

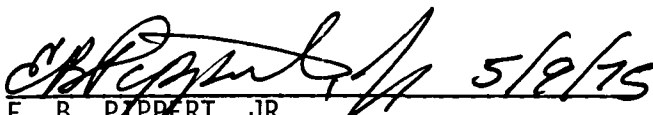
ASTP

FINAL

FLIGHT PLAN

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FLIGHT PLAN

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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 elapsed 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
\emptyset	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)

DATE 5/15/75

SECTION 1.

SECTION 1 - FLIGHT PLAN NOTES

I. CREW

A. Crew designations are as follows:

<u>APOLLO</u>	<u>PRIME</u>	<u>BACKUP</u>
Apollo Commander (AC)	Stafford	Bean
Command Module Pilot (CP)	Brand	Evans
Docking Module Pilot (DP)	Slayton	Lousma
<u>SOYUZ</u>	<u>SOYUZ 1</u>	<u>SOYUZ 2</u>
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:

<u>Left Seat Crewman</u>	<u>Days</u>	<u>Typical Activity</u>
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 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. Refsmdat 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 $R = 90^\circ + \text{flt az.}$, $P = 90^\circ$, $Y = 0^\circ$.
 - (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, $R = 0^\circ$, $P = 29^\circ$, $Y = 0^\circ$ (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. $Y = 45^\circ$, $P = 90^\circ$, $R = 180^\circ$.
 - (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 $P = 0^\circ$, $Y = 0^\circ$, $R = 0^\circ$.
 - (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, $R = 0^\circ$, $P = 180^\circ$, $Y = 0^\circ$.
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.

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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 $\Phi = 37.75^\circ$, $\Theta = 90^\circ$.

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.

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SECTION 2

SECTION 2 - CHARTS AND TABLES

Table 2-1
G/N OPTICS/BMAG-1 POWER SCHEDULE

<u>G/N Power Optics-On</u>	<u>Off</u>	<u>Δ T (On)</u>
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)

<u>BMAG-Off</u>	<u>BMAG-Warmup</u>	<u>BMAG-On</u>
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)

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TABLE 2-2
BIOMED HARNESS WEARING
SCHEDULE

<u>GET (HR:MIN) (SOYUZ)</u>	<u>AC</u>	<u>CP</u>	<u>DP</u>
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

2-4

<u>DAY</u>	<u>CDI</u>	<u>GET (SOYUZ)</u>	<u>SCENE DESCRIPTION</u>	<u>COVERAGE</u>	<u>R/T/DUMP</u>
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

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TABLE 2-3

APOLLO TV SCHEDULE (CONT)

<u>DAY</u>	<u>CDT</u>	<u>GET (SOYUZ)</u>	<u>SCENE DESCRIPTION</u>	<u>COVERAGE</u>	<u>R/T/DUMP</u>
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 TRANSFER 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

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TABLE 2-3

APOLLO TV SCHEDULE (CONT)

<u>DAY</u>	<u>CDT</u>	<u>GET (SOYUZ)</u>	<u>SCENE DESCRIPTION</u>	<u>COVERAGE</u>	<u>R/T/DUMP</u>
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)

<u>DAY</u>	<u>CDT</u>	<u>GET (SOYUZ)</u>	<u>SCENE DESCRIPTION</u>	<u>COVERAGE</u>	<u>R/T/DUMP</u>
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

ASTPFUEL CELL PURGE AND
WASTE WATER, & URINE DUMP SCHEDULE

DUMP NO.	H2 F.C. PURGE (GET)	ΔT (HR:MIN)	O2 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	
	TK1 Auto	TK2 Auto	TK1 Auto	TK2 Auto
07:00 Liftoff	TK1 Auto	TK2 Auto	TK1 Auto	TK2 Auto
76:00 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	10	4	B	2	A-4
2	34:25	13	5	A	1	A-4
3	46:55	12	6	B	4	A-4
4	58:25	11	*7	A	5	D-4
5	69:40	14	*8	B	6	D-4
6	83:30	10	*9	A	7	D-4
7	93:55	15	*10	B	8	D-4
8	108:40	11	*11	A	9	D-4
9	119:30	12	*12	B	10	D-4
10	131:50	13	*13	A	11	D-4
11	144:30	14	*14	B	12	D-4
12	158:05	12	*15	A	13	D-4
13	169:50	13	*16	B	14	D-4
14	183:25	10	17	A	15	B-6
15	193:45	14	18	B	16	B-6
16	207:30	12	19	A	17	B-6
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)	REFSMAT	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 MNR	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 MNR	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 MNR	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 MNR	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 •175:00 GET •157:30 GET •83.00 GET •127:05 GET •108:05 GET •57:55 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, 67:30,83:50,94:30,107:35,120:40, 132:40,144:50,157:20,170:10,179:35, & 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, 179:10 205:30
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, 132:45 146:10, 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

ASTP ASTRONOMY EXPERIMENTS; DATA SUMMARY

REV	MA 048 SOFT XRAY				MA 083-EXTREME UV SURVEY			MA 088-HELIUM GLOW SCANS (X-AXIS POSITION)		
	ON	TARGETS	OFF		ON	TARGETS	OFF	ON		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	124:47		126:09	SUPPL DATA	124:47			
76 77	127:40	SUPPL. DATA	128:14		127:49	SUPPL DATA	12:14	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 93	151:36	SUPPL. DATA	151:42		151:36	SUPPL DATA	151:42	151:36	340°,0°,20°	
	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

REV	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

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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

6A - OIL SLICKS
6B - LONDON
7A - HUMBOLDT CURRENT
7B - NAZCA PLAIN
7C - INTERNAL WAVES
7D - PERUVIAN DESERT
7E - ORINOCO RIVER DELTA
7F - GALAPAGOS ISLANDS
7G - CARIBBEAN SEA
8A - FALKLAND CURRENT
8B - CHILEAN ANDES
8C - DUNE FIELD
8D - PARANA RIVER
8E - CIRCULAR STRUCTURES IN BRAZIL
9A - AFAR TRIANGLE
9B - ARABIAN PENINSULA
9C - GUINEA CURRENT
9D - DESERT COLORS
9E - OWEINOT MTS.
9F - NILE DELTA
9G - LEVANTINE RIFT
9H - NIGER RIVER

VIS. OBS.
SITES

9I - ALGERIAN DESERT
9J - TRIPOLI
9K - STRAIT OF GIBRALTAR
9L - ALPS
9M - DANUBE DELTA
9N - ANATOLIAN FAULT
9O - VOLCANICS
9P - BIOILLUMINESCENCE
10A - GREAT DIKE
10B - SOMALI CURRENT
10C - ARABIAN SEA
10D - HIMALAYAS
10E - TAKLA MAKAN DESERT
11A - PLAYAS
11B - CORAL SEA
11C - SIMPSON DESERT
12A - ICEBERGS

Table 2-12

Primary Evaporator Deactivation

<u>Deactivate</u>	<u>Activate</u>	<u>Time Off</u> <u>Δ T</u>
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

<u>Deactivate</u>	<u>Activate</u>	<u>Time Off</u> <u>Δ T</u>
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

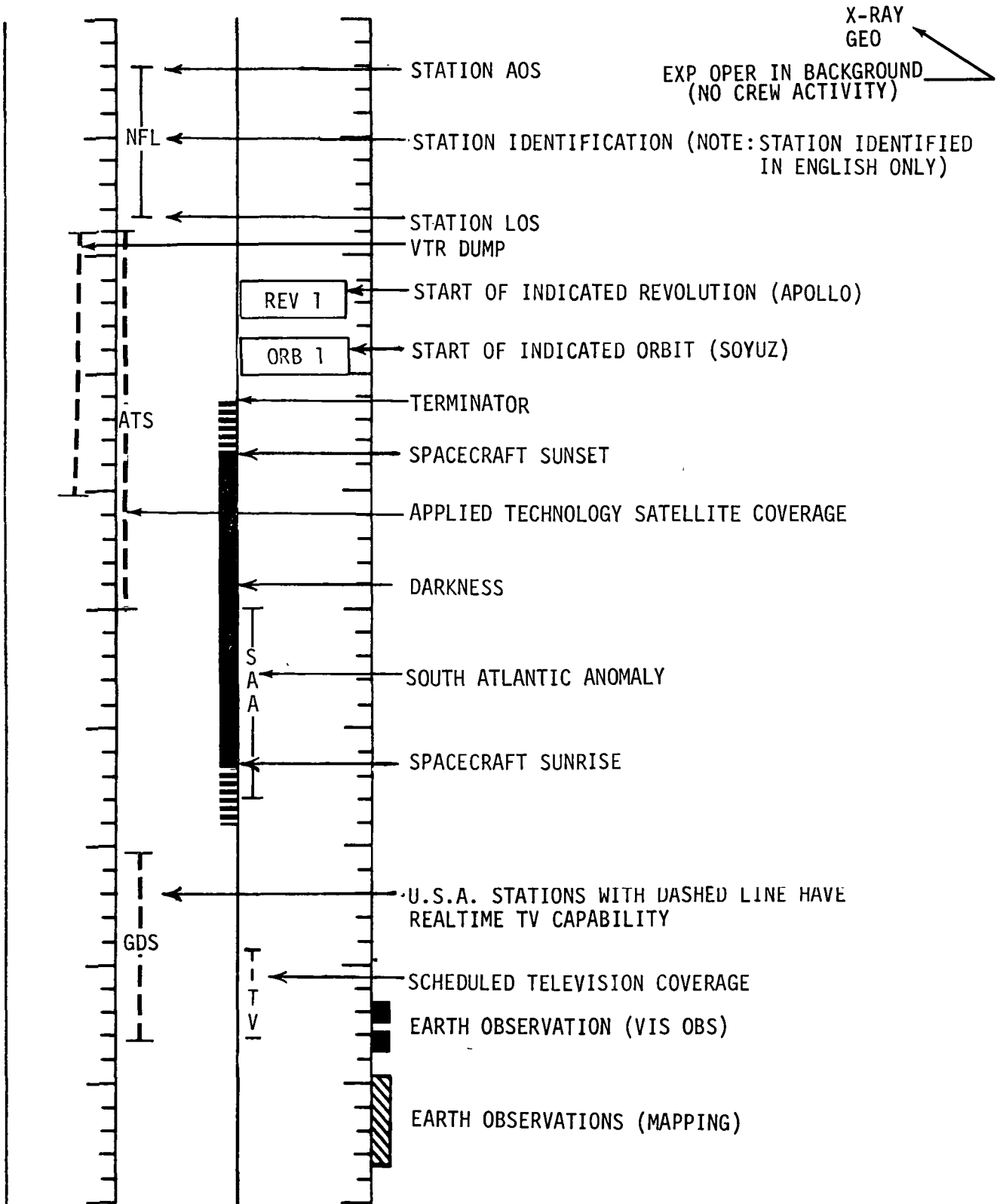
TABLE 2- 13

ASTP RETURN TO EARTH BLOCK DATA SCHEDULE

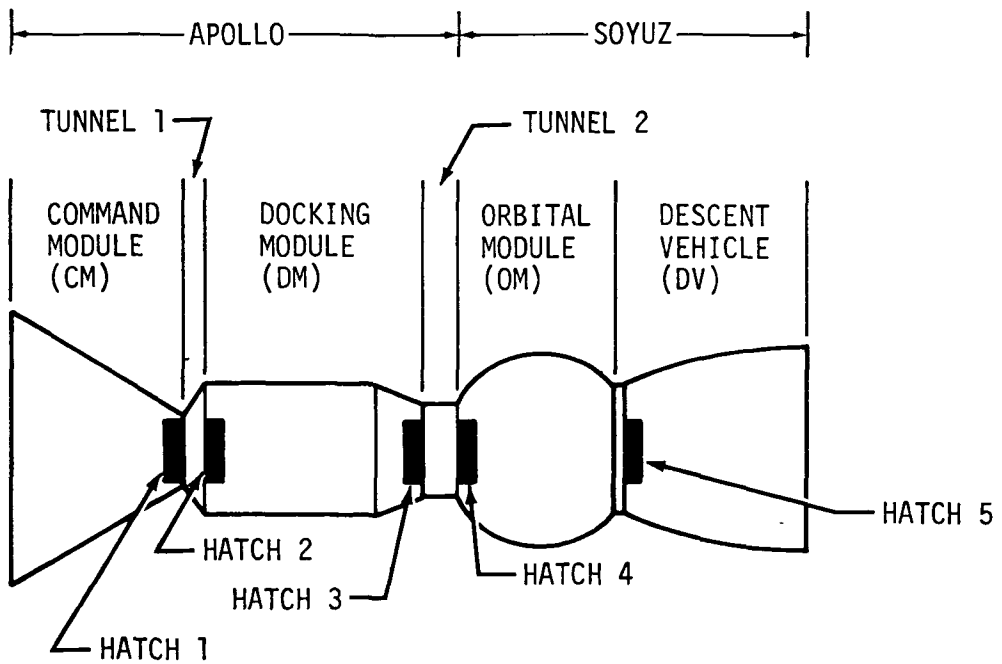
GET UPDATE (HR:MIN)	GET I (HR:MIN)	DEORBIT REV
29:50	57:50/81:30	33/48
53:15	105:10	63
75:35	128:55	78
97:45	152:35	93
126:55	176:15	108
149:30	199:56	123
173:07	223:35	138

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 begin 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.

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EUV PAD - REV 72

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

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		11:33		357A
			1:00	357A
		:15	1:45	357
		:15	1:00	357B
		:15	2:00	357
		:15		357A
			1:00	
		2:25		198A
			1:15	
		:15	2:30	198
		:15		198B
			1:15	
		1:22		356A
			1:00	
		:15	2:15	356
		:15	1:55	356B
		:15	2:15	356
		:15		356A
			1:00	
		2:32		340A

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 P00). 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 P00). 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	DET	DATA
40:00	V49 MNVR + 2 2 5 0 0 + 1 8 1 0 0 + 3 5 6 0 0	14:50	EUV, X-RAY - PWR DWN
55:00	X-RAY, HeG, EUV - OPS	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
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	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
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	24:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
06:10	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
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	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
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	42:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)
14:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	—:—	CONTINUE WITH PAD ON NEXT PAGE

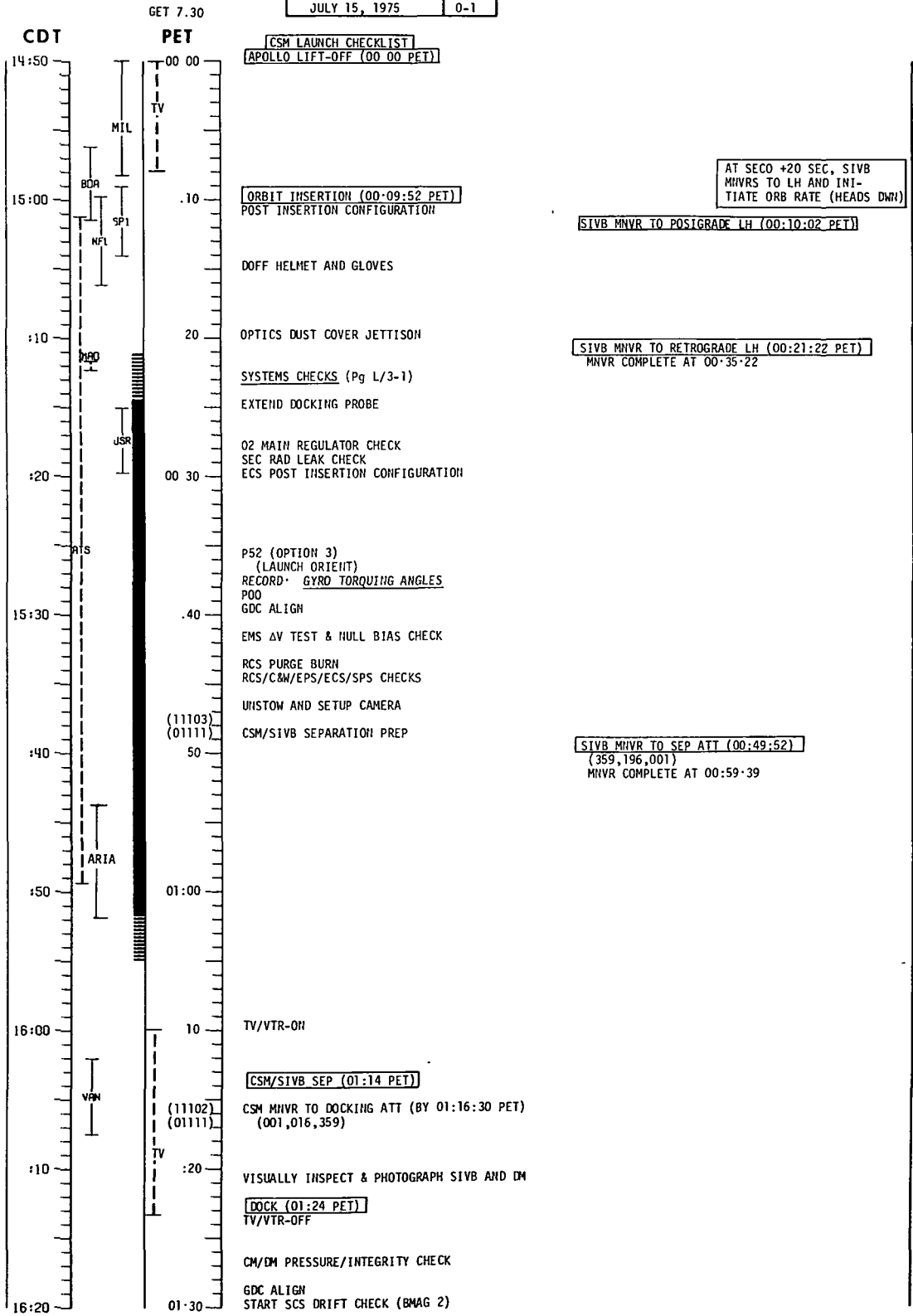
SECTION 4 - DETAILED FLIGHT PLAN

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	0-1

MCC

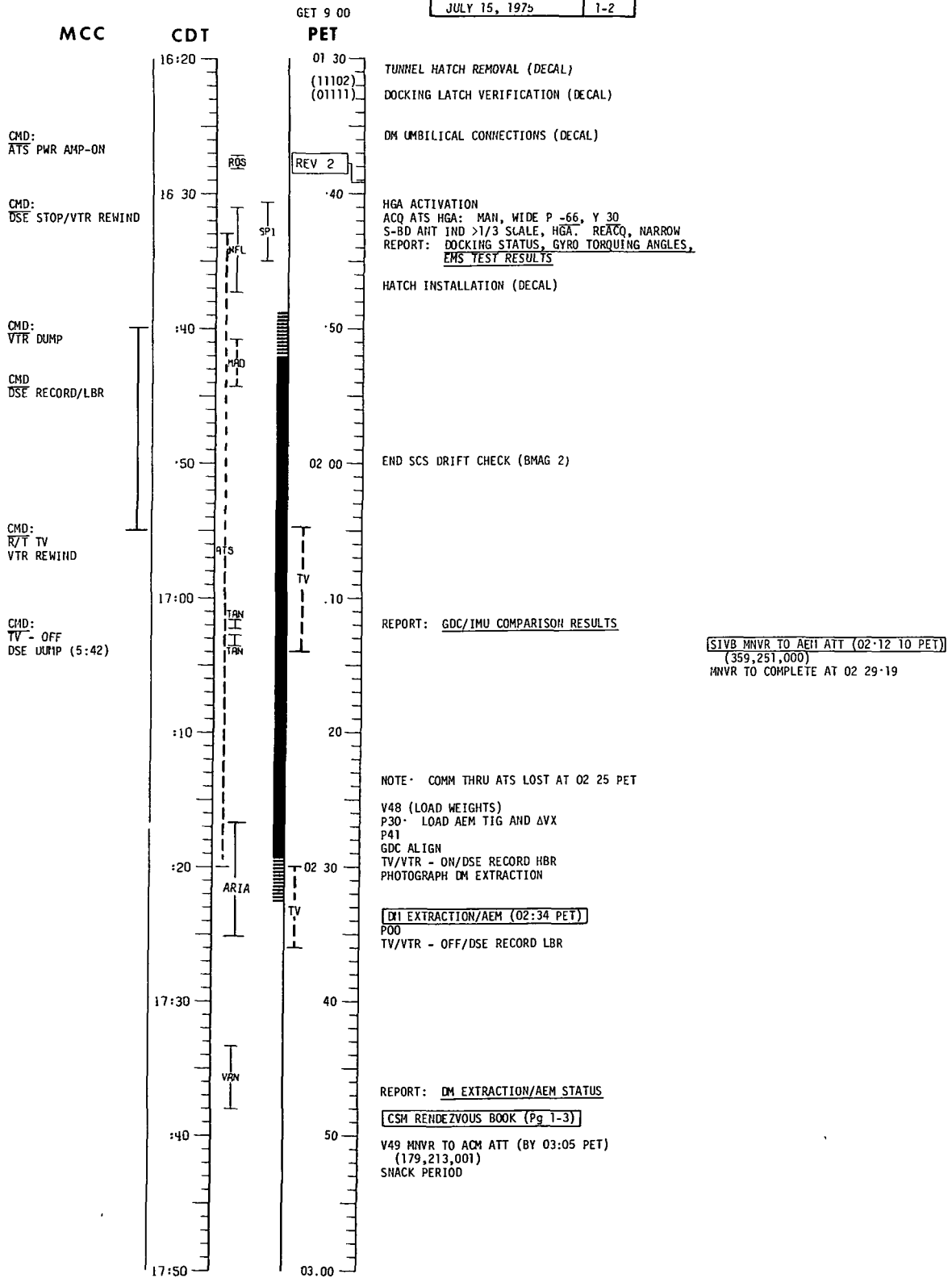
CMD:
DSE RECORD/LBR



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

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	1-2



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-2

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	2-3

GET 10.30

MCC
 UPLINK:
 CSM & SOYUZ S.V.
 PIPA BIAS
 UPDATE
 ACM PAD (PREL)

CDT

PET

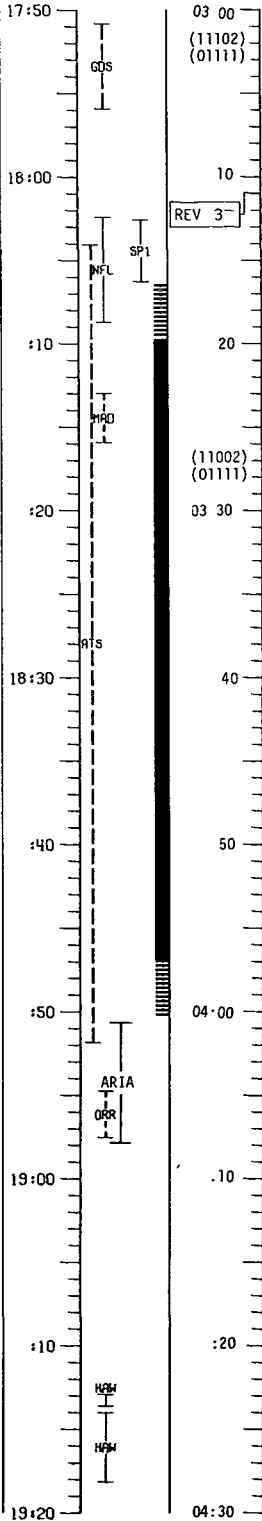
UPDATE
 BACKUP GDC ALIGN PAD
 STAR ACQUISITION PAD
 CMD:
 VTR DUMP

UPLINK:
 ACM TARGET LOAD
 UPDATE:
 ACM PAD (FINAL)
 CMD:
 VTR REWIND
 DSE DUMP (07:00)

CMD:
 DSE DUMP (8:00)

CMD
 DSE RECORD/LBR

UPDATE:
 NCT PAD (PREL)
 NPC ADVISORY
 UPLINK:
 CSM S.V.
 GYRO COMP



ACQ ATS HGA MAN, WIDE P -78, Y 34
 S-BD ANT IND >1/3 SCALE, HGA REACQ, NARROW

P52 (OPTION 3)
 (LAUNCH ORIENT)

REPORT: GYRO TORQUING ANGLE
 P00, CMC MODE AUTO
 GDC ALIGN

(11002)
 (01111) V48 (11002) (01111) (LOAD WEIGHTS)

P30, VERIFY ACM TIG AND ΔV'S

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

P40

ACM (03:45 PET)
 (TRIM ΔVGX ±.2)

REPORT: BURN STATUS
 P00
 VTR POWER - OFF

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

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-3

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	3-4

MCC

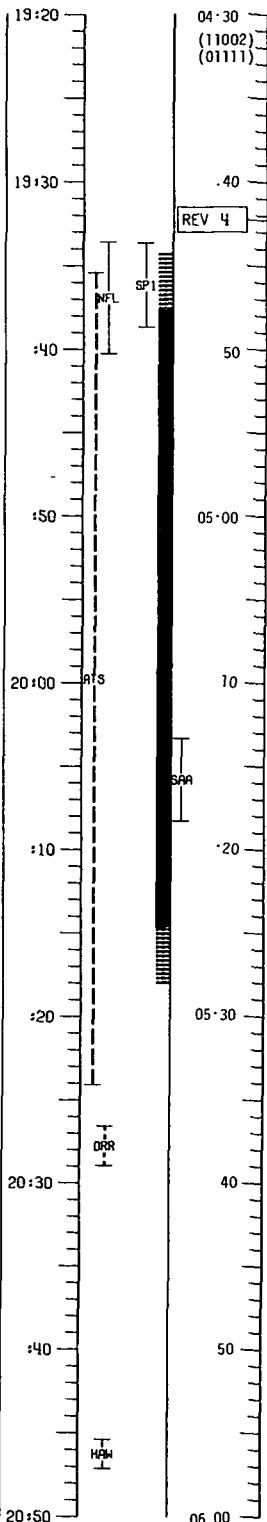
CDT

GET 12 00
PET

UPDATE
NCT PAD (FINAL)
NPC PREL PAD
(IF REQD)
UPLINK
NCT TARGET LOAD
CMD:
DSE DUMP (10 00)

CMD:
DSE RECORD/LBR

UPDATE:
CSM ALOHE WT



04:30
(11002)
(01111)
REV 4
ACQ ATS HGA MAN, WIDE P -55, Y 45
S-BD ANT IND >1/3 SCALE HGA REACQ, NARROW

REPORT DM/CM ΔP
V48 (LOAD WEIGHTS)
BIOSTACK - OH (R1)
RECORD GET & INDICATOR STATUS
(RENDZ BOOK, Pg 1-5)

JOINT OPS CHECKLIST

ZFF PHOTOS, Pg J/10-1
P52 (OPTION 3)
(LAUNCH ORIENT)
RECORD: GYRO TORQUING ANGLES
POO, CMC MODE AUTO
GDC ALIGN

MHVR TO NCI PAD PITCH ATT (BY 05:28 PET)

05:30 P30, VERIFY NCI TIG AND ΔV'S
GO TO SPS BURN-RNDZ CUE CARD (BANK B)

P40

NCI (05:41 PET)
(TRIM ΔVGX ±.2)

RECORD: BURN STATUS
POO
IF NPC NOT REQD:
V49 MHVR TO SI +X FWD SLEEP ATT (BY 06 05 PET)
(012,014,332) * IF NPC REQ'D* * *
* MHVR TO P38 ATT *
* (180,160,000) *
* * * * * * * * * * *

REPORT: NCI BURN STATUS, GYRO TORQUING ANGLES

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

ZFF

NOTE: COMM THRU ATS LOST AT 05:28 PET

EXPERIMENT CHECKLIST
CM HEIGHT MEASUREMENTS, Pg 1-59

CM HEIGHT
MEASUREMENTS
(CP ONLY)

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

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-4

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	4-5

MCC

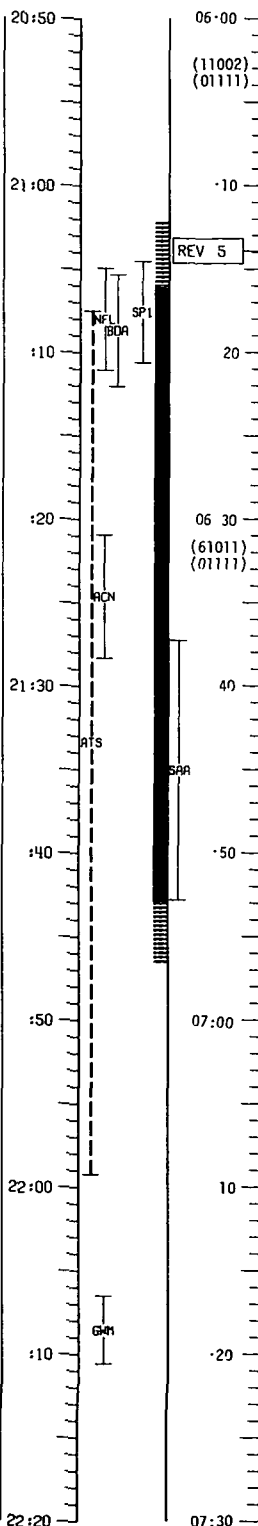
CDT

GET 13.30
PET

GID:
DSE DUMP (10:00)

UPLINK:
RNDZ REFSMAT
(IF NPC NOT REQ'D)

CMD:
DSE RECORD/LBR



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 *

REV 5

ACQ ATS HGA MAN, WIDE P -54, Y 265
S-BD ANT >1/3 SCALE, HGA REACQ, NARROW

P52 (OPTION 3)
(LAUNCH OPIFHT)
RECORD: GYRO TORQUING ANGLES

P52 (OPTION 1)
(RNDZ ORIENT)
(018,170,330)

P00, CMC MODE - AUTO
GDC ALIGN
V48 (61011)
(01111)

N47 (LOAD CSM & DM WEIGHTS)

REPORT: GYRO TORQUING ANGLES (OPT 3 & 1)

LEG VOLUME MEASUREMENTS (CP ONLY)
NOTE: IF TIME PERMITS, PERFORM LIMB VOL MEAS ON ALL THREE CREWMEN

*****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) *

EAT PERIOD

*****IF NPC EXECUTED*****
*UPLINK *
*RNDZ REFSMAT *
*REPORT: NPC BURN STATUS *

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

FLIGHT PLAN

HOUSTON DATE	REV
JULY 15, 1975	6-7

MCC

CDT

GET

CMD:
DSE STOP

CMD
DSE RECORD/HBR

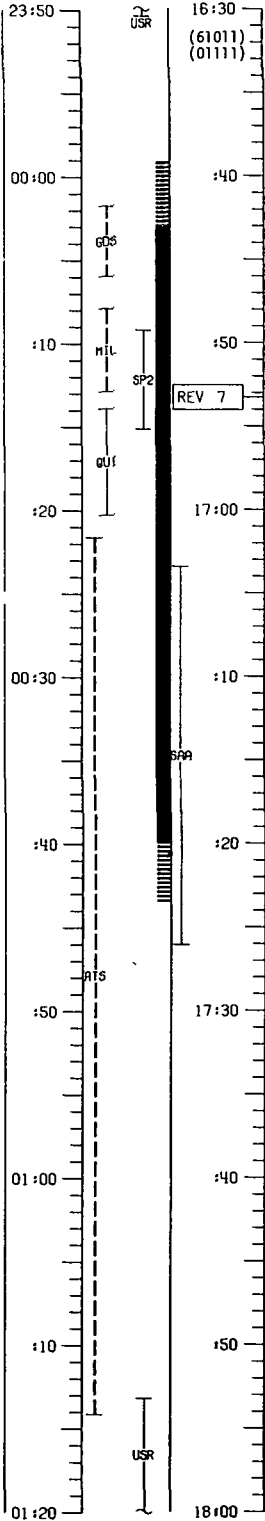
CMD
DSE STOP

CMD
DSE RECORD/HBR
CMD:
DSE STOP

CMD:
DSE RECORD/HBR

CMD:
DSE STOP

CMD:
DSE RECORD/LBR



REST PERIOD
(8.0 HOURS)

GEO

BIOS

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

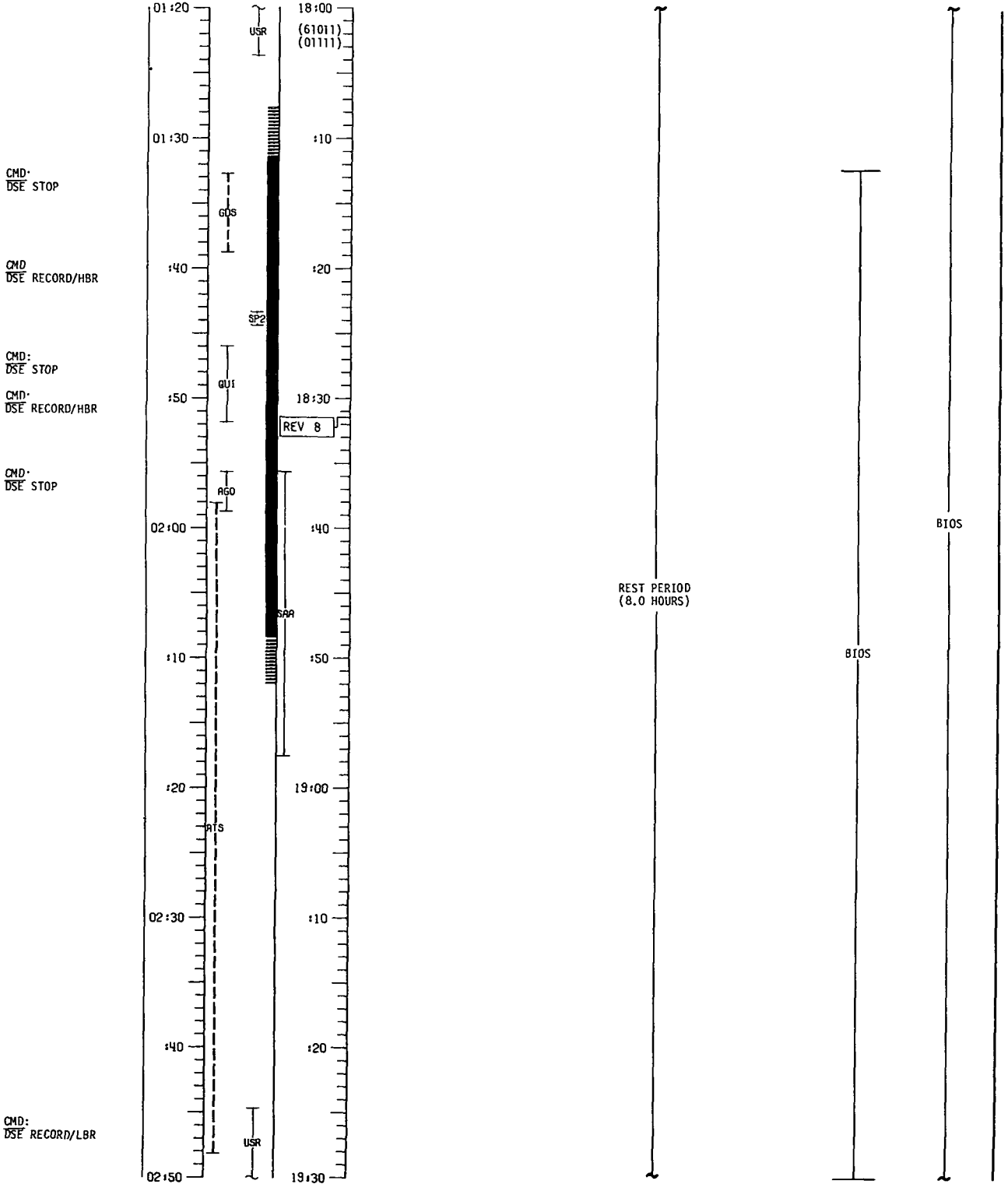
FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	7-8

