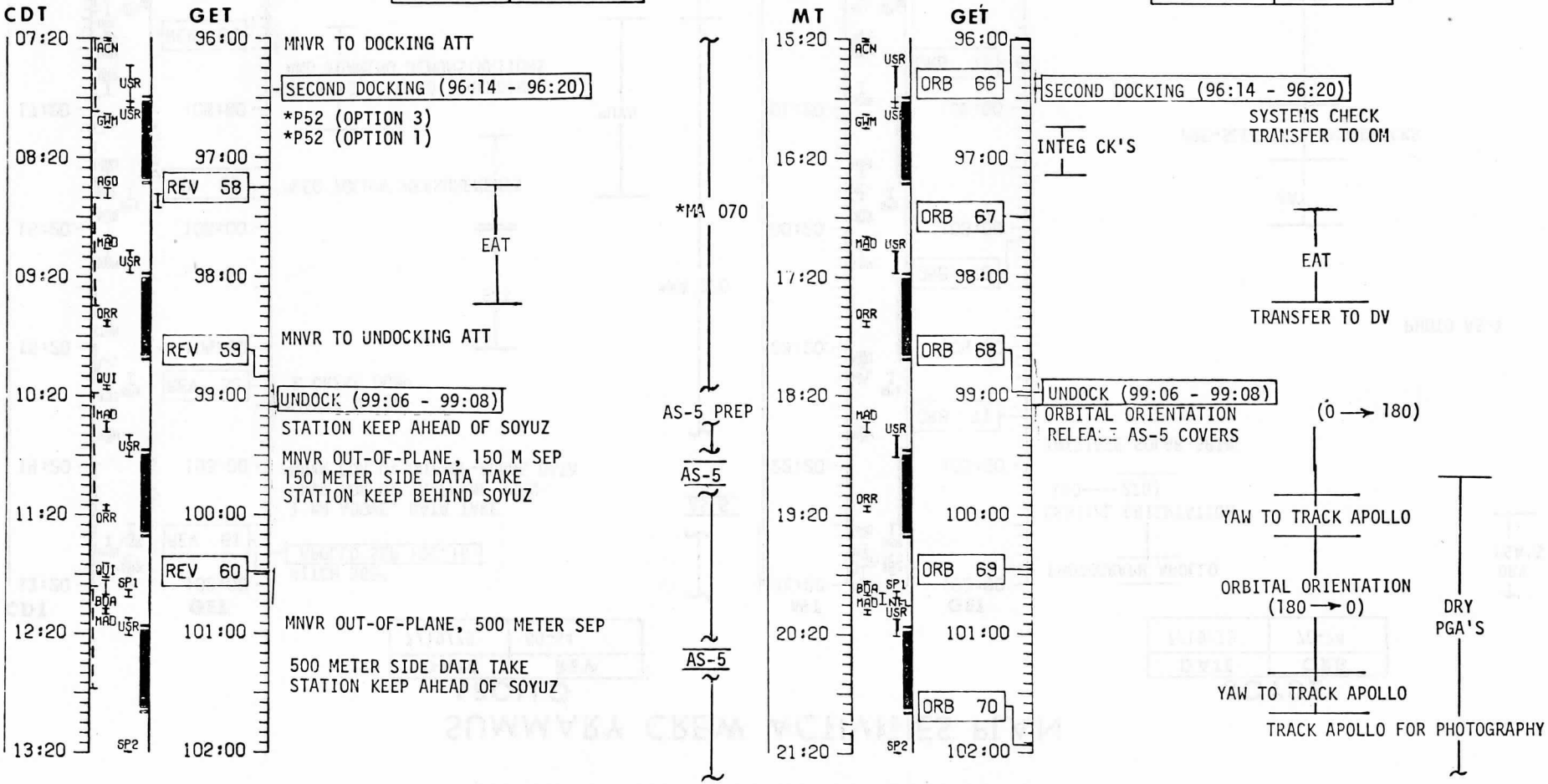
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/19/75	57-60

SOYUZ

DATE	ORB
7/19/75	65-70



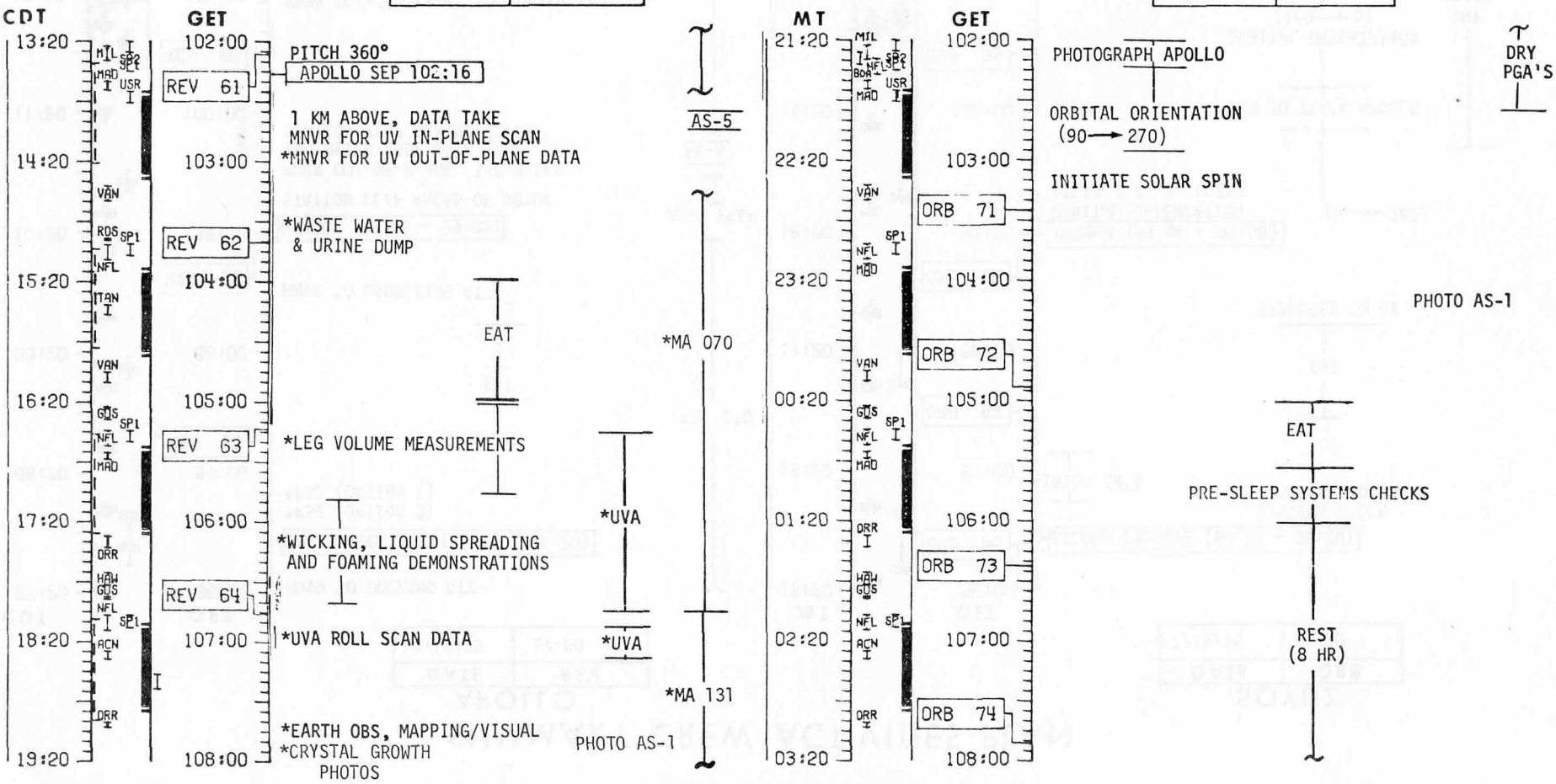
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/19/75	60-64

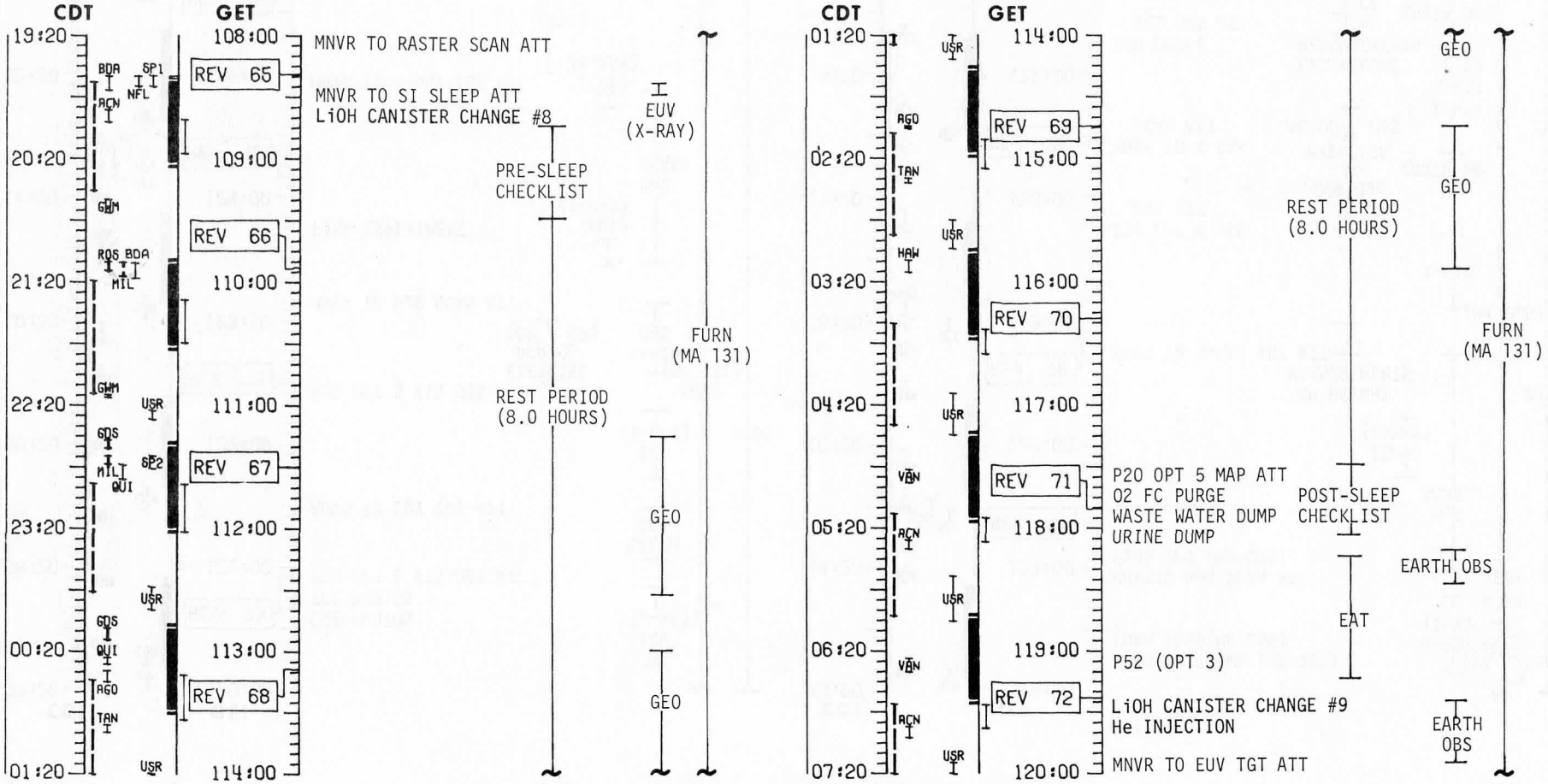
SOYUZ

DATE	ORB
7/19/75	70-74



SUMMARY FLIGHT PLAN

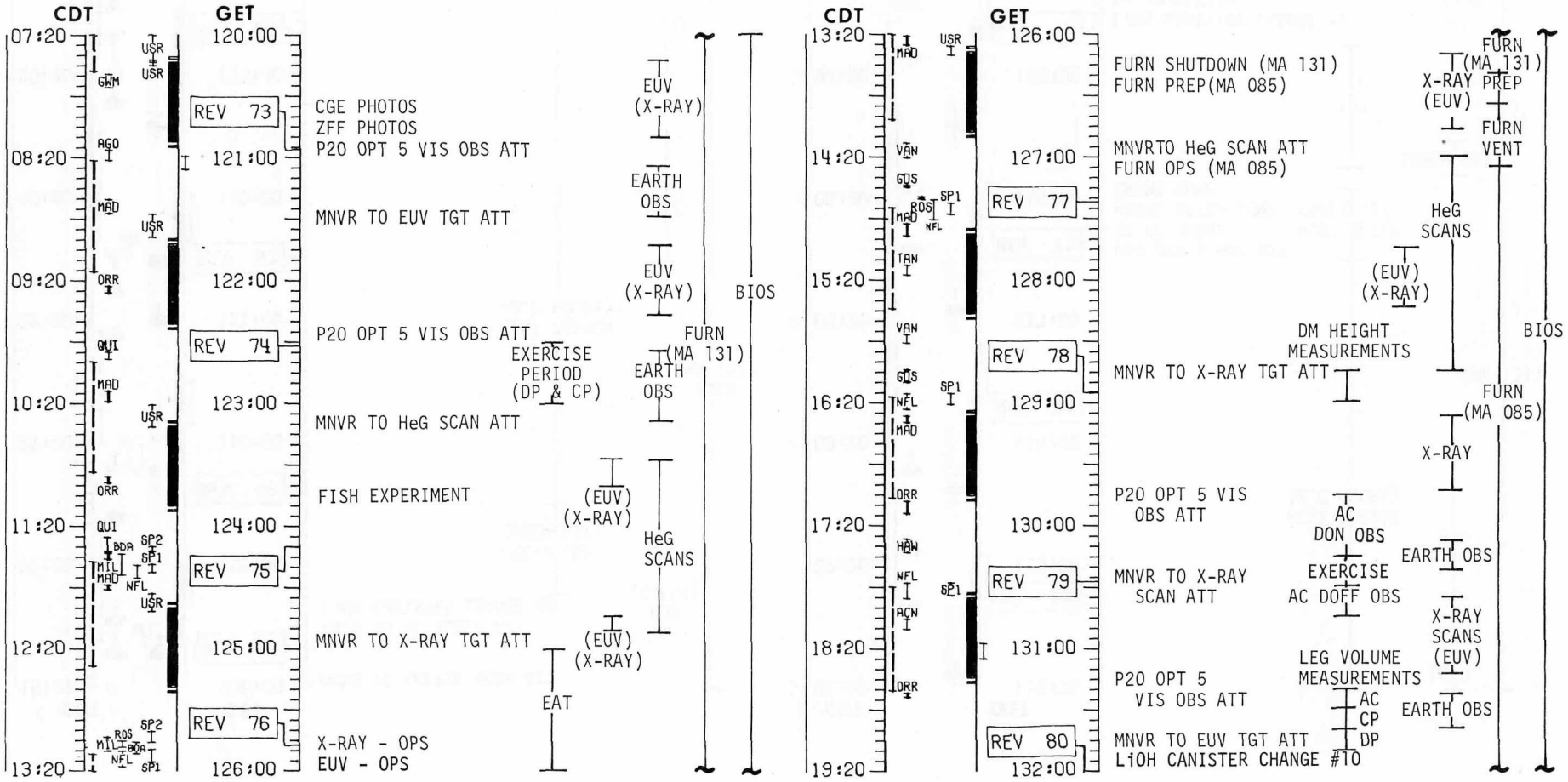
DATE	REV
7/19/75	64-72



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-15

SUMMARY FLIGHT PLAN

DATE	REV
7/20/75	72-79

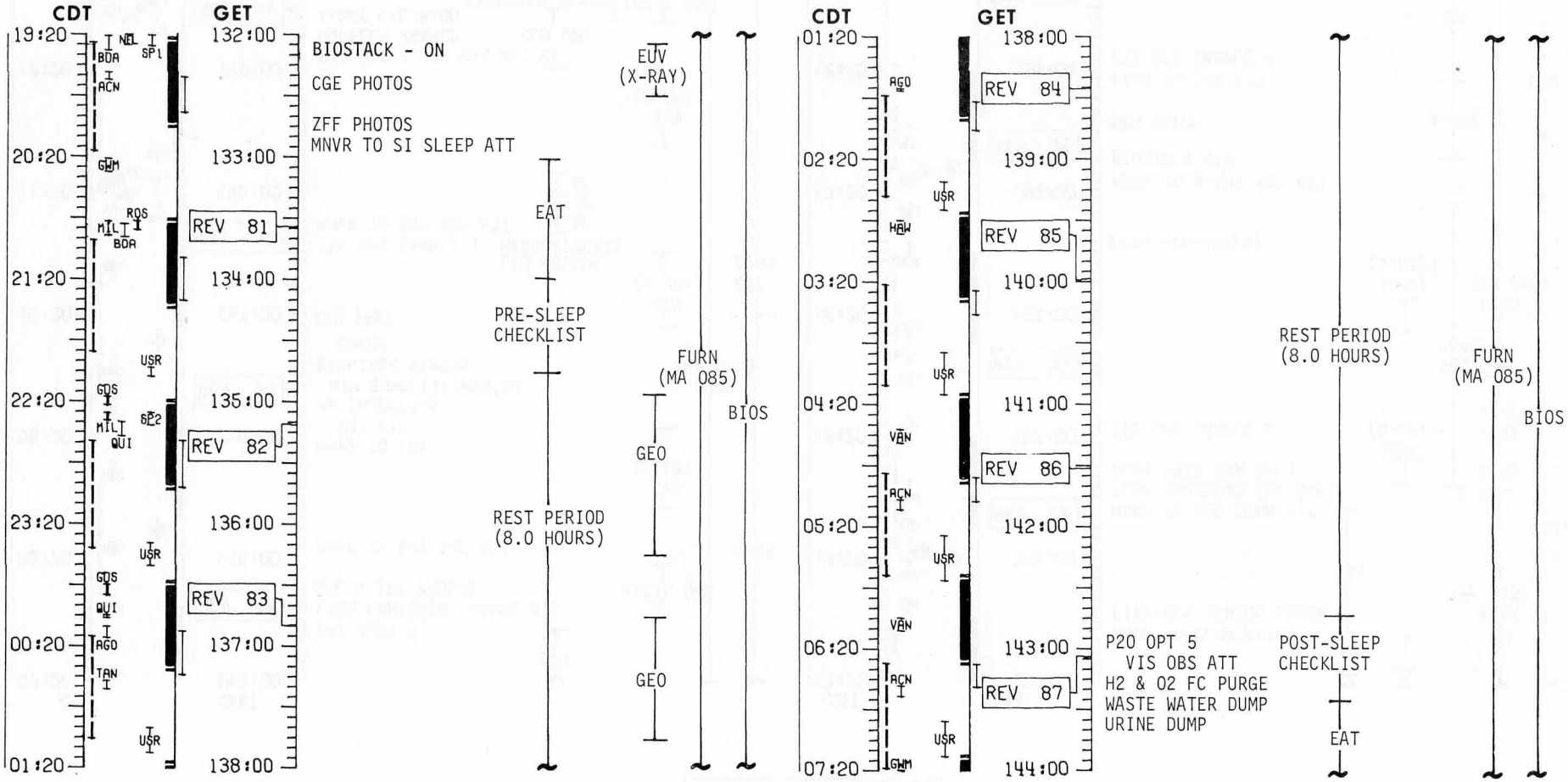


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-16

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/20/75	80-87

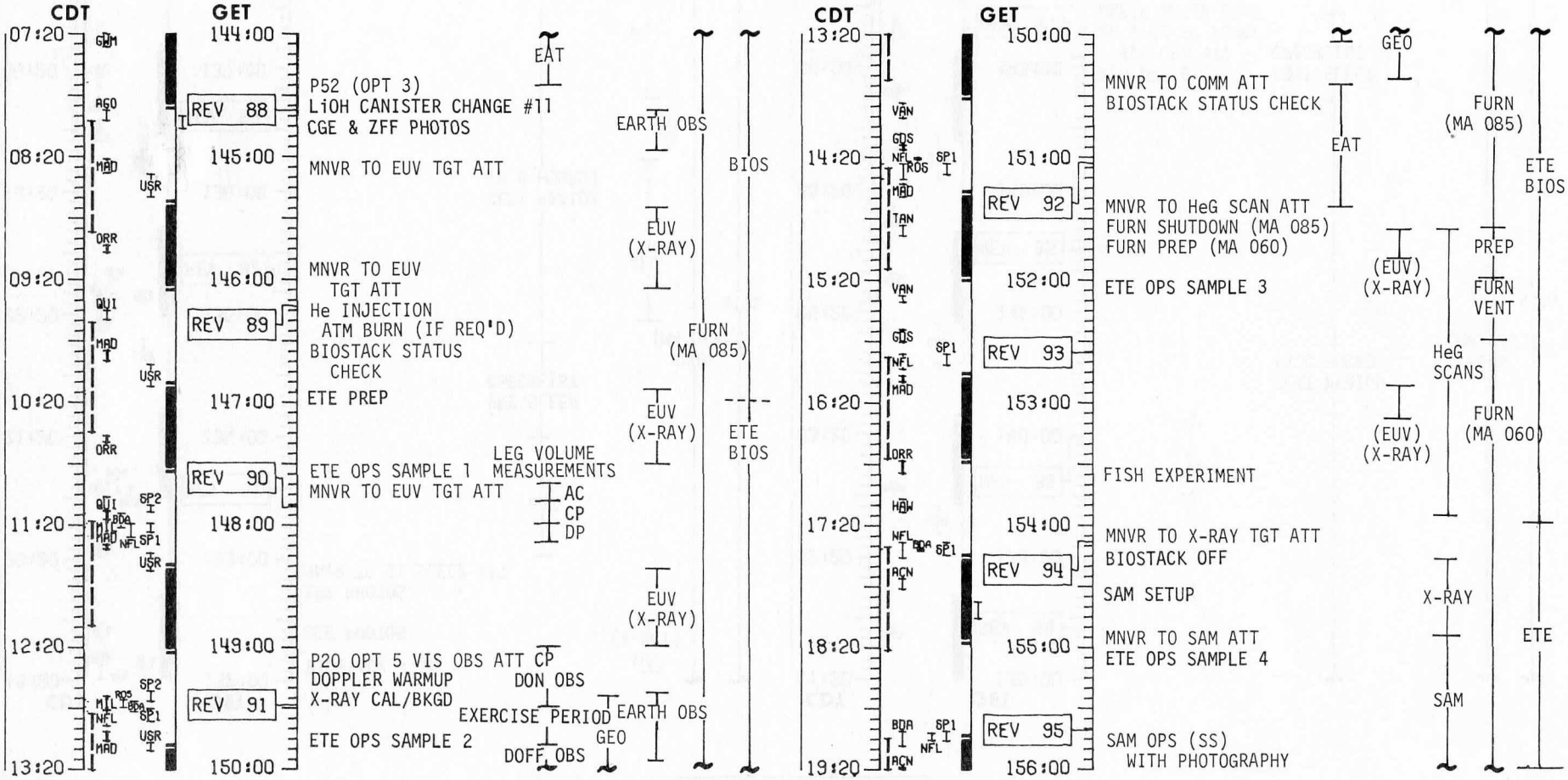


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-17

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/21/75	87-95

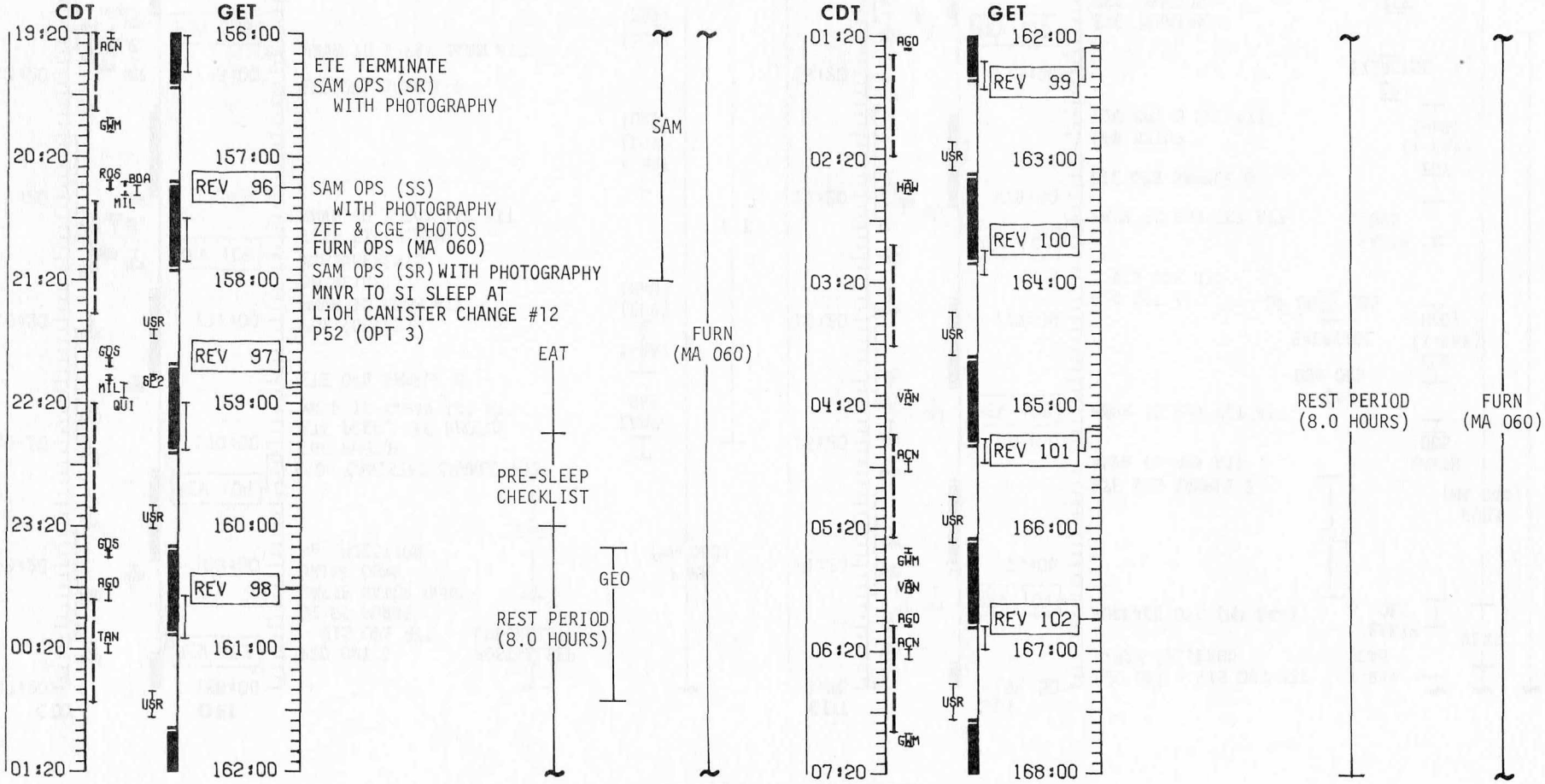


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	5-18

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/21/75	92-102

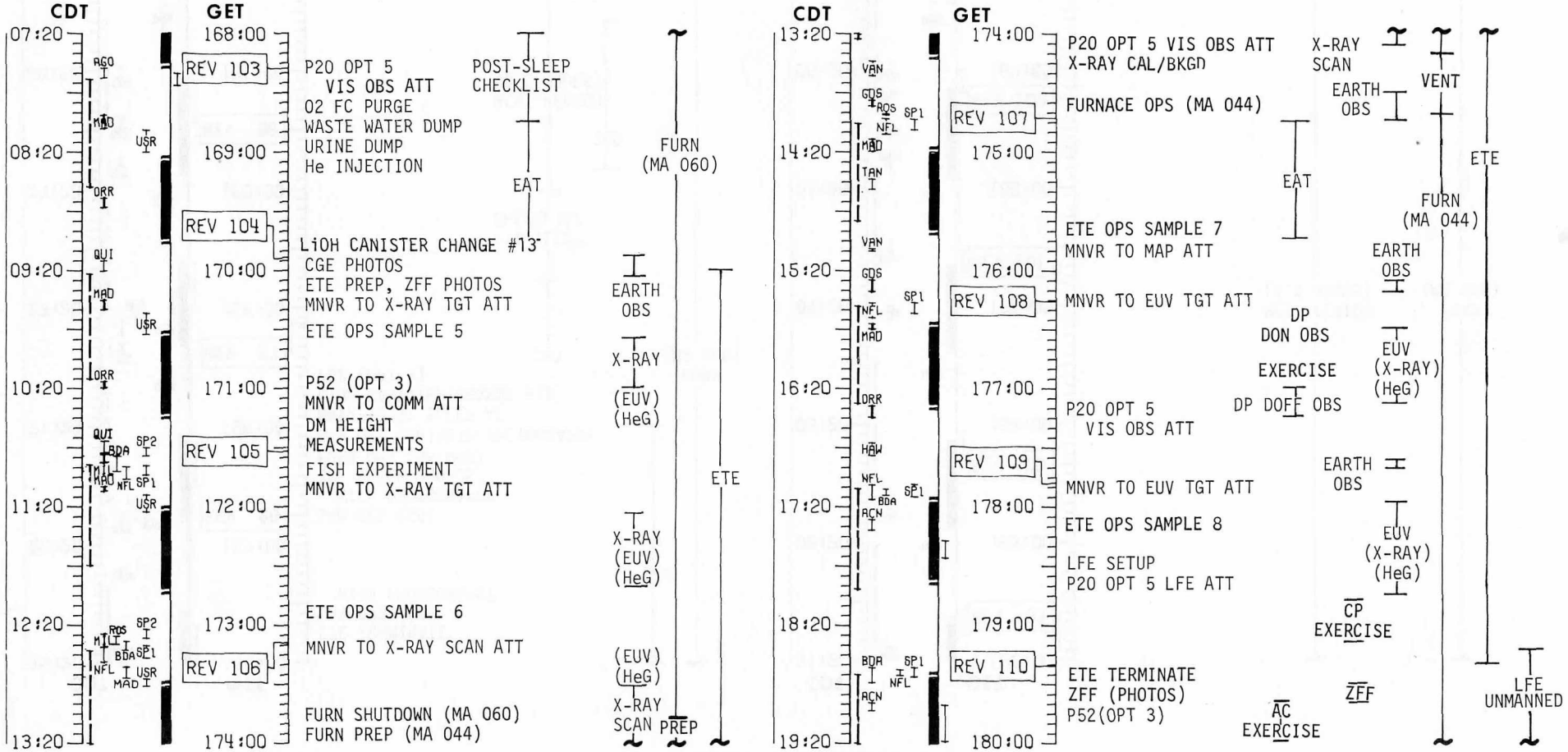


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-19

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/22/75	102-110

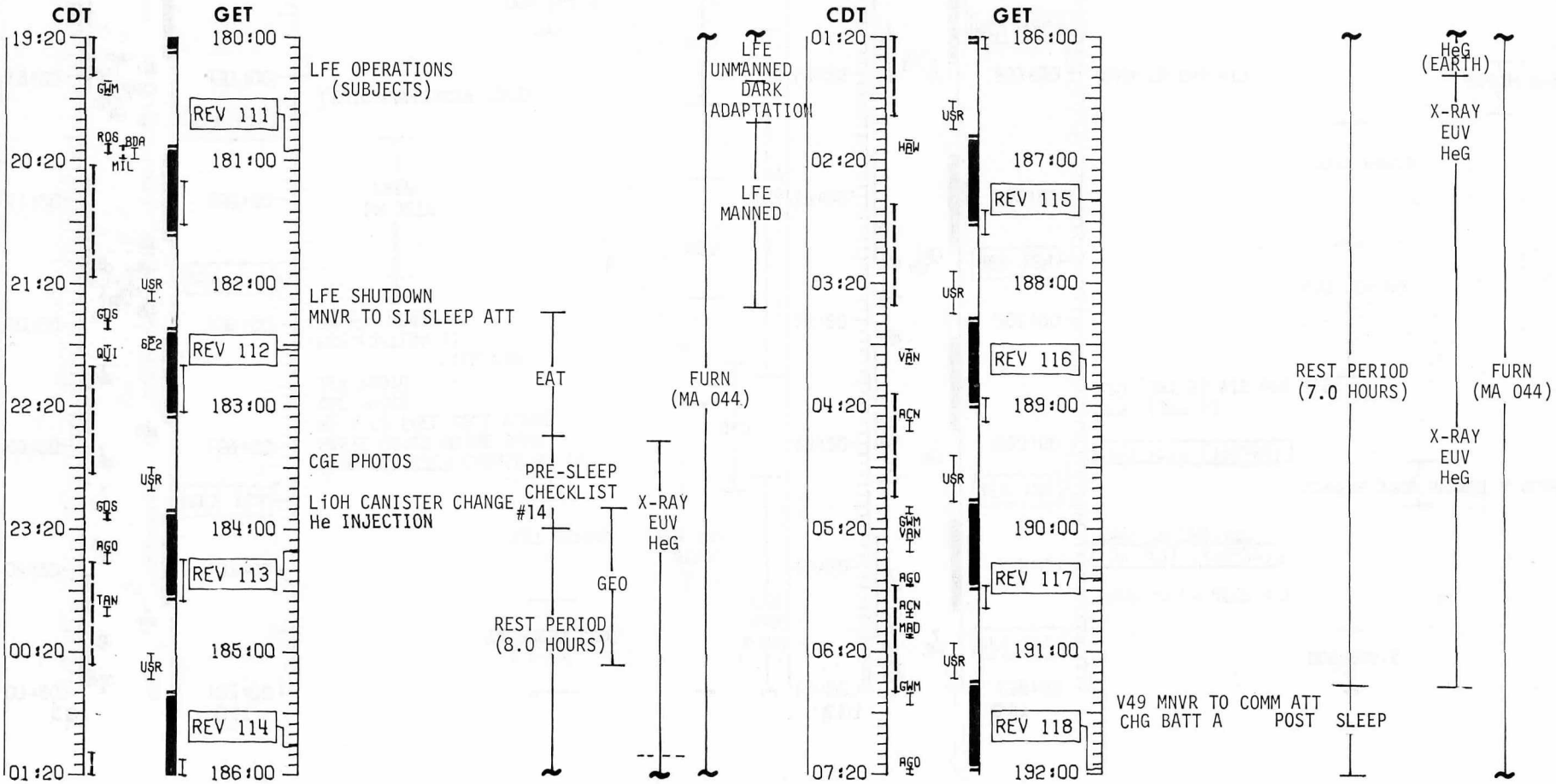


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	REVISION A	JUNE 18, 1975	5-20