MCC

CDT

GET



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-8

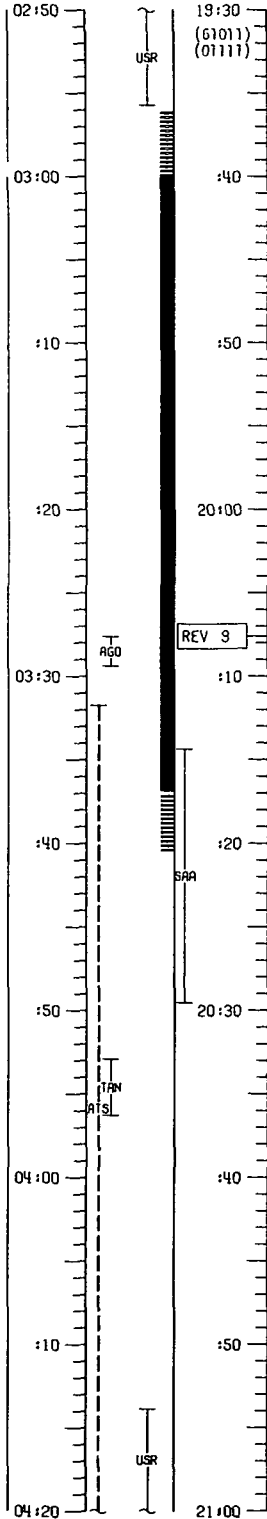
FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	8-9

MCC

CDT

GET



CMD
DSE DUMP (20:30)

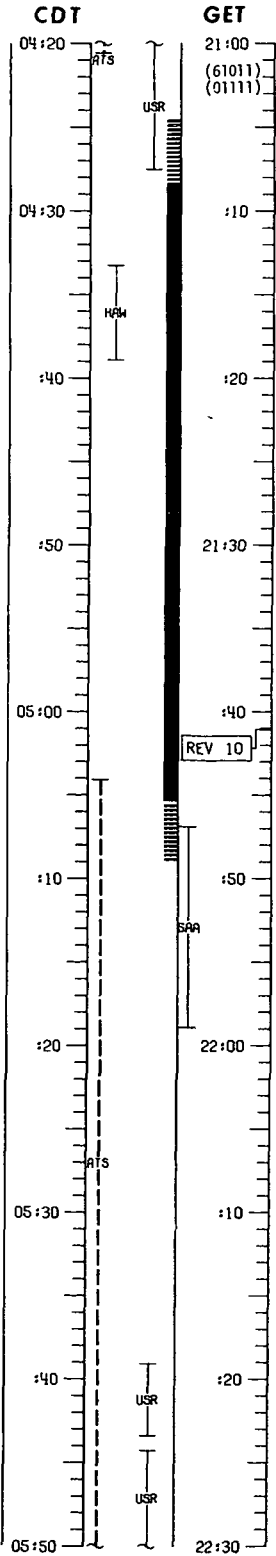
CMD:
DSE RECORD/LBR

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-9

FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	9-10

MCC



NOTE NO CONT THRU ATs UNTIL 24:49 GET

REST PERIOD
(8.0 HOURS)

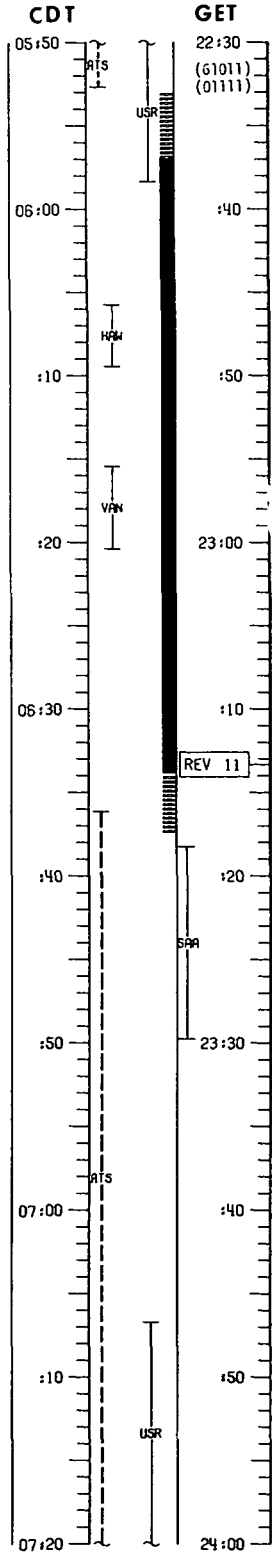
BIOS

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-10

FLIGHT PLAN

HOUSTON DATE	REV
JULY 16, 1975	10-11

MCC



NOTE: NO COM1 THRU ATIS UNTIL 24:49 GET

REST PERIOD (8.0 HOURS)

BIOS

CSM SYSTEMS CHECKLIST

POST-SLEEP CHECKLIST, Pg S/1-49

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-11

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	12-13

BIOS

MCC

CDT

GET

CP

AC

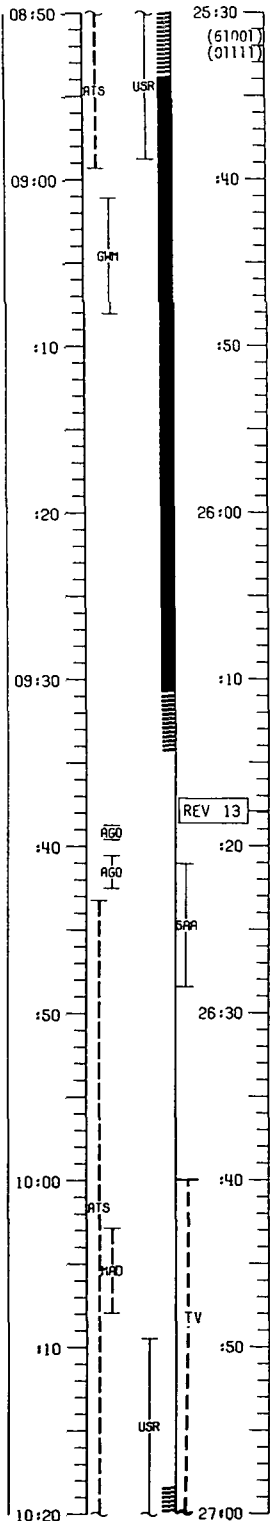
DP

CMD
DSE RECORD/LBR

UPDATE
CONSUMABLES STATUS
FLIGHT PLAN
UPLINK:
CSM S V
ATS S V

CMD
DSE STOP

CMD
DSE RECORD LBR
R/T TV



G/H POWER OPTICS-ON

P52 (OPTION 3)
(RMDZ ORIENT)

REPORT GYRO TOPPING ANGLES
POP, CHC MODE-AUTO
GDC ALIGN
OPTICS ZERO-ZERO
G/H POWER OPTICS-OFF

WASTE H2O DUMP TO 60%, Pg S/1-25

O2 FUEL CELL PURGE

DI CHECKLIST
PREPOCKING DI CHECKOUT
Pg D/1-1

TV PREP

P52 IMU REALIGN	
N71	_____
N05	_____
N93	_____
X	<input type="checkbox"/> _____
Y	<input type="checkbox"/> _____
Z	<input type="checkbox"/> _____
GET	_____

ACQ ATS HGA 1/4" WIDE
P -7.0, Y 325
S-80 ANT IMP 1/3 SCALE
HGA REACQ, NARROW

EXPERIMENT CHECKLIST
FISH EXPERIMENT, Pg 1-65

FISH EXPERIMENT

PERFORM TUNNEL PRESS EQUALIZATION

DM TUNNEL VENT-DM/CM AP (VERIFY)
NOTE DM/CP AP (GAGE (+) 1 PSI
HATCH 1 PRESSURE EQUALIZATION VALVE-
OPEN (CCW) UNTIL DM/CM AP GAGE=
0 PSI
HATCH 1 PRESSURE EQUALIZATION
VALVE - CLOSED
MONITOR AP GAGE 2 MIN FOR STABILITY
IF NOT STABLE, REPORT TO MCC-H

BIOSTACK STATUS CHECK (R1)
RECORD GET & IND STATUS
BIOSTACK - OFF

BIOSTACK PAD			
HR		IND STATUS	ON
MIN			OFF

JOINT OPS CHECKLIST
ZFF PHOTOS Pg J/10-1

ZFF

TUNNEL 1 PRESSURE
INTEGRITY CHECK AND
EQUALIZATION

REMOVE AND STOW
HATCH 1 AND CM
DOCKING ASSEMBLY

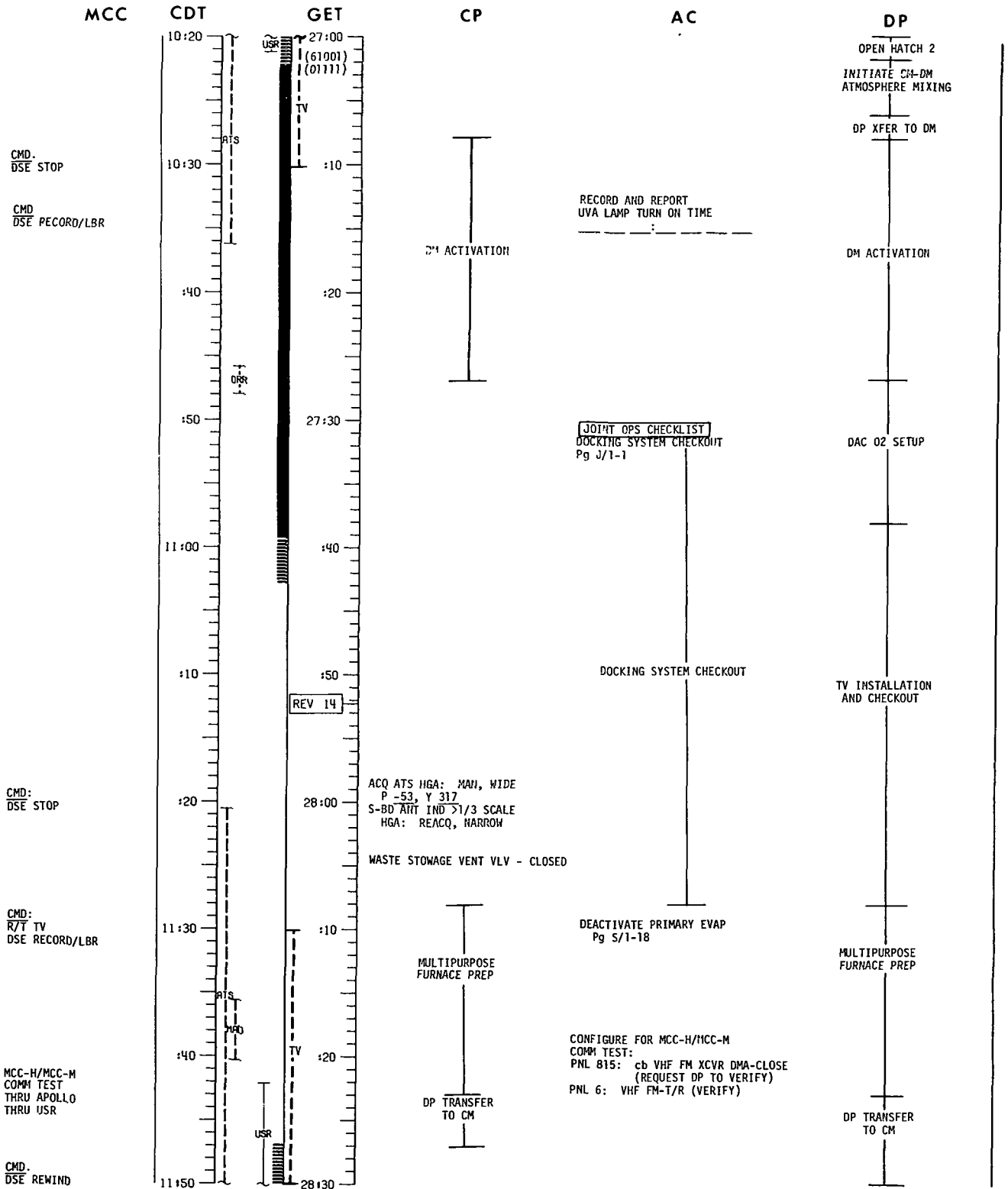
DM PRESSURE INTEGRITY
CHECK

CM-DM PRESSURE
EQUALIZATION

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 1-13

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	13-14

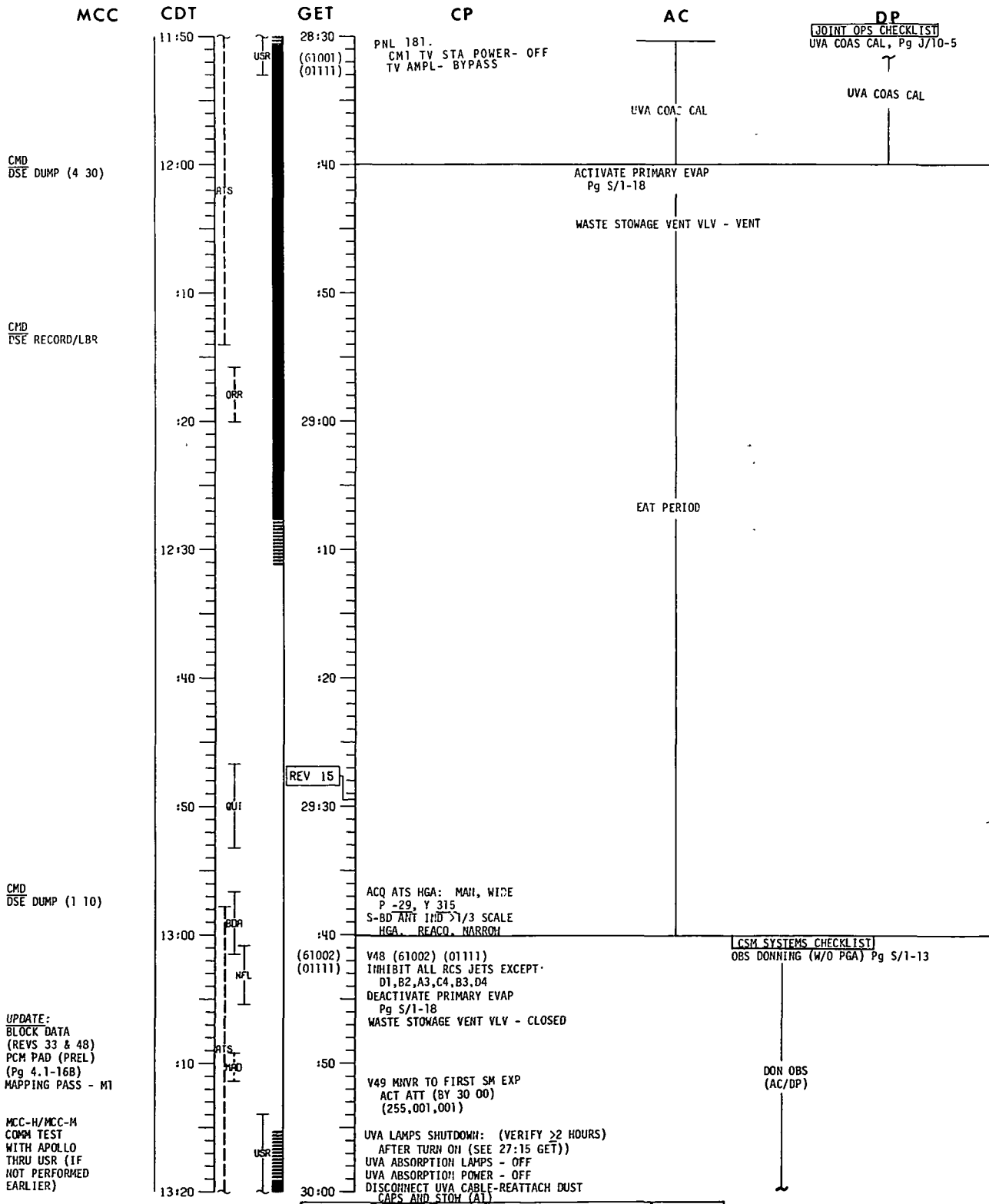


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-14

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	14-15

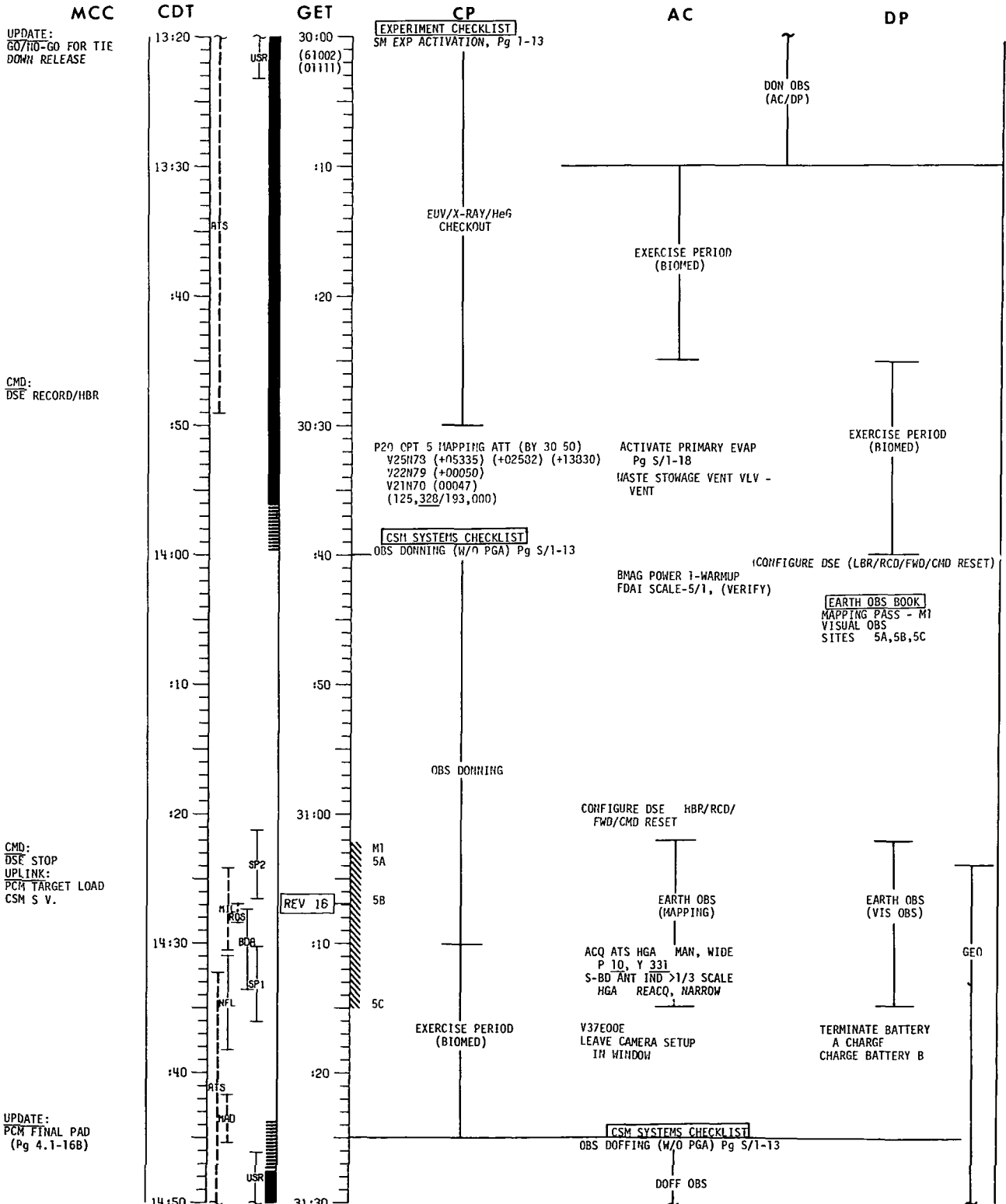
UVA LAMP BURN IN



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 1-15

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	15-16



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-16

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APOLLO DETAILED CREW ACTIVITIES PLAN

PCM PAD DATA

		PRELIMINARY				FINAL			
N33	HR	+	X	X					
TIG	PCM MIN	+	X	X					
	SEC	-	X	X					
NB1	ΔV_X		X	X					
ΔV_{PCM}	ΔV_Y		X	X					
	ΔV_Z		X	X					
N22	R	+				0	0		
PCM	P	+				0	0		
	Y	+				0	0		
	ΔV_C		X	X					
	BT		X	X					

ΔV_C AT IGN	+	X	X	X				
ΔV_C TAILOFF	-	X	X	X				

WT	+							
----	---	--	--	--	--	--	--	--

PT								
----	--	--	--	--	--	--	--	--

YT								
----	--	--	--	--	--	--	--	--

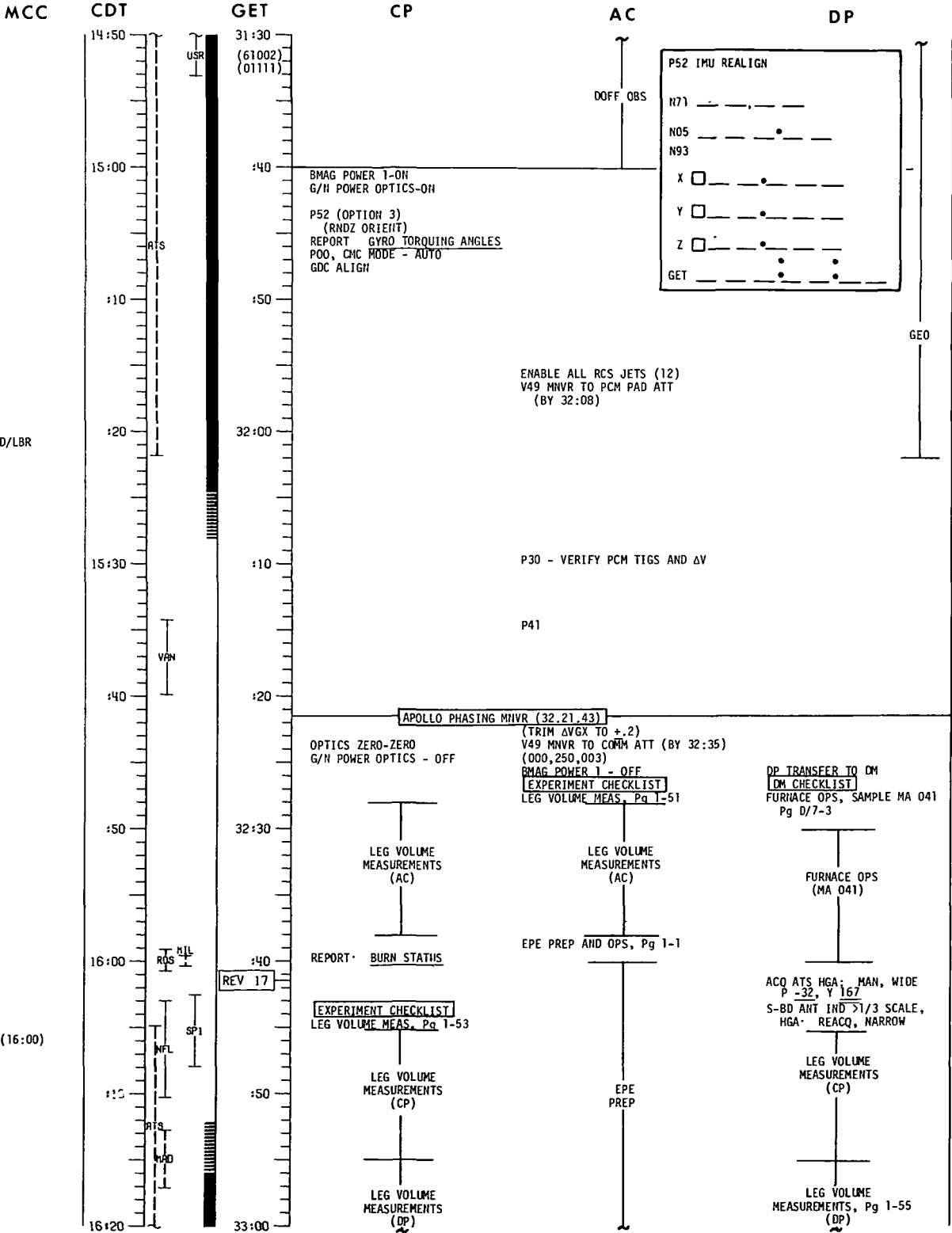
		BURN ATT CHECK			
STAR		X	X	X	X
SA	+				0
TA	+				0 0

		SPS BURN STATUS			
ATIG		X	X		
AFTER TRIM					
ΔV_C		X			
FDAI (IF ATTITUDE NOT NOMINAL)	R	+			X
	P	+			X
	Y	+			X
N85 (IF VG > .2)	VGX		0	0	
	VGY		0	0	
	VGZ		0	0	
TRANSMIT NB1 APPLIED					

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-16B

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	16-17



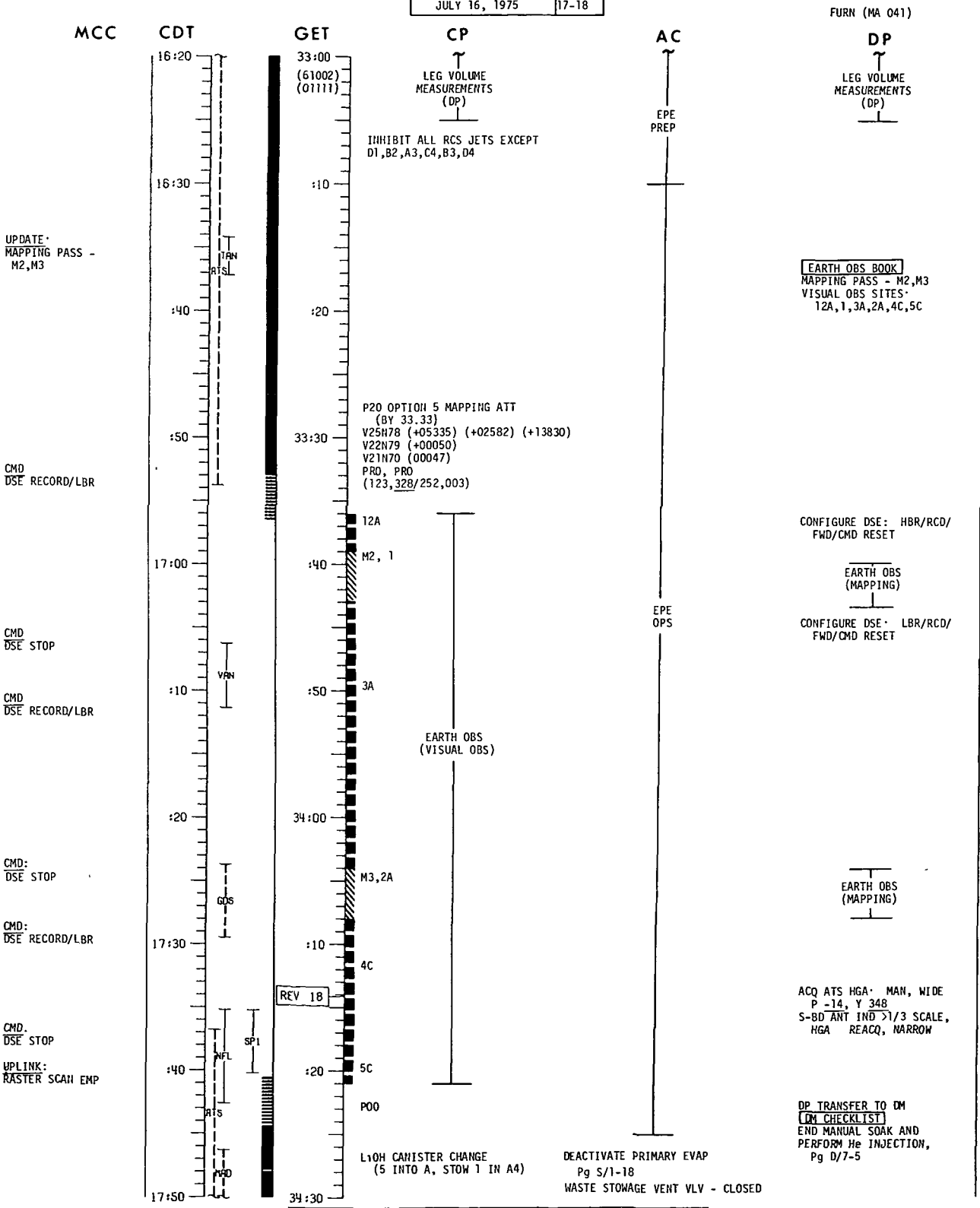
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 1-17

CMD: DSE RECORD/LBR

CMD: DSE DUMP (16:00)

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	17-18

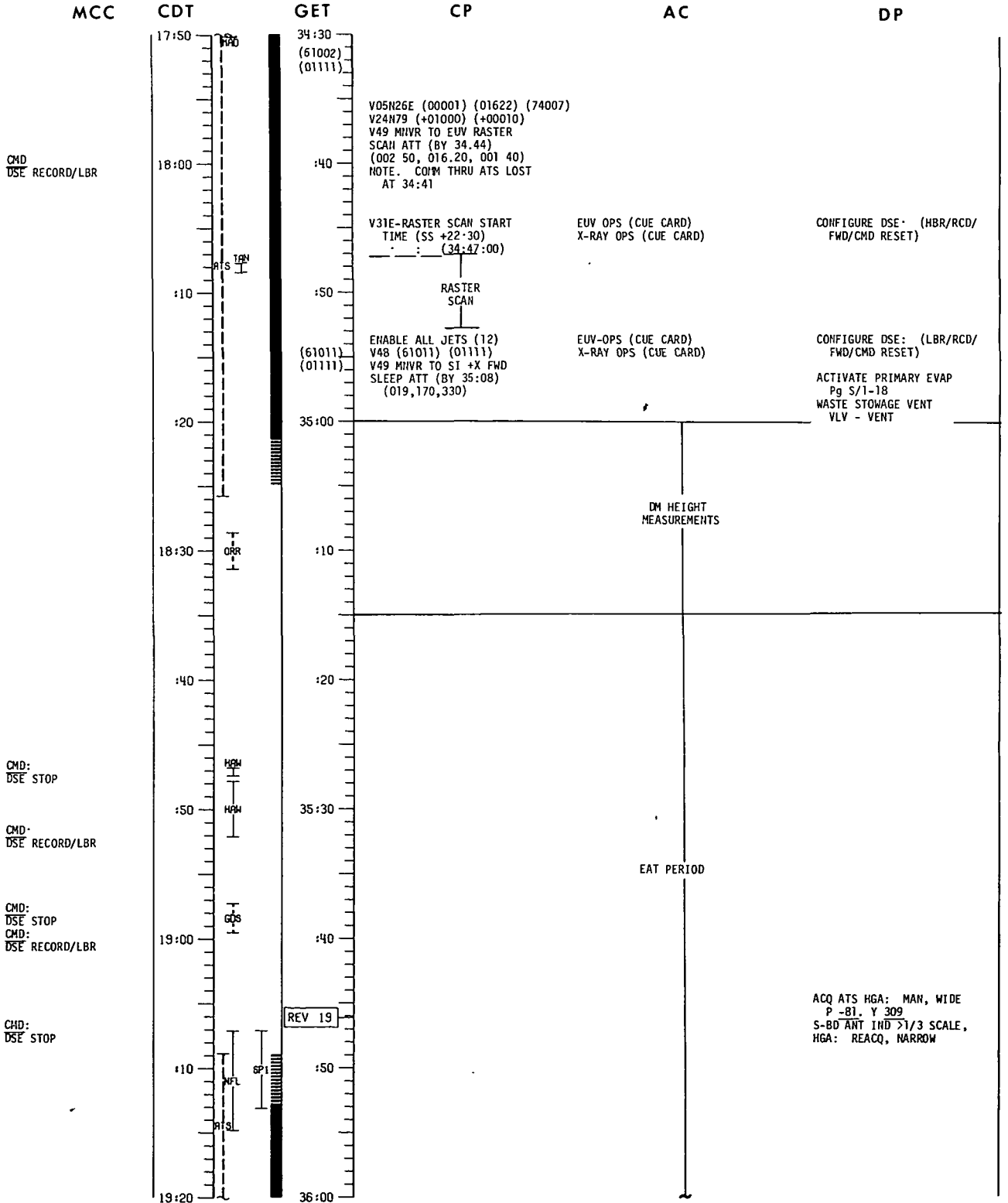


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-18

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	18-19

FURN (MA 041)



ACQ ATS HGA: MAN, WIDE
P -81. Y 309
S-BD ANT IND >1/3 SCALE,
HGA: REACQ, NARROW

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-19

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 16, 1975	20-21

FURN (MA 041)

MCC

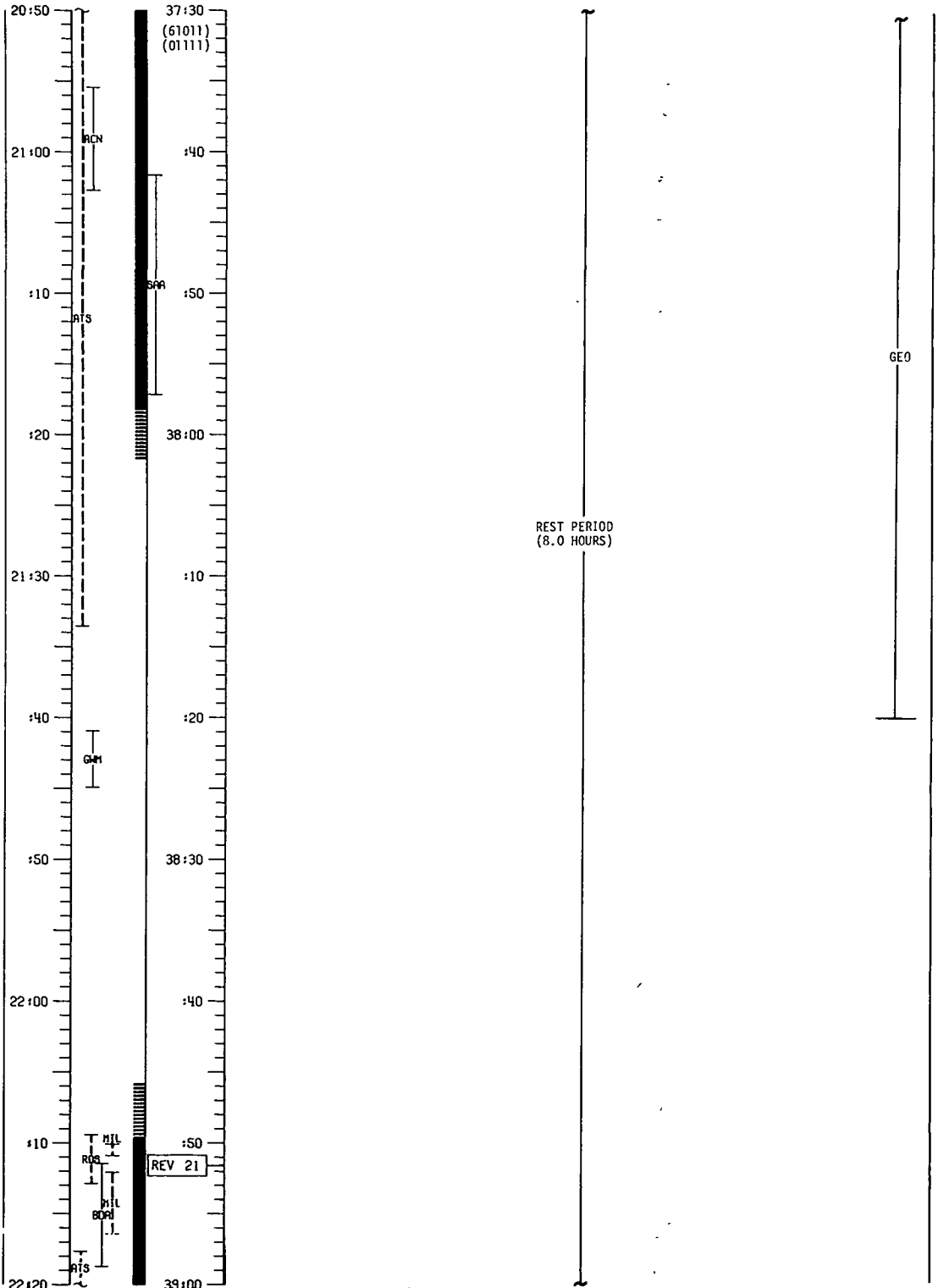
CDT

GET

CP

AC

DP



CMD:
DSE RECORD/HBR

CMD:
DSE STOP

CMD:
DSE RECORD/LBR

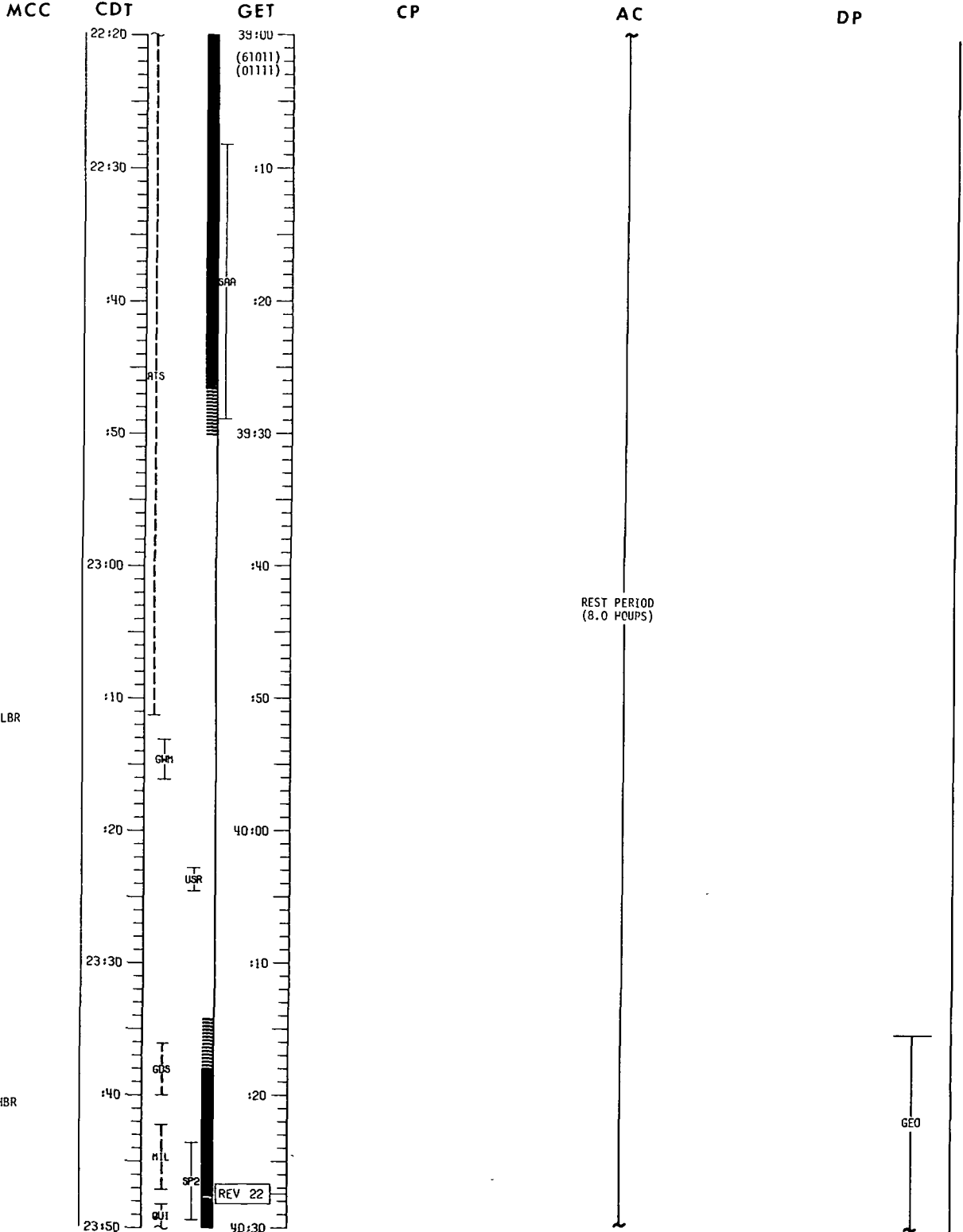
CMD:
DSE DUMP (11.15)

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 (NA 041)



CMD
DSE RECORD/LBR

CMD:
DSE STOP

CMD:
DSE RECORD/HBR

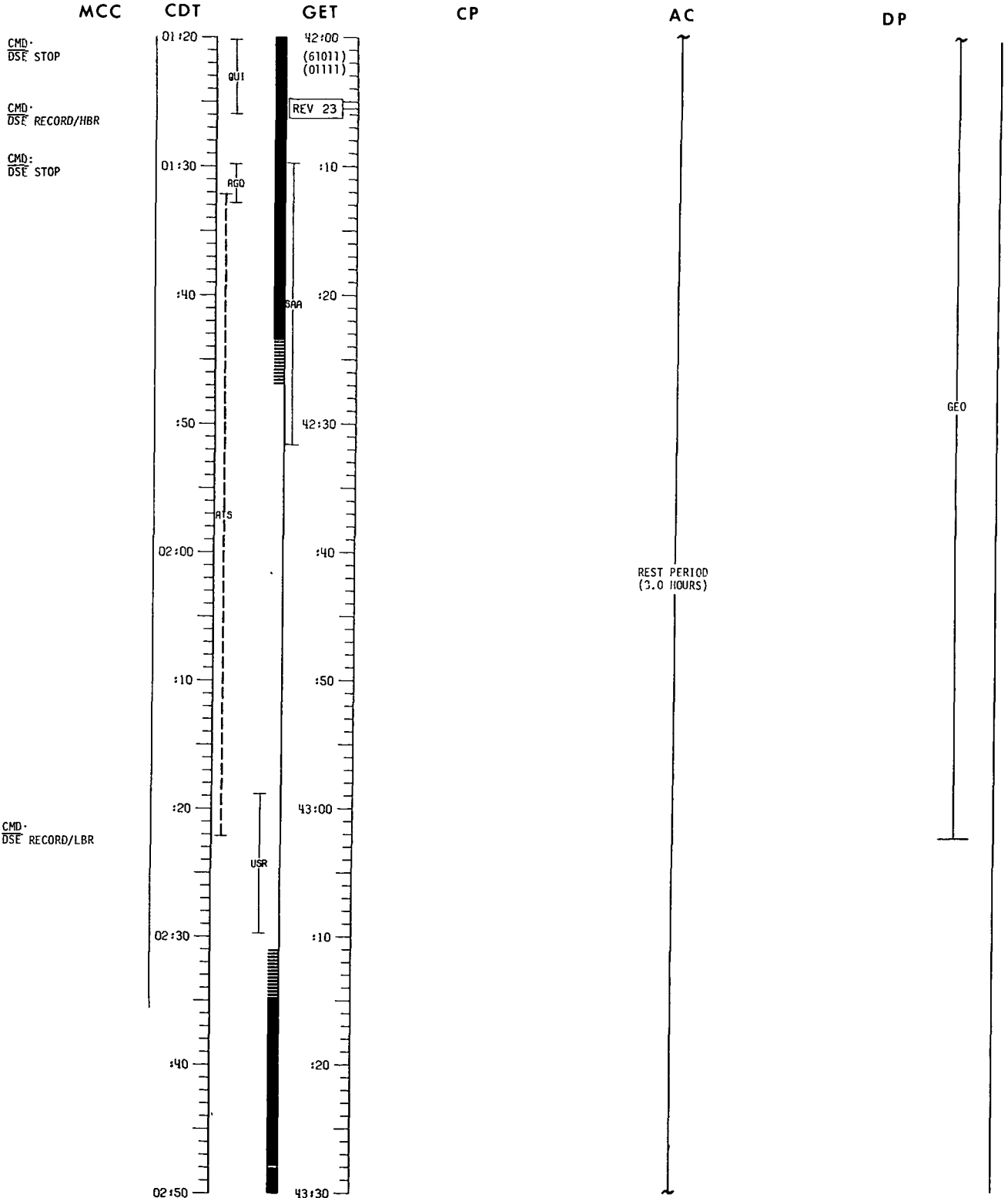
CMD:
DSE STOP

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

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	22-23

FURN (MA 041)

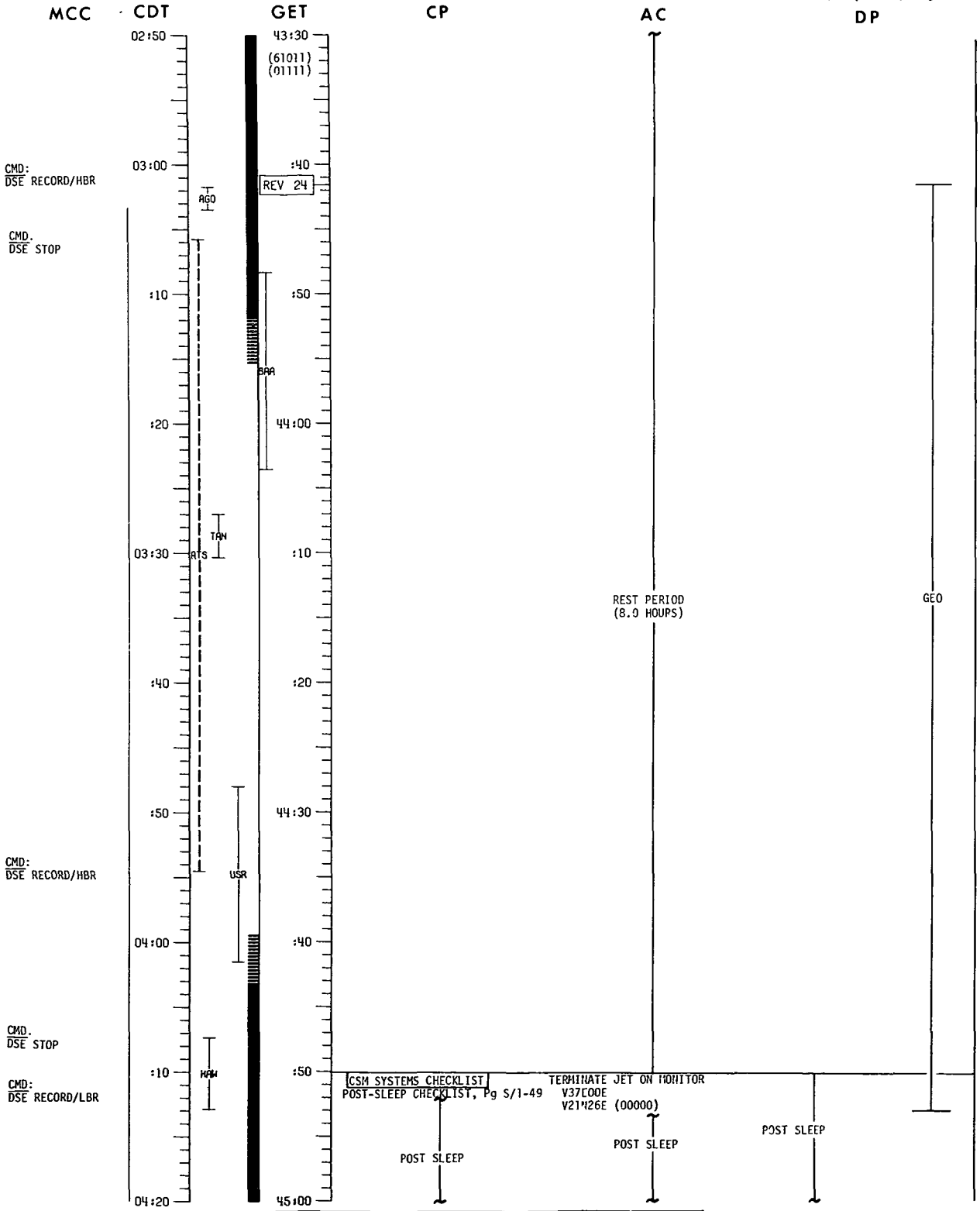


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-24

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	23-24

FURN (MA 041)



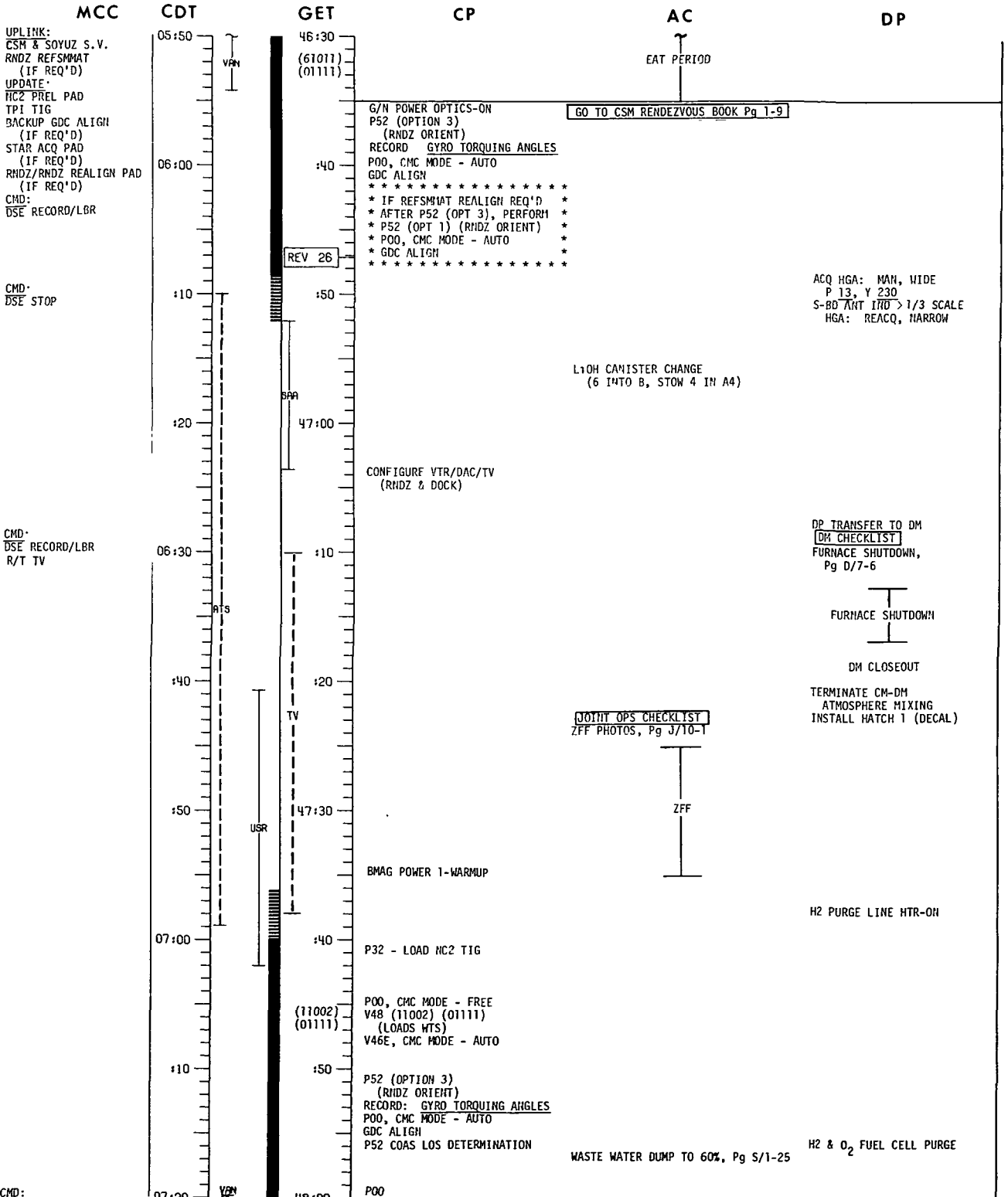
CSM SYSTEMS CHECKLIST
 POST-SLEEP CHECKLIST, Pg S/1-49
 TERMINATE JET ON MONITOR
 V37C00E
 V21426E (00000)

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.1-25

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 17, 1975	25-26

FURN (MA 041)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 1-27

5/15/75

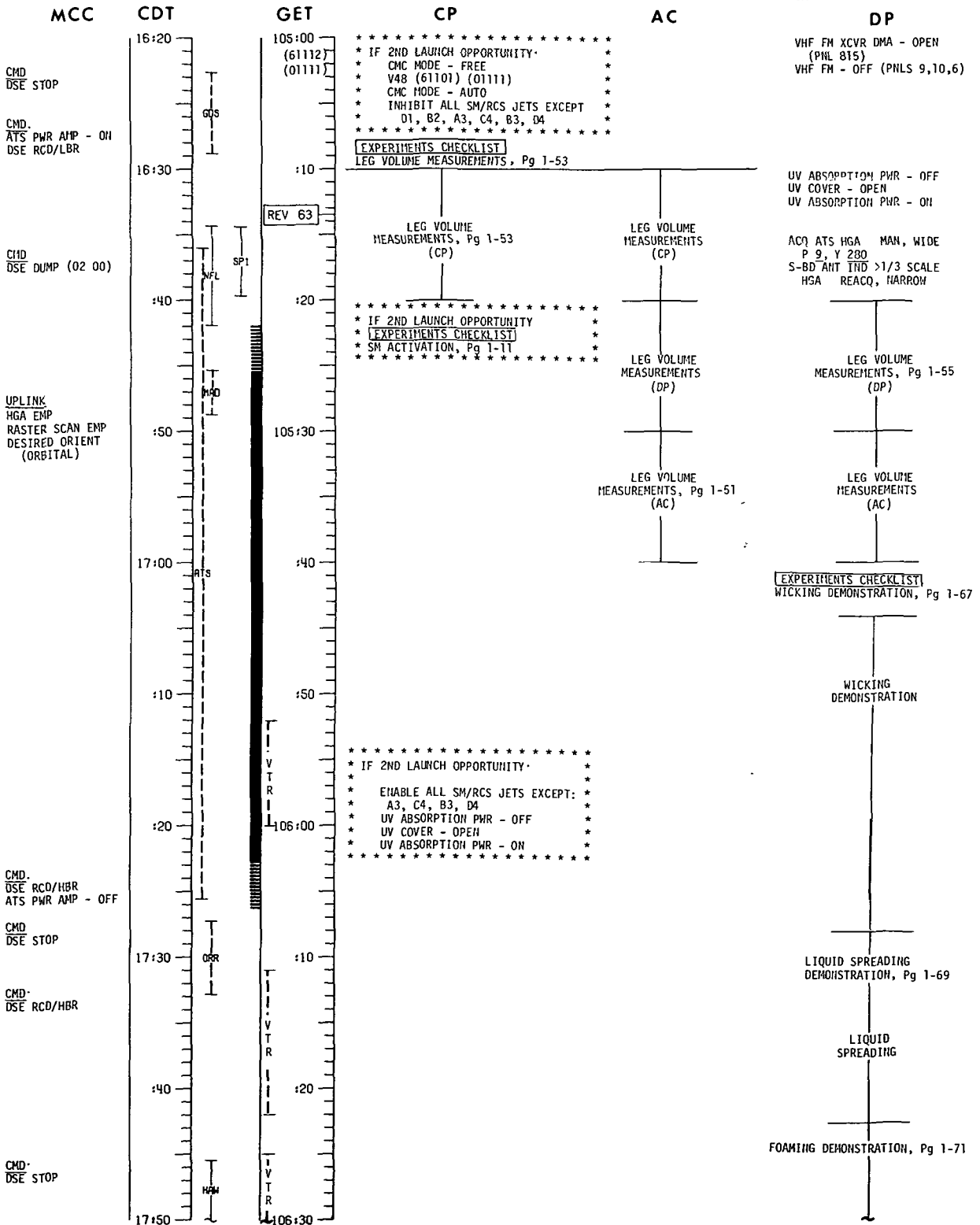
JOINT ACTIVITIES PHASE

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

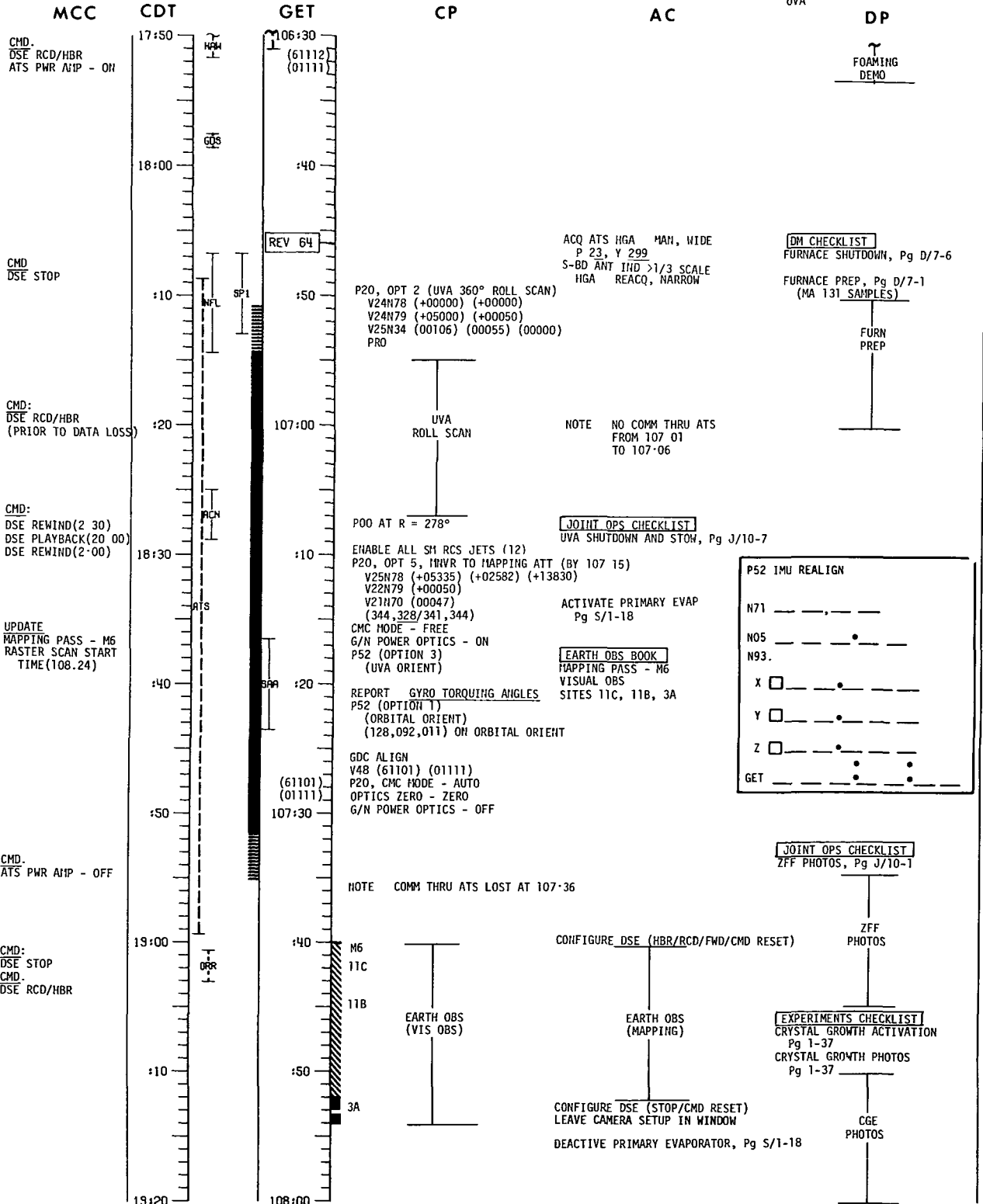


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-1

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	63-64

FURN (MA 070/MA 131)
UVA

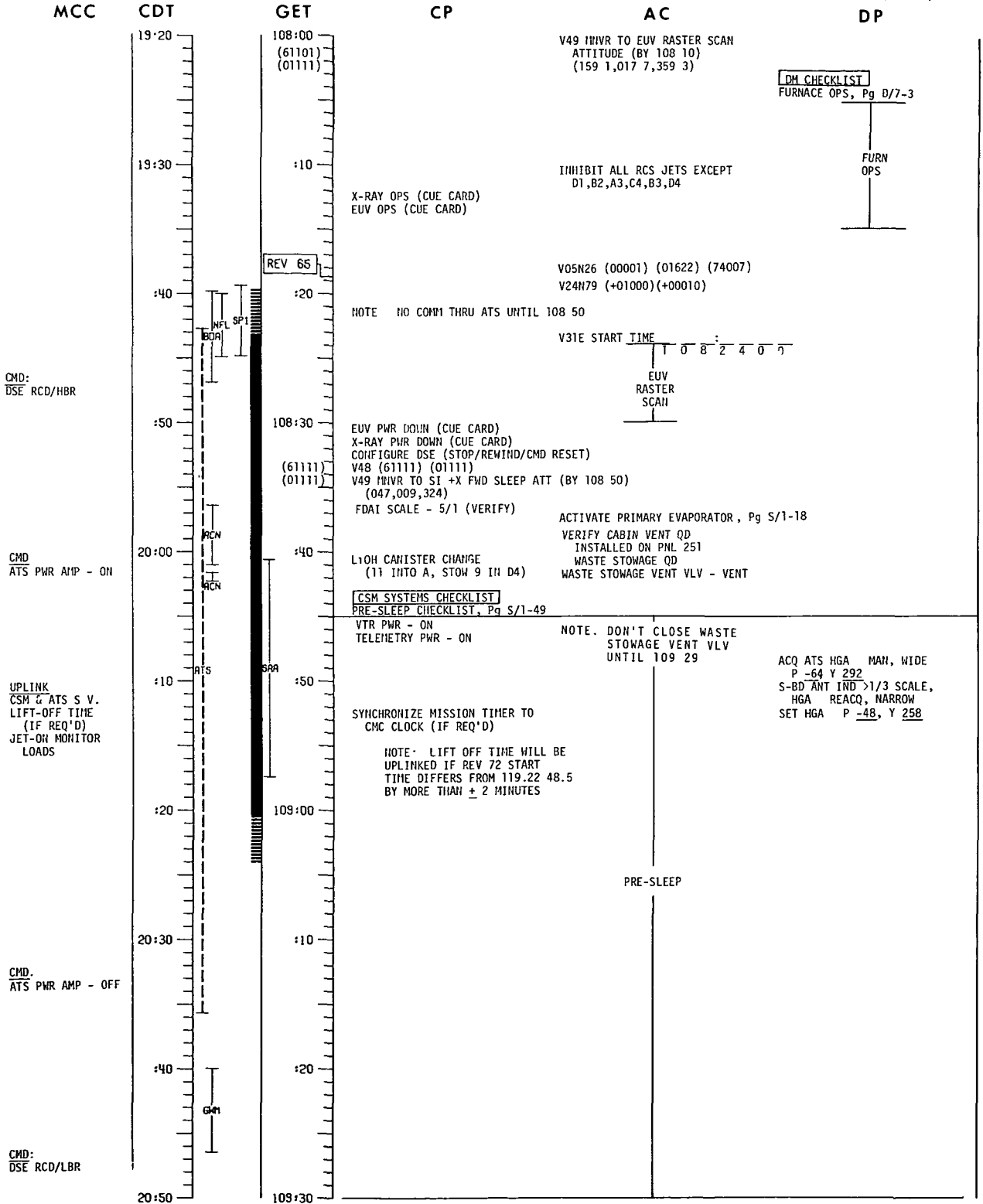


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-2

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	64-65

FURN (MA 131)

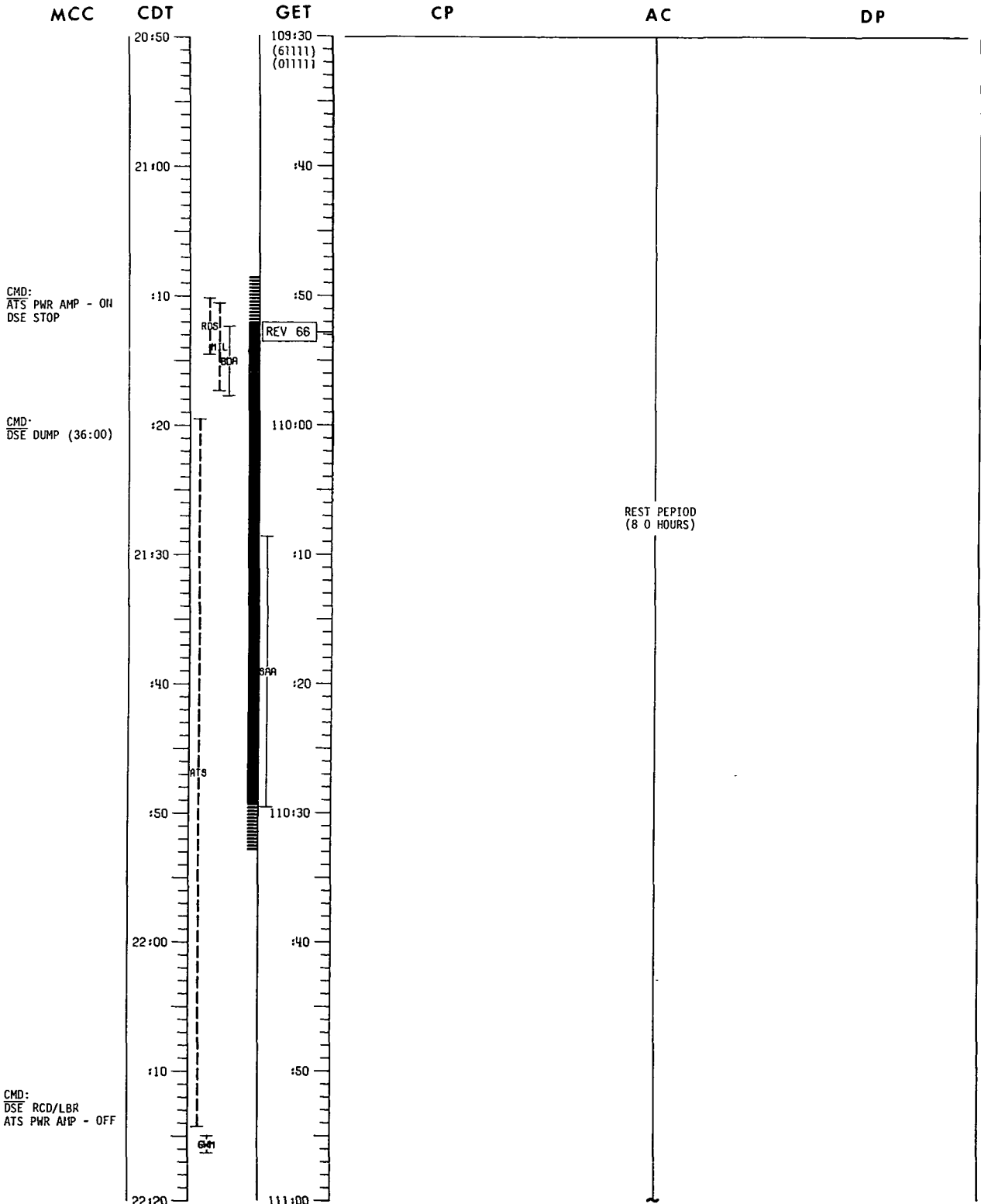


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-3

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	65-66

FURN (MA 131)