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/22/75	110-117

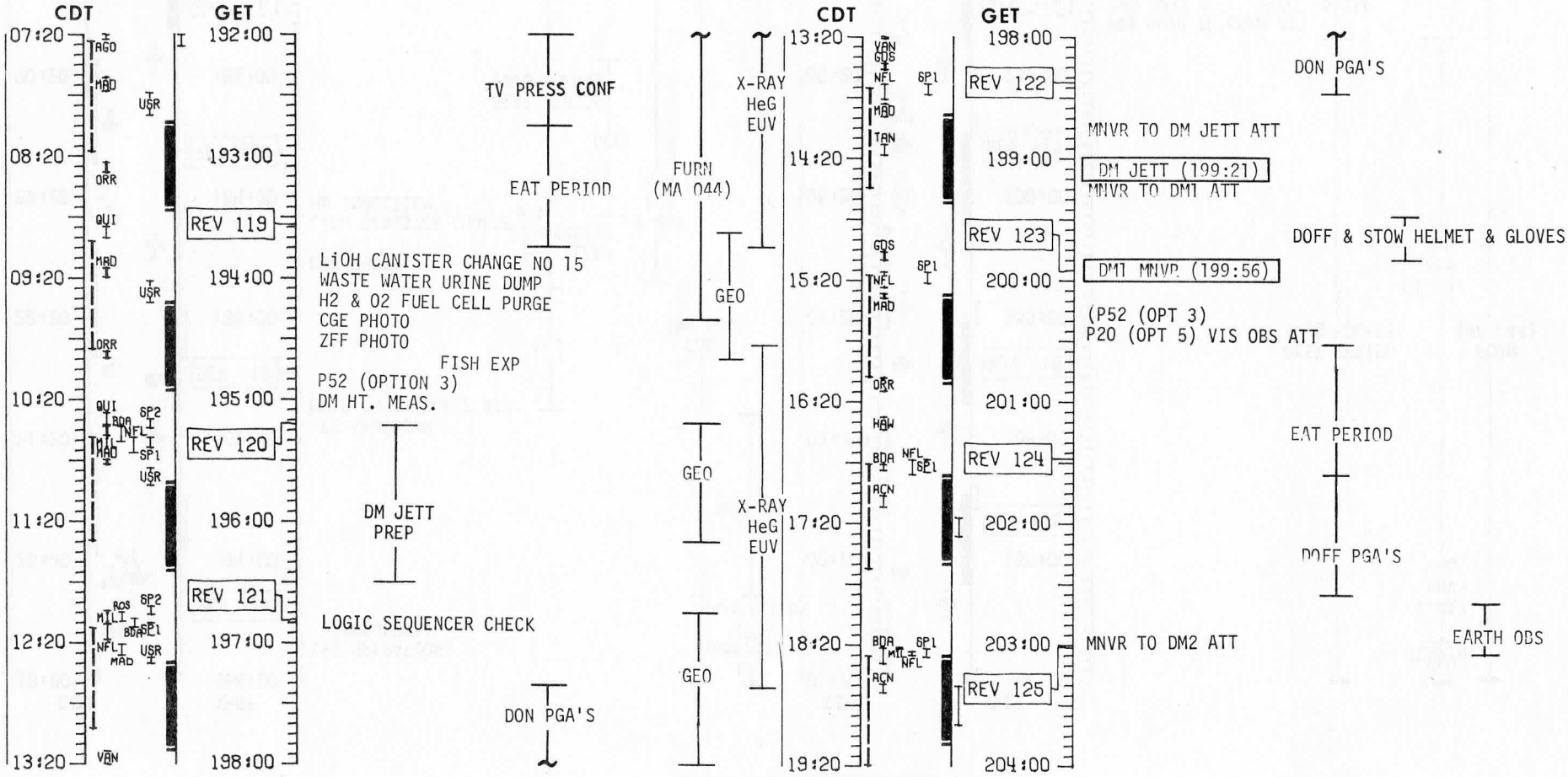


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-21

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/23/75	117-125

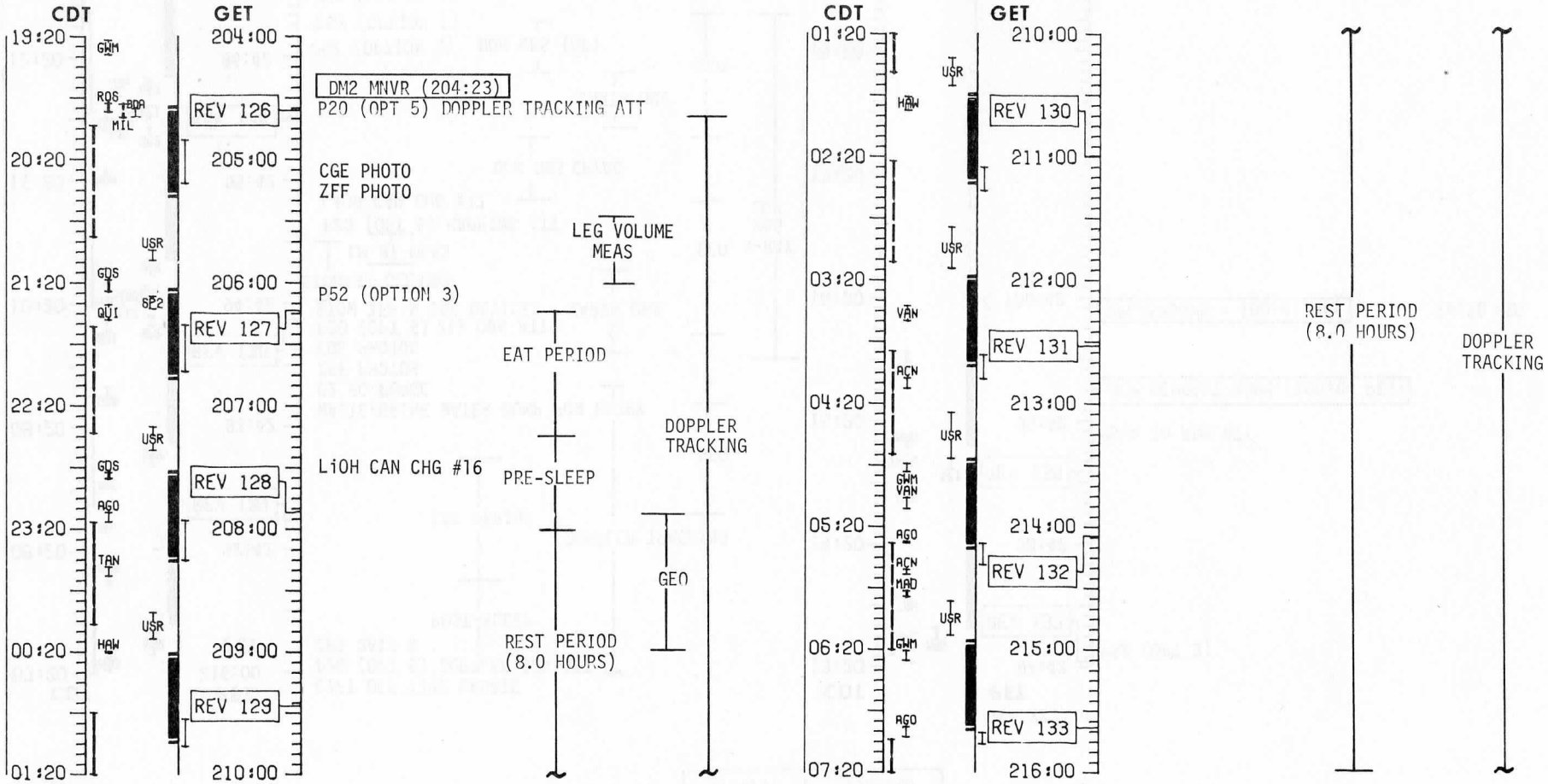


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-22

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/23/75	125-133

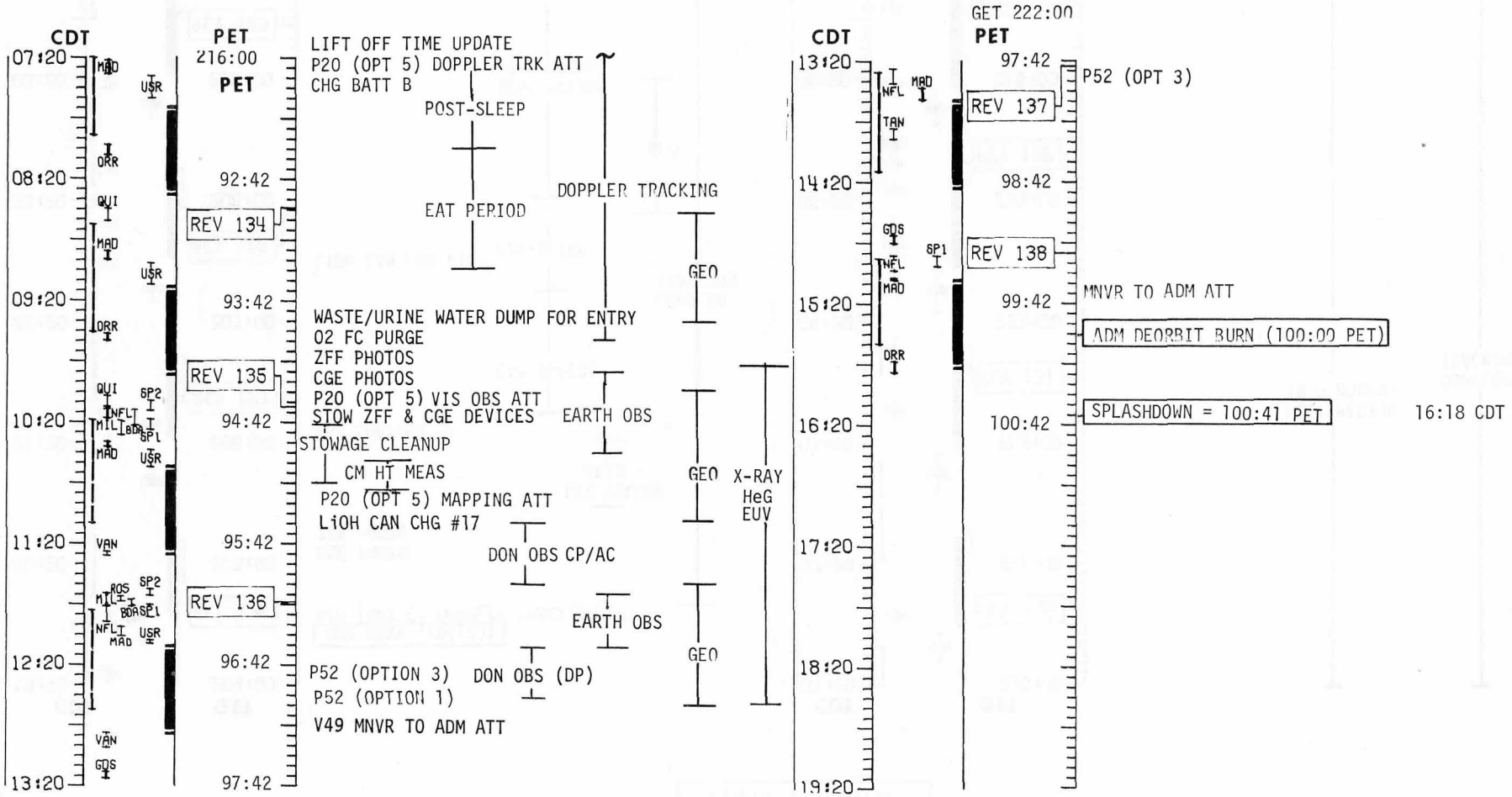


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-23

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/24/75	133-140



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-24

FLIGHT PLANNING BRANCH

SECTION 6 - ASTRONOMY EXPERIMENT PADS

EUV PAD - REV 72

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___:___:___					
SET DET				COUNTING UP TO 120 14 16 (SS)					
35:00				X-RAY CAL/BACKGROUND (CUE CARD) (THRU ATS)	16	255			
41:00	248.40	250.10	000				11:33		357A
55:00				X-RAY, EUV - OPS					
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET				1:00	357A
1:00	245.40						:15	1:45	357
3:00	242.40	---	---				:15	1:00	357B
4:15	245.40						:15	2:00	357
6:30	248.40	---	---				:15		357A
6:45				V21N46E (61102), V46E				1:00	
7:45	287.80	187.50	---				2:30		198A
10:15				V21N46E (61101), V46E				1:10	
11:25	290.80	---	---				:15	2:30	198
14:10	293.80	---	---				:15		198B
14:25				V21N46E (61102), V46E				1:15	
15:40	297.30	149.20	---				1:22		356A
17:02				V21N46E (61101), V46E				1:00	
18:02	294.30	---	---				:15	2:15	356
20:32	291.30	---	---				:15	1:55	356B
22:42	294.30	---	---				:15	2:15	356
25:12	297.30	---	---				:15		356A
25:27				V21N46E (61102), V46E				1:00	
26:27	294.20	092.70	050.00				2:32		340A
(CON'T)									

EUV PAD - REV 72 (CON'T)

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
28:59				V21N46E (61101), V46E				1:00	
29:59	291.20	---	---				:15	2:00	340
32:14	288.20	---	---				:15	1:00	340B
33:29	291.20	---	---				:15	2:00	340
35:44	294.20	---	---				:15	1:00	340A
36:59				DSE: STOP/REWIND/CMD RESET					
				EUV, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				COUNTING UP TO 121 43 08 (SS)					
45:00	192.20	112.20	000				5:08		354A
55:00				X-RAY, EUV - OPS					
0:00	---	---	---	V21N46E (61101), V46E	19	279	---	1:00	354A
1:00	189.20	---	---		23	280	:15	1:00	354
2:15	186.20	---	---		26	280	:15	1:00	354B
3:30	171.40	075.20	---		27	301	3:19	1:00	351
7:49	149.90	037.50	---		23	310	3:37	1:00	362A
12:26	146.90	---	---		26	314	:15	2:30	362
12:36				VERIFY DSE TAPE MOTION					
15:11	143.90	---	---				:15	2:00	362B
17:26	146.90	---	---				:15	2:30	362
20:11	149.90	---	---				:15		
20:26				V21N46E (61102), V46E				1:00	
21:26	160.20	320.00	---				2:37		358A
24:03				V21N46E (61101), V46E				1:00	
25:03	163.20	---	---				:15	2:30	358
27:48	166.20	---	---				:15	2:00	358B
30:03	163.20	---	---				:15	2:30	358
32:48	160.20	---	---				:15	1:00	358A
34:03				CONFIGURE DSE: LBR/RCD /FWD/CMD RESET					
				EUV, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

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SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (123:28:00 (SS+16))

DET	DATA
40:00	V49 MNVR + 225.00 + 181.00 + 356.00
55:00	X-RAY, HeG, EUV - OPS
55:00	LOAD P20 OPT 2: 140° SCAN N78(R1 & R2) N79 + 0000.00 + 0.5000 + 0000.00 + 0000.50
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 044.00 + 172.00 + 317.00 V48E, V21N46E 61102
06:10	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
07:45	LOAD P20 OPT 2: 100° SCAN N78 (R1 & R2) N79 + 0000.00 - 0.5000 + 0000.00 + 0000.50
10:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 314.00 + 177.00 + 337.00 V48E, V21N46E 61101
14:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)

DET	DATA
14:50	EUV, X-RAY - PWR DWN
17:35	LOAD P20 OPT 2: 120° SCAN N78(R1 & R2) N79 + 0000.00 + 0.5000 + 0000.00 + 0000.50
20:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 034.00 + 172.00 + 317.00
24:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
29:20	LOAD P20 OPT 2: 100° SCAN N78 (R1 & R2) N79 + 0000.00 + 0.5000 + 0000.00 + 0000.50
37:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 074.00 + 177.00 + 337.00
42:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	CONTINUE WITH PAD ON NEXT PAGE

DET	DATA
50:32	LOAD P20 OPT 2: 120° SCAN N78 (R1 & R2) N79 + 0 0 0.0 0 + 0.5 0 0 0 + 0 0 0.0 0 + 0 0 0.5 0
52:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 1 5 9.0 0 + 1 7 2.0 0 + 3 1 7.0 0
57:00	POO V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
02:41	LOAD P20 OPT 2: 100° SCAN N78 (R1 & R2) N79 + 0 0 0.0 0 + 0.5 0 0 0 + 0 0 0.0 0 + 0 0 0.5 0
08:54	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 3 4 4.0 0 + 1 7 7.0 0 + 3 3 7.0 0 V48E, V21N46E 6 1 1 0 2
13:24	POO V49E, PRO, PRO DSE (STOP/CMD RESET)
15:22	X-RAY - EUV - OPS

DET	DATA
15:40	LOAD P20 OPT 2: 120° SCAN N78 (R1 & R2) N79 + 0 0 0.0 0 - 0.5 0 0 0 + 0 0 0.0 0 + 0 0 0.5 0
18:54	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) V48E, V21N46E 6 1 1 0 1
22:54	POO DSE (STOP/REWIND/CMD RESET)
23:04	EUV,HeG, X-RAY - PWR DWN ACQ ATS: MAN, WIDE P -25, Y 177 S-BD ANT IND >1/3 SCALE HGA: REACQ, NARROW UPTLM - RELAY
	GO TO FP FOR NEXT MNVR

X-RAY PAD - REV 76

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				COUNTING UP TO 126 09 42 (SS)					
55:00	211	118	000	VERIFY ATTITUDE					301
				X-RAY, EUV - OPS (VERIFY)					
0:00	---	---	---	V21N46E (61102), V46E	-2	202		2:00	301
2:00	203	156	---		-26	188	1:17	2:00	304
5:17	206	137	---		-10	194	:39	5:00	302
10:56	350	124	---		-27	168	4:50		256
15:46				V21N46E (61101), V46E				2:00	
17:46	345	121	---		-23	173	:32	5:00	257
23:18	348	100	---		-44	177	2:09	2:00	259
27:27	356	106	---		-37	172	:52	2:00	260
30:19	357	103	---		-40	173	:16	2:00	263
31:00				VERIFY DSE TAPE MOTION					
32:35	355	100	---				:19	2:00	261
34:54	355	097	---				:15		262
35:09				V21N46E (61102), V46E				2:00	
37:09	020	---	---	CONFIGURE DSE: STOP/CMD RESET			:50		
				EUV, X-RAY - PWR DWN					
				GO TO HeG PAD -					
				REV 76/77 FOR					
				NEXT MNVR					

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SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (127:00:32 (SS-38))

DET	DATA
50:00	V49 MNVR + 121.00 + 290.00 + 342.00
55:00	HeG - OPS
57:00	LOAD P20 OPT 2: 80° SCAN N78 (R1 & R2) N79 + 090.00 + 05.000 - 037.75 + 00.050
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 142.00 + 127.00 + 012.00
04:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
05:57	LOAD P20 OPT 2: 60° SCAN N78 (R1 & R2) N79 + 090.00 - 05.000 - 037.75 + 00.050
09:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 140.00 + 210.00 + 343.00
13:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)

DET	DATA
__:__	
14:35	LOAD P20 OPT 2: 40° SCAN N78 (R1 & R2) N79 + 090.00 + 05.000 - 037.75 + 00.050
19:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 168.00 + 048.00 + 348.00
24:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
25:58	LOAD P20 OPT 2: 80° SCAN N78 (R1 & R2) N79 + 090.00 - 05.000 - 037.75 + 00.050
29:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 141.00 + 132.00 + 012.00
33:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	CONTINUE WITH PAD ON NEXT PAGE

DET	DATA	DET	DATA
35: 00	LOAD P20 OPT 2: 60° SCAN N78 (R1 & R2) N79 + 0 9 0.0 0 / + 0 5 0 0 0 - 0 3 7.7 5 / + 0 0 0.5 0	54: 57	LOAD P20 OPT 2: 80° SCAN N78 (R1 & R2) N79 + 0 9 0.0 0 / + 0 5 0 0 0 - 0 3 7.7 5 / + 0 0 0.5 0
39: 30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 1 5 8.0 0 + 3 2 3.0 0 + 0 0 5.0 0	59: 00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 1 3 2.0 0 + 2 4 2.0 0 + 3 5 5.0 0 V48E, V21N46E 6 1 1 0 1
44: 00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	03: 30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
44: 20	X-RAY, EUV - OPS	__:__	
45: 31	LOAD P20 OPT 2: 40° SCAN N78 (R1 & R2) N79 + 0 9 0.0 0 / - 0 5 0 0 0 - 0 3 7.7 5 / + 0 0 0.5 0	06: 59	LOAD P20 OPT 2: 60° SCAN N78 (R1 & R2) N79 + 0 9 0.0 0 / - 0 5 0 0 0 - 0 3 7.7 5 / + 0 0 0.5 0
49: 00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 1 6 9.0 0 + 0 5 6.0 0 + 3 5 2.0 0	09: 30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 1 5 8.0 0 + 3 2 9.0 0 + 0 0 7.0 0
53: 00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	13: 30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__		13: 50	EUV, X-RAY - PWR DWN CONTINUE WITH PAD ON NEXT PAGE