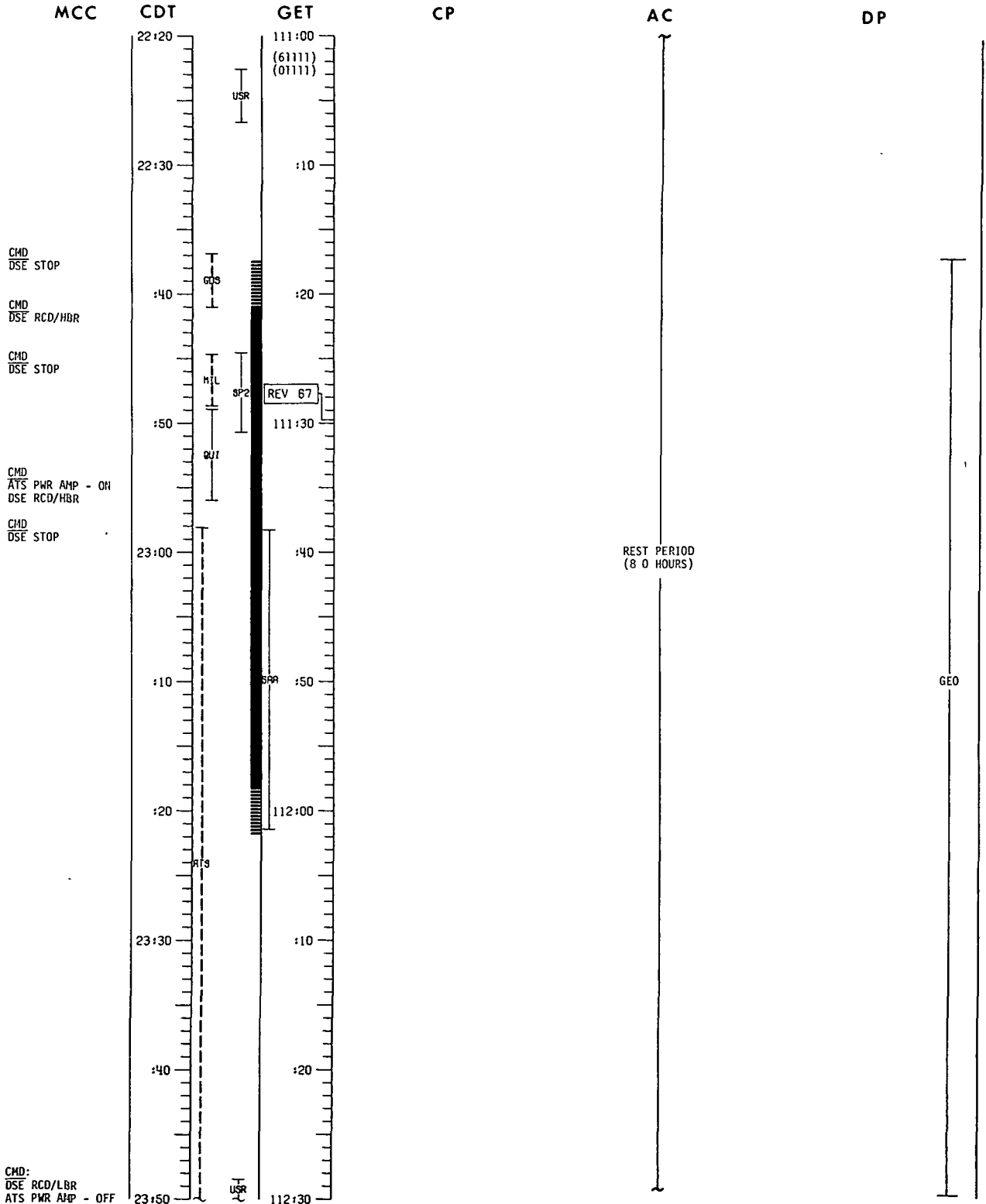


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-4

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	66-67

FURN (MA 131)

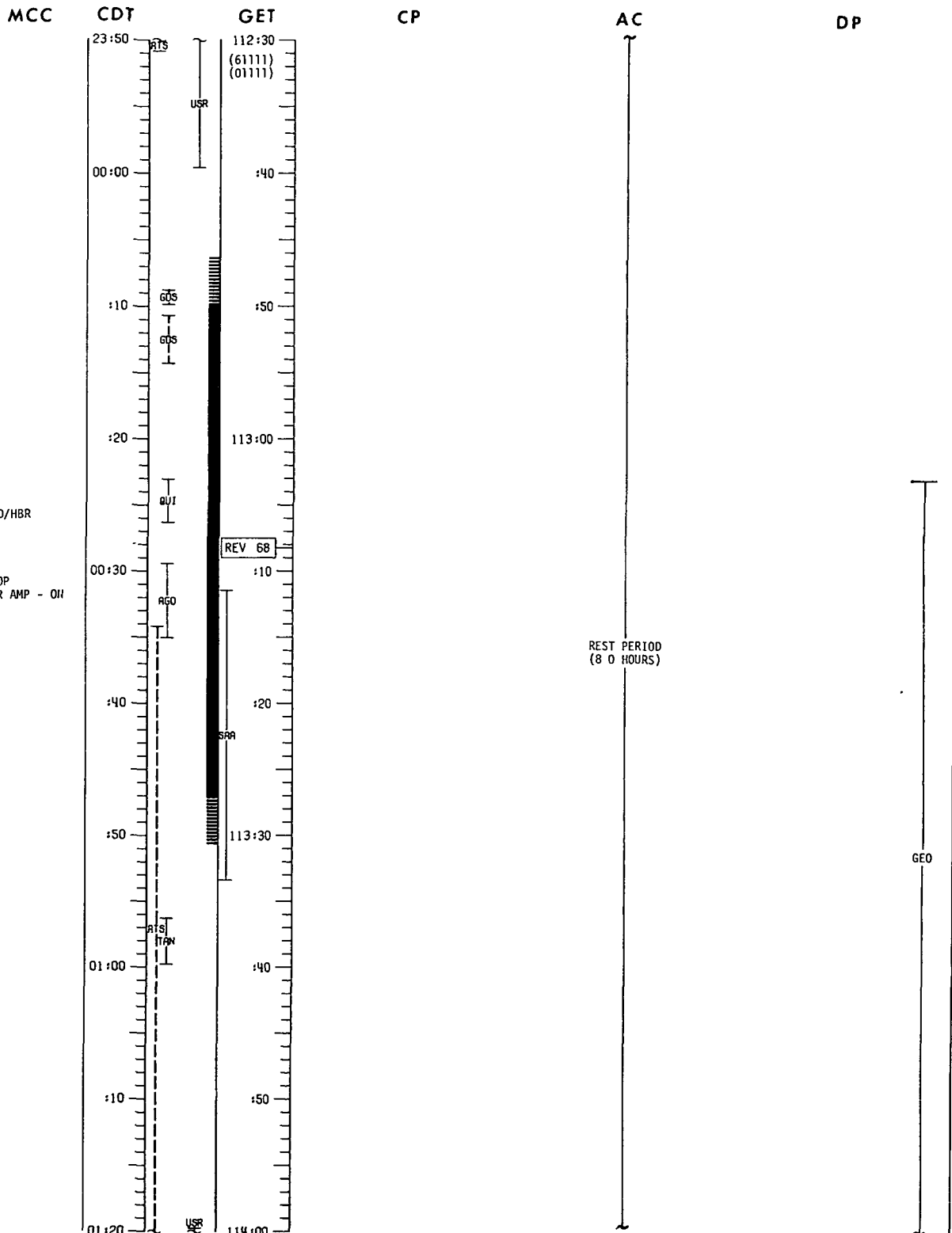


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-5

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 19, 1975	67-68

FURN (MA 131)



CMD
DSE RCD/HBR

CMD.
DSE STOP
ATS PWR AMP - OH

REST PERIOD
(8 0 HOURS)

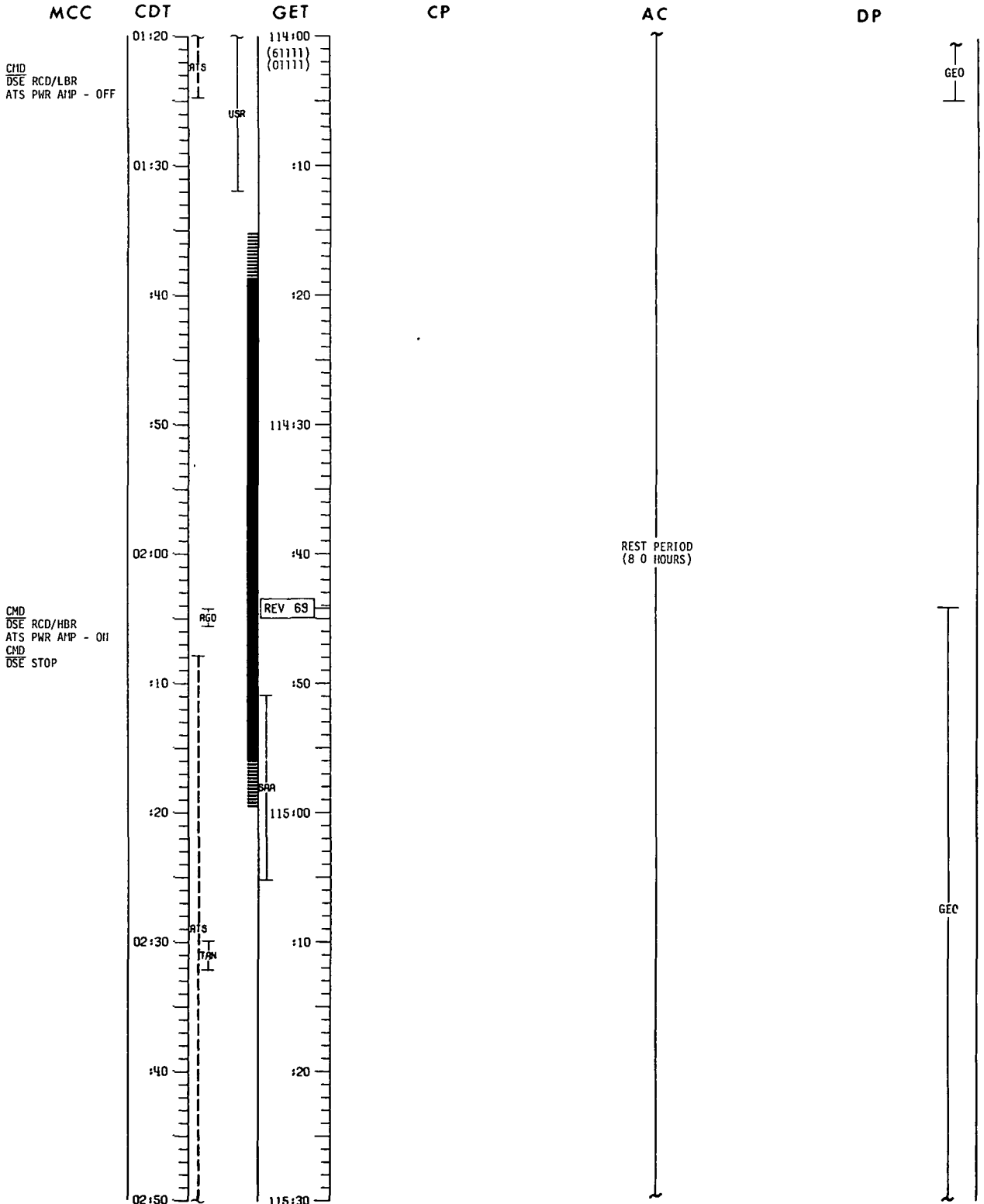
GEO

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)

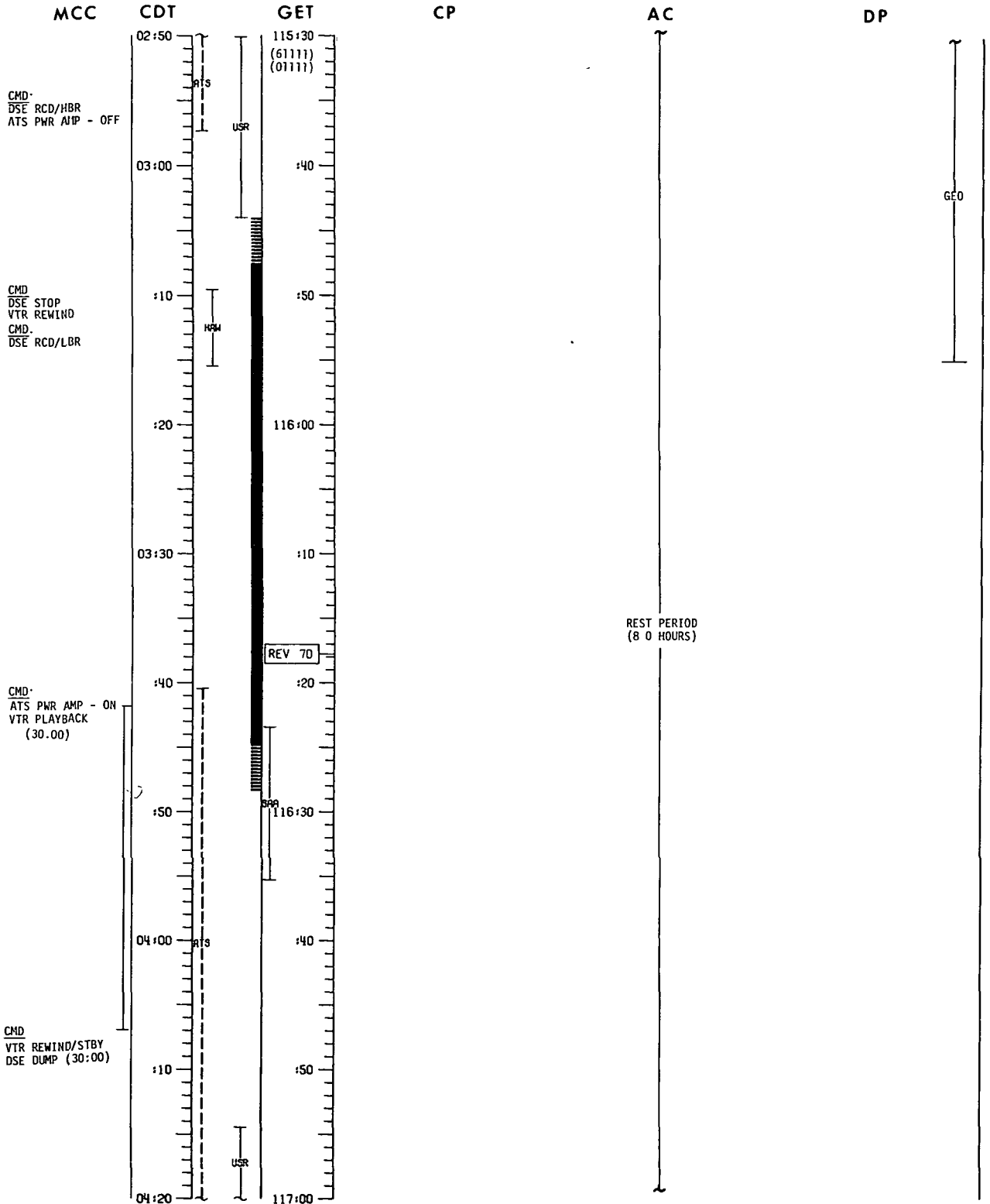


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-7

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	69-70

FURN (MA 131)

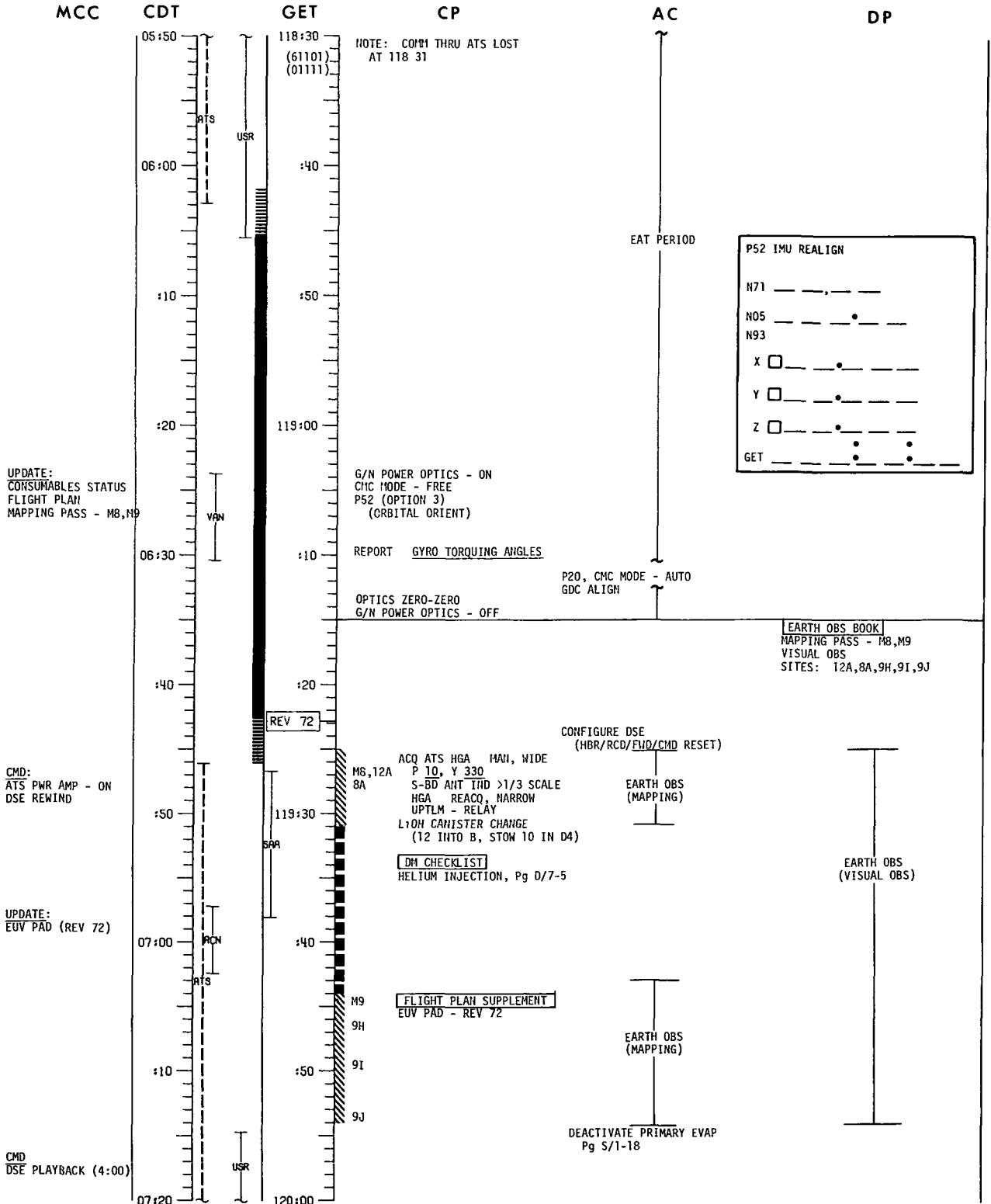


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-8

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	71-72

FURN (MA 131)

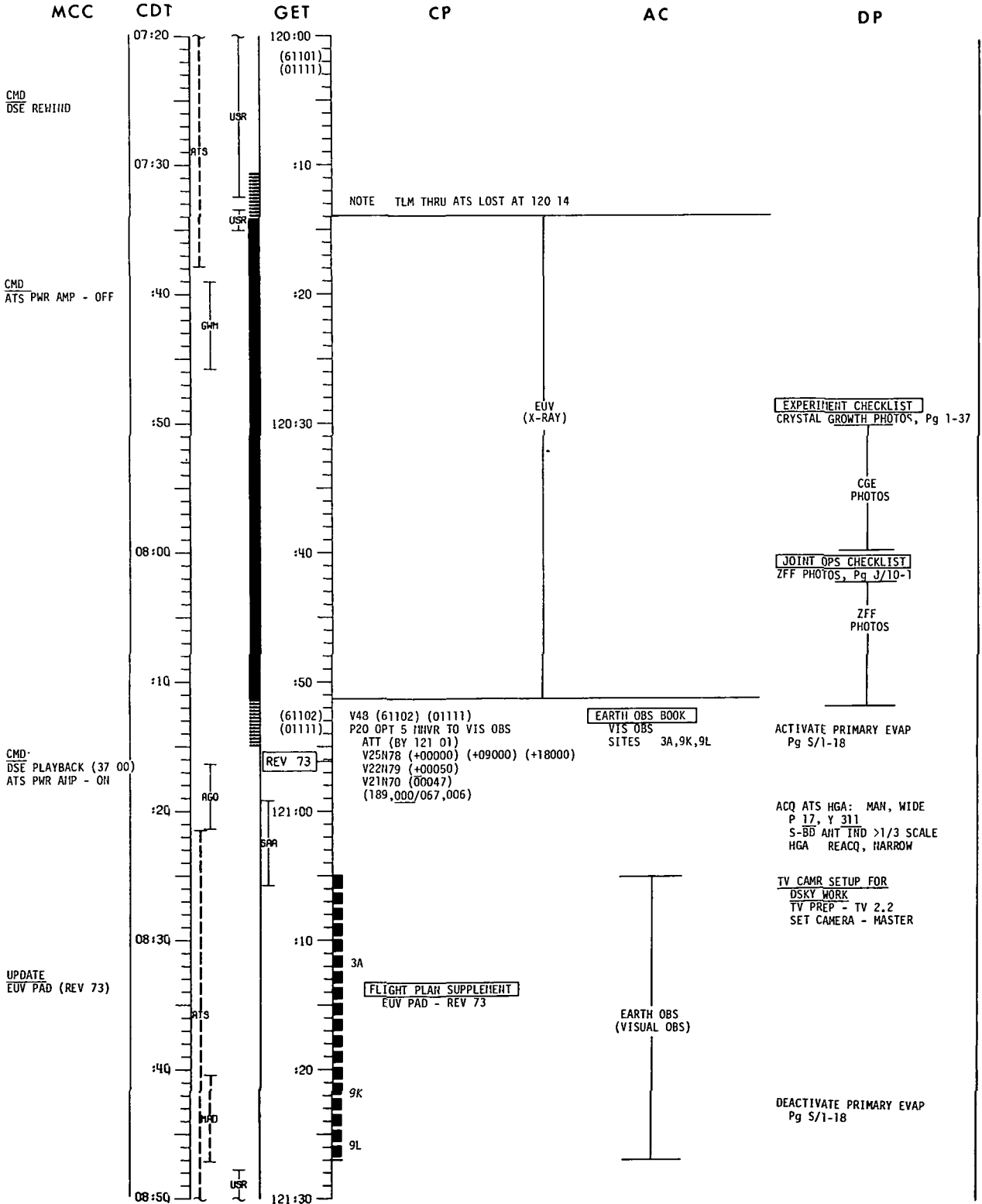


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-10

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	72-73

FURN (MA 131)

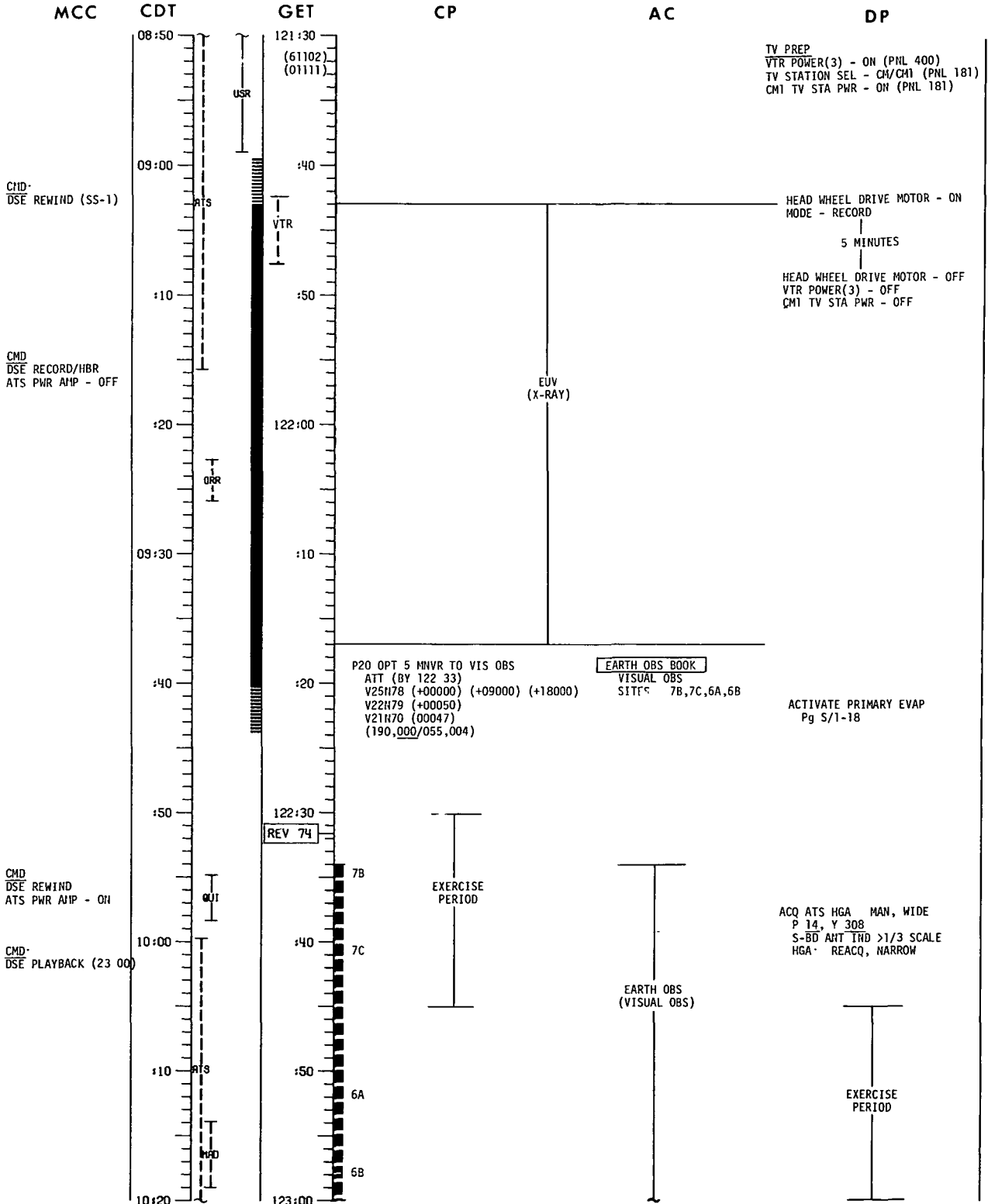


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-11

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	73-74

FURN (NA 131)

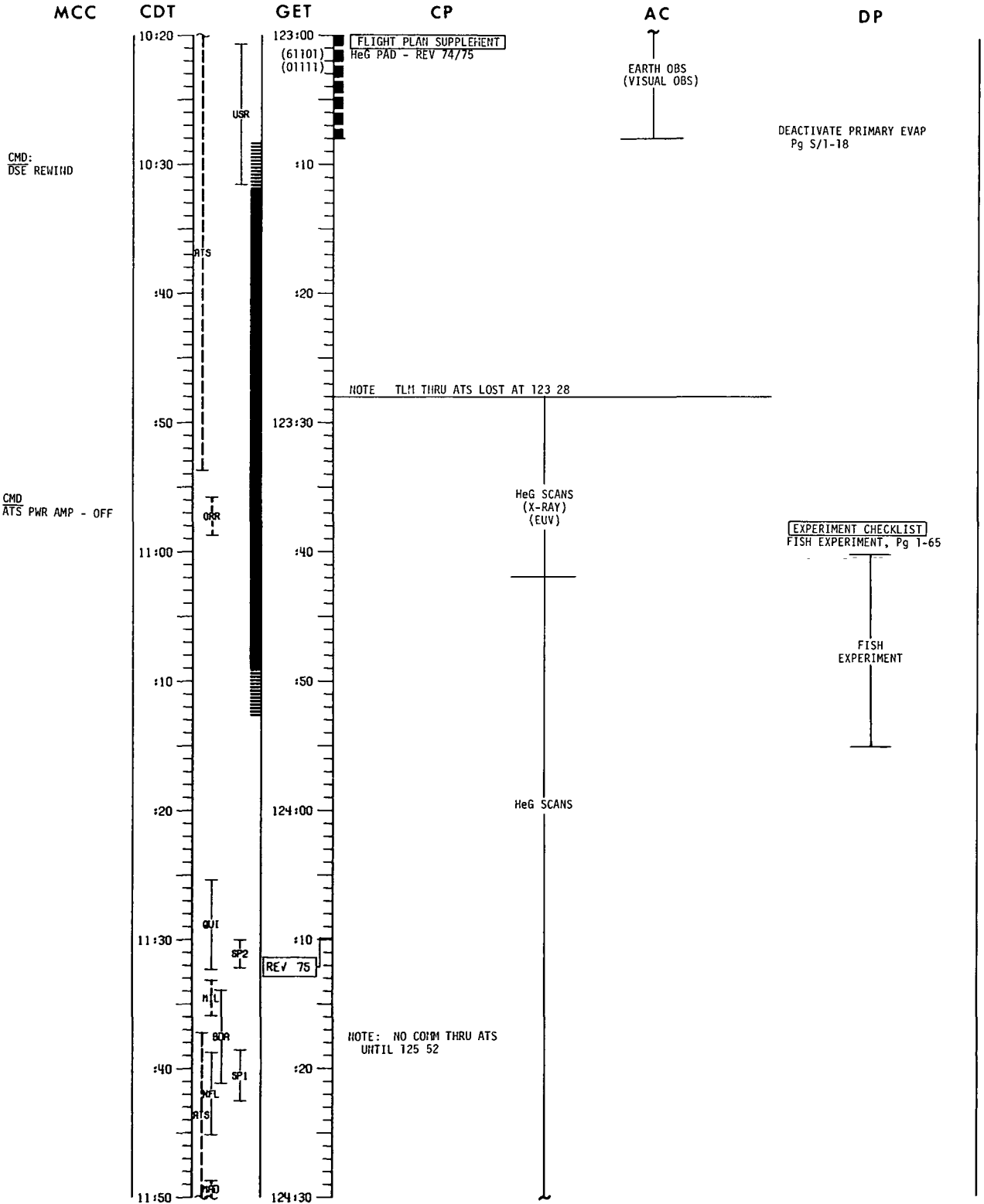


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-12

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	74-75

FURN (MA 131)

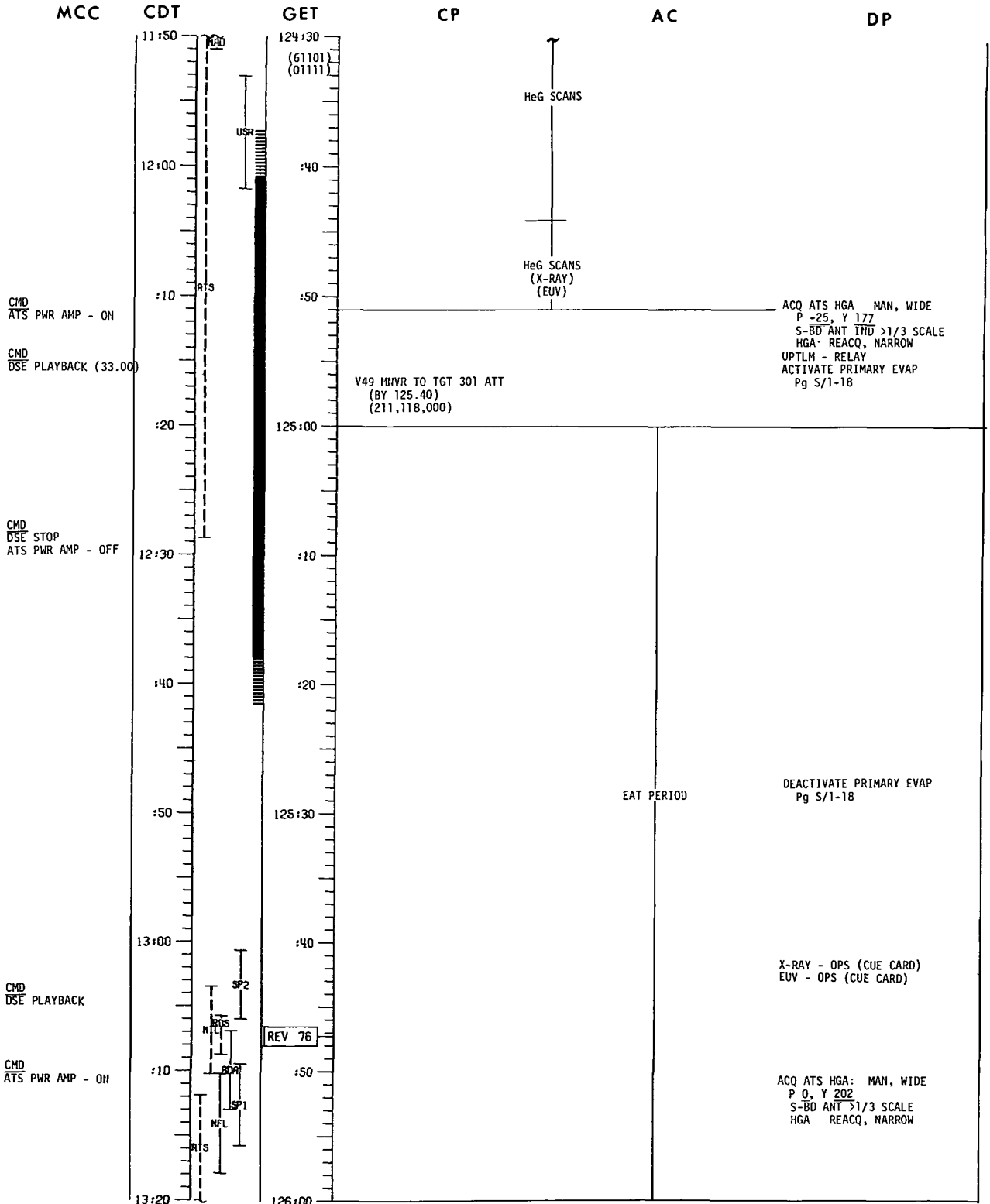


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-13

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	75-76

FURN (MA 131)