DET	DATA
16:40	LOAD P20 OPT 2: 40° SCAN N78 (R1 & R2) N79 + 0 9 0.0 0 + 0.5 0 0 0 - 0 3 7.7 5 + 0 0 0.5 0
19:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 0 4 5.0 0 + 1 8 1.0 0 + 3 5 6.0 0
23:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
31:11	LOAD P20 OPT 2: 140° SCAN N78 (R1 & R2) N79 + 0 0 0.0 0 + 0.5 0 0 0 + 0 0 0.0 0 + 0 0 0.5 0
38:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) V48E, V21N46E 6 1 1 0 2
44:40	P00 DSE (STOP/REWIND/CMD RESET)
44:50	HeG - PWR DWN GO TO X-RAY PAD - REV 78 FOR NEXT MNVR

DSE 6:09 + 44:50 = 50:49

X-RAY PAD - REV 78

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___:___:___					
SET DET				COUNTING UP TO 129 07 24 (SS)					
45:00	110	129	000				4:10		249
50:00				ACQ ATS	-30	199			
59:30				X-RAY - OPS					
0:00	---	---	---	V21N46E (61101) V46E	-30	199		2:00	249
2:00	104	115	---		-25	187	1:15	2:00	252
5:15	099	112	---		-25	186	:30	2:00	253
7:45	094	114	---		-25	190	:25		251
8:10				V21N46E (61102), V46E				2:00	
10:10	067	321	---		-38	23	5:10	1:00	921
16:20	080	332	---		-36	41	:35		222
16:55				V21N46E (61101), V46E				1:00	
17:55	078	328	---		-35	33	:25	2:00	221
20:20	084	319	---		-31	26	:55	1:00	220
22:15	077	318	---		-33	20	:40	2:00	218
24:55	079	313	---		-32	15	:30	1:00	217
26:25	089	308	---		-29	15	1:00	1:00	215
28:25	076	308	---		-31	7	1:50	1:00	216
31:15	076	304	---		-30	2	:50	1:00	214
33:05	075	275	---		-23	334	2:25	1:00	211
36:30				X-RAY - OFF					
				GO TO FP FOR NEXT MNVR					

SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (130:36:14 (SS))

DET	DATA
46:00	V49 MNVR + 0 5 0 0 0 + 2 3 8 0 0 + 3 4 3 0 0
54:00 55:00	DSE (STOP/CMD RESET)(VERIFY) X-RAY, EUV - OPS
55:00	LOAD P20 OPT 2: 191 SCAN N78(R1 & R2) N79 + 0 0 0 0 0 - 0 5 0 0 0 + 0 0 0 0 0 + 0 0 0 5 0
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 2 1 9 0 0 + 2 5 2 0 0 + 3 4 8 0 0 V48E, V21N46E 6 1 1 0 1
06:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
07:58	LOAD P20 OPT 2: 192 SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 + 0 5 0 0 0 + 0 0 0 0 0 + 0 0 0 5 0
09:50	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 0 0 6 0 0 + 0 2 3 0 0 + 0 2 3 0 0 V48E, V21N46E 6 1 1 0 2
16:50	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)

DET	DATA
__:__	
21:35	LOAD P20 OPT 2: 207 SCAN N78(R1 & R2) N79 + 0 0 0 0 0 + 0 5 0 0 0 + 0 0 0 0 0 + 0 0 0 5 0
29:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET)
34:00	P00 DSE (STOP/CMD RESET)
34:10	EUV, X-RAY - PWR DWN GO TO FP FOR NEXT MNVR

DSE 15 + 19:10 = 34:10

EUV PAD - REV 80

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___:___:___					
SET DET				COUNTING UP TO 132 05 06 (SS)					
40:00				V21N46E(61101),V46E					
41:00	211.70	100.00	000				10:11		387A
55:00				X-RAY, EUV - OPS					
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET				1:45	387A
1:45	208.70	---	---				:15	3:30	387
5:30	205.70	---	---				:15		387B
5:45				V21N46E(61102),V46E				1:45	
7:30	162.10	019.60	---				3:00	1:00	328
11:30	121.90	021.60	---				1:21		327
12:51				ACQ ATS HGA	-32	130		1:00	
13:51	121.20	030.60	---	DSE: STOP/REWIND/CMD RESET			:19		384A
14:10				V21N46E(61101), V46E	-36	135		1:00	
15:10	124.20	---	---		-34	133	:15	2:30	384
17:55	127.20	---	---		-33	130	:15	2:00	384B
20:10	124.20	---	---		-36	130	:15	2:30	384
22:55	121.00	---	---		-38	130	:15	1:00	384A
24:10				EUV, X-RAY - PWR DWN					
				GO TO FP					

DSE 34:10 + 14 = 48:10

EUV PAD - REV 88

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___:___:___					
SET DET				COUNTING UP TO 145 24 39 (SS)					
37:00				X-RAY CAL/BACKGROUND (CUE CARD)(THRU MAD)					
44:00	125.90	118.80	000				13:36		348A
58:00				X-RAY, EUV - OPS					
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET				1:15	348A
1:15	128.90	---	---				:15	3:00	348
4:30	131.90	---	---				:15	1:15	348B
6:00	145.50	97.40	---				2:07	1:00	368A
9:07	148.50	---	---				:15	1:30	368
10:52	151.50	---	---				:15		368B
11:07				V21N46E (61102), V46E				1:00	
12:07	098.60	359.90	---				3:36		364A
15:43				V21N46E (61101), V46E				1:00	
16:43	095.60	---	---				:15	2:30	364
19:28	092.60	---	---				:15	2:00	364B
21:43	095.60	---	---				:15	2:30	364
24:28	098.60	---	---				:15		364A
24:43				V21N46E (61102), V46E				1:00	
25:43	350.10	070.2	310.00	DSE: STOP/CMD RESET X-RAY - PWR DWN			5:06		343A
30:49				V21N46E (61101), V46E				3:41	
33:00				DSE: FWD/CMD RESET					
34:30	---	---	---					1:00	
35:30	356.10	---	---				:30	1:00	343
37:00	002.10	---	---				:30	1:00	343B
(CONT'D)									

EUV PAD - REV 88 (CON'T)

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
38:30				DSE: STOP/REWIND/ CMD RESET					
				EUV - PWR DWN					
				GO TO FP FOR NEXT MNVR					

EUV PAD - REV 89

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___ : ___ : ___					
SET DET				COUNTING UP TO 146 53 29 (SS)					
55:00	178.10	037.60	000	VERIFY ATTITUDE					365A
				X-RAY, EUV - OPS					
0:00	---	---	---		21	303		1:00	
1:00	181.10	---	---		18	303	:15	2:30	365
3:45	184.10	---	---		15	304	:15	2:00	365B
6:00	181.10	---	---		17	305	:15	2:30	365
8:45	178.10	---	---		20	308	:15	1:00	365A
10:00	172.10	030.60	---		20	311	:50	1:00	352A
11:50	169.10	---	---		23	313	:15	2:00	352
14:05	166.10	---	---		25	315	:15	1:00	352B
15:20	169.10	---	---		23	315	:15	2:00	352
17:35	172.10	---	---		22	315	:15	1:00	352A
18:50	174.30	025.50	---		17	316	:30	1:00	353A
20:20	171.30	---	---		20	318	:15	2:00	353
21:12				VERIFY DSE TAPE MOTION					
22:35	168.30	---	---				:15		353B
22:50				V21N46E (61102), V46E				1:00	
23:50	167.40	278.40	---				3:35		338A
27:25				V21N46E (61101), V46E				1:00	
28:25	170.40	---	---				:15	1:00	338
29:40	173.40	---	---				:15		338B
29:55				V21N46E (61102), V46E				1:20	
31:15	178.20	250.00	---				1:00		902
(CONT'D)									

EUV PAD - REV 89 (CONT'D)

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
32:15				V21N46E (61101), V46E				1:15	
33:30	181.20	---	---				:15	2:00	902
35:45	184.20	---	---				:15	1:00	902B
37:00				CONFIGURE DSE: LBR/RCD/FWD/CMD RESET					
				EUV, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

EUV PAD - REV 90

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___: ___: ___					
SET DET				COUNTING UP TO 148 22 19 (SS)					
55:00	210.90	060.50	000	VERIFY ATTITUDE					355A
				X-RAY, EUV - OPS					
0:00	---	---	---		21	274		1:00	
1:00	207.90	---	---		24	275	:15	2:00	355
3:15	204.90	---	---		27	276	:15	1:00	355B
4:30	203.70	051.60	---		27	285	:45	1:00	361A
6:15	200.70	---	---		30	287	:15	2:30	361
9:00	197.70	---	---		33	289	:15	2:00	361B
11:15	200.70	---	---		31	290	:15	2:30	361
14:00	203.70	---	---		29	290	:15	1:00	361A
15:15	209.00	025.70	---		13	310	2:15	1:15	901A
18:45	206.00	---	---		16	312	:15	2:30	901
21:30	203.00	---	---		20	313	:15		901B
21:45				V21N46E (61102), V46E				1:35	
23:20	191.30	264.20	---				4:10		JUP-A
27:06				VERIFY DSE TAPE MOTION					
27:30				V21N46E (61101), V46E				1:30	
29:00	194.30	---	---				:15	2:30	JUP
31:45	197.30	---	---				:15	1:00	JUP-B
33:00	194.30	---	---				:15	2:30	JUP
35:45	191.30	---	---				:15	1:00	JUP-A
37:00				CONFIGURE DSE: LBR/RCD/FWD/CMD RESET					
				EUV, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

DSE 10:00

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SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (151:35:59 (SS + 16))

DET	DATA
50:00	V49 MNVR + 054.00 + 004.00 + 344.00
55:00	X-RAY, HeG, EUV - OPS
56:00	LOAD P20 OPT 2: 340° SCAN N78(R1 & R2) N79 + 000.00 + 0.500 + 000.00 + 00.50
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 148.00 + 009.00 + 324.00
06:10	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
06:30	EUV, X-RAY - PWR DWN
14:35	LOAD P20 OPT 2: 0° SCAN N78 (R1 & R2) N79 + 000.00 + 0.500 + 000.00 + 00.50
19:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 212.00 + 016.00 + 305.00 V48E, V21N46E 61102
23:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
26:39	LOAD P20 OPT 2: 20° SCAN N78(R1 & R2) N79 + 000.00 + 0.500 + 000.00 + 00.50
30:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 264.00 + 009.00 + 324.00 V48E, V21N46E 61101
34:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
41:40	LOAD P20 OPT 2: 0° SCAN N78 (R1 & R2) N79 + 000.00 + 0.500 + 000.00 + 00.50
46:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 332.00 + 016.00 + 305.00
50:55	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	CONTINUE WITH PAD ON NEXT PAGE

DET	DATA
58:25	LOAD P20 OPT 2: 20° SCAN N78 (R1 & R2) N79 + 00.00 + 05.00 + 00.00 + 00.50
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 032.00 + 009.00 + 324.00 V48E, V21N46E 61102
04:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
__:__	
07:25	LOAD P20 OPT 2: 0° SCAN N78 (R1 & R2) N79 + 00.00 + 05.00 + 00.00 + 00.50
11:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 092.00 + 016.00 + 305.00 V48E, V21N46E 61101
16:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
17:00	X-RAY, EUV - OPS

DET	DATA
23:15	LOAD P20 OPT 2: 20° SCAN N78 (R1 & R2) N79 + 00.00 + 05.00 + 00.00 + 00.50
28:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 234.00 + 004.00 + 344.00
32:30	P00 V49E, PRO, PRO DSE (LBR/CMD RESET)
32:50	EUV, X-RAY - PWR DWN
36:35	LOAD P20 OPT 2: 340° SCAN N78 (R1 & R2) N79 + 00.00 + 05.00 + 00.00 + 00.50
13:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET)
19:10	P00 DSE (STOP/CMD RESET) UPTLM - RELAY
19:20	HeG - PWR DWN GO TO X-RAY PAD - REV 94 FOR NEXT MNVR

DSE 39:40 (HBR) + 40:30 (LBR)

X-RAY PAD - REV 94

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				COUNTING UP TO 154 17 38 (SS)					
45:00	074	026	351				3:29		224
53:00				ACQ ATS	-54	124			
55:00				X-RAY, EUV - OPS					
0:00	---	---	---		-54	124		2:00	224
2:00	071	024	355		-55	128	:27		223A
2:27				LOAD P20 (NOTE 1)				2:00	
4:27				N34 (PRO)	-48	131	2:40		223B
7:07				V37E00E				1:00	
8:07	076	018	000		-52	120	:56		223C
9:03				LOAD P20 (NOTE 2)				2:00	
11:03				N34 (PRO)	-58	141	2:05		223D
13:08				V37E00E				1:00	
14:08	075	299	000	(ENTER SAA)	-48	18	7:16	6:36	213
28:00				(OUTSIDE SAA)				5:00	213
33:00	076	287	000		-44	356	1:01	2:00	212
36:01				EUV, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

NOTE 1: P20 OPT 2
V24N78 (+09000)(-03775)
V24N79 (+01000)(+00050)

NOTE 2: P20 OPT 2
V24N78 (-02954)(-03250)
V21N79 (-01000)

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7-10-75 (P&I)
~~6/18/75~~

X-RAY PAD - REV 104

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				COUNTING UP TO 170 34 36 (SS)					
40:00	334	304	000	X-RAY CAL/BACKGROUND (CUE CARD) (THRU MAD)			12:54		250
59:30				X-RAY, HeG, EUV - OPS					
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET				2:00	250
2:00	344	291	---				1:19		254
3:19				V21N46E (61102), V46E				2:00	
5:19	334	249	---				1:28	2:00	225
8:47	310	253	---				:49		229
9:36				V21N46E (61101), V46E				5:00	
14:36	310	259	---				:31	2:00	227
17:07	299	255	---				:56		231
18:03				V21N46E (61102), V46E				2:00	
20:03	278	233	---				1:05	2:00	266 ~~267~~
21:08				V21N46E (61101), V46E				5:00	
26:08				DSE: STOP/REWIND/CMD RESET					
				EUV, HeG, X-RAY - PWR DWN					
				GO TO FP FOR P52					

DSE 26:08

X-RAY PAD - REV 105

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				___:___:___					
SET DET				COUNTING UP TO 172 03 24					
53:00	291	260	000				2:30		232
56:00				X-RAY, HeG, EUV - OPS					
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET				2:00	232
2:00	310	250	---				1:48		230
2:20				DSE: STOP/CMD RESET					
3:48				DSE: FWD/CMD RESET				2:00	
5:48	321	244	---				1:03		228
6:51				V21N46E (61102), V46E				2:00	
8:51	349	219	---	DSE: STOP/CMD RESET			1:15		233
10:06				DSE: FWD/CMD RESET				5:00	
15:06	336	207	---				:36		237
15:42				V21N46E (61101), V46E				1:00	
16:42	326	203	---				:54	2:00	246
19:36	328	201	---				:15	1:00	245
20:51	328	193	---				:40	1:00	322
22:31	332	200	---				:41	1:00	243
24:12	339	204	---				:41	2:00	236
26:53	344	204	---				:25	1:00	234
28:18	341	200	---				:25	1:00	238
29:43	340	195	---				:26	2:00	240
32:09	346	193	---				:32	1:00	235
33:41	341	189	---				:33	1:00	242
35:14				DSE: STOP/CMD RESET					
				EUV, HeG, X-RAY-PWR DWN GO TO FP					

DSE 32:31

SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (173:32:12 (SS))

DET	DATA
40:00	V49 MNVR + 264.00 + 104.00 + 316.00
55:00	X-RAY, HeG, EUV - OPS
55:00	LOAD P20 OPT 2: 201 SCAN N78(R1 & R2) N79 + 00000 - 05000 + 00000 + 00050
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 115.00 + 097.00 + 322.00
06:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
_ _	
09:18	LOAD P20 OPT 2: 202 SCAN N78 (R1 & R2) N79 + 00000 + 05000 + 00000 + 00050
14:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 039.00 + 093.00 + 329.00
22:20	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)

DET	DATA
_ : _	
25:44	LOAD P20 OPT 2: 203 SCAN N78(R1 & R2) N79 + 00000 - 05000 + 00000 + 00050
30:20	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET)
36:30	P00 DSE (STOP/REWIND/CMD RESET)
36:40	EUV,HeG,X-RAY - PWR DWN GO TO FP FOR NEXT MNVR

DSE 32:31 +20:30 = 53:01

EUV PAD - REV 108

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				COUNTING UP TO 176 29 48 (SS)					
45:00	103.70	113.40	000	V21N46E (61102), V46E (MNVR AFTER EARTH OBS)			5:56		347A
48:00				ACQ ATS	-30	290			
57:00				V21N46E (61101), V46E X-RAY, HeG, EUV - OPS					
0:00	---	---	---					1:15	347A
1:15	100.70	---	---		-19	182	:15	3:00	347
4:30	097.70	---	---				:15		347B
4:45				V21N46E (61102), V46E				1:15	
6:00	020.60	163.40	---				3:10		350A
9:10				V21N46E (61101), V46E				1:30	
10:40	017.60	---	---		25	224	:15	3:00	350
13:55	014.60	---	---				:15	2:00	350B
16:10	017.60	---	---		25	223	:15	3:00	350
19:25	020.60	---	---				:15	1:30	350A
21:10	007.20	112.20	---		-9	202	4:25	1:00	344
26:35	351.00	108.60	---		-6	204	1:23	1:00	341
28:58	297.10	098.40	---				4:34	1:00	338A
34:32	294.10	---	---		5	207	:15	1:00	338
35:47	291.10	---	---				:15	1:00	338B
37:02				EUV, HeG, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

EUV PAD - REV 109

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
				: :					
SET DET				COUNTING UP TO 177 58 36 (SS)					
45:00				V21N46E (61102), V46E					
46:00	074.00	073.00	310.00	MANUALLY ROLL TO 160° BEFORE INITIATING MNVR			5:54		367A
52:00				ACQ ATS HGA	-81	190			
55:00				V21N46E (61101), V46E					
57:00				HeG, EUV - OPS					
0:00	---	---	---	X-RAY - OPS	-84	213		1:00	367A
1:00	077.00	---	---		-85	188	:15	1:00	367
2:15	080.00	---	---				:15		367B
2:30				V21N46E (61102), V46E	-85	151		1:00	
3:30	132.90	079.60	000				2:20		383A
5:50				V21N46E (61101), V46E	-32	148		1:00	
6:50	135.90	---	---		-32	146	:15	2:00	383
9:05	138.90	---	---		-32	144	:15	1:00	383B
10:20	135.90	---	---		-32	144	:15	2:00	383
12:35	132.90	---	---				:15		383A
12:50				V21N46E (61102), V46E	-32	144		1:00	
13:50	086.50	339.60	---				3:36		195
17:26				V21N46E (61101), V46E	-44	63		1:00	
18:26	094.60	332.50	---		-37	59	:54	1:00	382A
20:20	091.60	---	---		-40	57	:15	2:30	382
23:05	088.60	---	---		-42	54	:15	2:00	382B
25:20	091.60	---	---		-40	54	:15	2:30	382
28:05	094.60	---	---				:15		382A
(CON'T)									

EUV PAD - REV 109 (CON'T)

DET	V49 MNVR TO			DATA	HGA		FP INFO		
	R	P	Y		P	Y	MNVR	DATA	TGT
28:20				V21N46E (61102), V46E	-37	54		1:00	
29:20	113.50	305.80	---	VERIFY DSE TAPE MOTION			1:06		193A
30:26				V21N46E (61101), V46E				1:45	
32:11	116.50	---	---				:15	3:30	193
35:56	119.50	---	---				:15	1:45	193B
42:00				CONFIGURE DSE: LBR/CMD RESET					
				EUV, HeG, X-RAY - PWR DWN					
				GO TO FP FOR NEXT MNVR					

SECTION 7

SECTION 7 - SOLAR ECLIPSE/UVA CHECKLIST

95+00 — U S R

11111 00146 00000 05000 00020

AT TV SI --

◄DP INFORM SOYUZ: UNDOCKING TIME . . . GET
(FROM FIRST UNDOCKING PAD TIME)

ВРЕМЯ РАССТЫКОВКИ ..... ПОЛЕТНОГО ВРЕМЕНИ.