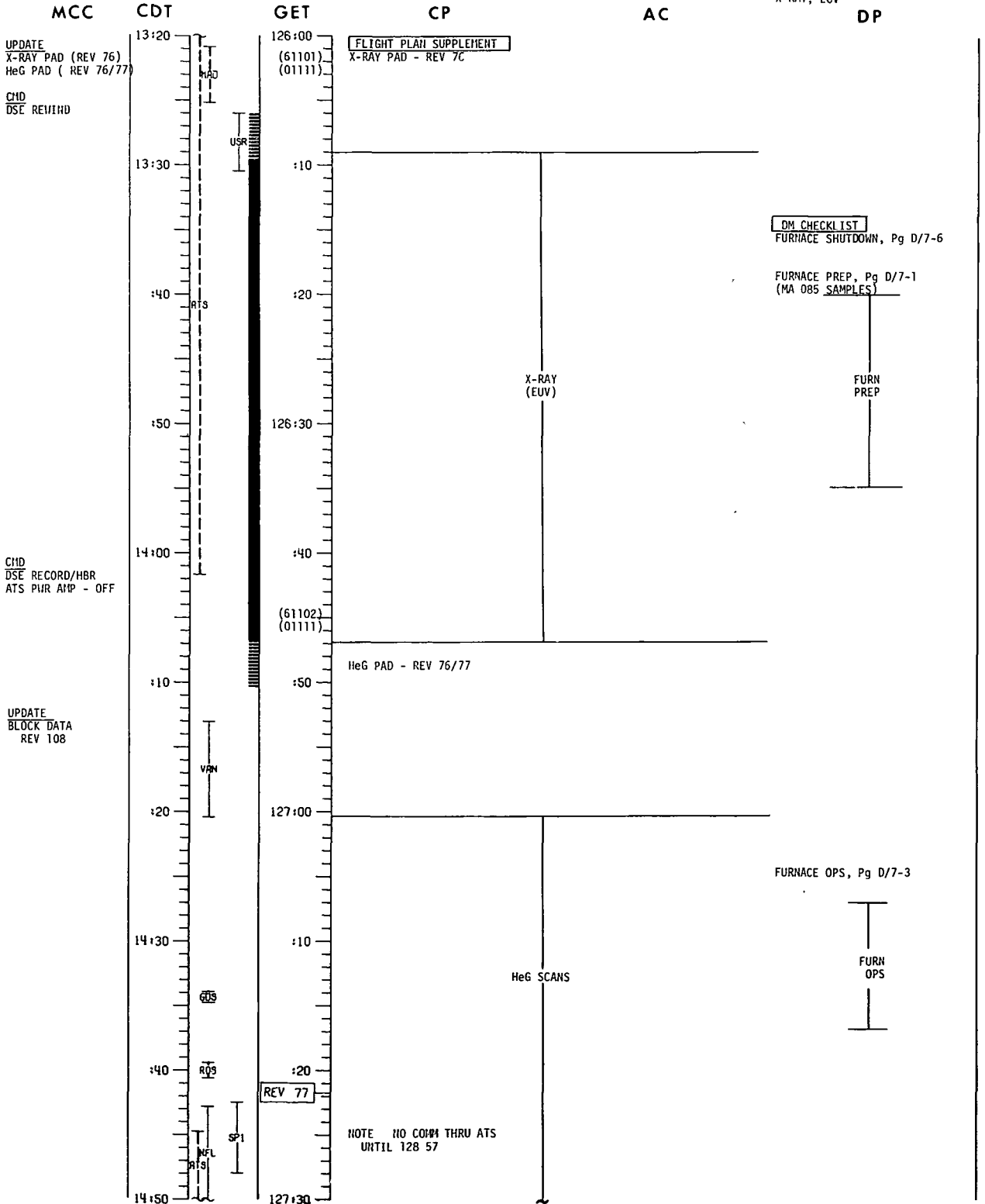


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-14

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	76-77

FURN (MA 131)/(MA 085)
X-RAY, EUV



DM CHECKLIST
FURNACE SHUTDOWN, Pg D/7-6

FURNACE PREP, Pg D/7-1
(MA 085 SAMPLES)

FURNACE OPS, Pg D/7-3

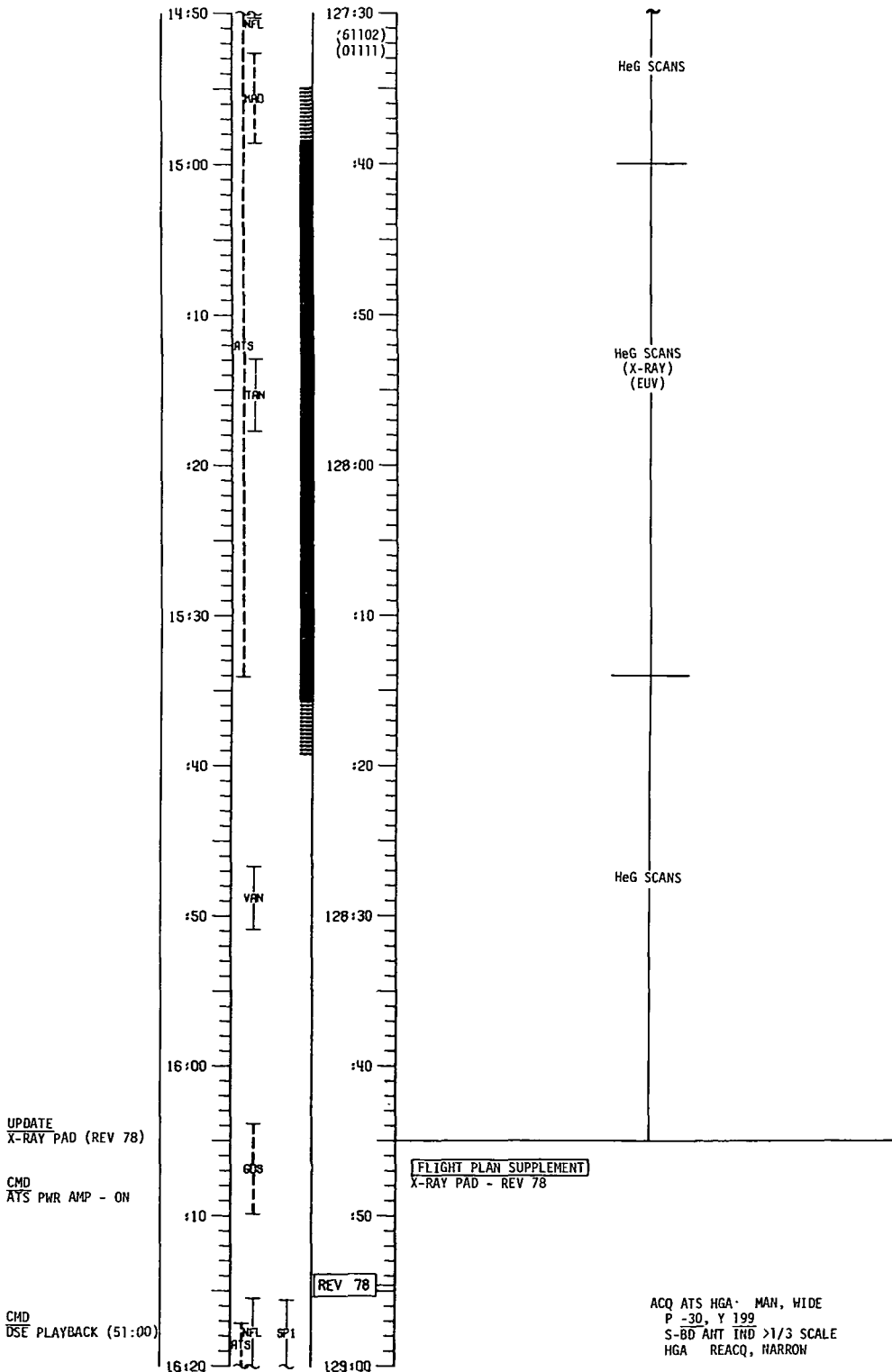
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-15

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	77-78

FURN (MA 085)

MCC CDT GET CP AC DP



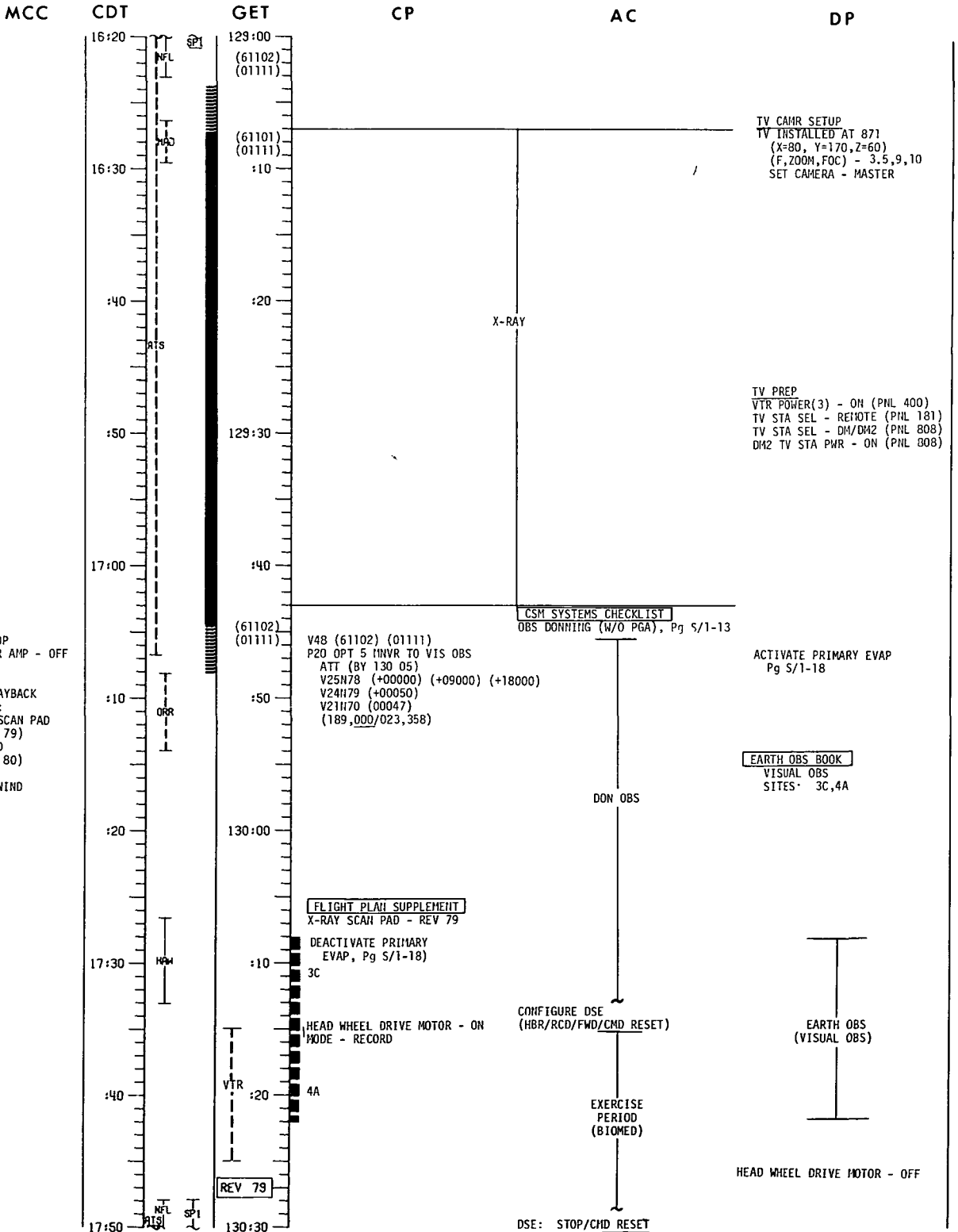
ACQ AT'S HGA MAN, WIDE
 P -30, Y 199
 S-BD AHT IND >1/3 SCALE
 HGA REACQ, NARROW

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-16

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	78-79

FURN (MA 085)



CMD
DSE STOP
ATS PWR AMP - OFF

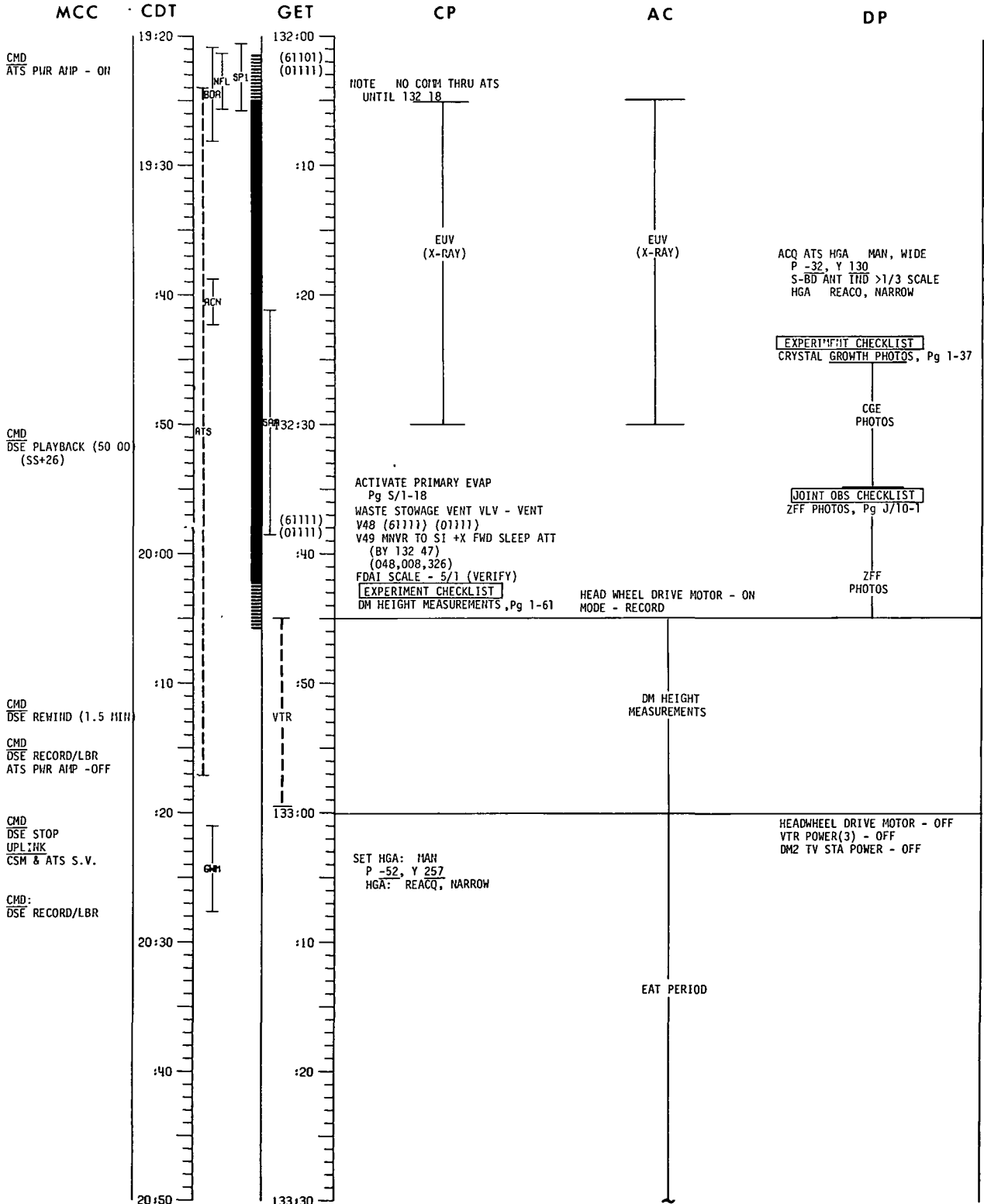
CMD
DSE PLAYBACK
UPDATE:
X-RAY SCAN PAD
(REV 79)
EUV PAD
(REV 80)
CMD
DSE REWIND

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-17

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	80

FURN (MA 085), B10S

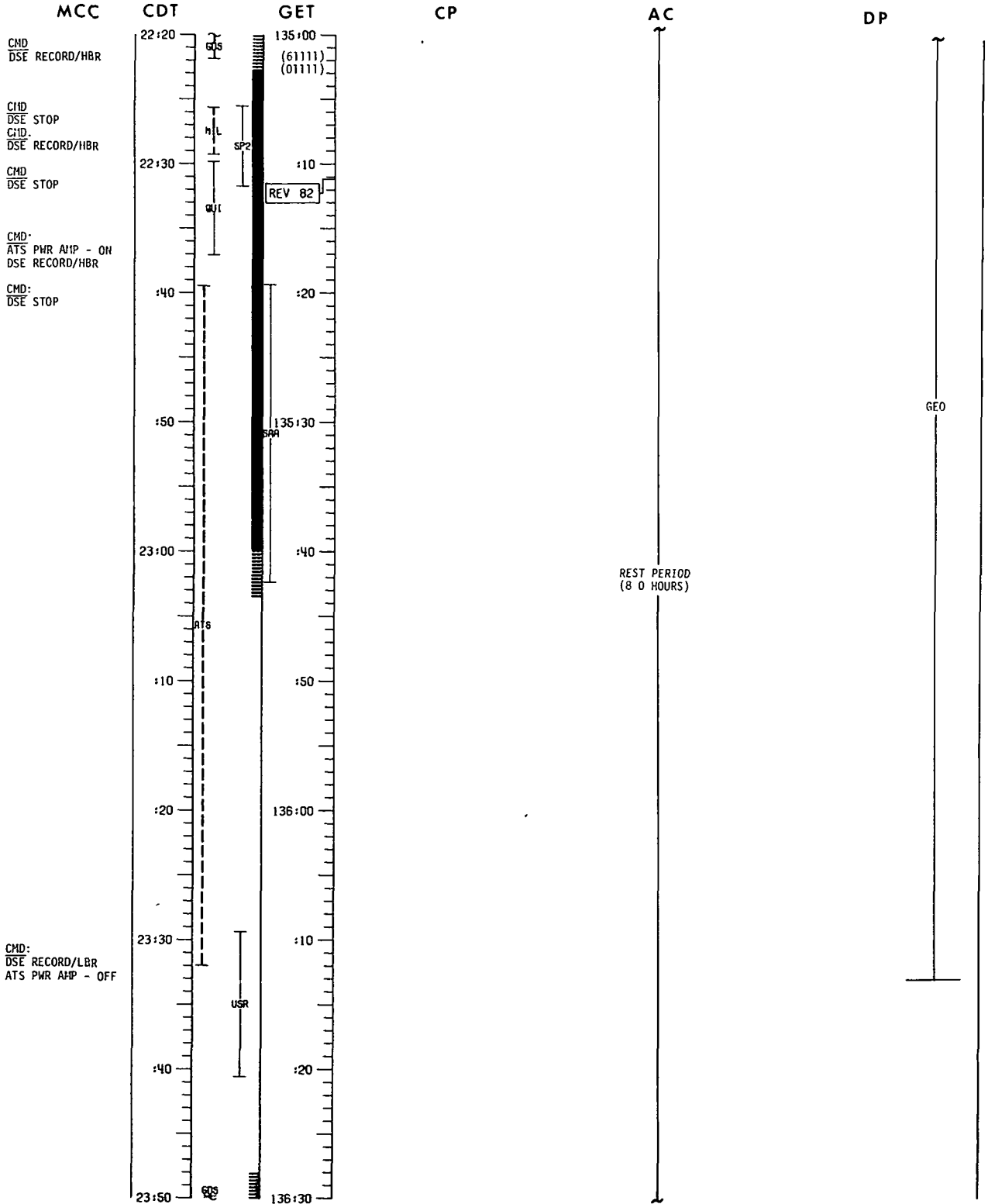


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-19

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	81-82

FURN (MA 085), B10S

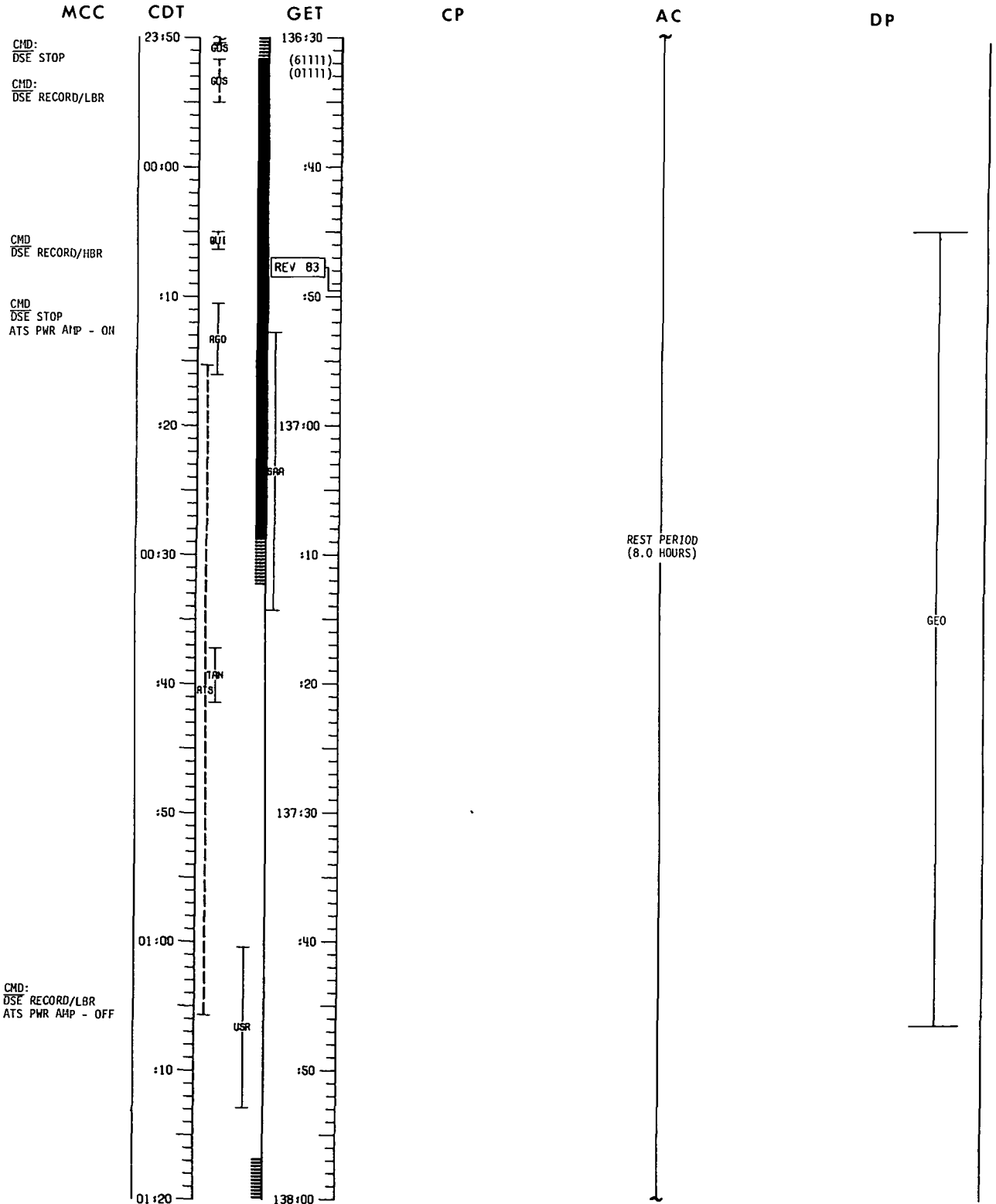


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-21

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 20, 1975	82-83

FURN (MA 085), 8105



MCC
 CDT
 GET

CMD:
 DSE STOP

CMD:
 DSE RECORD/LBR

CMD:
 DSE RECORD/HBR

CMD:
 DSE STOP
 ATS PWR AHP - ON

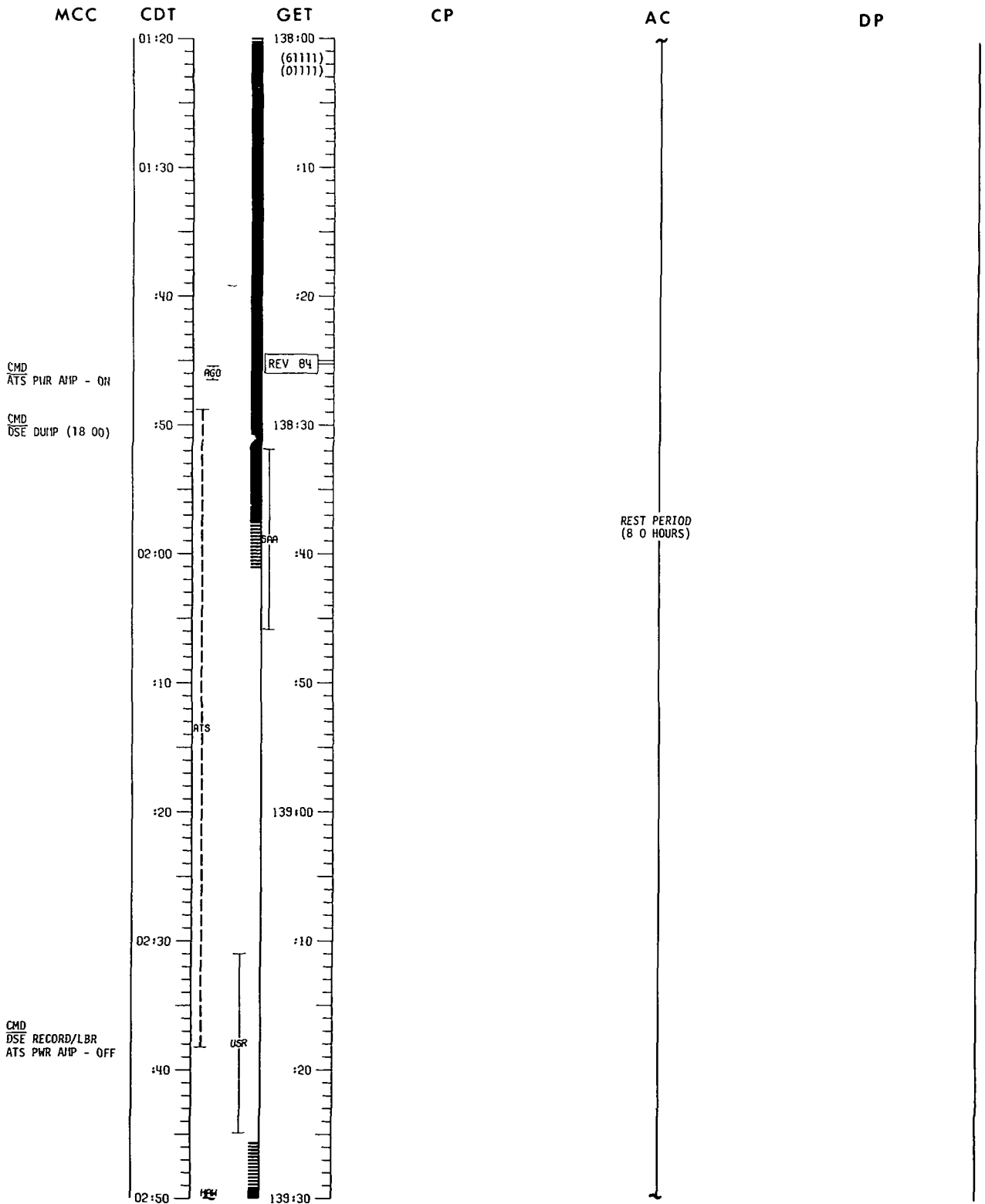
CMD:
 DSE RECORD/LBR
 ATS PWR AHP - OFF

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

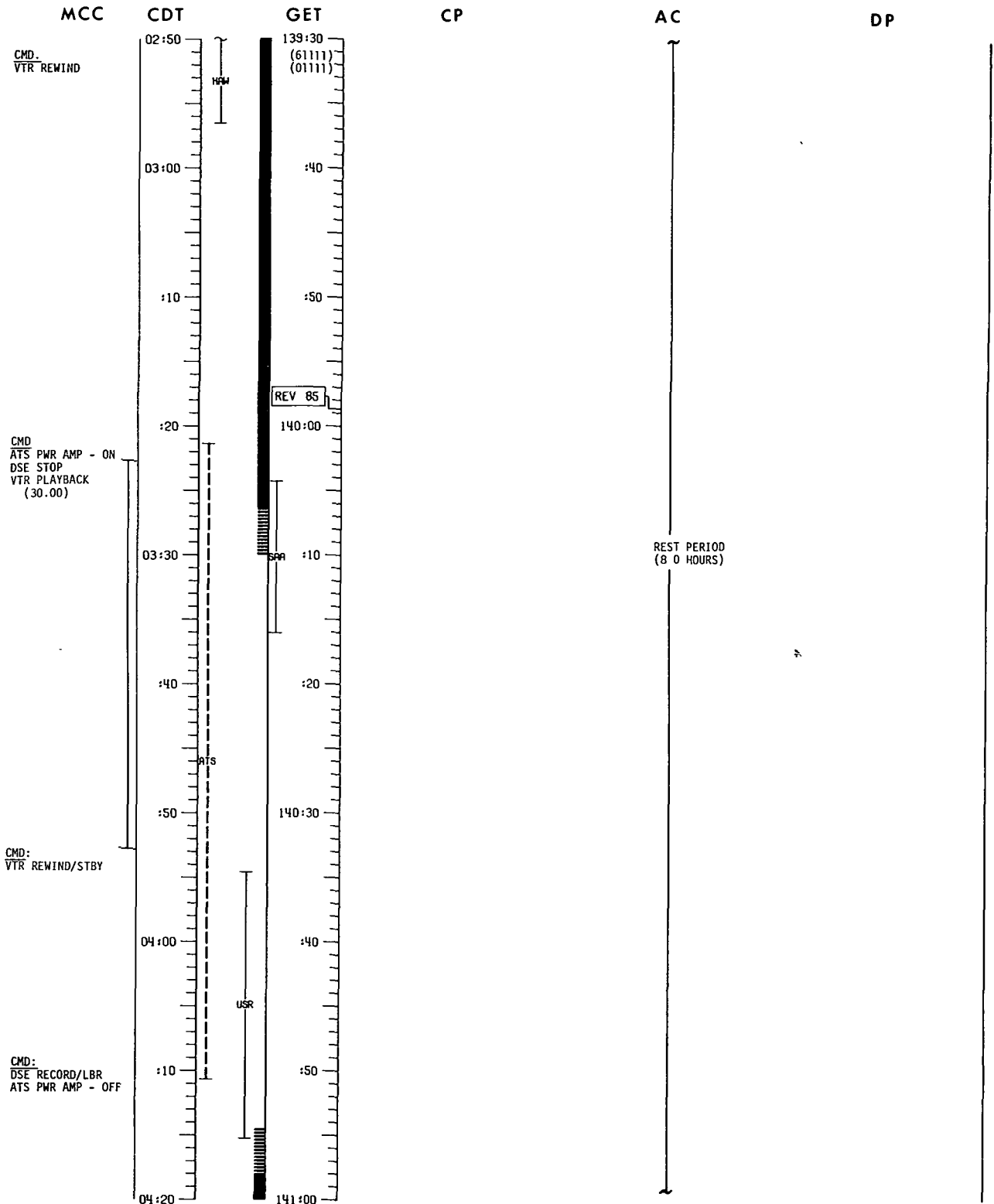


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-23

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	84-85

FURN (MA 085), BIOS

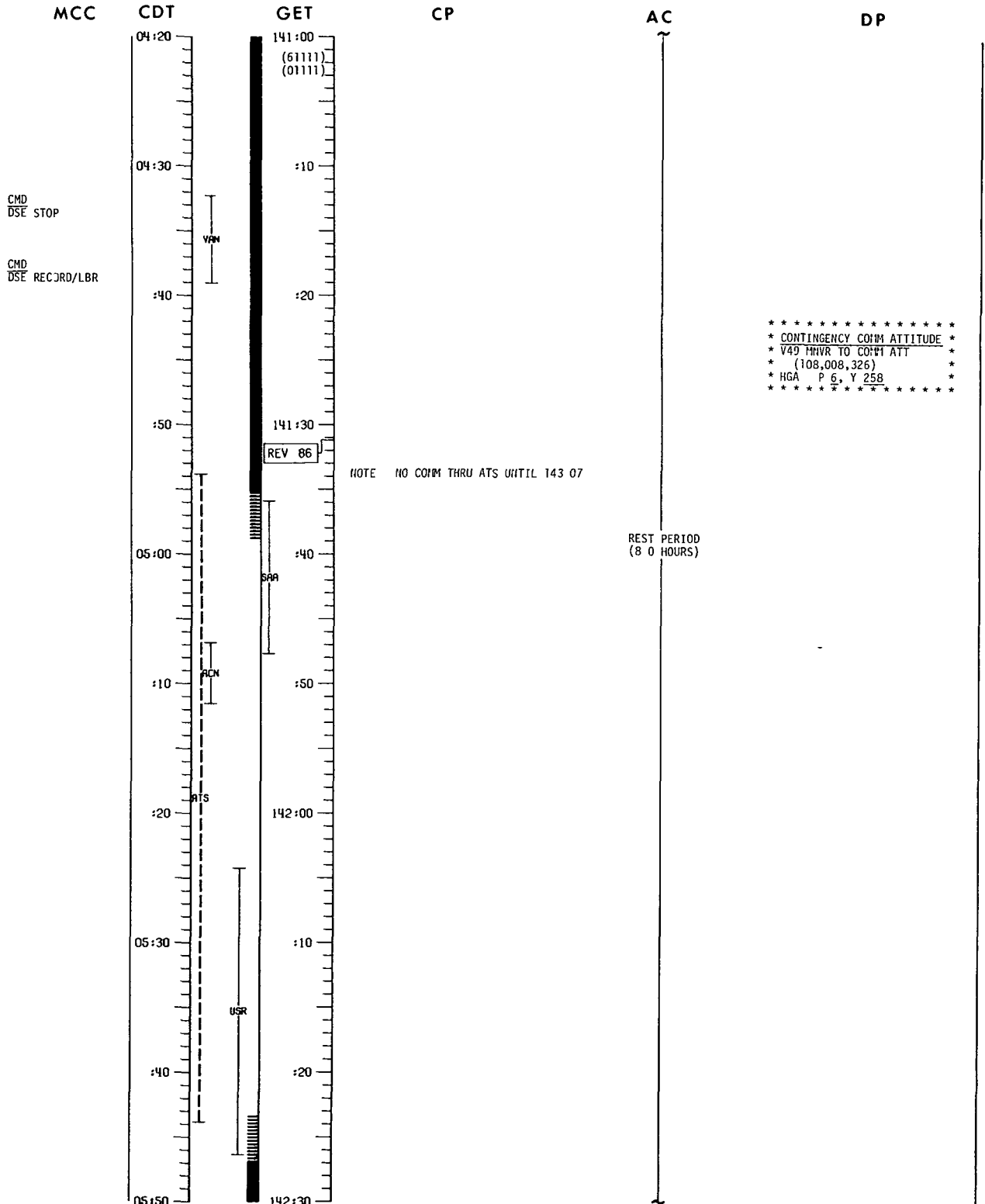


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-24

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	85-86

FUR:1 (MA 085), 8105



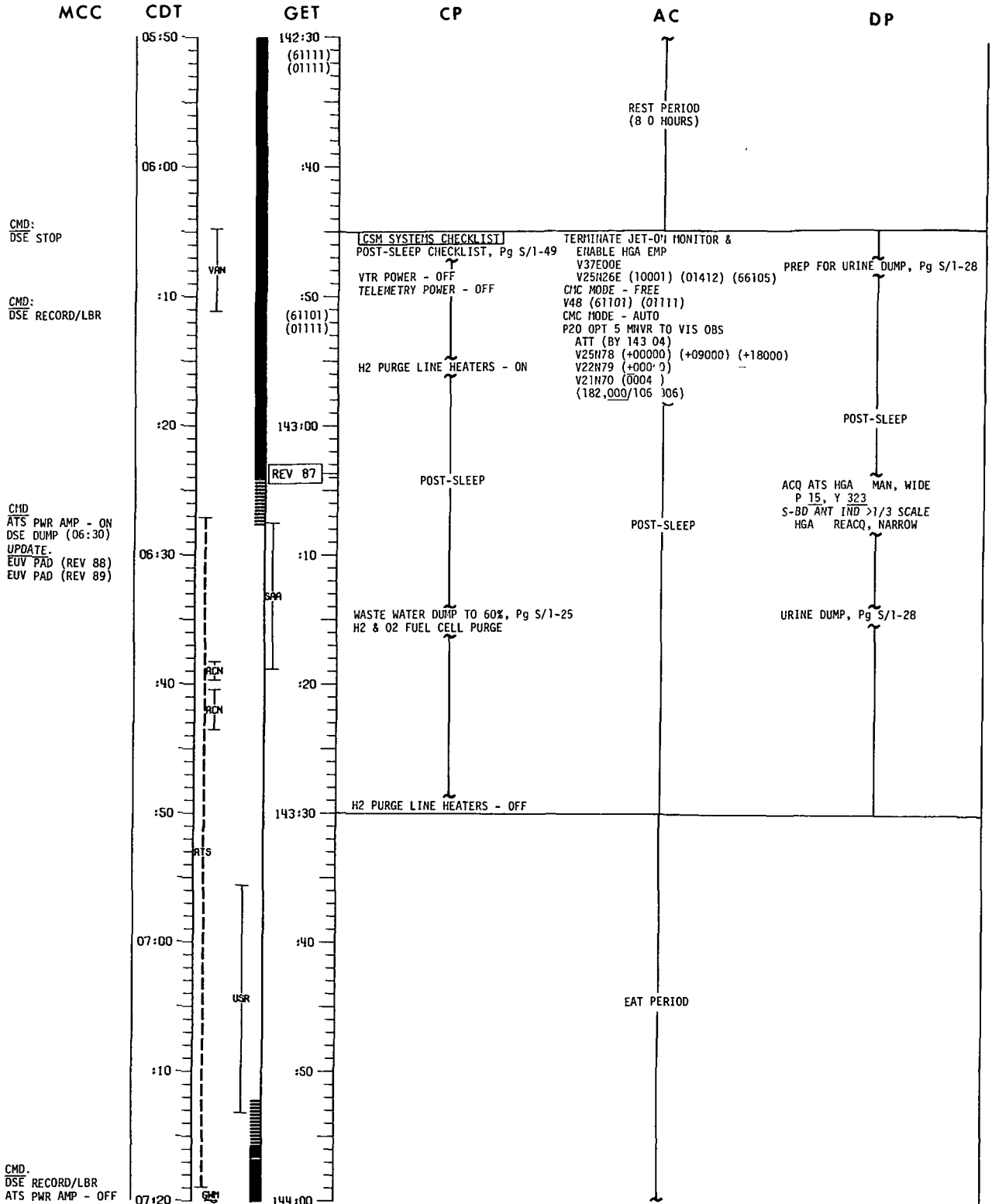
 * CONTINGENCY COMM ATTITUDE *
 * V49 MHVR TO COMM ATT *
 * (108,008,326) *
 * HGA P 6, Y 258 *

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-25

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	86-87

FURN (MA 085), BIOS



CMD:
DSE STOP

CMD:
DSE RECORD/LBR

CMD
ATS PWR AMP - ON
DSE DUMP (06:30)
UPDATE
EUV PAD (REV 88)
EUV PAD (REV 89)

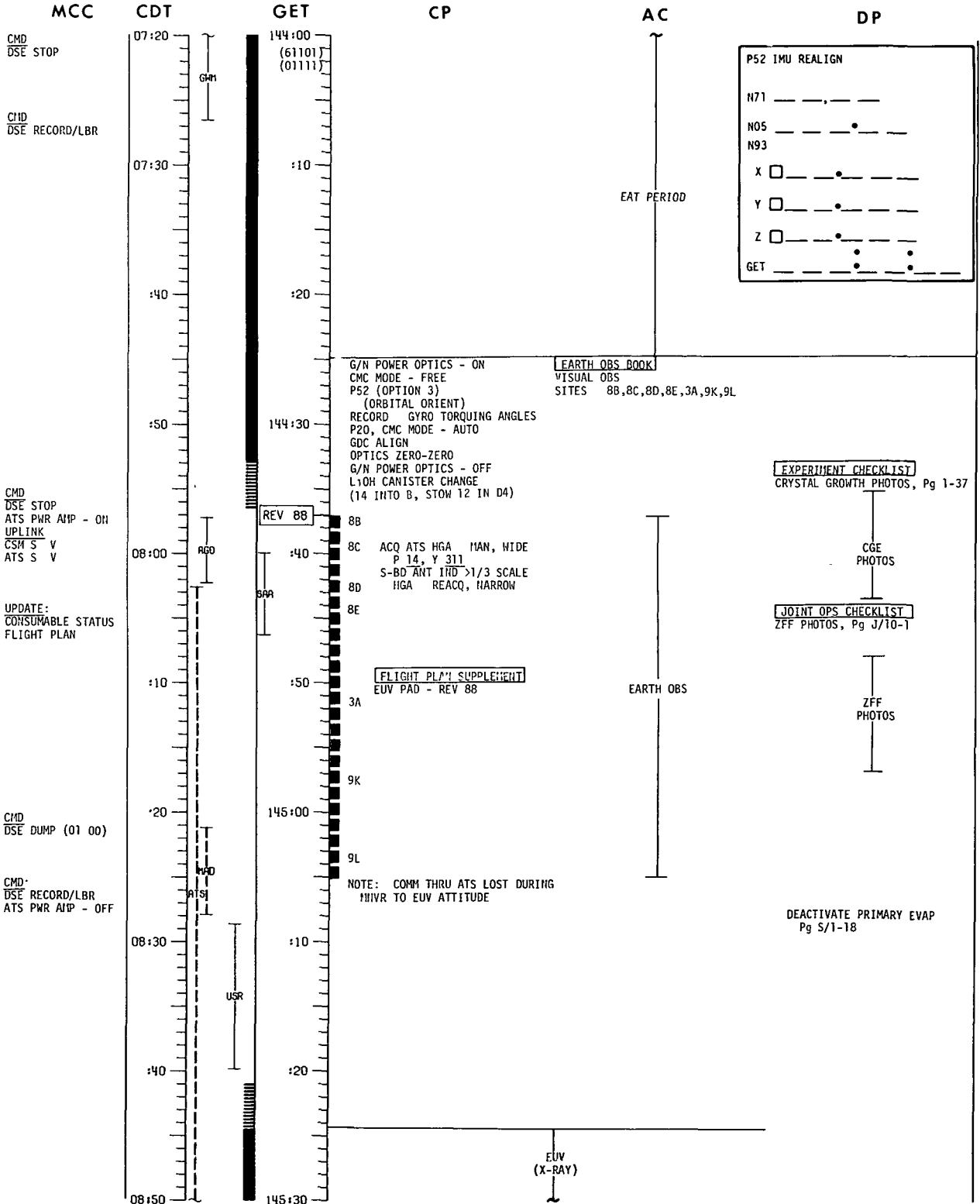
CMD.
DSE RECORD/LBR
ATS PWR AMP - OFF

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-26

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	87-88

FURN (HA 085), B105



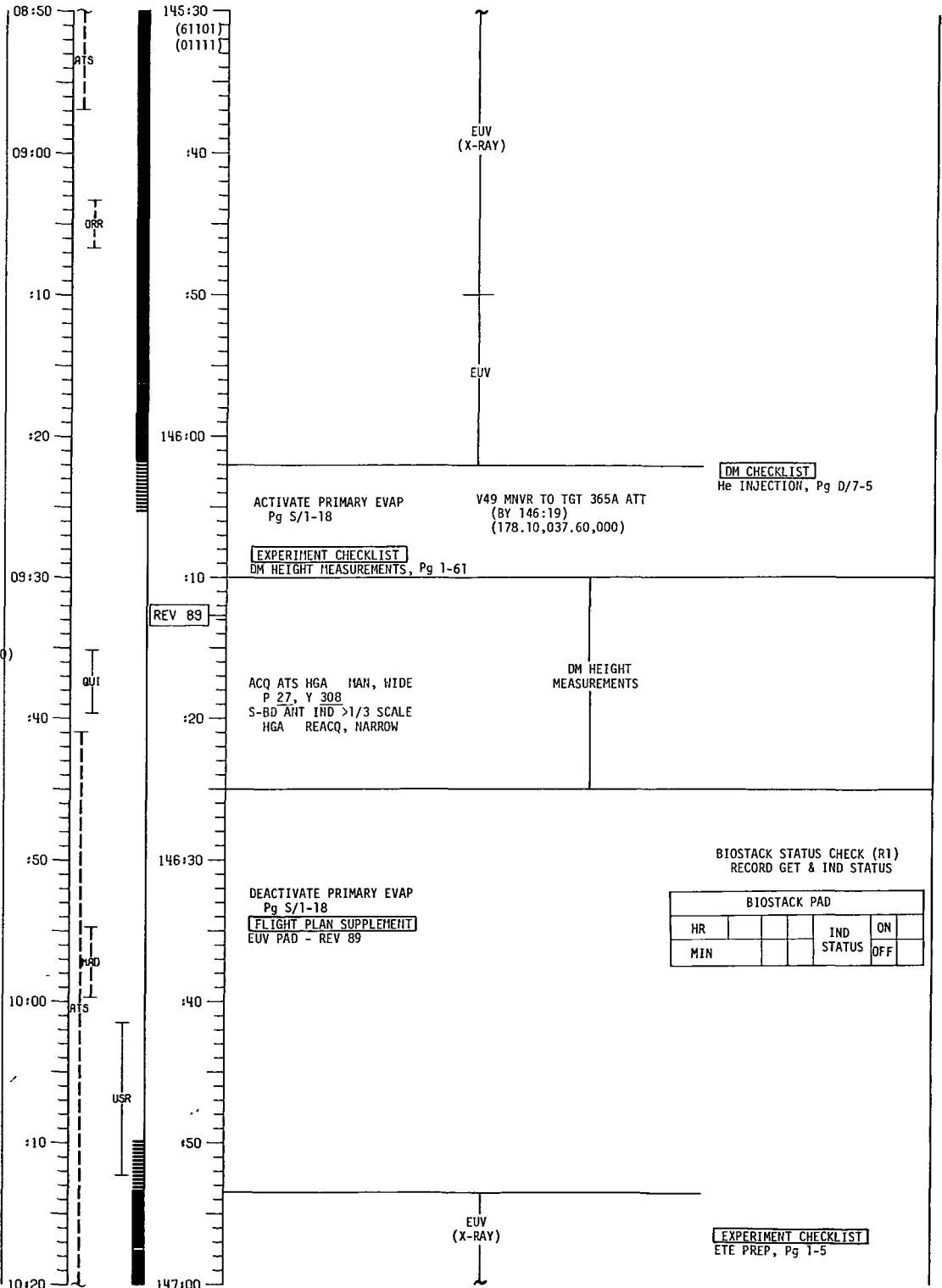
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-27

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	88-89

FURN (MA 085), B10S

MCC CDT GET CP AC DP



CMD
DSE PLAYBACK (32:00)
ATS PWR AMP - OII

CMD
DSE STOP
CMD
DSE PLAYBACK
UPDATE
EUV PAD (REV 90)

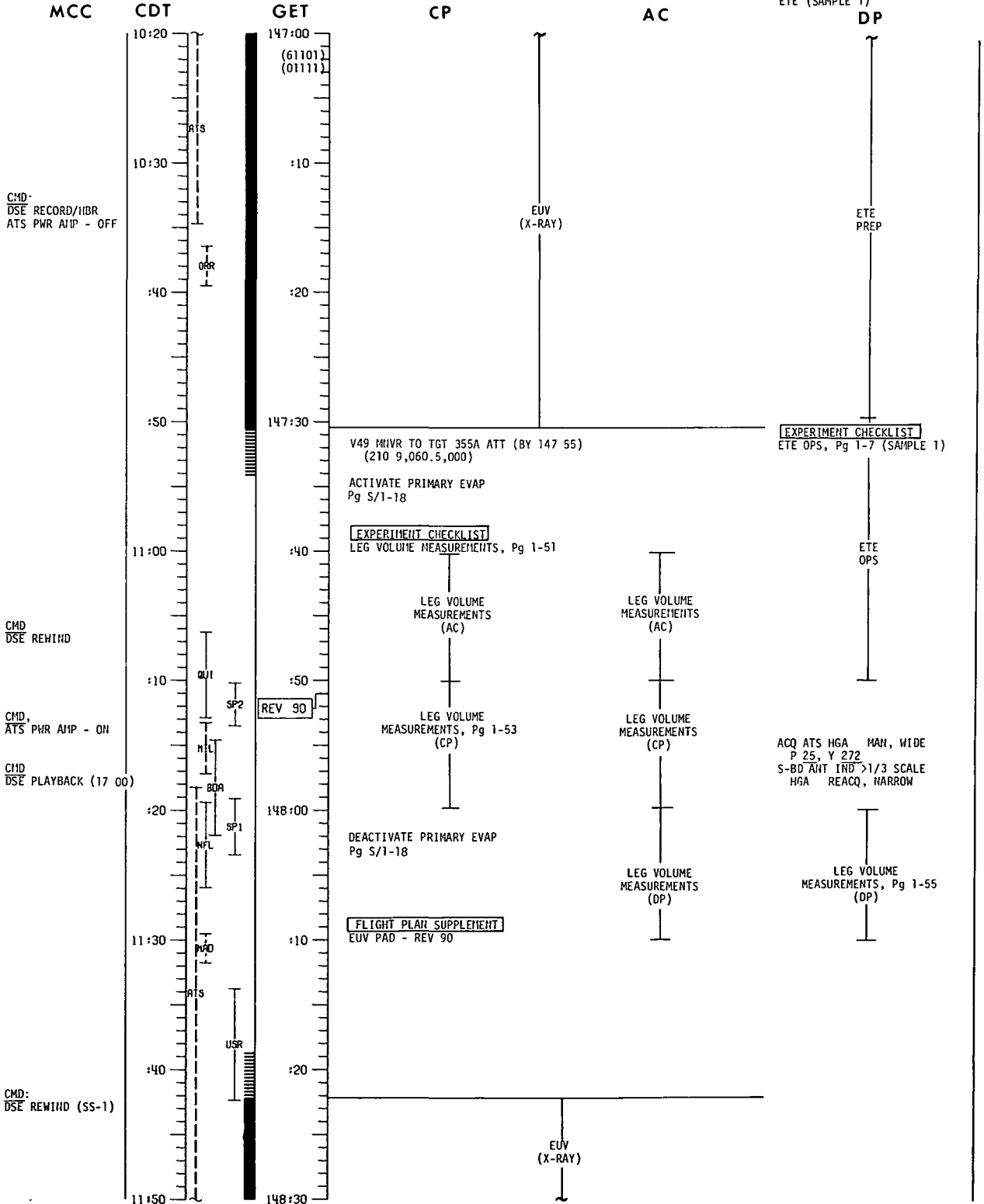
CMD
DSE REWIND (SS-1)

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINGAL	MAY 15, 1975	4.3-28

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	89-90

FURN (MA 085), BIOS
ETE (SAMPLE 1)

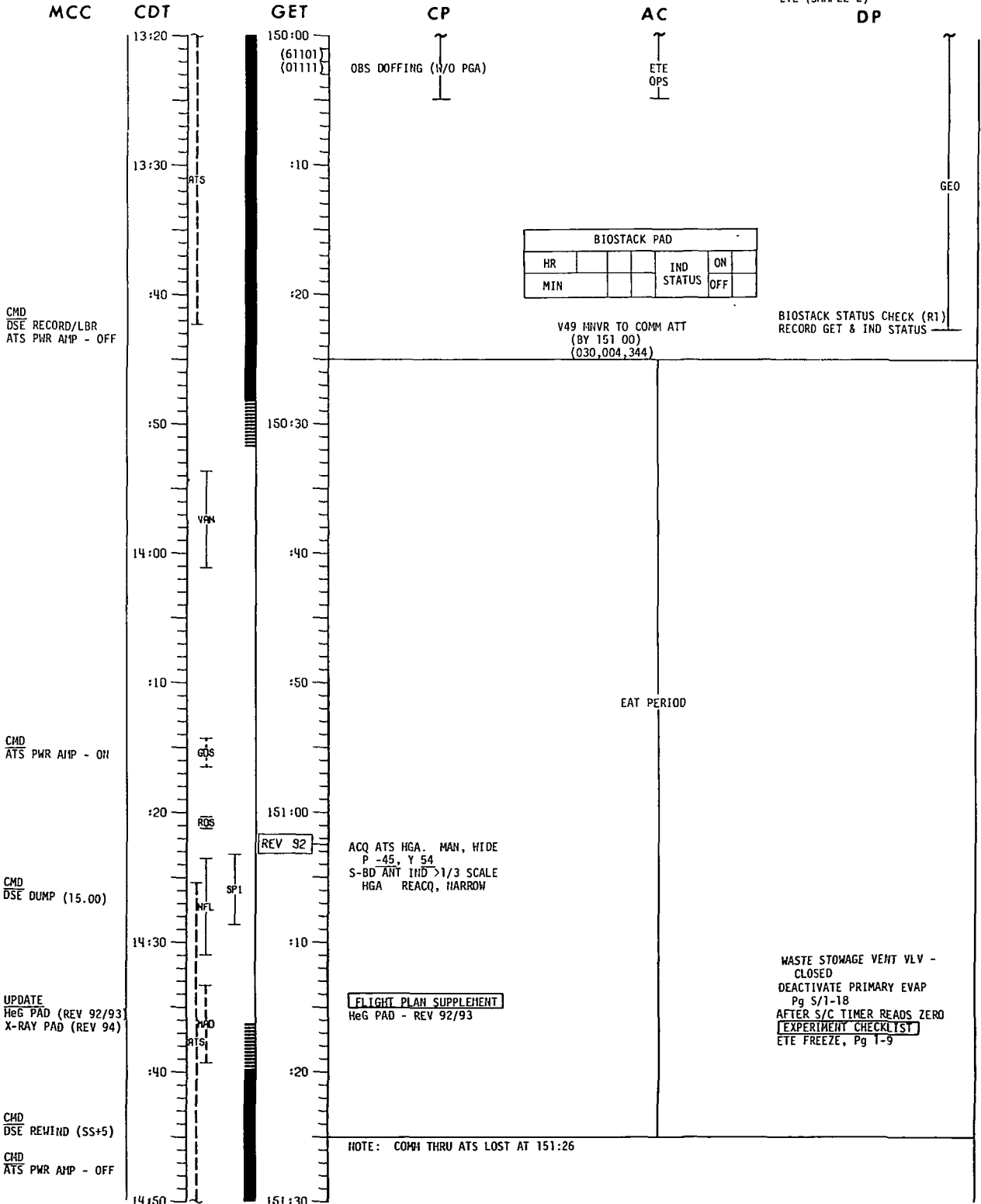


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-29

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	91-92

FURN (MA 085), BIOS
ETE (SAMPLE 2)



BIOSTACK PAD					
HR				IND STATUS	ON
MIN				OFF	

V49 HNVN TO COMM ATT
(BY 151 00)
(030,004,344)

BIOSTACK STATUS CHECK (R1)
RECORD GET & IND STATUS

REV 92
ACQ ATS HGA. MAN, WIDE
P -45, Y 54
S-BD ANT IND >1/3 SCALE
HGA REACQ, NARROW

FLIGHT PLAN SUPPLEMENT
HeG PAD - REV 92/93

WASTE STOWAGE VENT VLV -
CLOSED
DEACTIVATE PRIMARY EVAP
Pg S/1-18
AFTER S/C TIMER READS ZERO
EXPERIMENT CHECKLIST
ETE FREEZE, Pg 1-9

NOTE: COMM THRU ATS LOST AT 151:26

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-31

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	92-93

MCC

CDT

GET

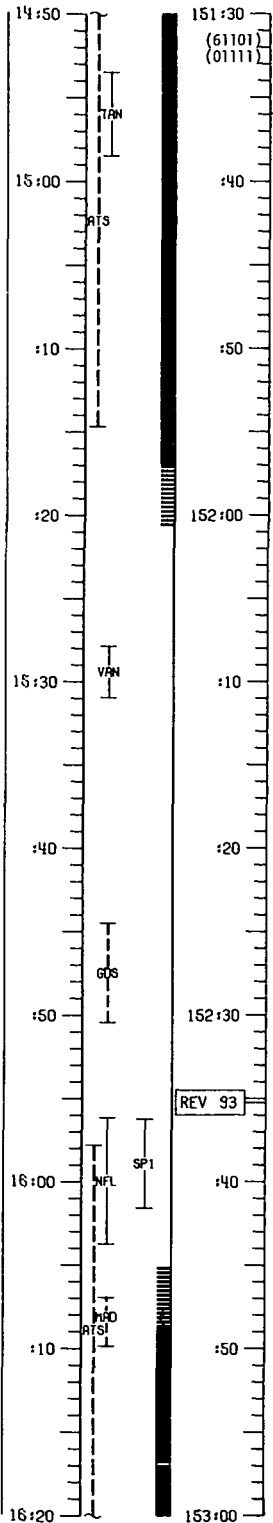
CP

AC

FURN (MA 085)/(MA 060), BIOS
ETE (SAMPLE 3)

DP

UNSTON PULSER & MA 060
SAMPLES FROM (A6)
DM CHECKLIST
FURNACE SHUTDOWN, Pg D/7-6



NOTE NO COM1 THRU ATS
UNTIL 154 11

REV 93

HeG SCANS
(X-RAY)
(EUV)

HeG SCANS

HeG SCANS
(X-RAY)
(EUV)

FURNACE PREP, D/7-1
(MA 060 SAMPLES)

FURN
PREP

EXPERIMENT CHECKLIST
ETE SHUTDOWN, Pg 1-10

ETE
SHUTDOWN

ETE OPS, Pg 1-7 (SAMPLE 3)

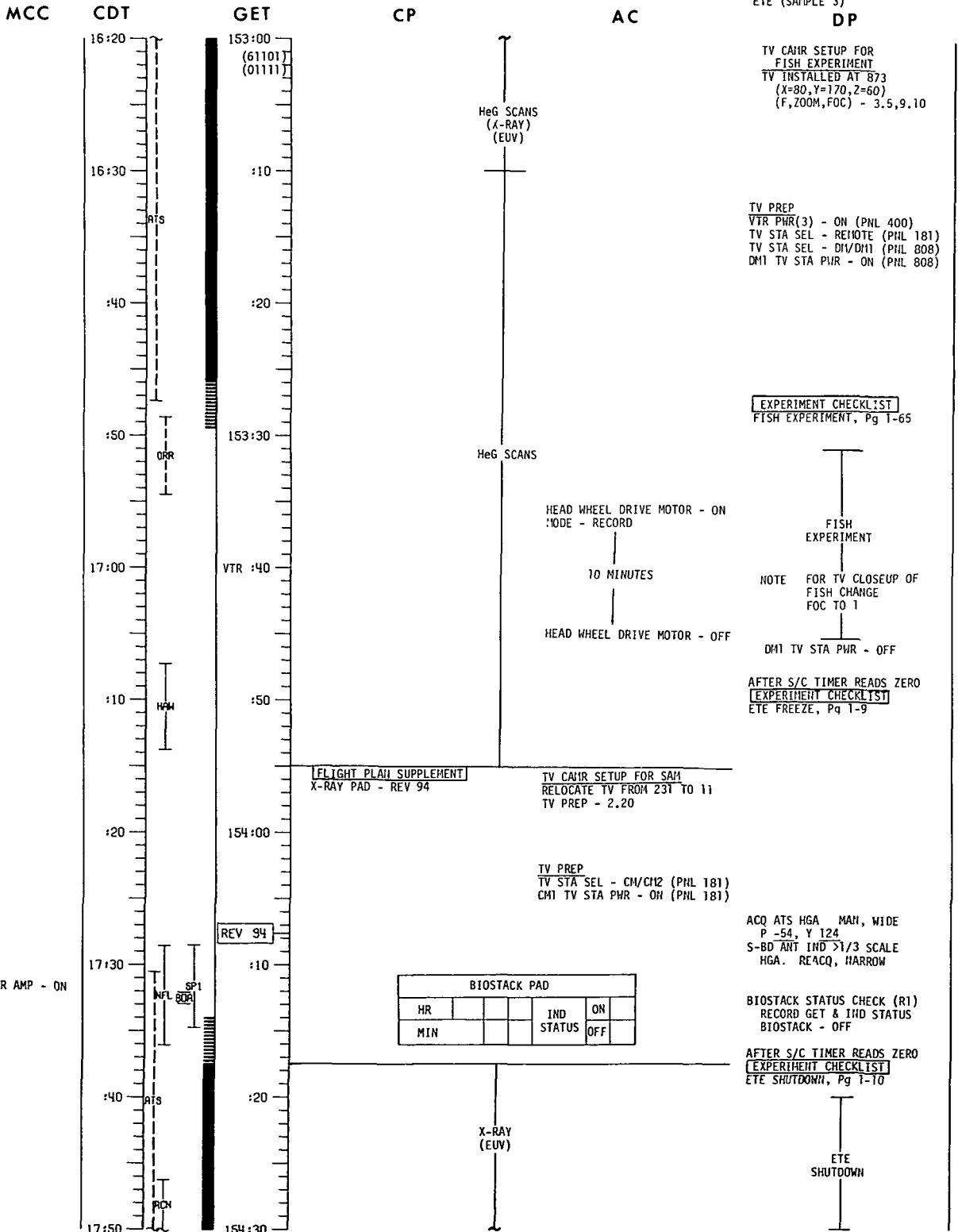
ETE
OPS

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-32

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	93-94

FURN (MA 060), BIOS
ETE (SAMPLE 3)



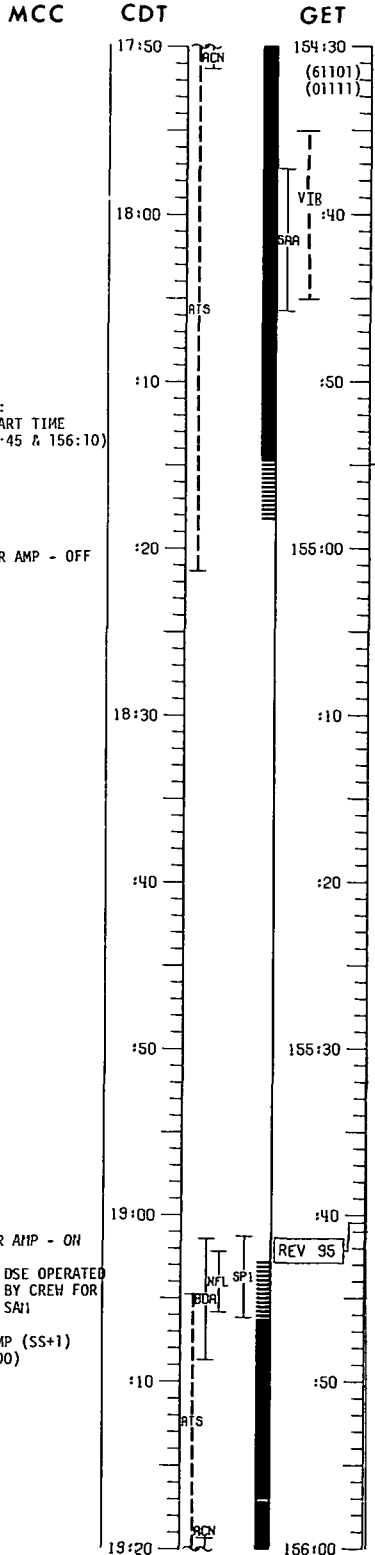
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-33

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	94-95

FURN (MA 060)
ETE (SAMPLE 3)/(SAMPLE 4)
DP

EXPERIMENT CHECKLIST
SAM INSTALLATION & CALIB,
Pg 1-31



UPDATE:
SAM START TIME
(155:45 & 156:10)

CMD
ATS PWR AMP - OFF

CMD
ATS PWR AMP - ON

NOTE DSE OPERATED
BY CREW FOR
SA1

CMD:
DSE DUMP (SS+1)
(47:00)

SAM INSTALLATION
CALIBRATION

SAM WINDOW 5 PHOTOS, Pg 1-35
(STEP 2, CAMERA SETUP ONLY)

ACTIVATE PRIMARY EVAP
Pg S/1-18

SAM OPERATIONS (SUNSET &
SUNRISE)
(STEP 3, PHOTO SETUP),
Pg 1-33

DEACTIVATE PRIMARY EVAP
Pg S/1-18
SAM ALIGNMENT C/O, Pg 1-32

SAM WINDOW 5 PHOTOS, Pg 1-35

SAM OPERATIONS (SUNSET),
Pg 1-33
(WITH PHOTOGRAPHY)

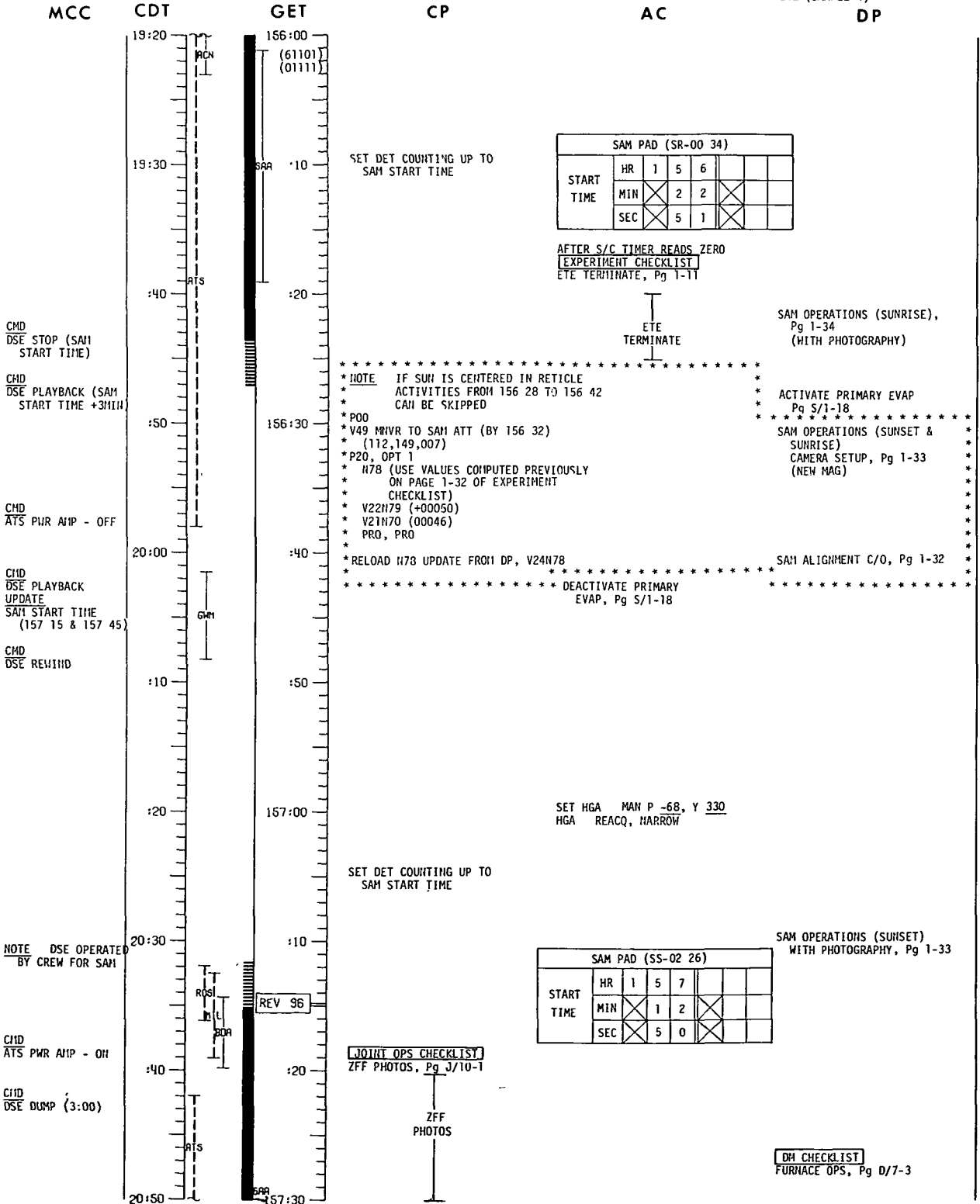
SAM PAD (SS-02 26)					
START TIME	HR	1	5	5	
	MIN	4	4		
	SEC	0	1		