V48E, LOAD N46 (61102), PRO, PRO - DO NOT ACTIVATE
(11111)

G/N POWER OPTICS - ON
P52 (OPT 3) (35, 36, 40) (RECORD)
(ORBITAL ORIENT)

95+10

OPTICS ZERO - ZERO
G/N POWER OPTICS - OFF
SC CONT - CMC/AUTO (VERIFY)
P00
ALIGN GDC TO IMU

SET DET COUNTING UP TO FIRST UNDOCKING PAD TIME (GET)

◄DP INFORM SOYUZ: TURN ON VHF RANGING
ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
VHF AM A - OFF (CTR)
VHF AM B - DUPLEX
VHF ANTENNA - RIGHT (VERIFY)

◄DP INFORM SOYUZ: THERE ARE 5 MINUTES UNTIL SYNC OF CLOCKS.
ДО СВЕРКИ ВРЕМЕНИ ОСТАЛОСЬ 5 МИНУТ.

95+20

40:00

◄DP INFORM SOYUZ: I WILL GIVE YOU A COUNTDOWN. ARE YOU READY?
AFTER RESPONSE: 5,4,3,2,1 MARK (DET = 40:00)
ДАЮ ОТСЧЕТ. ВЫ ГОТОВЫ?
5,4,3,2,1 МАРК.

V A N

REPORT GYRO TORQUE ANGLES AND TIME OF GYRO TORQUE

STDN UPDATE
GO/NO-GO FOR UNDOCK

PRIMARY EVAP DEACTIVATION CHECKLIST

ACTIVE UNDOCKING SWITCH CONFIGURATION

ACTIVE UNDOCKING PREP CHECKLIST

95+30

FIRST UNDOCKING PAD (SR + 1:15)

		NOMINAL						FINAL					
UNDOCK TIME (GET)	HR	+	XX	XX	0	9	5	+	XX	XX			
	MIN	+	XX	XX	XX	4	2	+	XX	XX	XX		
	SEC	+	XX	0	5	0	0	+	XX				
ATT	R	+	1	7	3	6	0	+					
	P	+	2	7	2	0	0	+					
	Y	+	3	5	0	9	0	+					
HGA	P	[ ]	0	0	1	0	0	[ ]				0	0
	Y	+	2	0	2	0	0	[ ]				0	0

P52 (OPT 3)

N71 1ST STAR		XX	0	0	0	
N71 2ND STAR		XX	0	0	0	
N05(R1) ANG ERR		XX			.	
N93 GYRO TORQUING ANGLES	X	[ ]		.		
	Y	[ ]		.		
	Z	[ ]		.		
TIME OF GYRO TORQUE	HR	+	0	0	0	
	MIN	+	0	0	0	
	SEC	+	0		.	0 0

PRIMARY EVAP DEACT CHECKLIST

GLY EVAP H2O FLOW - OFF (CTR)
GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR -
INCR FOR 1 MIN

ACTIVE UNDOCK SWITCH CONFIGURATION

EMS FUNC/MODE - ΔV SET/STBY
SET ΔV = +100.0 FPS
EMS FUNC - ΔV
RHC PWR NORMAL #2 - AC/DC
RHC PWR DIRECT #2 - MNA/B
DBD/RATE - MIN/LOW
MAN ATT (P&Y) - RATE CMD (VER)
MAN ATT (ROLL) - MIN IMP (VER)
THC PWR - ON (UP)
COAS PWR - ON (UP)
RHC #2 - ARMED
THC - ARMED
EXT LTS RUN/EVA - OFF (VER)

ACTIVE UNDOCKING PREP CHECKLIST

* * * * * * * * CAUTION * * * * * * * *
GUIDE RING-EXTD/RETR MUST BE OPERATED BY SYSTEM A OR B ONLY (SINGLE MOTOR). DYNAMIC FORCES USING 2 MOTORS COULD CREATE STRUCTURAL LOADS BEYOND DESIGN LIMITS.

STRUCT LATCH-OPEN MUST BE OPERATED BY SYSTEM A OR B ONLY (SINGLE MOTOR). STALLED GEAR BOX LOAD USING 2 MOTORS COULD EXCEED CABLE BREAKING STRENGTH.

MCC MAY ADVISE THAT MOTORS IN BOTH SYSTEMS ARE DEGRADED. THEREFORE, BOTH SYSTEMS (A&B) MAY BE OPERATED SIMULTANEOUSLY.
* * * * * * * * * * * * * * * * * * * *

3 NOTE: MONITOR FC 1 OR 2 (SYSTEM A) OR FC 3 (SYSTEM B) CURRENT WHEN OPERATING STRUCT LATCH, GUIDE RING, OR BACKUP PASSIVE MOTORS.

*IF SYSTEM B MOTORS REQUIRED: *
*
275 *CB MAIN B BAT BUS B-CLOSE(VER)*
5 *MAIN BUS TIE B/C - ON (UP) *
*
IF SYSTEM A&B MOTORS REQUIRED:
*
*MAIN BUS TIE (2) - ON (UP) *
*
*TO AVOID EXCESS CURRENT DRAIN *
*
*ON ENTRY BATTERIES: *
*
*MAIN BUS TIE (2) - OFF (DN) *
* AFTER SYSTEM TASK PERFORMED *

◄DP INFORM SOYUZ:
PREPARING FOR UNDOCKING.
ГОТОВЛЮСЬ К РАССТЫКОВКЕ.

DOCKING SYSTEM PREPARATION:

DOCKING SYSTEM A:

274 CB IND LOGIC MNA - CLOSE
CB IND PWR AC1 - CLOSE
CB CONTROL BAT A - CLOSE
CB MOTORS AC1 (3) - CLOSE

DOCKING SYSTEM B:

274 CB IND LOGIC MNB - CLOSE
CB IND PWR AC2 - CLOSE
CB CONTROL BAT B - CLOSE
CB MOTORS AC2 (3) - CLOSE

SM RCS QUAD HTRS (4) - OFF

```
95+30
11111
00146
00000      SET HGA: MAN, WIDE P=-18, Y=+220
05000        HGA: REACQ, NARROW
00020

           ACTIVE UNDOCKING/ECLIPSE CHECKLIST

61102
11111
95+40

           FIRST UNDOCKING (CSM ACTIVE) (95:42:05) (SR + 1:15)

           SOLAR
           ECLIPSE

           ON MCC REQUEST: UP TLM - UP TLM (CTR)
95+50                      TV STA SEL (2) - UP TLM
           STATION KEEP AT ~164 FT (50M)

           ◄DP INFORM SOYUZ: APOLLO STATION KEEPING.
                             INITIATE DOCKING ORIENTATION.
                             ЕСТЬ ЗАВИСАНИЕ АПОЛЛОНА.
                             НАЧНИТЕ ОРИЕНТАЦИЮ ДЛЯ СТЫКОВКИ.
           PRIMARY EVAP ACTIVATION
             GLY EVAP H2O FLOW - AUTO
             GLY EVAP STM PRESS - AUTO

           V25 N22E, LOAD DOCKING ATTITUDE (197, 205, 014)

           SET DET COUNTING UP TO 96:08
           LOAD DAC MAG CX03

           MNVR TO STATION KEEP ON SOYUZ APDS
           ◄DP INFORM SOYUZ: INITIATING ORIENTATION OF APOLLO.
96+00                        НАЧИНАЮ ОРИЕНТАЦИЮ АПОЛЛОНА.
           MNVR TO DOCKING ATTITUDE (197, 205, 014) HGA P=+4, Y=+251
```

ACTIVE UNDOCKING/ECLIPSE CHECKLIST

```
   3   DSE: (HBR/RCD/FWD/CMD RESET)
 230   UP TLM - RELAY
       DOCKING STATUS LIGHTS:
OUT OUT  GUIDE RING CAPTURE LT - ON (VERIFY)
OUT LIT  STRUCT RING CONTACT LT - ON (VERIFY)
LIT LIT  STRUCT LATCH CLOSE LT - ON (VERIFY)
             *  IF SOYUZ CLOSED ACTIVE HOOKS:                *
             *                                               *
             *◄DP INFORM SOYUZ: OPEN YOUR ACTIVE HOOKS.*
             *                 ОТКРОЙТЕ ВАШИ АКТИВНЫЕ КРЮКИ.*
             * [INFORM APOLLO: ACTIVE HOOKS OPEN.]          *

55:00 ◄DP INFORM SOYUZ: OPENING ACTIVE HOOKS.
                        ОТКРЫВАЮ АКТИВНЫЕ КРЮКИ.
   2     STRUCT LATCH A - OPEN (~8 SEC)
         STRUCT LATCH CLOSE LT - OUT
LIT OUT  STRUCT LATCH OPEN LT - ON
OUT LIT      * IF STRUCT LATCH OPEN LT - OUT:                *
LIT OUT      *   USE BU PROCEDURE FOR APOLLO ACTIVE          *
             *   UNDOCKING JOINT OPS CKLT PG J/3-4           *
         STRUCT LATCH A - OFF (CTR)

56:00    AUTO RCS SEL (12) - MNA/B, B/D ROLL (4) - OFF
         V46E
         V16 N4E
         SC CONT - CMC/FREE
         RHC - TRIM R2 & R3 (P&Y) TO 0.00 (FLY FROM ERRORS)

58:00 ◄DP INFORM SOYUZ: READY FOR UNDOCKING.

       [INFORM APOLLO: READY FOR UNDOCKING.]

         TO INITIATE ACTIVE UNDOCKING:
59:00      BMAG MODE (3) - ATT 1/RATE 2
           SC CONT - SCS (DO NOT CONTROL ROLL ATT)
           EMS MODE - NORMAL
           TV STA SEL - CM/CM2
           VTR PWR (3) - ON(VERIFY)
           VTR HEAD WHEEL DRIVE MOTOR - ON
           VTR TAPE MODE - RECORD       НАЧИНАЮ РАССТЫКОВКУ,
           DAC - ON (VOICE MARK)        5,4,3,2,1 МАРК.
59:55 ◄DP INFORM SOYUZ: INITIATING UNDOCKING
                        5,4,3,2,1 MARK.
00:00      CAPTURE LATCH A&B - RELEASE (MOM)
           GUIDE RING CAPTURE LT - OUT
LIT LIT  PASSIVE LT - ON
OUT OUT  STRUCT RING CONTACT LT - OUT
OUT OUT
           MONITOR UNDOCKING ΔVC = +100.2 FPS

         ◄DP INFORM SOYUZ: UNDOCKING COMPLETED.
                           РАССТЫКОВКА ВЫПОЛНЕНА.
       [INFORM APOLLO: UNDOCKING COMPLETED.]

00:15      THC - THRUST (-X) (4 JET) FOR 3 SEC
00:30      THC - THRUST (-X) (4 JET) FOR 4 SEC (1 MPS)

03:00      DSE - LBR
           DAC - OFF
           MAN ATT (3) - RATE CMD
           AUTO RCS SEL (16) - MNA/B
           RHC - CENTER SOYUZ IN COAS
04:00      THC - THRUST (+X) (4 JET) FOR 16 SEC
           PERFORM LOS RATE CONTROL AND BRAKING
```

96+00 — A C N — AT TV S — 61102 11111

PASSIVE DOCKING CHECKLIST * * * * * * * * * * * * * * * *
IF NO COMM BETWEEN SPACECRAFT
AND SOYUZ WISHES TO TERMINATE
*APOLLO APPROACH, SOYUZ WILL *
TURN ON BEACON LTS FOR 10 SEC
*THEN OFF (TWICE). *
* * * * * * * * * * * * * * * *

CONTACT (96:08)

96+10

U S R

SECOND DOCKING (96:14 - 96:20)

PASSIVE DOCKED CONFIGURATION CHECKLIST

11111 00146 00000 05000 00050

96+20

96+30

PASSIVE DOCKING CHECKLIST

```
    1   EMS FUNC/MODE - ΔV SET/STBY
        SET ΔVC = -100.0 FPS
        EMS FUNC - ΔV

LIT LIT DOCKING STATUS LTS:
OUT OUT   STRUCT LATCH OPEN LT - ON(VER)
OUT OUT   PASSIVE LT - ON (VERIFY)
        ◄DP INFORM SOYUZ:
ОРИЕНТАЦИЯ УСТАНОВЛЕНА. ORIENTATION ESTABLISHED.
ГОТОВ К СТЫКОВКЕ.       READY FOR DOCKING.
ВЫ ГОТОВЫ?              ARE YOU READY?

        [INFORM APOLLO:READY FOR DOCKING.]

      ◄DP INFORM SOYUZ:ПОДХОЖУ К СОЮЗУ.
                       APPROACHING SOYUZ.
        TO INITIATE APPROACH:
          VERIFY DOCKING ATTITUDE
          DAC - ON
    1     EMS MODE - NORMAL
55:00     THC - THRUST (+X) (4 JET)
            (ΔVC = -100.5 FPS)
          THC/RHC-MAINTAIN REL ALIGNMENT
            (CLOSING ΔV = 0.5 FPS)
        AT CONTACT:

        [INFORM APOLLO: CONTACT.]

00:00   ◄DP INFORM SOYUZ: CONTACT.
                          ЕСТЬ КАСАНИЕ.
LIT LIT   THC - THRUST (+X) (4 JET) AT
OUT OUT     CONTACT FOR 5 SEC MAX.
LIT OUT   GUIDE RING CAPTURE LT - ON
            (CAPTURE LT MAY BLINK) OR
            WHEN SOYUZ REPORTS CAPTURE
          *IF SCS CONTROL REQ'D:          *
          *MAN ATT (3) - MIN IMP          *
          *  (<2 SEC AFTER CAPTURE)       *
          *AUTO RCS SEL:                  *
          * A3,C4,B3,D4,B/D ROLL(4)-OFF*
          *DBD/RATE - MIN/HI              *
          *BMAG MODE (3) - ATT 1/RATE 2*
          *MAN ATT (3) - RATE CMD         *
          *SC CONT - SCS                  *
          SC CONT - CMC/FREE
            (<2 SEC AFTER CAPTURE)
    8     AUTO RCS SEL: A3,C4,B3,D4 - OFF
    1     SC CONT - CMC/AUTO
          DAC - OFF

        [INFORM APOLLO: CAPTURE.]

      ◄DP INFORM SOYUZ: CAPTURE.
                        ЕСТЬ СЦЕПКА.
        [INFORM APOLLO:            ]
        [  INITIATING RETRACTION.  ]
LIT LIT
OUT LIT MONITOR RETRACTION (~6 MIN):
LIT OUT   STRUCT RING CONTACT LT - ON

INFORM APOLLO: INTERFACE SEAL COMPRESSED.
               DOCKING SYSTEM POWER OFF.

        SOYUZ SYSTEM CHECK
      DP INFORM SOYUZ:DOCKING COMPLETED
```

PASSIVE DOCKED CONFIG CHECKLIST

```
      P00
      V44E, LOAD N87 (11111)
                     (00146)
                     (00000)
            LOAD N89 (05000)
                     (00050)
      V45E(ACTIVATE DOCKED DAP)
      RHC #2 - LOCKED
      THC - LOCKED
    1 EMS FUNC/MODE - OFF/STBY
      MAN ATT (ROLL) - MIN IMP
      MAN ATT (P&Y) - RATE CMD
      LIMIT CYCLE - OFF
      DBD/RATE - MIN/HI
      THC PWR - OFF
      RHC PWR NORMAL #2 - OFF
      RHC PWR DIRECT #2 - OFF
      BMAG MODE (3) - RATE 2
    5 MAIN BUS TIE(2)-OFF(VER)
    8 AUTO RCS SEL:
        A/C ROLL(4)-MNA/B
        B/D ROLL(4)-MNA/B
   15 COAS PWR - OFF

      DOCKING SYSTEM A:

  274   CB IND LOGIC MNA - OPEN
        CB IND PWR AC1 - OPEN
        CB CONTROL BAT A - OPEN
        CB MOTORS AC1(3) - OPEN

      DOCKING SYSTEM B:

  274   CB IND LOGIC MNB - OPEN
        CB IND PWR AC2 - OPEN
        CB CONTROL BAT B - OPEN
        CB MOTORS AC2(3) - OPEN

      SM RCS QUAD HTR A - SEC
      SM RCS QUAD HTRS
        B,C,D (3) - PRIM

    ◄DP INFORM SOYUZ:
      DOCKING SYSTEM POWER OFF.
      ПИТАНИЕ СТЫКОВОЧНОЙ
      СИСТЕМЫ ВЫКЛЮЧЕНО.

СТЫКОВКА ВЫПОЛНЕНА.
```

96+30

USR

ATS

ВКЛЮЧИТЕ ДВОЙНОЙ УКВ СИМПЛЕКС.