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)



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-35

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	96-97

FURN (HA 060)

MCC

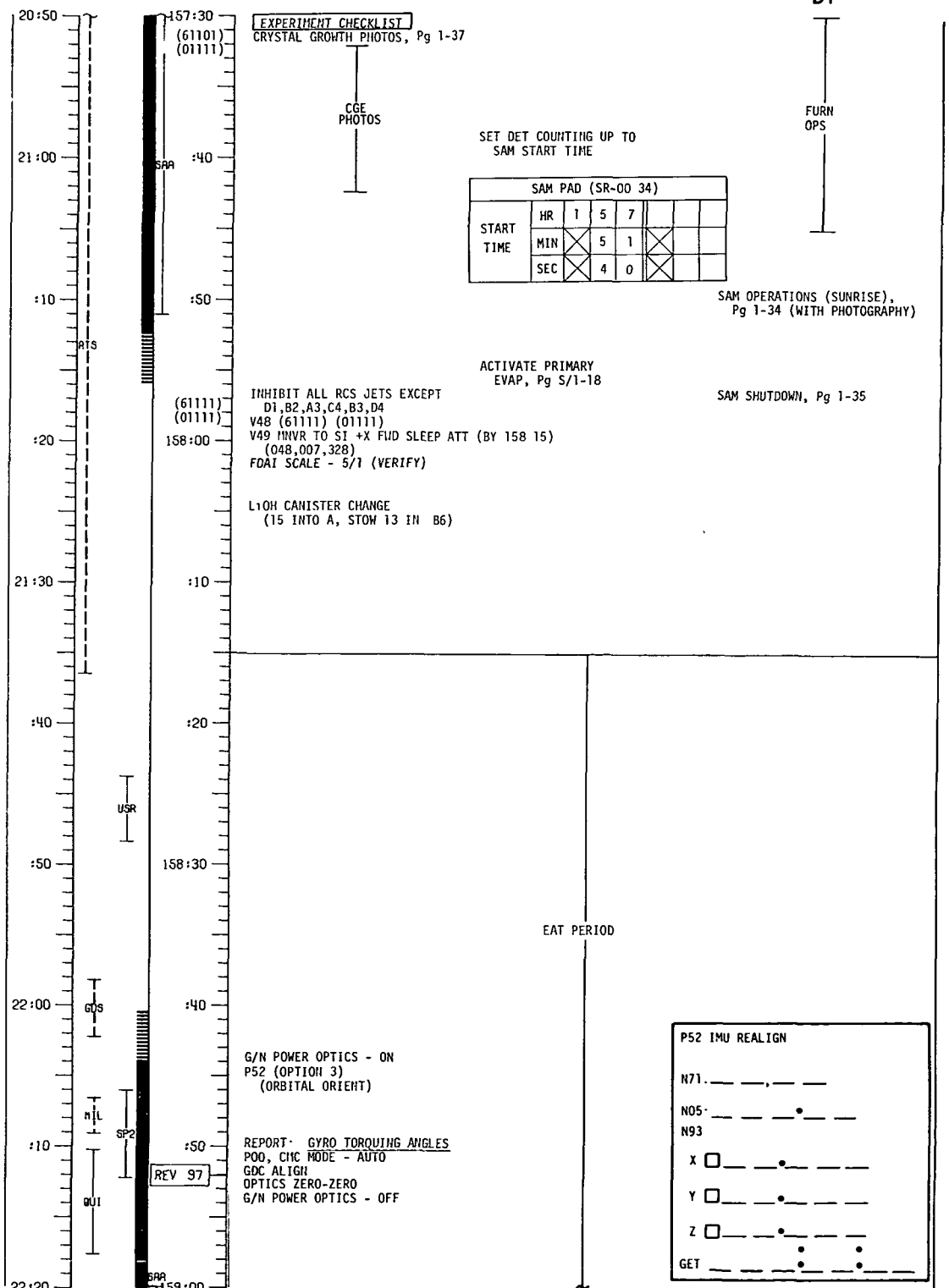
CDT

GET

CP

AC

DP



CMD
DSE RECORD/LDR
ATS PWR AMP - OFF

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

CMD.
ATS PWR AMP - ON

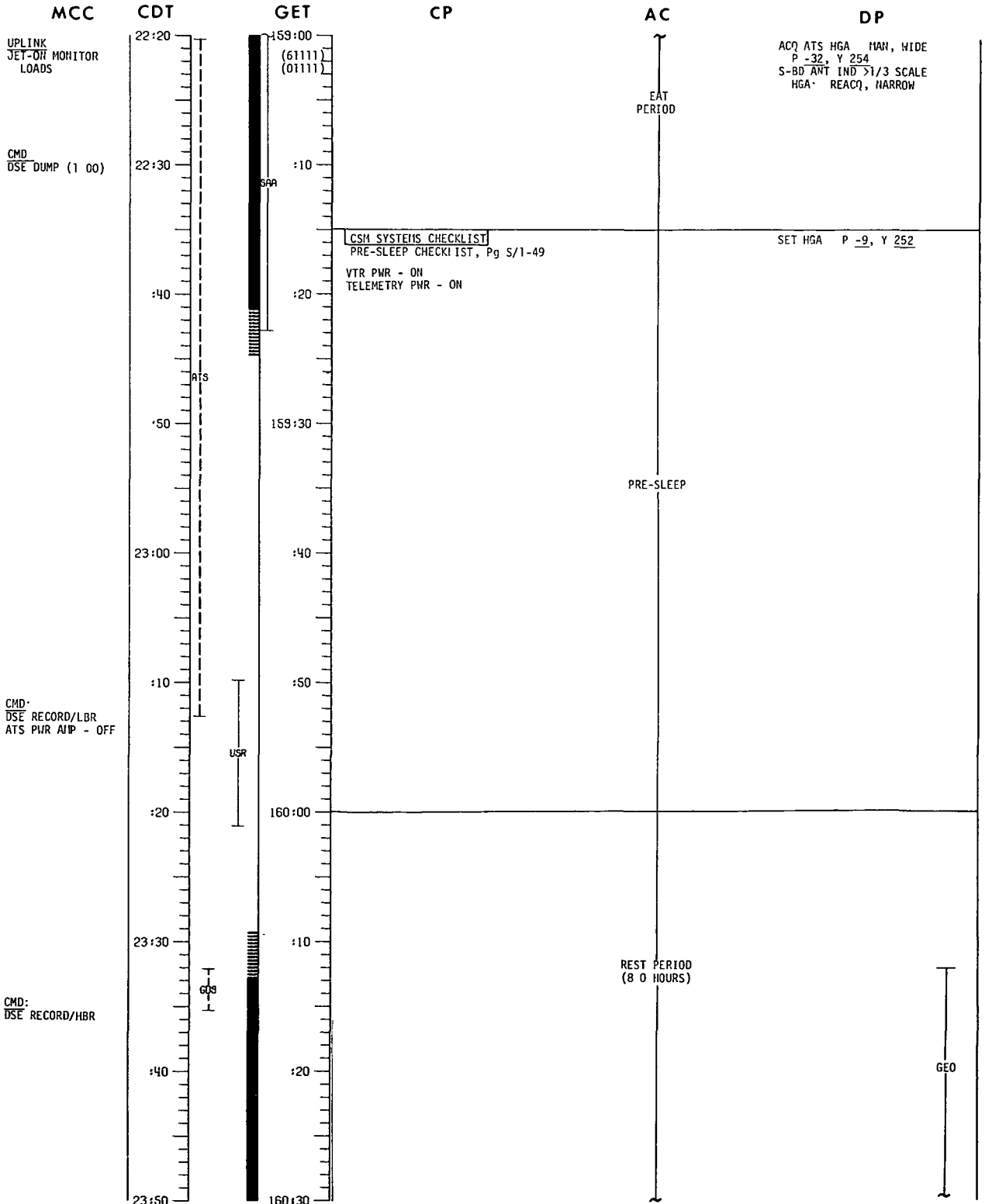
P52 IMU REALIGN	
N71	_____
N05	_____ . _____
N93	_____
X	<input type="checkbox"/> _____ . _____
Y	<input type="checkbox"/> _____ . _____
Z	<input type="checkbox"/> _____ . _____
GET	_____ . _____

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-36

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	97

FURH (11A 060)

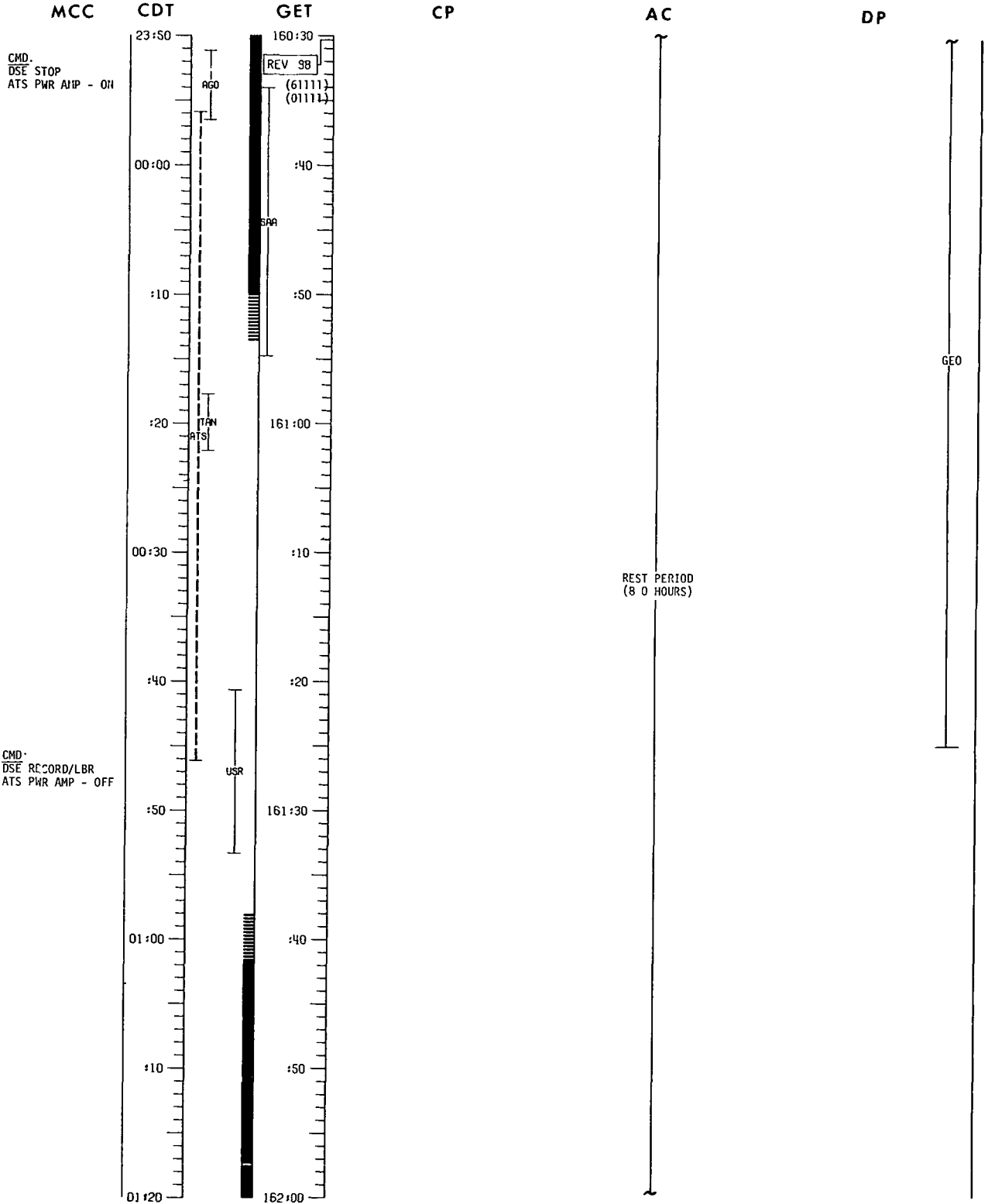


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-37

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 21, 1975	97-98

FURN (MA 060)

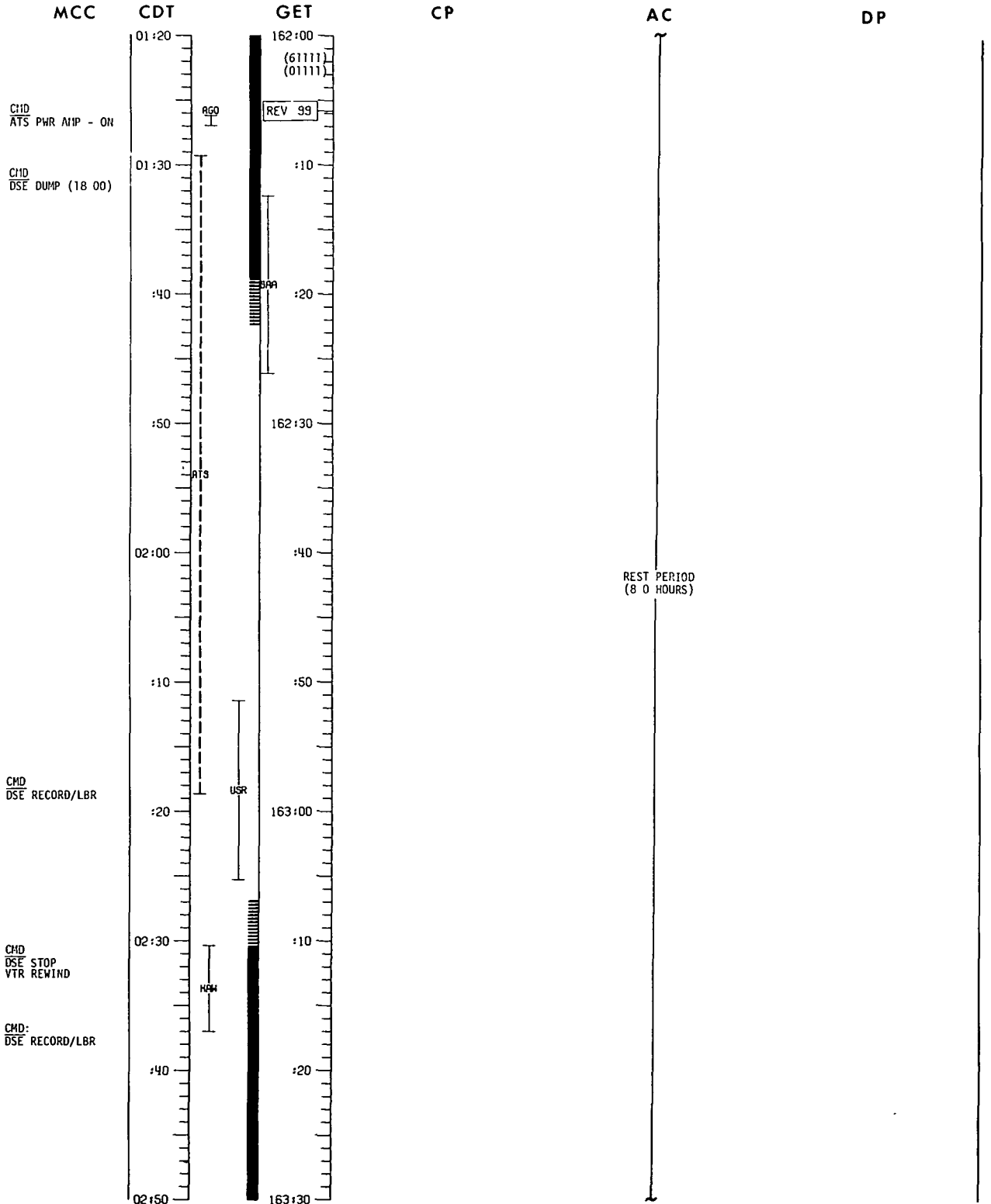


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-38

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	98-99

FURN (MA 060)

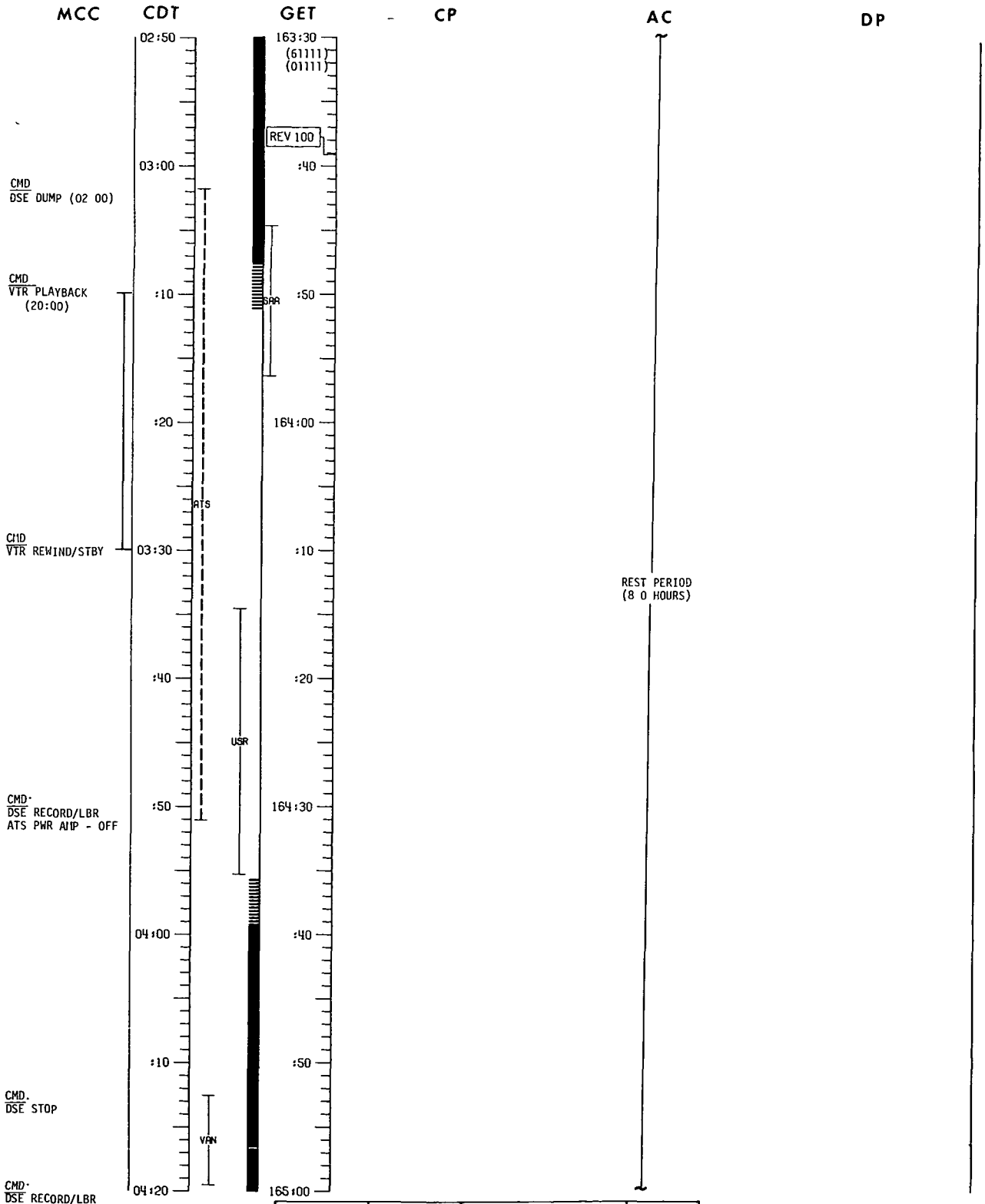


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-39

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

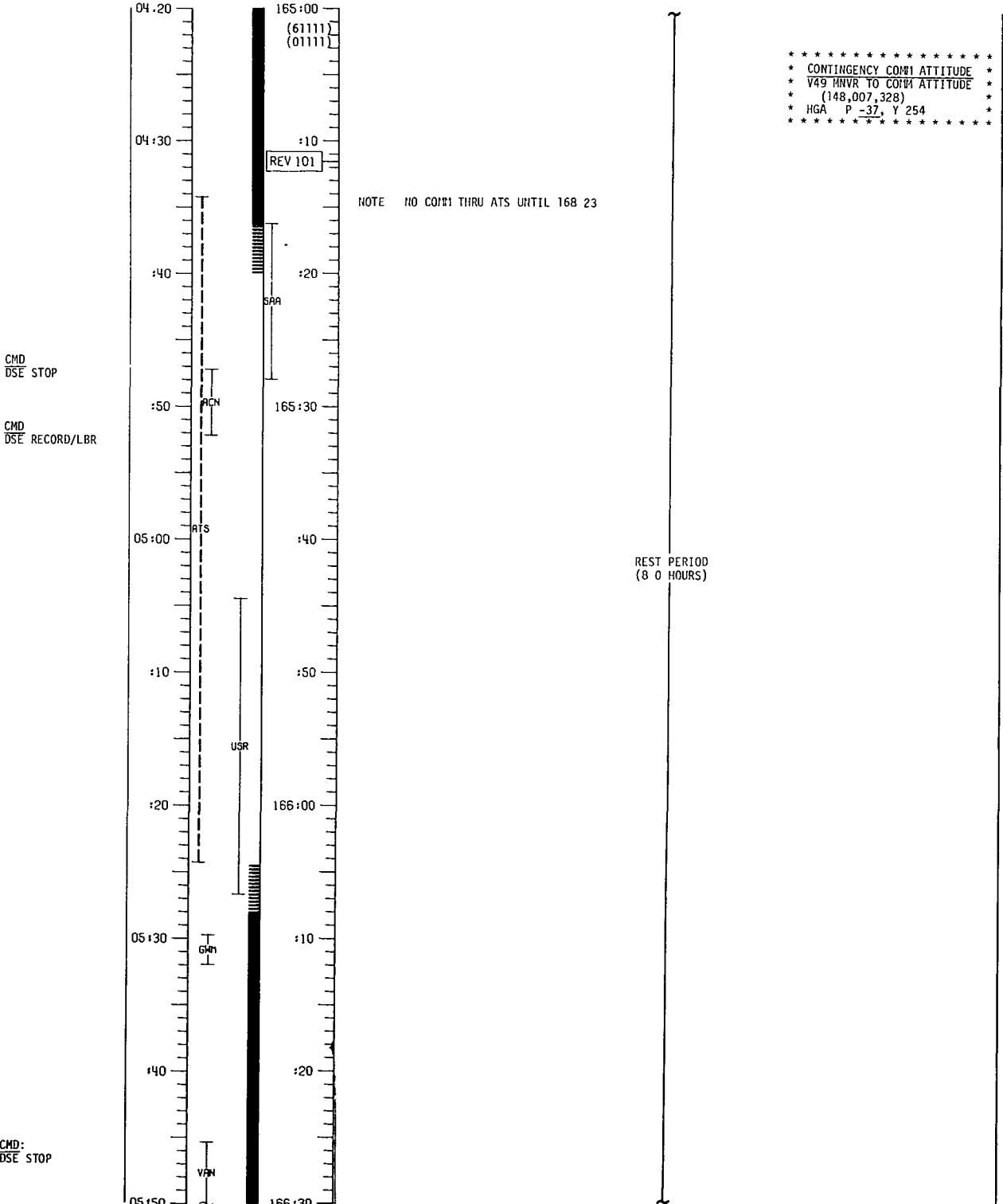
CDT

GET

CP

AC

DP

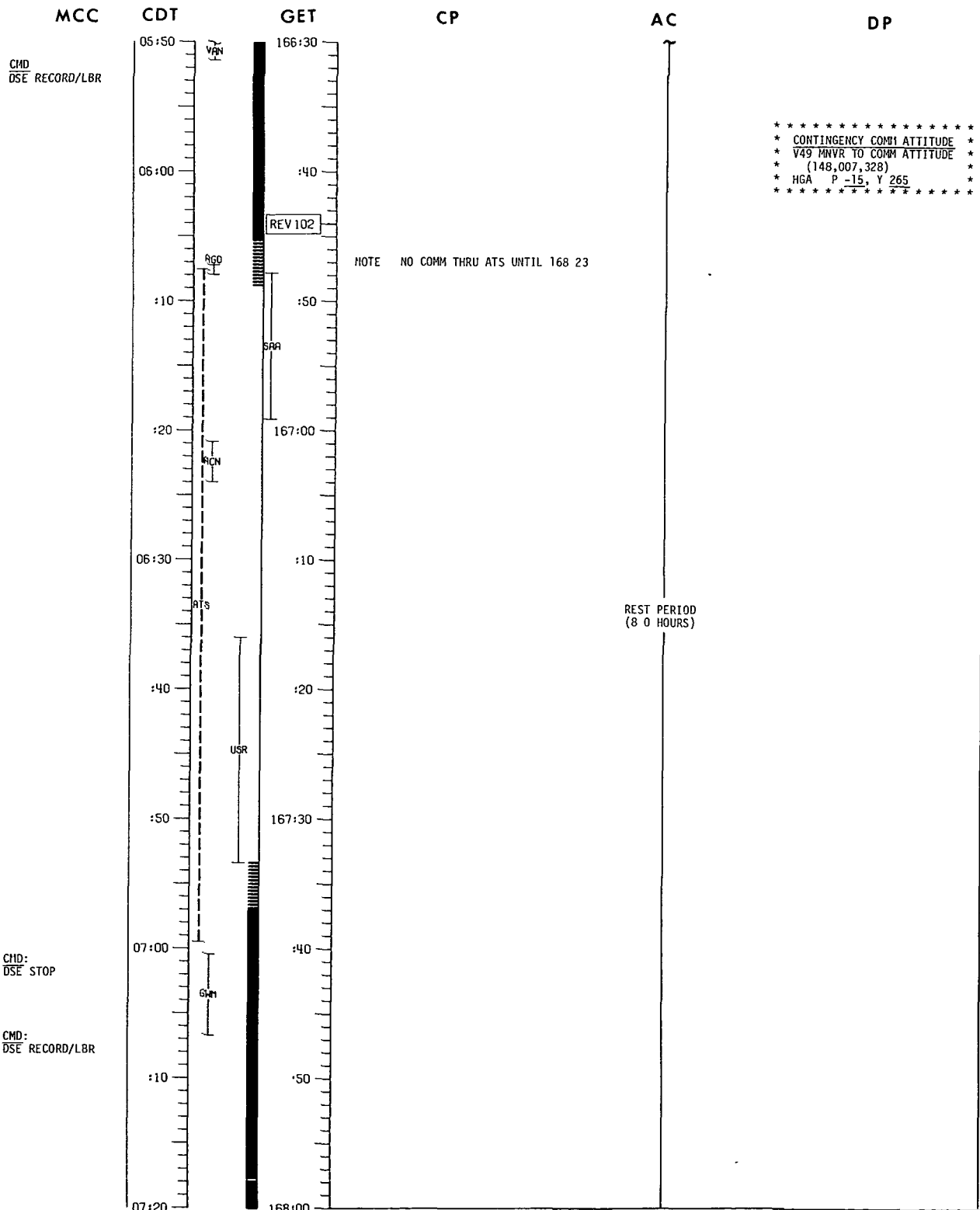


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-41

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	101-102

FURN (MA 060)



 * CONTINGENCY COM1 ATTITUDE *
 * V49 MNVR TO COM1 ATTITUDE *
 * (148,007,328) *
 * HGA P -15, Y 265 *

NOTE NO COMM THRU ATS UNTIL 168 23

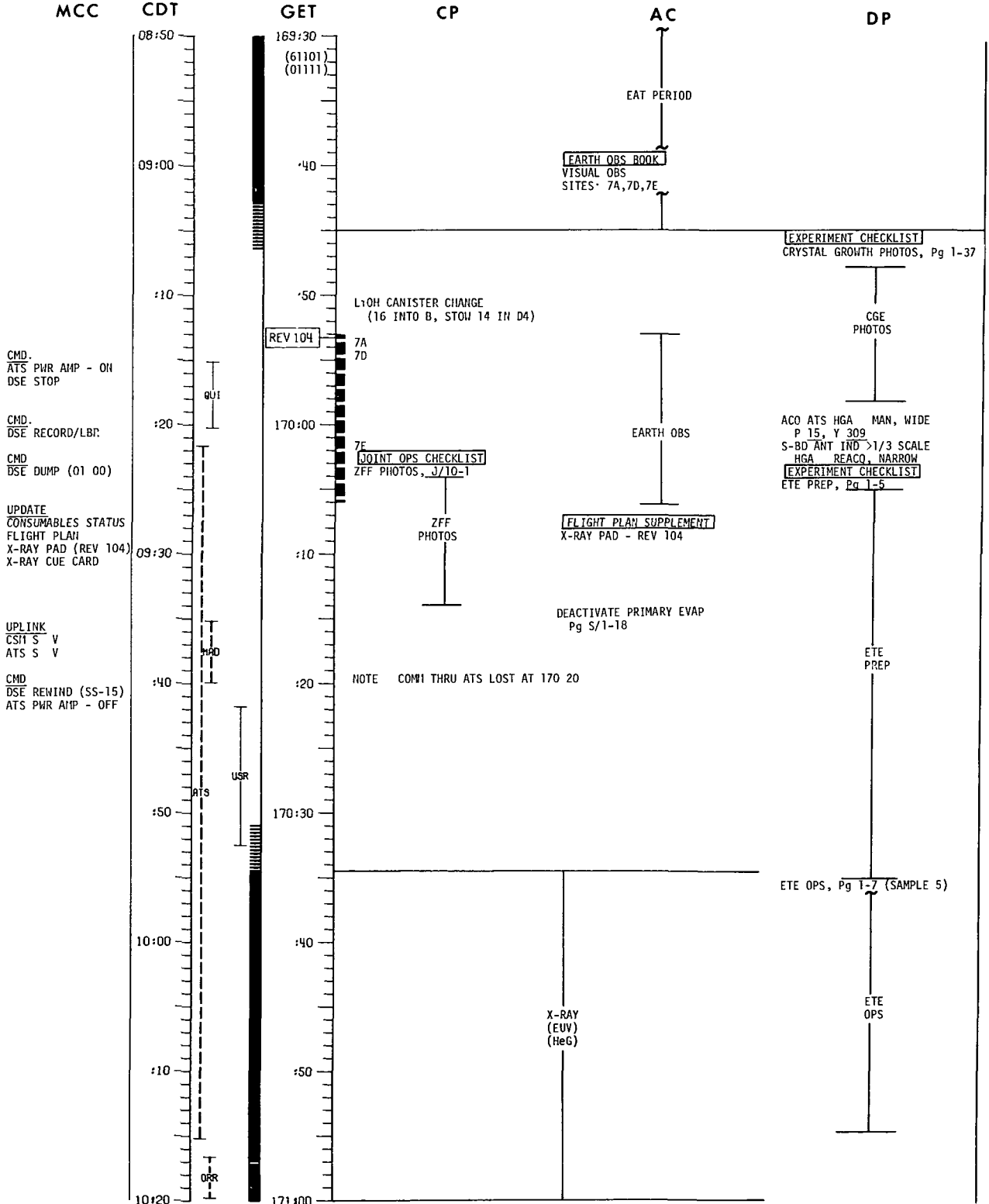
REST PERIOD
 (8 0 HOURS)

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-42

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	103-104

FURN (MA 060)