11111 ◄DP INFORM SOYUZ: TURN ON DUAL VHF SIMPLEX.

00146 VHF AM A - SIMPLEX

00000 VHF AM B - OFF

05000 G/N POWER OPTICS - ON

USR

00050 P52 (OPT 3) (33, 37, 42) (RECORD)

(ORBITAL ORIENT)

GWM

REPORT GYRO TORQUE ANGLES AND TIME OF GYRO TORQUE

STDN UPDATE SECOND UNDOCKING PAD (PG 7-7)

96+40 P52 (OPT 1) (038, 278, 304) ON UVA ORIENT

OPTICS ZERO - ZERO

G/N POWER OPTICS - OFF

SC CONT - CMC/AUTO (VERIFY)

P00

ALIGN GDC TO IMU

HATCH 1 REMOVAL CHECKLIST

96+50

UVA PREP CHECKLIST

97+00

P52 (OPT 3)

N71 1ST STAR		XX	0	0	0		
N71 2ND STAR		XX	0	0	0		
N05(R1) ANG ERR		XX			.		
N93 GYRO TORQUING ANGLES	X			.			
	Y			.			
	Z			.			
TIME OF GYRO TORQUE	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0		.	0	0

HATCH 1 REMOVAL CHECKLIST

VERIFY DM/CM ΔP +/- 1 PSI
TUNNEL HATCH REMOVAL (DECAL)
STOW HATCH 1 (TOP OF A5)
INITIATE CM/DM ATMOSPHERE MIXING

UVA PREP CHECKLIST

OPTAIN DRAG-THRU POWER UMBILICAL
(AFT BKH FRONT OF A1)
CONNECT CABLE TO J1 PNL 230 AND
J2 PNL 862
274 CB UV/DOPPLER MNA - CLOSE
230 UV COVER - CLOSE (VERIFY)

UV ABSORPTION LAMPS - ON
MOUNT BRACKET (R5) AND PENLIGHT
IN LH RNDZ WINDOW

97+00

11111
00146
00000
05000
00050

97+10

--EAT PERIOD

A
G
O

97+20

ACQUIRE ATS HGA: MAN, WIDE P=-13, Y=+240
S-BD ANT IND > 1/3 SCALE, HGA: REACQ, NARROW

A
T
S

97+30

97+30		ATS	EAT PERIOD
11111 00146 00000 05000 00050			
97+40	MAD		STDN UPLINK P27 (SV, EMP 76)
	USR		
97+50			
98+00			

98+00

11111
00146
00000
05000
00050

ATS

EAT PERIOD

98+10

V62E (N22/N20 ERROR NEEDLES)

98+20

OR

STDN UPDATE
GO/NO-GO FOR UNDOCK

DP INFORM SOYUZ: READY FOR UNDOCKING ORIENTATION.
ГОТОВ К ОРИЕНТАЦИИ ДЛЯ РАССТЫКОВКИ.

V49 MNVR TO SECOND UNDOCKING PAD ATT BY 98:35

SET HGA: MAN, WIDE P & Y FROM SECOND UNDOCKING PAD HGA
HGA: REACQ, NARROW

98+30

SECOND UNDOCKING PAD (EQUATOR CROSSING - 36 MIN)

		NOMINAL						FINAL					
UNDOCK TIME (GET)	HR	+	XX	XX	0	9	9	+	XX	XX			
	MIN	+	XX	XX	XX	0	7	+	XX	XX	XX		
	SEC	+	XX	0	0	0	0	+	XX				
ATT	R	+	0	2	9	0	0	+					
	P	+	3	1	4	0	0	+					
	Y	+	3	2	4	0	0	+					
HGA	P	+	0	0	8	0	0					0	0
	Y	+	2	3	0	0	0					0	0

98+30

11111
00146
00000
05000
00050

◄DP INFORM SOYUZ: ORIENTATION ESTABLISHED.ОРИЕНТАЦИЯ УСТАНОВЛЕНА.
SC CONT - CMC/HOLD
P20 OPT 5 (QUAD C TO EARTH, -X (CSM) ALONG $\bar{V}$, 0.2 DEG DBD)
N78 (+90.00, -82.75, +180.00)
N79 (R2 = +00020)
N70 (00047)
ENTER ON F50 18 (DO NOT MNVR)

98+40

ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
◄DP INFORM SOYUZ: TURN ON VHF RANGING.
CONFIGURE VHF FOR RANGING
VHF AM A - OFF (CTR)
VHF AM B - DUPLEX
VHF RANGING - ON (UP)

SET DET COUNTING UP TO SECOND UNDOCKING PAD TIME (GET)
(PG 7-7)

PASSIVE UNDOCKING SWITCH CONFIGURATION

98+50

ALIGN GDC TO IMU

QUI

UV ABSORPTION POWER - ON

ATS

ACQUIRE ATS HGA: MAN, WIDE P & Y FROM SECOND
UNDOCKING PAD HGA (PG 7-7)
S-BD ANT IND > 1/3 SCALE, HGA: REACQ, NARROW

99+00

PASSIVE UNDOCKING SWITCH CONFIGURATION

```
     HATCH 3 - CLOSED (VERIFY)
     HATCH 3 PEV - CLOSED (VERIFY)
  1  EMS FUNC/MODE - ΔV SET/STBY
     SET ΔVC = +101.3 FPS
     EMS FUNC - ΔV
     RHC PWR NORMAL #2 - AC/DC
     RHC PWR DIRECT #2 - MNA/B
     SC CONT - CMC/HOLD (VERIFY)
     MAN ATT (3) - MIN IMP
     DBD RATE - MIN/LOW
     BMAG MODE (3) - ATT 1/RATE 2
     THC PWR - ON (UP)
     COAS PWR - ON (UP)
     RHC #2 - LOCKED
     THC - ARMED
     V16 N4E

    INFORM APOLLO: PREPARING FOR UNDOCKING.

     DOCKING SYSTEM PREPARATION:
       DOCKING SYSTEM A:

274      CB IND LOGIC MNA - CLOSE
         CB IND PWR AC1 - CLOSE
         CB CONTROL BAT A - CLOSE
         CB MOTORS AC1 (3) - CLOSE

       DOCKING SYSTEM B:

         CB IND LOGIC MNB - CLOSE
         CB IND PWR AC2 - CLOSE
         CB CONTROL BAT B - CLOSE
         CB MOTORS AC2 (3) - CLOSE

     *       IF ACTIVE HOOKS CLOSED:                    *
     *                                                  *
     *     ◄DP INFORM SOYUZ: OPENING ACTIVE HOOKS.      *
     *                       ОТКРЫВАЮ АКТИВНЫЕ КРЮКИ.   *
     *LIT LIT  STRUCT LATCH A - OPEN (~8 SEC)            *
     *OUT LIT  STRUCT LATCH CLOSE LT - OUT               *
     *LIT OUT  STRUCT LATCH OPEN LT - ON                 *

       DOCKING STATUS LTS:

LIT LIT  STRUCT LATCH OPEN LT - ON (VERIFY)
OUT LIT  GUIDE RING CAPTURE LT - ON (VERIFY)
LIT OUT  PASSIVE LT - ON (VERIFY)
         STRUCT RING CONTACT LT - ON (VERIFY)
```

99+00 — AT TV

PASSIVE UNDOCKING CHECKLIST

SOYUZ BEGINS UNDOCKING SEQUENCE (99:03)

00:00

SECOND UNDOCKING (CSM PASSIVE) (99:06 - 99:08)

STATION KEEP
P20 (OPT 5) HOLDS LH
(QUAD C TO EARTH, -X ALONG $\bar{V}$)
THC - CENTER SOYUZ IN COAS
NULL LOS RATES
MAINTAIN 18M
SET DET COUNTING UP TO 99:21:00

99+10

50:00

VERIFY GDC ALIGNED TO IMU

MAD

PRIMARY EVAP DEACTIVATION CHECKLIST

BMAG MODE (3) - ATT 1/RATE 2 (VERIFY)
MAN ATT (3) - MIN IMP (VERIFY)
SC CONT - CMC/AUTO (VERIFY)

99+20

00:00 — USR

THC -Y(L) 6 PULSES (2 SEC BETWEEN PULSES)

SC CONT - SCS
RHC - TRACK SOYUZ, NULL ROLL RATE
V16N4E, V23N78E, +25500E
RHC - KEEP ROLL ERROR NULLED, TRACK SOYUZ
IF ATS LOCK LOST: SET HGA: MAN, WIDE P=+15, Y=+214
(ACQUIRE AT 99:31)
◄DP INFORM SOYUZ: TURN ON BEACONS AND ORIENTATION LTS.
EXT LTS RUN/EVA - RUN/EVA — ВКЛЮЧИТЕ МАЯКИ И
EXT LTS RNDZ - RNDZ — ОГНИ ОРИЕНТАЦИИ.
AFTER SOYUZ REPORTS OPENING REFLECTOR COVERS:
OBSERVE OPENING OF TOP SIDE COVER (WITH SPOTTING SCOPE)

~06:30

WHEN YAW ERROR (N04,R3) ~ 0 DEG
SC CONT - CMC/HOLD

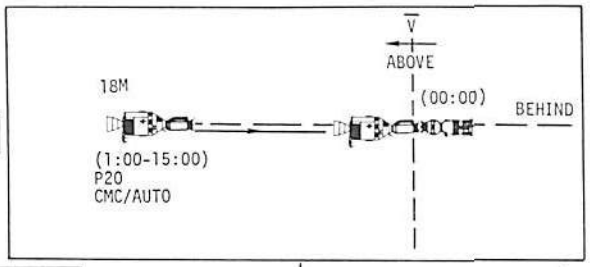
IF COVER NOT OPEN SEE PG J/10-8

THC +Y(R) 3 PULSES (2 SEC BETWEEN PULSES)

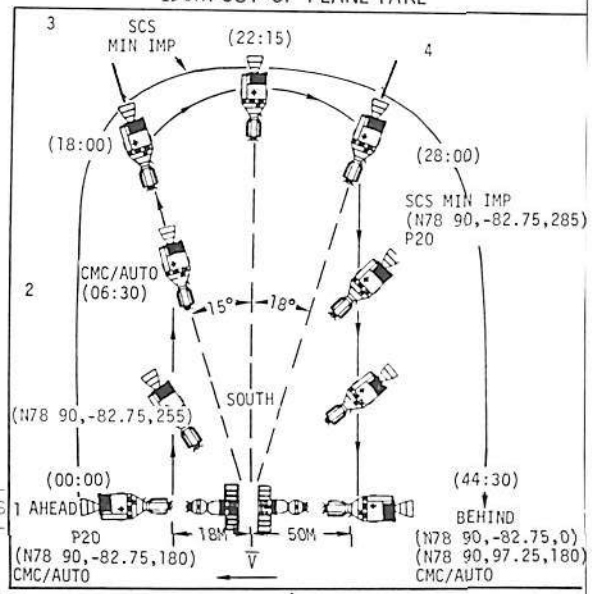
99+30

RHC - LOCKED
V58E(P20(OPT 5)MAINTAINS QUAD C TO EARTH,-X 75 DEG S OF V)

PASSIVE UNDOCK & STATIONKEEP



150M OUT-OF-PLANE TAKE



PASSIVE UNDOCKING CHECKLIST

[INFORM APOLLO: READY FOR UNDOCKING.]

55:00 ◄DP INFORM SOYUZ: READY FOR UNDOCKING.
ГОТОВ К РАССТЫКОВКЕ.

56:00 [INFORM APOLLO: INITIATING UNDOCKING.]

AUTO RCS SEL (16) - MNA/B

58:00 EMS MODE - NORMAL
DET - STOP/RESET/UP
DAC - ON
MONITOR PASSIVE UNDOCKING

00:00 AT UNDOCKING: DET - START
GUIDE RING CAPTURE LT - OUT
LIT LIT STRUCT RING CONTACT LT - OUT
OUT OUT UNDOCKING ΔVC = 101.5 FPS
OUT OUT

[INFORM APOLLO: UNDOCKING COMPLETED.]

◄DP INFORM SOYUZ: UNDOCKING COMPLETED.
V46E — РАССТЫКОВКА ВЫПОЛНЕНА.
SC CONT - CMC/AUTO
V58E (ESTABLISH ORB RATE DRIVE)

00:40 WHEN BODY DIAMETER ~8 DEG:
THC (+X) (FWD) (1.5 FPS ON EMS)
THC - CENTER SOYUZ IN COAS
V44E, V25E, E, E, E, PRO, PRO
(LOAD ZEROES INTO N87)
V45E
V31E (ONLY ONCE)
(ACTIVATE MIN IMP THC EMP)
RHC - LOCKED (VERIFY)
EMS FUNC/MODE - ΔV SET/BACKUP
VHF RNG - RESET

THC - NULL LOS RATES & STATION KEEP
18M AHEAD OF SOYUZ (BODY ~8 DEG)
◄DP INFORM SOYUZ: STATIONKEEPING.ЗАВИСАНИ
04:00 ◄DP INFORM SOYUZ: OPEN REFLECTOR COVERS
AS PROGRAMMED.
DAC - OFF — ОТКРОЙТЕ КРЫШКИ ОТРАЖАТЕЛЕЙ
ПО ПРОГРАММЕ.

DOCKING SYSTEM A:

CB IND LOGIC MNA - OPEN
CB IND PWR AC1 - OPEN
CB CONTROL BAT A - OPEN
CB MOTORS AC1 (3) - OPEN

DOCKING SYSTEM B:

CB IND LOGIC MNB - OPEN
CB IND PWR AC2 - OPEN
CB CONTROL BAT B - OPEN
CB MOTORS AC2 (3) - OPEN
MAIN BUS TIE (2) - OFF (VERIFY)

PRIMARY EVAP DEACTIVATION CHECKLIST

GLY EVAP H2O FLOW - OFF (CTR)
GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR - INCR FOR 1 MIN

```
99+30   USR   V16N4E
              THC - CENTER SOYUZ IN COAS, NULL LOS RATES
00000         (1 DEG/MIN ~ 0.1 FPS)
00000
00000
05000
00050

        PREPARE HRC FOR SOYUZ PHOTOS (CX FILM)

17:30   SC CONT - CMC/AUTO
18:00   THC -Z(U) 3 PULSES (2 SEC BETWEEN PULSES)
           -Y(L) 4 PULSES (2 SEC BETWEEN PULSES)
99+40   SC CONT - SCS
        AUTO RCS SEL A3, C4, B3, D4 - OFF                          D
        DP INFORM SOYUZ: TURN OFF BEACONS AND ORIENTATION LTS.     A
        150M DATA TAKE CHECKLIST              ВЫКЛЮЧИТЕ МАЯКИ И    T
        V23N78E, +27000E                     ОГНИ ОРИЕНТАЦИИ.  1   A
        CHECK N04 R2 DECREASING & R3->0 DEG                    5
~22:15  CHECK N04 R2 MINIMUM (~-5.5 DEG) & R3~0 DEG            0   T
        V23N78E, +28500E; RECORD VHF RANGE              NM     M   A
                                  ---------------                K
        CHECK N04 R2 INCREASING TOWARDS -1.0 DEG                 E

                                 *IF EARLY FINAL SEP REQ'D *
                                 *PERFORM EARLY FINAL SEP  *
                                 *CHECKLIST (PG 7-11)      *
                                 * * * * * * * * * * * * * *

~27:00  WHEN N04 R2=-1.0 DEG AND INCREASING, DATA TAKE
          COMPLETION CHECKLIST
~28:00  SC CONT - CMC/AUTO
99+50   THC -Z(U) 3 PULSES (2 SEC BETWEEN PULSES)
           +Y(R) 4 PULSES (2 SEC BETWEEN PULSES)
        RHC - LOCKED
        V58E (P20 (OPT 5) MAINTAINS QUAD C TO EARTH,
              -X 105 DEG S OF V̄)
        THC - NULL LOS RATES (3 MINUTES MAX)
        V16N4E                                  СБОР ДАННЫХ ВЫПОЛНЕН,
        SC CONT - SCS                           ВКЛЮЧИТЕ МАЯКИ
        RHC - TRACK SOYUZ & KEEP ROLL ERROR NULLED  И ОГНИ ОРИЕНТАЦИИ.
        DP INFORM SOYUZ: DATA TAKE COMPLETED. TURN ON BEACONS
                         AND ORIENTATION LTS.       ГОТОВ ВКЛЮЧИТЬ ПРОЖЕКТОР.
        IF REQUIRED DP INFORM SOYUZ: READY TO TURN ON SPOTLIGHT.
        WHEN N04 YAW ERROR ~5 DEG AND INCREASING, INCREMENT
          N78, R3 BY 10 DEG
        MONITOR N04 PITCH ERROR
                          MAN ATT P - RATE CMD
        IF N04 PITCH ERROR IF P ERROR > +3 DEG, THC UP 1 SEC
          NOT WITHIN 3 DEG IF P ERROR < -3 DEG, THC DN 1 SEC
                          MAN ATT P - MIN IMP
        RHC - TRACK SOYUZ AND KEEP N04 ROLL ERROR WITHIN 3 DEG
        MAINTAIN N04 YAW ERROR WITHIN 5 DEG BY UPDATING N78, R3
100+00  MAINTAIN N04 PITCH ERROR WITHIN 3 DEG WITH 1 SEC, UP/DN
          THC CORRECTIONS AS SHOWN ABOVE
```

150 M DATA TAKE CHECKLIST

```
      IF COMM - VERIFY DSE TAPE MOTION
    * * * * * * * * * * * * * * * * * * * * * * * *
    * IF NO COMM - TAPE RCDR - HBR/RCD/FWD/CMD RESET*
    * * * * * * * * * * * * * * * * * * * * * * * *
274   EXT LTS RNDZ - OFF
      AFTER DP INHIBITS RCS JETS:

230     UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC)
        UV COVER - OPEN (TB BP <15 SEC THEN GRAY,
          IF NOT GRAY IN 15 SEC - OFF (CTR))
        UV ABSORPTION POWER - ON
        UV ABSORPTION LAMPS - ON (VERIFY)
101     SYSTEM TEST METER - C,& (VERIFY)

      DP WILL TRACK SOYUZ USING COAS MARK
        AND PENLIGHT
      VERIFY DP INFORM SOYUZ ORIENTATION LIGHTS
        AND BEACONS OFF

      MONITOR SYSTEM TEST METER
        HELP DP TRACK REFLECTOR BY
        CALLING OUT VOLTAGE AND DIRECTION
      OBTAIN 30 SEC OF BACKGROUND DATA
        AT BEGINNING OF DATA TAKE KEEPING
        METER READING >3.0 OR <2.0 VOLTS

      DP WILL TRACK SOYUZ FOR DURATION OF
        DATA TAKE USING COAS, PENLIGHT
        AND RHC TO KEEP METER READING
        >2.0 AND <3.0 VOLTS
```

DATA TAKE COMPLETION CHECKLIST

```
230   UV ABSORPTION POWER - OFF
      UV COVER - CLOSE (TB BP FOR <15 SEC THEN GRAY,
        IF NOT GRAY IN 15 SEC - OFF (CTR))


      INFORM DP - DATA TAKE COMPLETE AND UV COVER
        CLOSED; TURN RCS JETS BACK ON.
    * * * * * * * * * * * * * * * * * * * * * * * *
    * IF NO COMM - TAPE RCDR - LBR/RCD/FWD/CMD RESET*
    * * * * * * * * * * * * * * * * * * * * * * * *
274   EXT LTS RNDZ - RNDZ
      IF DP INFORMS SOYUZ ~READY TO TURN ON
        SPOTLIGHT~ WAIT FOR RESPONCE THEN:
        EXT LTS RNDZ - SPOT
* * * * * * * * * * * * * * * * * * * * * * * * * * *
*IF THC TRANSLATION REQ'D DURING DATA TAKE:         *
*  UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC) *
*  UV COVER - CLOSE(TB BP <15 SEC THEN GRAY,        *
*    IF NOT GRAY IN 15 SEC - OFF (CTR))             *
*  UV ABSORPTION POWER - ON                         *
*  AUTO RCS SEL (16) - MNA/B                        *
*  MAN ATT (3) - RATE CMD                           *
*  THC - AS REQ'D                                   *
*  MAN ATT (3) - MIN IMP                            *
*  AUTO RCS SEL A3,C4,B3,D4 - OFF                   *
*  UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC) *
*  UV COVER - OPEN (TB BP <15 SEC THEN GRAY,        *
*    IF NOT GRAY IN 15 SEC - OFF (CTR))             *
*  UV ABSORPTION POWER - ON                         *
*  CONTINUE DATA TAKE                               *
* * * * * * * * * * * * * * * * * * * * * * * * * * *
```

100+00

PRIMARY EVAP ACTIVATION
GLY EVAP H2O FLOW - AUTO
GLY EVAP STM PRESS - AUTO

00000
00000
00000
05000
00050

```
*IF EARLY FINAL SEP REQ'D *
*PERFORM EARLY FINAL SEP  *
*CHECKLIST                *
* * * * * * * * * * * * * *
```

~44:30

WHEN N78 R3 = 0 DEG AND YAW ERROR ~ 0 DEG:
MAN ATT (3) - RATE CMD
THC +Y(R) 3 SEC

MAN ATT (3) - MIN IMP
SC CONT - CMC
RHC - LOCKED
V58E (P20 (OPT 5) MAINTAINS QUAD C TO EARTH,
-X ALONG $-\bar{V}$)

100+10

THC - CENTER SOYUZ IN COAS, NULL LOS RATES, MAINTAIN 50M
(AT 50M, BODY DIAMETER ~3 DEG, WINGS ~9 DEG)
VERIFY SOYUZ MNVR TO LH ASAP ВКЛЮЧИТЕ ДВОЙНОЙ УКВ СИМПЛЕКС, ВЫКЛЮЧИТЕ
DP INFORM SOYUZ: TURN ON DUAL VHF SIMPLEX. МАЯКИ И ОГНИ ОРИЕНТАЦИИ.
TURN OFF BEACONS AND ORIENTATION LTS.
VHF COMM CHECKLIST
EXT LTS RNDZ - OFF
ALIGN GDC TO IMU

```
*IF EARLY FINAL SEP REQ'D *
*PERFORM EARLY FINAL SEP  *
*CHECKLIST                *
* * * * * * * * * * * * * *
```

25:00

SET DET COUNTING UP TO 100:50:00

FDAI SCALE - 5/5
VZ5N78E, +9000E, +9725E, +18000E
MAN ATT ROLL - ACCEL CMD
RHC - ROLL 180 DEG AT ~2 DEG/SEC
WHEN ROLL ERROR NULLED:
RHC - NULL ROLL RATE
MAN ATT ROLL - MIN IMP
V58E
RHC - LOCKED
FDAI SCALE - 5/1
THC - MAINTAIN STATION KEEP AT 50M

VHF COMM CHECKLIST

VHF AM A - SIMPLEX
VHF AM B - OFF (CTR)
VHF RANGING - OFF

100+20

35:00 — QUI

LOAD DAC MAG (CX04)
VERIFY SETTINGS: (T8, 1/250/INFINITY) 12 FPS

100+30

UV ABSORPTION POWER - ON

EARLY FINAL SEP CHECKLIST

IF FINAL SEP REQ'D IMMEDIATELY FOLLOWING 150M DATA TAKE:

DO NOT PERFORM SWEEP TERMINATION BURN
MAN ATT (3) - MIN IMP (VERIFY)
BMAG MODE (3) - ATT 1/RATE 2 (VERIFY)
SC CONT - SCS (VERIFY)
AUTO RCS SEL (16) - MNA/B
P00
V31E (TERMINATE MIN IMP THC EMP)
RHC - CONTINUE TO TRACK SOYUZ IN COAS
V46E
P30; N33 = 99:54:00; N81 = +2.0, +0.5, +0.4
P41, BYPASS MNVR, KEEP SOYUZ IN COAS
MAN ATT (3) - RATE CMD
SEP MNVR
MAN ATT (3) - MIN IMP
P00
RHC - CONTINUE TO TRACK SOYUZ IN COAS
PERFORM 1000M DATA TAKE CHECKLIST (PG 7-15) FROM 21 TO 29 MINUTES
AFTER SEP MNVR AS THE CSM PASSES OVER SOYUZ AT ~750M.

IF FINAL SEP REQ'D AFTER REACHING STATION KEEPING 50M BEHIND SOYUZ:

MAN ATT (3) - MIN IMP (VERIFY)
BMAG MODE (3) - ATT 1/RATE 2 (VERIFY)
SC CONT - SCS
P00
V31E (TERMINATE MIN IMP THC EMP)
RHC - CONTINUE TO TRACK SOYUZ IN COAS
V46E
P30; N33 = PRESENT TIME + 5 MINUTES; N81 = 0.0, 0.0, +0.4
P41, BYPASS MNVR, KEEP SOYUZ IN COAS
MAN ATT (3) - RATE CMD
SEP BURN #1
MAN ATT (3) - MIN IMP
P00
RHC - CONTINUE TO TRACK SOYUZ IN COAS
P30; N33 = SEP BURN #1 TIG + 8 MINUTES; N81 = +1.4, 0.0, +0.4
P41, BYPASS MNVR, KEEP SOYUZ IN COAS
MAN ATT (3) - RATE CMD
SEP BURN #2
MAN ATT (3) - MIN IMP
PERFORM 1000M DATA TAKE CHECKLIST (PG 7-15) FROM 22 TO 30 MINUTES
AFTER SEP BURN #2 AS THE CSM PASSES OVER SOYUZ AT ~750M.

IF FINAL SEP REQ'D AND CSM NOT STATION KEEPING 50M BEHIND SOYUZ:

MAN ATT (3) - MIN IMP (VERIFY)
BMAG MODE (3) - ATT 1/RATE 2 (VERIFY)
SC CONT - SCS (VERIFY)
V16N4E
RHC - TRACK SOYUZ IN COAS
THC - MAINTAIN SAFE RANGE
CONTACT STDN FOR SEP BURN P30 LOAD
AFTER STDN UPDATES P30 LOAD:
V31E (TERMINATE MIN IMP THC EMP)
V46E
P30, LOAD N33 AND N81
P41, BYPASS MNVR, TRACK SOYUZ IN COAS
30 SEC BEFORE TIG - MAN ATT (3) - RATE CMD
SEP MNVR
MAN ATT (3) - MIN IMP
P00
RHC - TRACK SOYUZ TO VERIFY SEPERATION

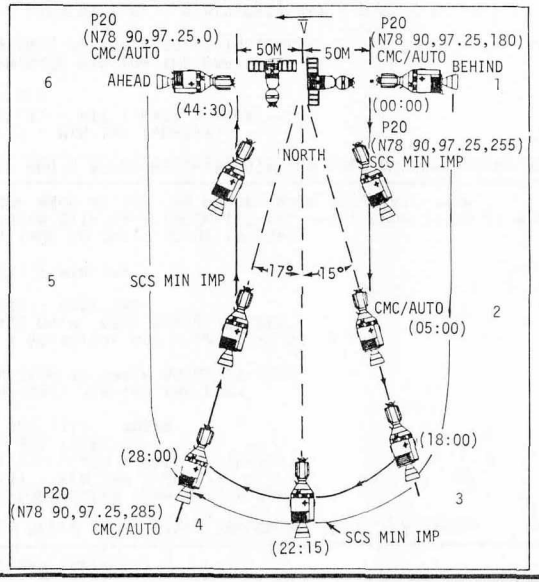
N33 = ____:____:____.____
N81 = ____,____,____

100+30	QUI	
00000		
00000		
00000		
05000		
00050		
	BDA	
45:00		
	ATS	ACQUIRE ATS HGA: MAN, WIDE P=+10, Y=+316 S-BD ANT IND > 1/3 SCALE, HGA: REACQ, NARROW
	SP1	
100+40	NFL	
55:00		PRIMARY EVAP DEACTIVATION CHECKLIST
59:30	MAD	SC CONT - SCS MAN ATT (3) - RATE CMD RHC - ARMED
100+50		THC +Y(R) 9 SEC
		MAN ATT (3) - MIN IMP RHC - TRACK SOYUZ, NULL ROLL RATE V16N4E V23N78E, +25500E
	USR	RHC - KEEP ROLL ERROR NULLED, TRACK SOYUZ EXT LTS RNDZ - RNDZ DP INFORM SOYUZ: BEACON ON.МАЯК ВКЛЮЧЕН.
~05:30		WHEN YAW ERROR (N04, R3) ~0 DEG: MAN ATT (3) - RATE CMD
		THC -Y(L) 2 SEC
		MAN ATT (3) - MIN IMP SC CONT - CMC/AUTO RHC - LOCKED
101+00		V58E (P20 (OPT 5) MAINTAINS QUAD A TO EARTH, -X 105 DEG N OF ∇) THC-CENTER SOYUZ IN COAS,NULL LOS RATES(1 DEG/MIN~0.3 FPS)

PRIMARY EVAP DEACTIVATION CHECKLIST

GLY EVAP H2O FLOW - OFF (CTR)
GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR - INCR FOR 1 MIN

500M OUT-OF-PLANE TAKE



```
101+00   V16N4E
         DP INFORM SOYUZ: TURN ON VHF RANGING.ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
00000    VHF RANGING CHECKLIST
00000    DP INFORM SOYUZ: RANGING LOCKUP ESTABLISHED.
00000                      РЕЖИМ ИЗМЕРЕНИЯ ДАЛЬНОСТИ УСТАНОВЛЕН.
05000
00050

17:30    SC CONT - SCS
         MAN ATT (3) - RATE CMD
18:00    THC -Z(U) 5 SEC
             +Y(R) 7 SEC
         MAN ATT (3) - MIN IMP
         AUTO RCS SEL A3, C4, B3, D4 - OFF
101+10   DP INFORM SOYUZ: TURN OFF BEACONS AND ORIENTATION LTS.
         500M DATA TAKE CHECKLIST              ВЫКЛЮЧИТЕ МАЯКИ И
         V23N78E, +27000E                      ОГНИ ОРИЕНТАЦИИ.
         CHECK N04 R2 DECREASING (MORE NEG) & R3->0 DEG
~22:15   CHECK N04 R2 MINIMUM (~-5.5 DEG) & R3~0 DEG
         V23N78E, +28500E; RECORD VHF RANGE                NM
                                          --------------
         CHECK N04 R2 INCREASING TOWARDS -1.0 DEG

~27:00   WHEN N04 R2=-1 DEG AND INCREASING, DATA TAKE
           COMPLETION CHECKLIST
~28:00   MAN ATT (3) - RATE CMD
         THC -Z(U) 5 SEC
             -Y(L) 7 SEC

101+20   MAN ATT (3) - MIN IMP
         SC CONT - CMC
         RHC - LOCKED
         V58E (P20 (OPT 5) MAINTAINS QUAD A TO EARTH,
                -X 75 DEG N OF V̄)
         V16N4E
         THC - NULL LOS RATES
         ADJUST N78 R3 TO INITIALLY CENTER SOYUZ IN COAS,RIGHT/LEFT
         THC - CENTER SOYUZ IN COAS AND NULL LOS RATES
         DP INFORM SOYUZ: DATA TAKE COMPLETED. TURN ON BEACONS
                          AND ORIENTATION LTS. СБОР ДАННЫХ ВЫПОЛНЕН, ВКЛЮЧИТЕ МАЯКИ
                                                И ОГНИ ОРИЕНТАЦИИ.
         IF REQUIRED DP INFORM SOYUZ: READY TO TURN ON SPOTLIGHT.
                                      ГОТОВ ВКЛЮЧИТЬ ПРОЖЕКТОР.
         PRIMARY EVAP ACTIVATION
           GLY EVAP H2O FLOW - AUTO
           GLY EVAP STM PRESS - AUTO

101+30
```

DATA TAKE

```
500 M DATA TAKE CHECKLIST

      IF COMM - VERIFY DSE TAPE MOTION
    * * * * * * * * * * * * * * * * * * * * * * * *
    * IF NO COMM - TAPE RCDR - HBR/RCD/FWD/CMD RESET*
    * * * * * * * * * * * * * * * * * * * * * * * *
274   EXT LTS RNDZ - OFF
      AFTER DP INHIBITS RCS JETS:

230     UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC)
        UV COVER - OPEN (TB BP <15 SEC THEN GRAY,
          IF NOT GRAY IN 15 SEC - OFF (CTR))
        UV ABSORPTION POWER - ON
        UV ABSORPTION LAMPS - ON (VERIFY)
101     SYSTEM TEST METER - C,8 (VERIFY)

      DP WILL TRACK SOYUZ USING COAS MARK
        AND PENLIGHT
      VERIFY DP INFORM SOYUZ ORIENTATION LIGHTS
        AND BEACONS OFF

      MONITOR SYSTEM TEST METER
        HELP DP TRACK REFLECTOR BY
        CALLING OUT VOLTAGE AND DIRECTION
      OBTAIN 30 SEC OF BACKGROUND DATA
        AT BEGINNING OF DATA TAKE KEEPING
        METER READING >3.0 OR <2.0 VOLTS

      DP WILL TRACK SOYUZ FOR DURATION OF
        DATA TAKE USING COAS, PENLIGHT,
        AND RHC TO KEEP METER READING
        >2.0 AND <3.0 VOLTS
```

VHF RANGE CHECKLIST

```
VHF AM A - OFF
VHF AM B - DUPLEX
VHF RANGING - ON
VHF RNG - RESET
```

DATA TAKE COMPLETION CHECKLIST

```
230   UV ABSORPTION POWER - OFF
      UV COVER - CLOSE (TB BP FOR <15 SEC THEN GRAY,
        IF NOT GRAY IN 15 SEC - OFF (CTR))

      INFORM DP - DATA TAKE COMPLETE AND UV COVER
        CLOSED; TURN RCS JETS BACK ON.
    * * * * * * * * * * * * * * * * * * * * * * * *
    * IF NO COMM - TAPE RCDR - LBR/RCD/FWD/CMD RESET*
    * * * * * * * * * * * * * * * * * * * * * * * *
274   EXT LTS RNDZ - RNDZ
      IF DP INFORMS SOYUZ ~READY TO TURN ON
        SPOTLIGHT~ WAIT FOR RESPONCE THEN:
        EXT LTS RNDZ - SPOT
```

```
* * * * * * * * * * * * * * * * * * * * * * * * * * *
*IF THC TRANSLATION REQ'D DURING DATA TAKE:          *
*  UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC)  *
*  UV COVER - CLOSE(TB BP <15 SEC THEN GRAY,         *
*    IF NOT GRAY IN 15 SEC - OFF (CTR))              *
*  UV ABSORPTION POWER - ON                          *
*  AUTO RCS SEL (16) - MNA/B                         *
*  MAN ATT (3) - RATE CMD                            *
*  THC - AS REQ'D                                    *
*  MAN ATT (3) - MIN IMP                             *
*  AUTO RCS SEL A3,C4,B3,D4 - OFF                    *
*  UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC)  *
*  UV COVER - OPEN (TB BP <15 SEC THEN GRAY,         *
*    IF NOT GRAY IN 15 SEC - OFF (CTR))              *
*  UV ABSORPTION POWER - ON                          *
*  CONTINUE DATA TAKE                                *
* * * * * * * * * * * * * * * * * * * * * * * * * * *
```

101+30

00000 WHEN BODY DIAMETER = 2 DEG OR VHF RANGE = .04 NM:
00000 SC CONT - SCS
00000 MAN ATT (3) - RATE CMD
05000 THC -X(A) 3 SEC
00050 +Y(R) 2 SEC
MAN ATT (3) - MIN IMP
RHC - TRACK SOYUZ AND KEEP ROLL ERROR NULLED
WHEN N04 YAW ERROR ~ -5 DEG AND DECREASING, INCREMENT N78, R3 BY 10 DEG
~44:30 MONITOR N04 PITCH ERROR
CHECK N04 PITCH ERROR STABLE AND WITHIN 3 DEG OF 0 DEG

IF N04 PITCH ERROR NOT WITHIN 3 DEG	MAN ATT P - RATE CMD IF P ERROR > +3 DEG, THC UP 1 SEC IF P ERROR < -3 DEG, THC DN 1 SEC MAN ATT P - MIN IMP

RHC - TRACK SOYUZ AND KEEP N04 ROLL ERROR WITHIN 3 DEG
MAINTAIN N04 YAW ERROR WITHIN 5 DEG BY UPDATING N78, R3
MAINTAIN N04 PITCH ERROR WITHIN 3 DEG WITH .5 SEC, UP/DN THC CORRECTIONS AS SHOWN ABOVE
DAC - ON

101+40

WHEN N78 R3 = 0 DEG AND YAW ERROR ~5 DEG:
MAN ATT (3) - RATE CMD
THC -Y(L) 3 SEC

MAN ATT (3) - MIN IMP
SC CONT - CMC
RHC - LOCKED
V58E (P20 (OPT 5) MAINTAINS QUAD A TO EARTH, -X ALONG V)
THC - CENTER SOYUZ IN COAS, NULL LOS RATES, MAINTAIN 50M (AT 50M, BODY DIAMETER ~3 DEG, WINGS ~9 DEG)
◄DP INFORM SOYUZ: TURN ON DUAL VHF SIMPLEX.
TURN OFF BEACONS AND ORIENTATION LTS.
VHF COMM CHECKLIST — ВКЛЮЧИТЕ ДВОЙНОЙ УКВ СИМПЛЕКС,
EXT LTS RNDZ - OFF — ВЫКЛЮЧИТЕ МАЯКИ И ОГНИ ОРИЕНТАЦИИ.
ALIGN GDC TO 0,0,0
DAC - OFF
SET DET COUNTING UP TO 102:16:00

SOYUZ PHOTOS

101+50

35:00

102+00

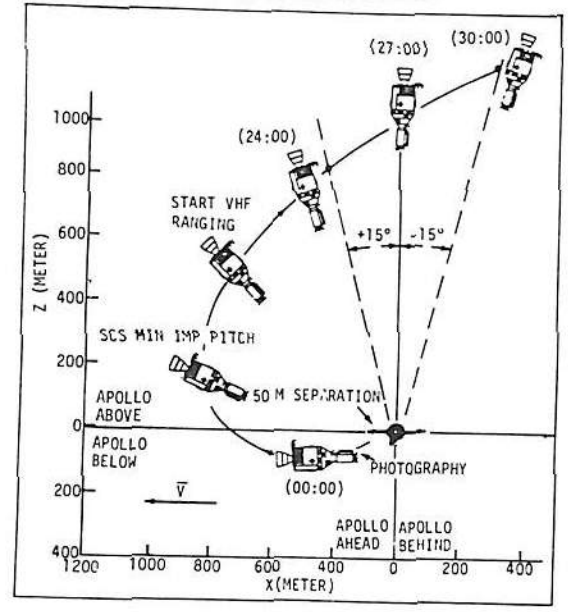
UV ABSORPTION POWER - ON

VHF COMM CHECKLIST

VHF AM A - SIMPLEX
VHF AM B - OFF (CTR)
VHF RANGING - OFF

102+00	SP2	SET ATS HGA: MAN, WIDE P=-35, Y=+144
45:00		S-BD ANT IND > 1/3 SCALE, HGA: REACQ, NARROW
00000		
00000	MIL	
00000		
05000		
00050		
	ROS	
	BDA	FDAI SCALE - 5/5
51:30		SC CONT - SCS
		MAN ATT (3) - RATE CMD
52:00	SP1	THC -Z(U) 2 SEC
		VERIFY SOYUZ GO FOR PHOTOS
		DP INFORM SOYUZ: INITIATING PITCH ROTATION.
102+10	NFL	MAN ATT PITCH - ACCEL CMD НАЧИНАЮ РАЗВОРОТ ПО ТАНГАЖУ.
		RHC - PITCH UP 2 DEG/SEC, 360 DEG & CTR SOYUZ IN COAS
55:00		FDAI SCALE - 5/1
		V31E
61112		V48E, LOAD N46 (61112, 01111); V46E
01111		MAN ATT PITCH - MIN IMP
		RHC - CENTER SOYUZ IN COAS РАЗВОРОТ ПО ТАНГАЖУ ВЫПОЛНЕН.
	AT	DP INFORM SOYUZ: PITCH ROTATION COMPLETED.
	TV	P30, LOAD N33 (102:16:00), LOAD N81 (+1.8, +0, +.6)
	SI	P41, BYPASS MNVR
59:30		MAN ATT (3) - RATE CMD
00:00		SEP MNVR
		MAN ATT (P) - MIN IMP
		DBD/RATE - MAX/LOW
		RHC - TRACK SOYUZ, KEEP GDC ROLL AT 0 DEG
		P00
102+20		SUN/SOYUZ MAY PASS < 5 DEG
	MAD	PRIMARY EVAP DEACTIVATION CHECKLIST
	USR	
		CM1 TV STA PWR - OFF (PNL 181)
		CM2 TV STA PWR - OFF
102+30		TV AMPL - BYPASS

1000M IN-PLANE DATA TAKE



PRIMARY EVAP DEACTIVATION CHECKLIST

GLY EVAP H2O FLOW - OFF (CTR)
GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR - INCR FOR 1 MIN

```
        N=
102+30  N=  ◄DP INFORM SOYUZ: TURN ON VHF RANGING.ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
        NA    VHF RANGING CHECKLIST
61112   NT  ◄DP INFORM SOYUZ: RANGING LOCKUP ESTABLISHED.
01111   NS    P25 N77, R, RDOT РЕЖИМ ИЗМЕРЕНИЯ ДАЛЬНОСТИ УСТАНОВЛЕН.
        N=
        N=    V83E
        N=
        N=
        N=
        N=
        N=
        N=
        N=
        N=
21:00   N=    AUTO RCS SEL A3, C4, B3, D4 - OFF
        N=  ◄DP INFORM SOYUZ: TURN OFF BEACONS AND ORIENTATION LTS.
        N=    1000M DATA TAKE CHECKLIST          ВЫКЛЮЧИТЕ МАЯКИ И
        N=                                       ОГНИ ОРИЕНТАЦИИ.
        N=
        N=
102+40  N=
        N=
        N=
        N=
        N=
        N=
        N=
        N=
        N=
        N=
30:00   N=    DATA TAKE COMPLETE WHEN R3 OF N83 > 285 DEG
        N=  ◄DP INFORM SOYUZ: AS-5 COMPLETED.AC-5 ВЫПОЛНЕН
        N=    VHF COMM CHECKLIST
        N=    EXT LTS RUN/EVA - OFF
        N=    P00
        N=    SC CONT - CMC/AUTO
33:00   N=    MAN ATT (3) - RATE CMD
        N=    BMAG MODE (3) - RATE 2
102+50  N/    V49 MNVR TO UV IN-PLANE SCAN ATTITUDE BY 102:52:00
        N/      (181, 270, 315)
        N/    AFTER MNVR COMPLETE:
        N/      UV ABSORPTION PWR - OFF
36:00   N/      UVA COVER - CLOSE
        N/
        N/    * * * * * * * * * * * * * * * * * * * * * * * * * * * *
        N/    *IF NO COMM - DSE - LBR/RCD/FWD/CMD RESET              *
        N/    *             UP TLM - RELAY                           *
        N/    *ON MCC REQUEST: UP TLM - UP TLM (CTR)                 *
        N/    *IF NO COMM BY 103:00 - UP TLM - DIRECT (FOR VAN PASS)*
        N/    * * * * * * * * * * * * * * * * * * * * * * * * * * * *
        N/    V49 MNVR TO OUT-OF-PLANE DATA ATTITUDE BY 102:56:00
        N=      (278, 268, 045)
41:00   N=    SET HGA: MAN, WIDE P=-30, Y=+249
        N=      HGA: REACQ, NARROW
        N=
        N=
        N=
        N=
103+00  N=    GO TO FLIGHT PLAN VOL I, PG 4.2-54.
        N=
```

DATA TAKE 1000M

1000 M DATA TAKE CHECKLIST

```
     IF COMM - VERIFY DSE TAPE MOTION
   * * * * * * * * * * * * * * * * * * * * * * * * * * *
   * IF NO COMM - TAPE RCDR - HBR/RCD/FWD/CMD RESET*
   * * * * * * * * * * * * * * * * * * * * * * * * * * *

274  EXT LTS RNDZ - OFF

     AFTER DP INHIBITS RCS JETS:

230    UV ABSORPTION POWER - OFF (NOT MORE THEN 20 SEC)
       UV COVER - OPEN (TB BP <15 SEC THEN GRAY,
         IF NOT GRAY IN 15 SEC - OFF (CTR))
       UV ABSORPTION POWER - ON
       UV ABSORPTION LAMPS - ON (VERIFY)
     NOTE: STAR TRACKER CANNOT BE USED TO VERIFY
       REFLECTED SIGNAL STRENGTH.
     DP WILL TRACK SOYUZ USING COAS MARK
       AND PENLIGHT
     VERIFY DP INFORM SOYUZ ORIENTATION
       AND BEACONS OFF
```

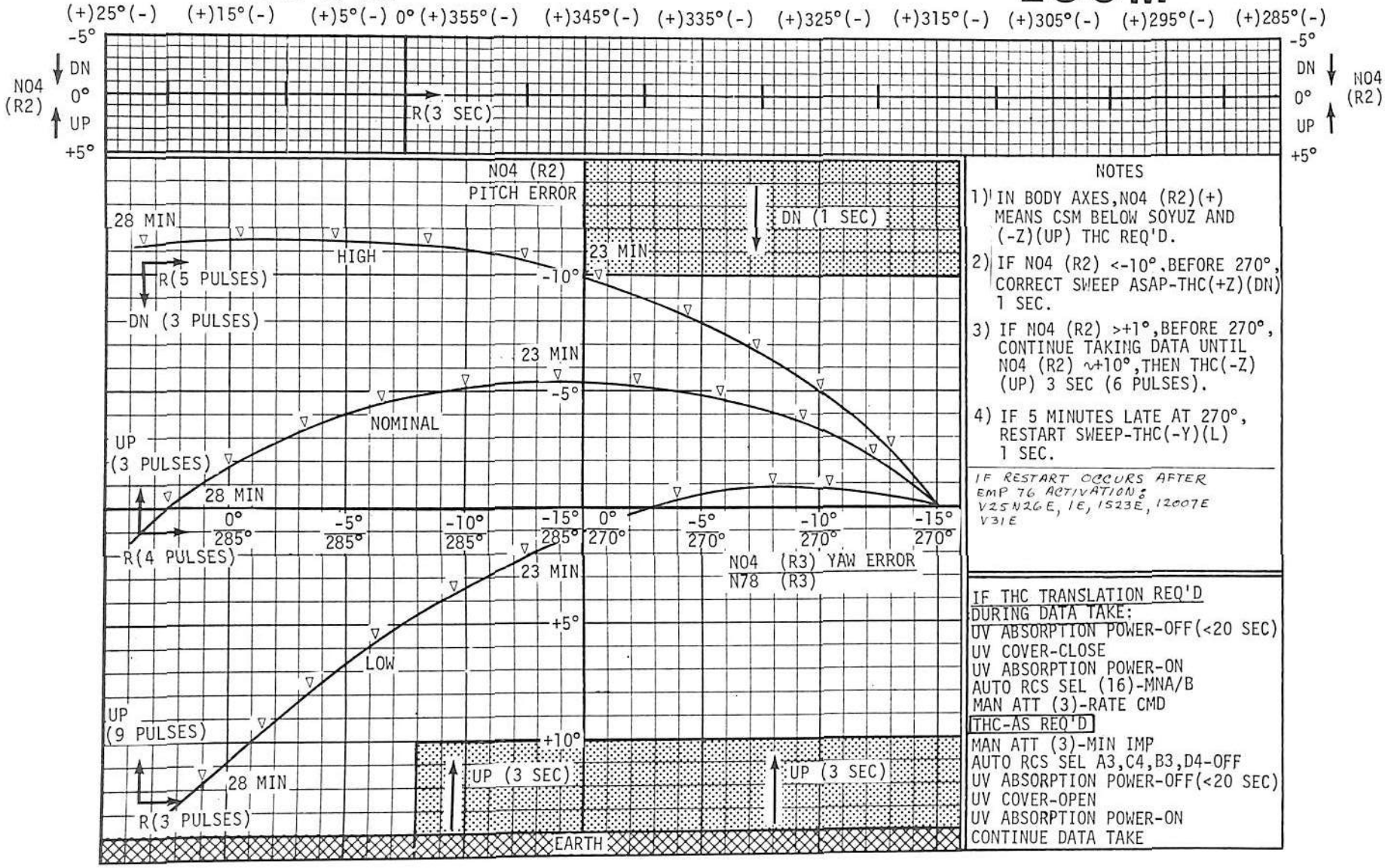
VHF RANGE CHECKLIST

```
VHF AM A - OFF
VHF AM B - DUPLEX
VHF RANGING - ON
VHF RNG - RESET
```

VHF COMM CHECKLIST

```
VHF AM A - SIMPLEX
VHF AM B-OFF(CTR)
VHF RANGING - OFF
```

150M 150M UVA RELATIVE MOTION PLOT 150M



NOTES

1) IN BODY AXES, N04 (R2)(+) MEANS CSM BELOW SOYUZ AND (-Z)(UP) THC REQ'D.

2) IF N04 (R2) <-10°, BEFORE 270°, CORRECT SWEEP ASAP-THC(+Z)(DN) 1 SEC.

3) IF N04 (R2) >+1°, BEFORE 270°, CONTINUE TAKING DATA UNTIL N04 (R2) ∿+10°, THEN THC(-Z) (UP) 3 SEC (6 PULSES).

4) IF 5 MINUTES LATE AT 270°, RESTART SWEEP-THC(-Y)(L) 1 SEC.

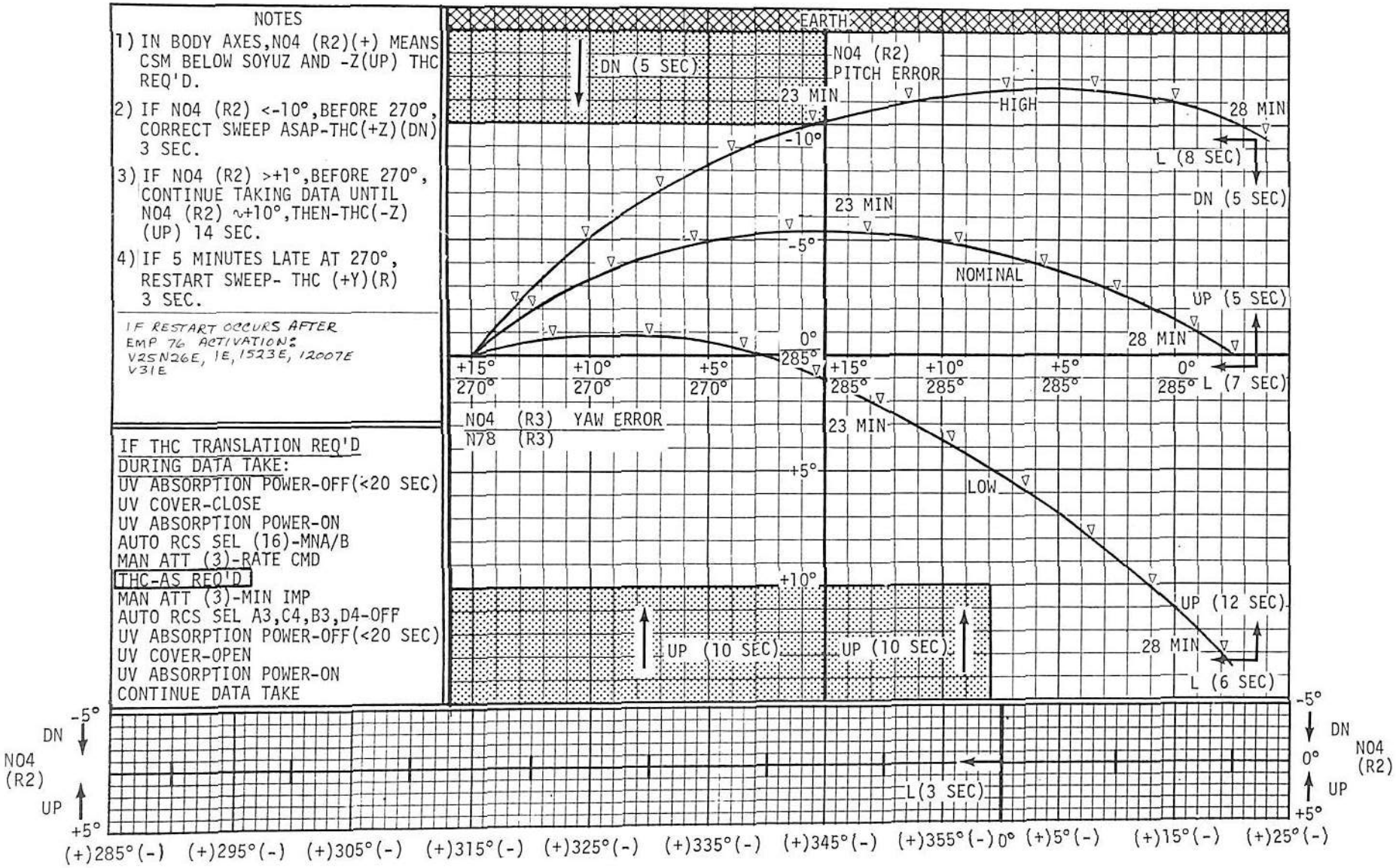
IF RESTART OCCURS AFTER EMP 76 ACTIVATION: V25N26E, 1E, 1523E, 12007E V31E

IF THC TRANSLATION REQ'D DURING DATA TAKE:
UV ABSORPTION POWER-OFF(<20 SEC)
UV COVER-CLOSE
UV ABSORPTION POWER-ON
AUTO RCS SEL (16)-MNA/B
MAN ATT (3)-RATE CMD
THC-AS REQ'D
MAN ATT (3)-MIN IMP
AUTO RCS SEL A3,C4,B3,D4-OFF
UV ABSORPTION POWER-OFF(<20 SEC)
UV COVER-OPEN
UV ABSORPTION POWER-ON
CONTINUE DATA TAKE

500M 500M UVA RELATIVE MOTION PLOT 500M

NOTES

1) IN BODY AXES, N04 (R2)(+) MEANS CSM BELOW SOYUZ AND -Z(UP) THC REQ'D.
2) IF N04 (R2) <-10°, BEFORE 270°, CORRECT SWEEP ASAP-THC(+Z)(DN) 3 SEC.
3) IF N04 (R2) >+1°, BEFORE 270°, CONTINUE TAKING DATA UNTIL N04 (R2) ∿+10°, THEN-THC(-Z) (UP) 14 SEC.
4) IF 5 MINUTES LATE AT 270°, RESTART SWEEP- THC (+Y)(R) 3 SEC.

IF RESTART OCCURS AFTER EMP 76 ACTIVATION:
V25N26E, 1E, 1523E, 12007E
V31E

IF THC TRANSLATION REQ'D DURING DATA TAKE:
UV ABSORPTION POWER-OFF(<20 SEC)
UV COVER-CLOSE
UV ABSORPTION POWER-ON
AUTO RCS SEL (16)-MNA/B
MAN ATT (3)-RATE CMD
THC-AS REQ'D
MAN ATT (3)-MIN IMP
AUTO RCS SEL A3,C4,B3,D4-OFF
UV ABSORPTION POWER-OFF(<20 SEC)
UV COVER-OPEN
UV ABSORPTION POWER-ON
CONTINUE DATA TAKE