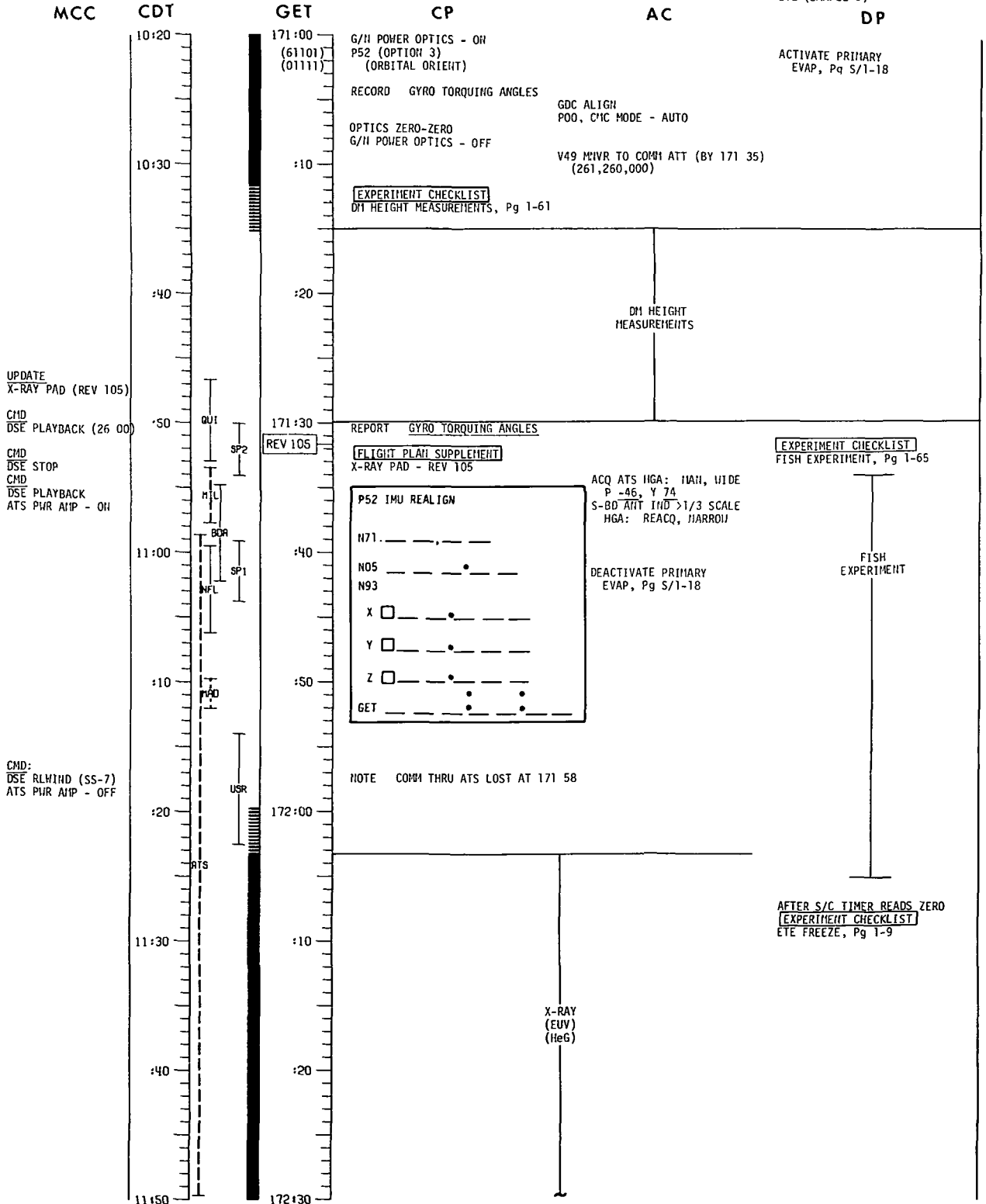


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-44

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	104-105

FURN (MA 060)
ETE (SAMPLE 5)

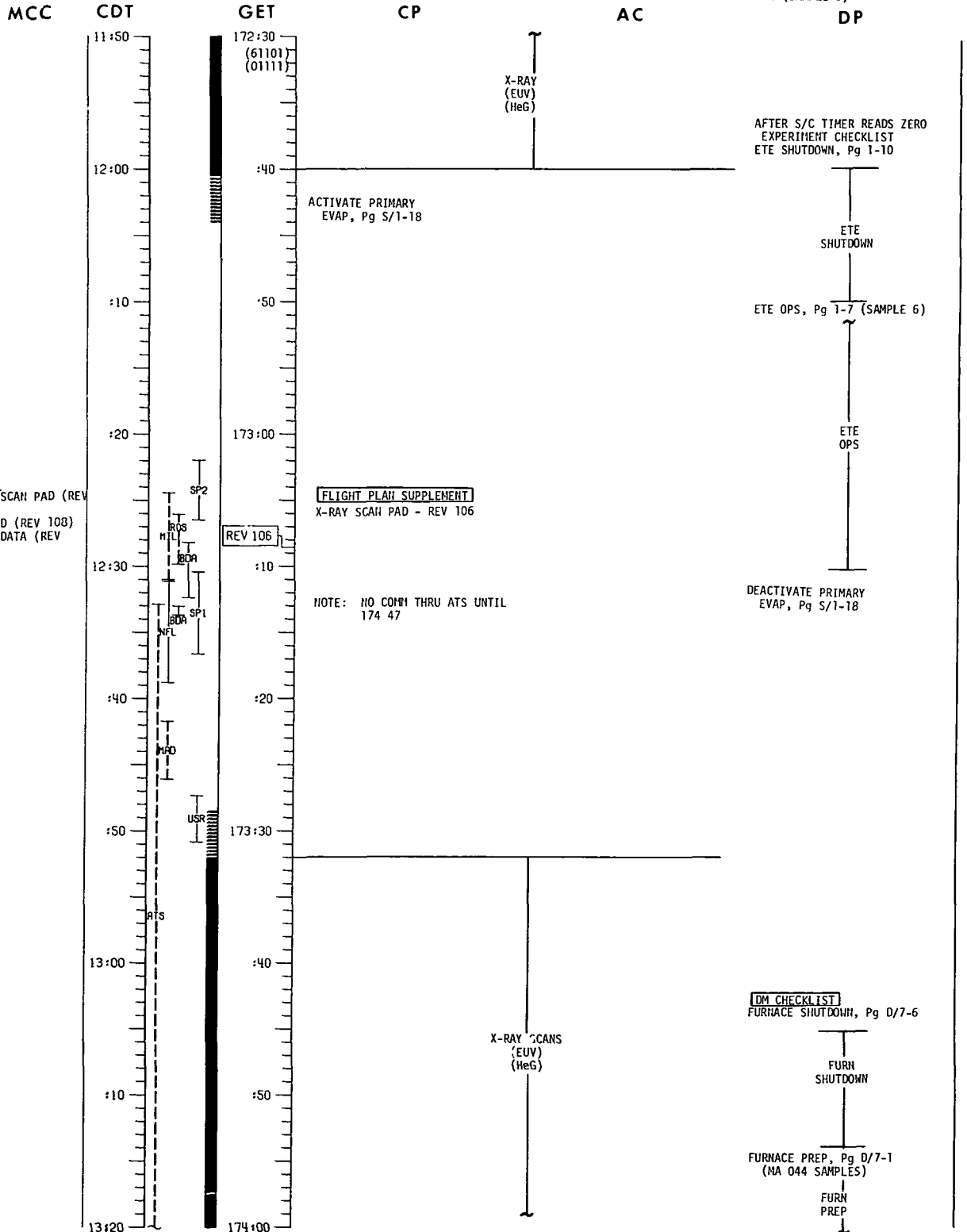


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-45

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	05-106

FURN (MA 060)/(MA 044)
ETE (SAMPLE 5)



UPDATE
X-RAY SCAN PAD (REV 106)
EUV PAD (REV 108)
BLOCK DATA (REV 138)

FLIGHT PLAN SUPPLEMENT
X-RAY SCAN PAD - REV 106

NOTE: NO COMM THRU ATS UNTIL 174 47

DEACTIVATE PRIMARY EVAP, Pg S/1-18

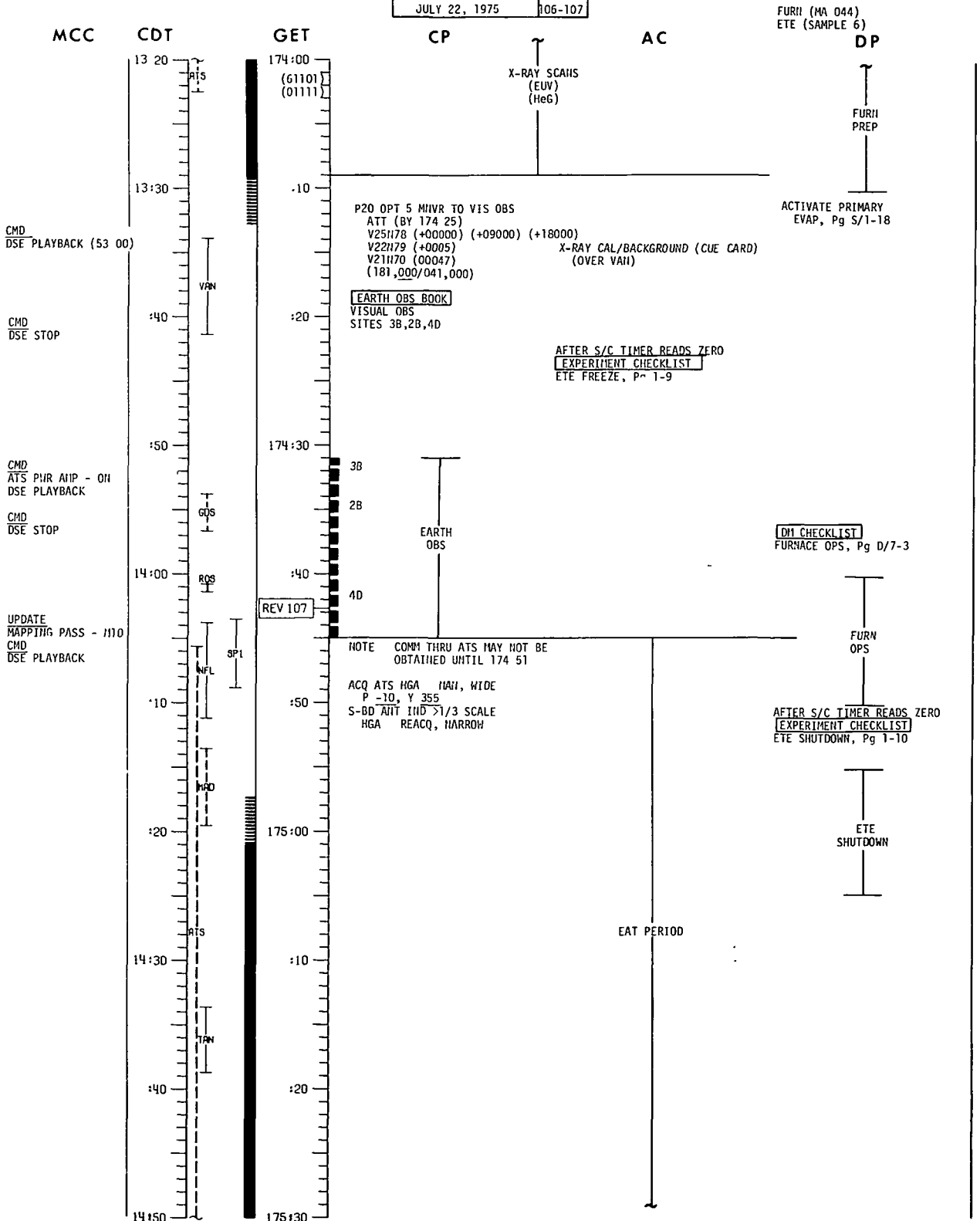
DM CHECKLIST
FURNACE SHUTDOWN, Pg D/7-6

FURNACE PREP, Pg D/7-1 (MA 044 SAMPLES)

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-46

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	106-107

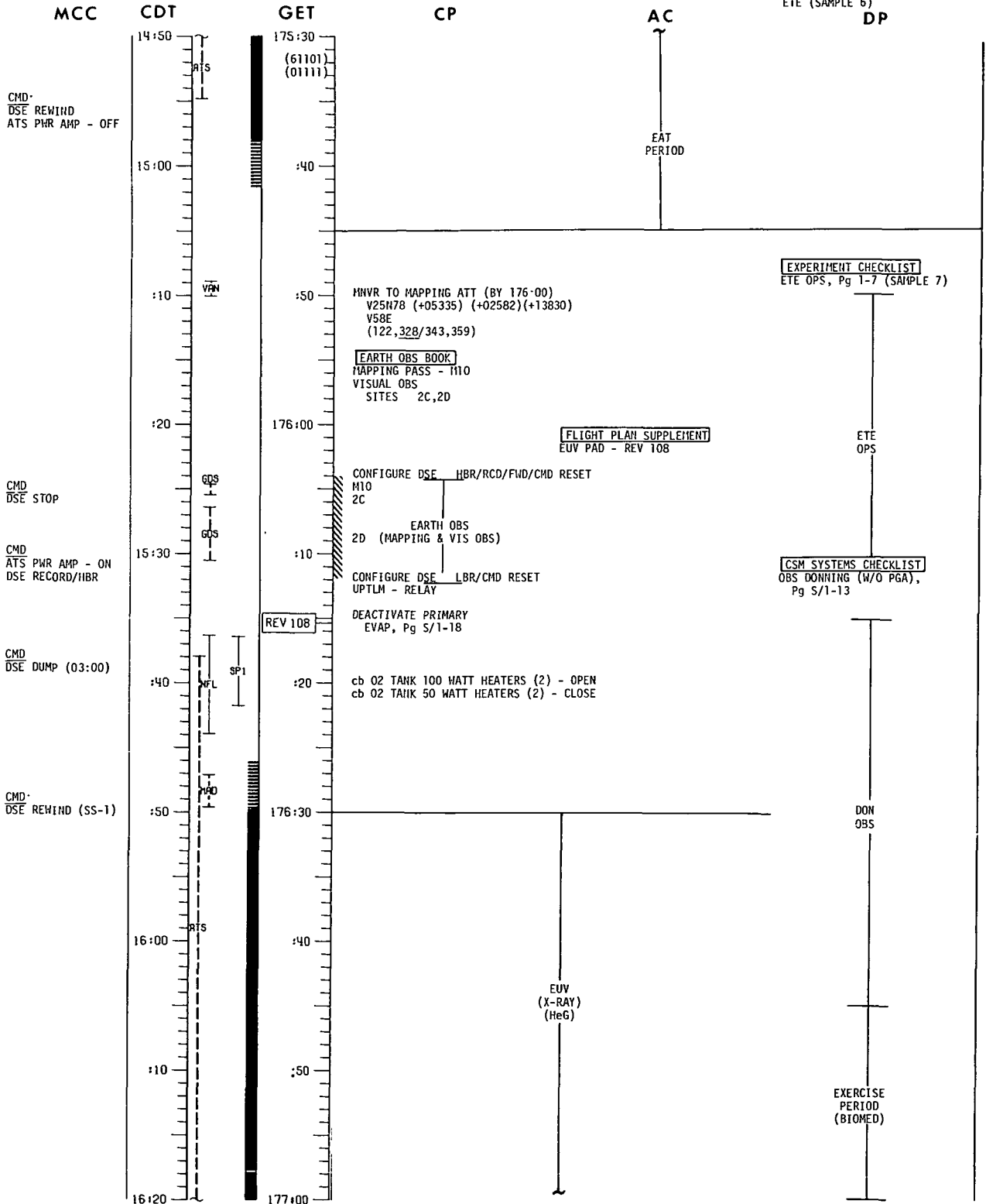


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-47

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	107-108

FURN (MA 044)
ETE (SAMPLE 6)
DP

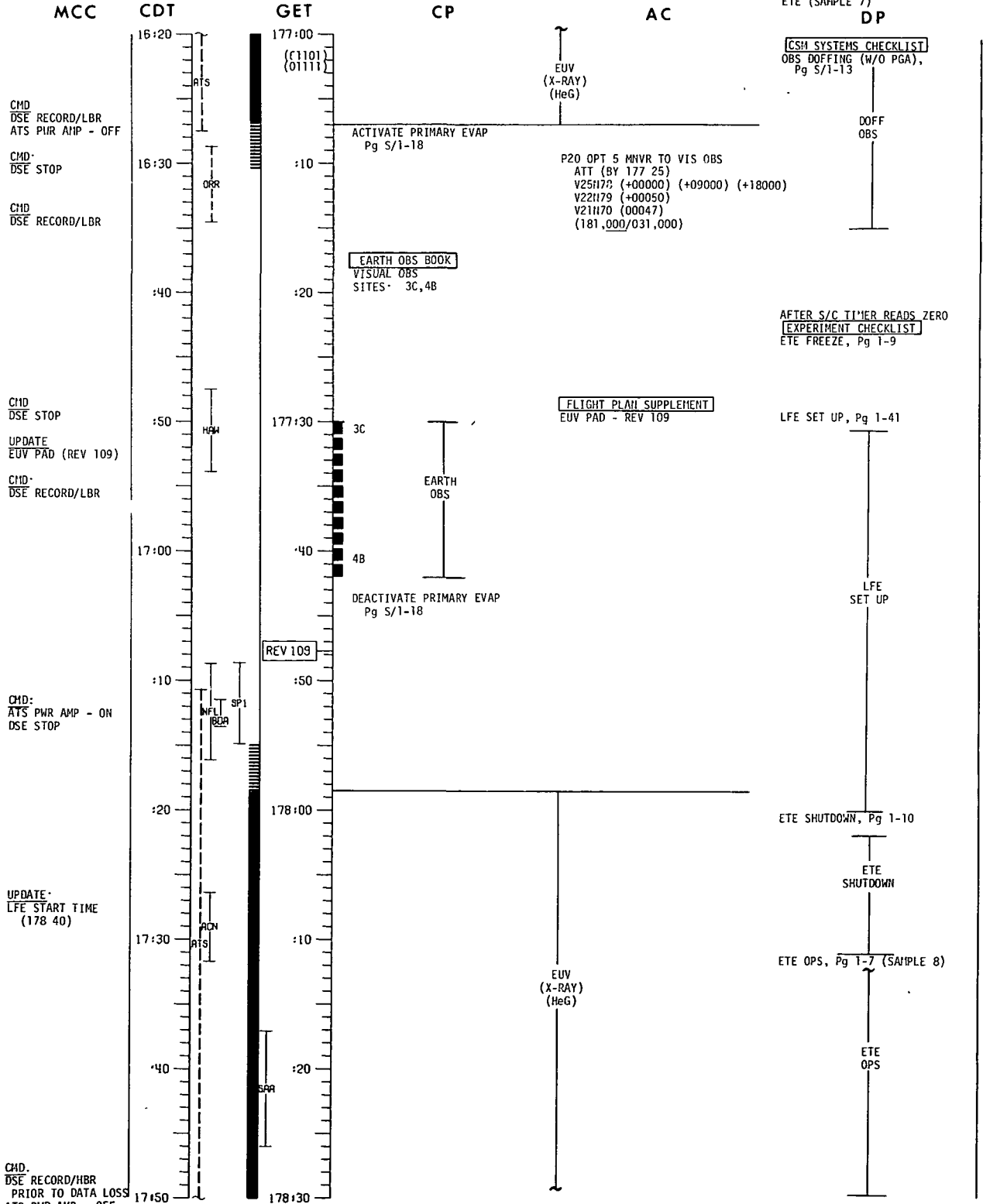


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-48

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	108-109

FURN (MA 044)
ETE (SAMPLE 7)

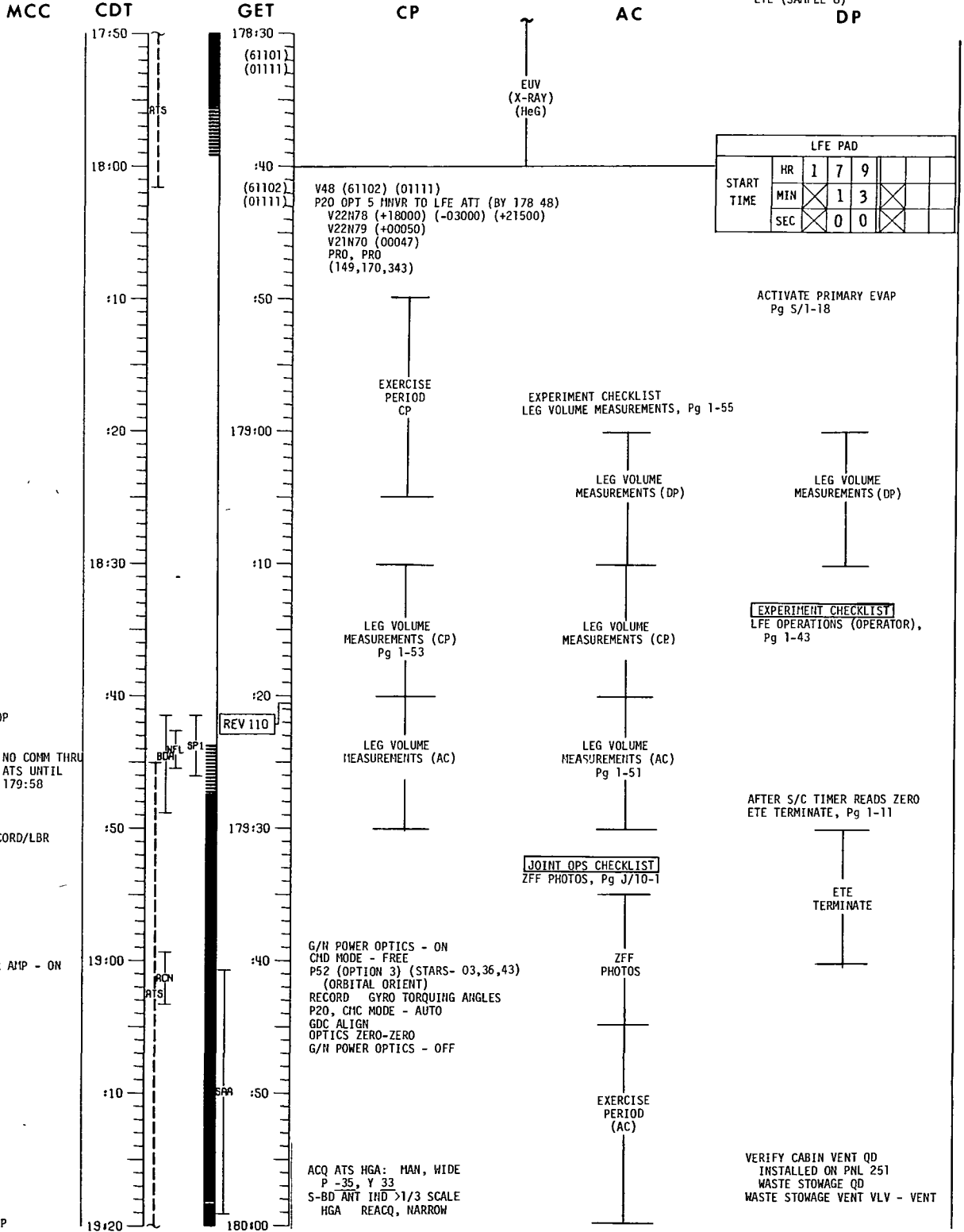


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-49

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	109-110

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



CMD:
DSE STOP

NOTE NO COMM THRU
ATS UNTIL
179:58

CMD
DSE RECORD/LBR

CMD:
ATS PWR AMP - ON

CMD:
DSE STOP

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

ACTIVATE PRIMARY EVAP
Pg 5/1-18

EXPERIMENT CHECKLIST
LEG VOLUME MEASUREMENTS, Pg 1-55

EXPERIMENT CHECKLIST
LFE OPERATIONS (OPERATOR),
Pg 1-43

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

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

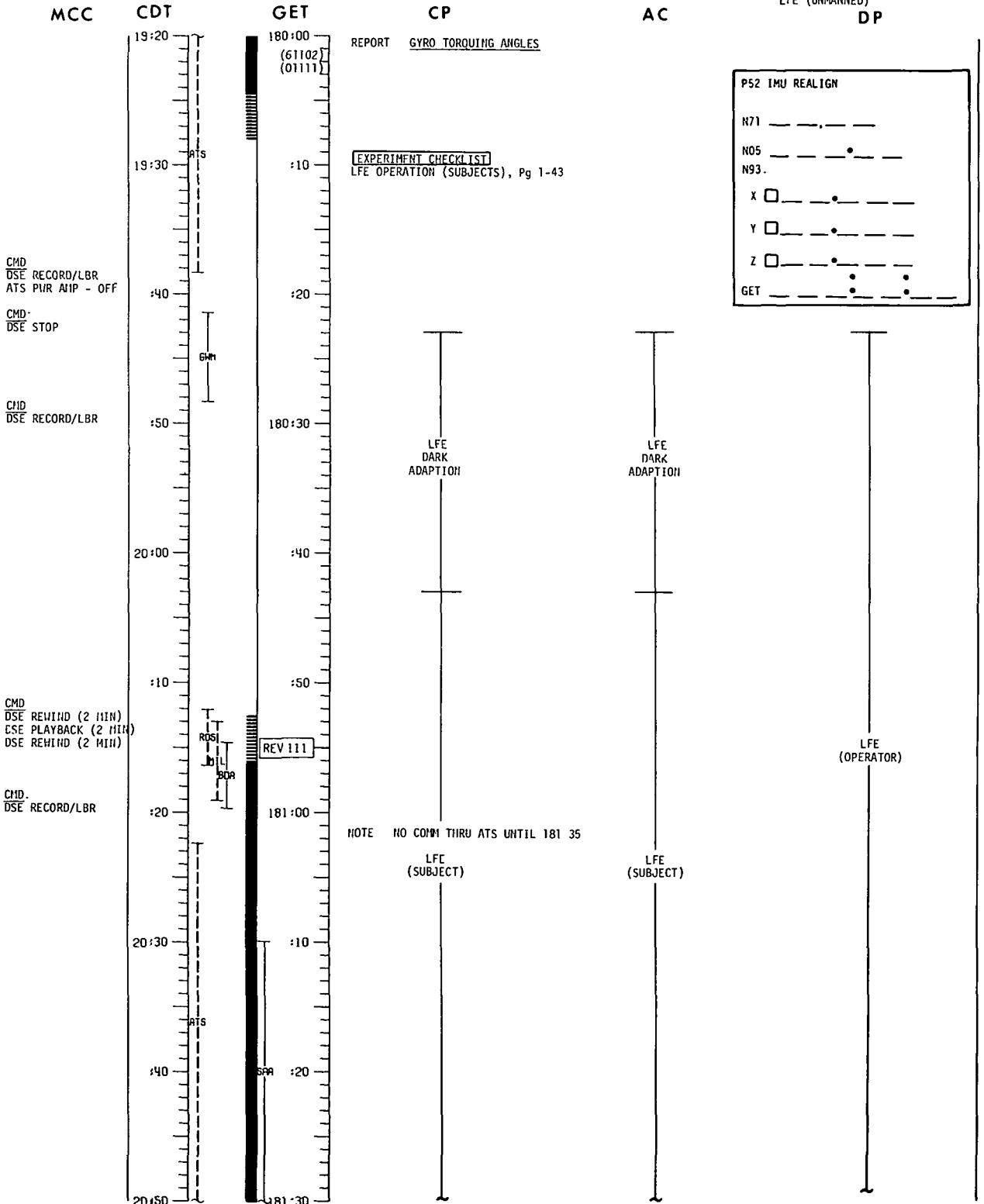
VERIFY CABIN VENT QD
INSTALLED ON PNL 251
WASTE STOWAGE QD
WASTE STOWAGE VENT VLV - VENT

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-50

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	110-111

FURN (MA 044)
LFE (UNMANNED)
DP

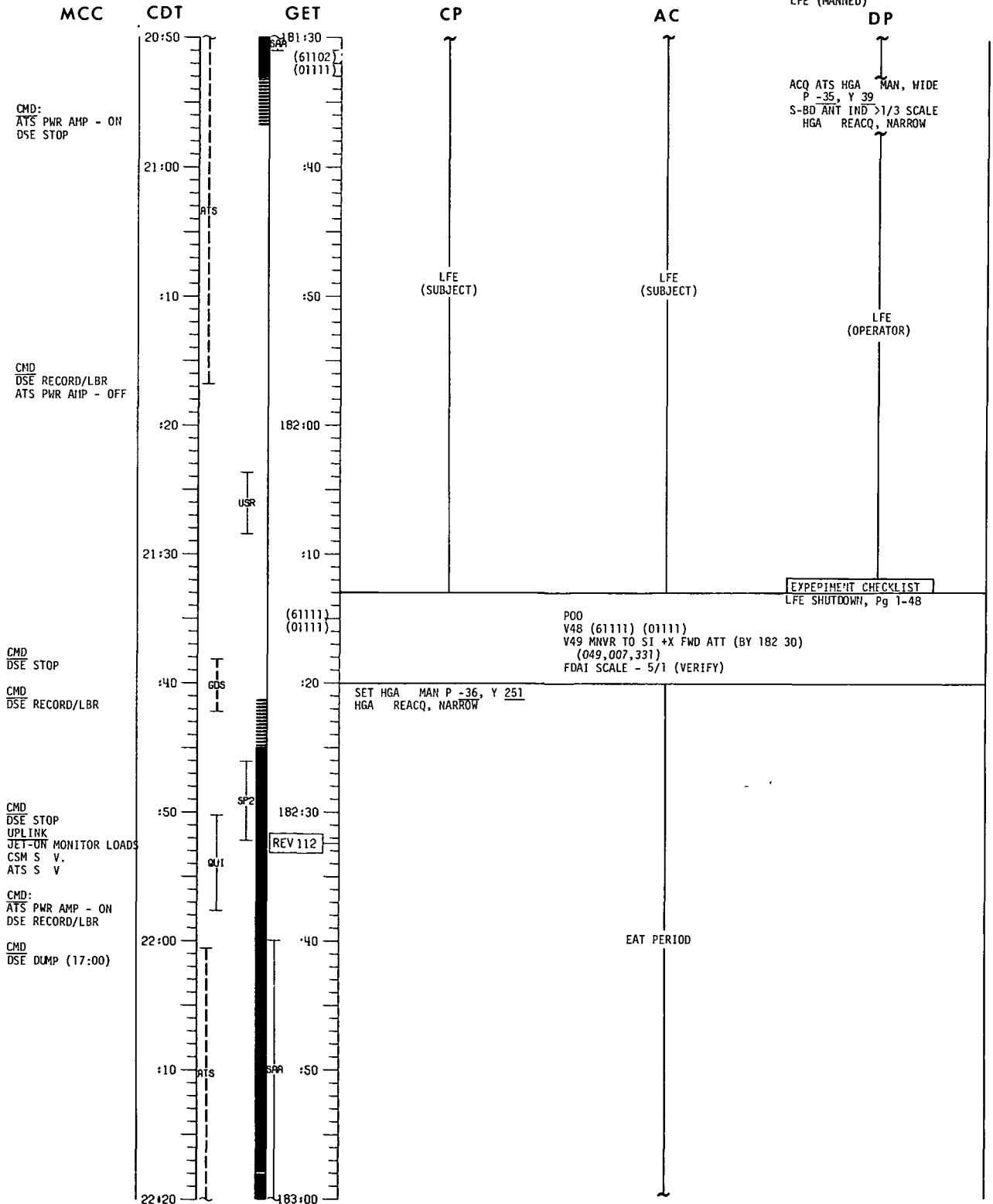


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-51

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	111-112

FURN (11A 044)
LFE (MANNED)



ACQ ATS HGA MAN, WIDE
P -35, Y 39
S-BD ANT IND >1/3 SCALE
HGA REACQ, NARROW

EXPERIMENT CHECKLIST
LFE SHUTDOWN, Pg 1-48

P00
V48 (61111) (01111)
V49 MNVR TO SI +X FWD ATT (BY 182 30)
(049,007,331)
FDAI SCALE - 5/1 (VERIFY)

SET HGA MAN P -36, Y 251
HGA REACQ, NARROW

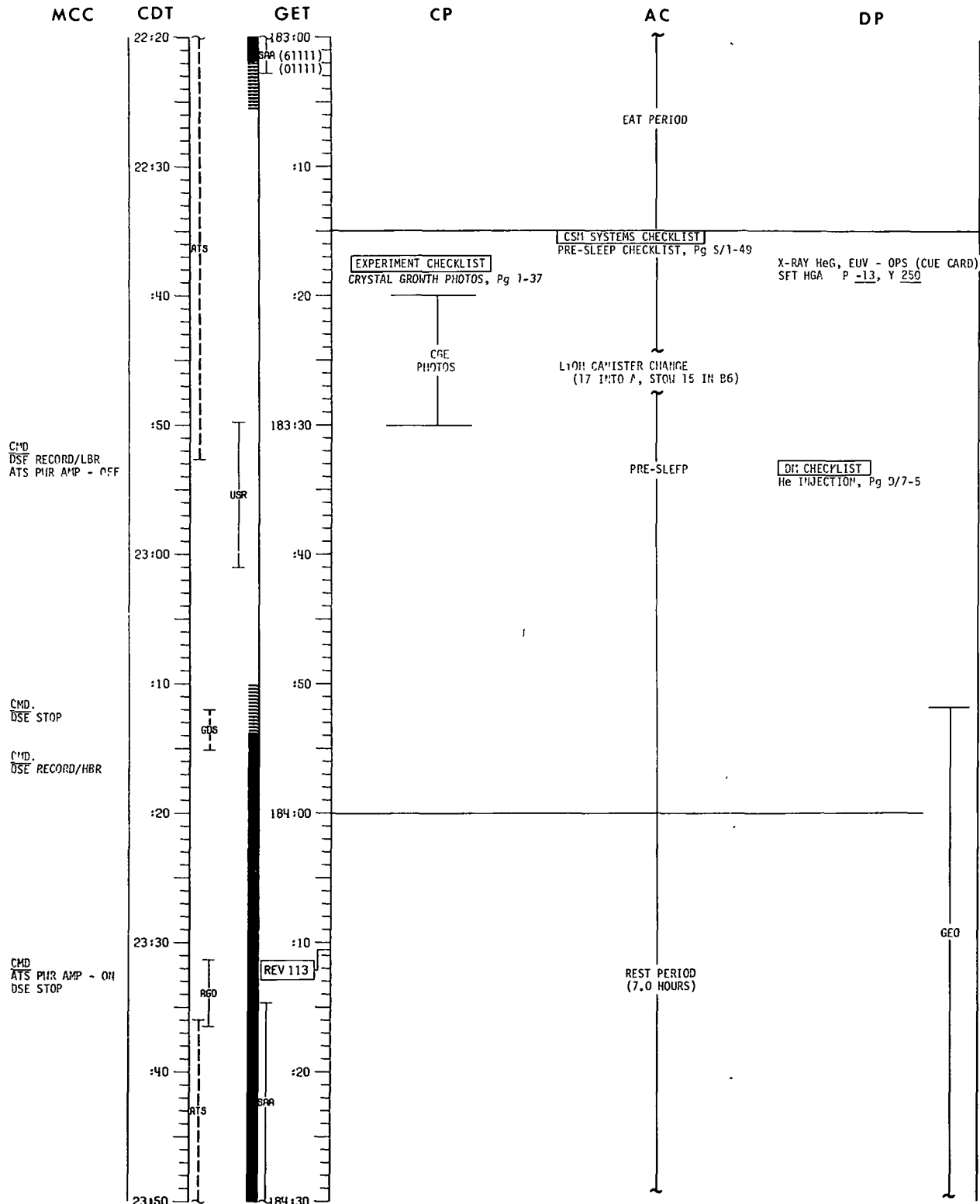
EAT PERIOD

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)

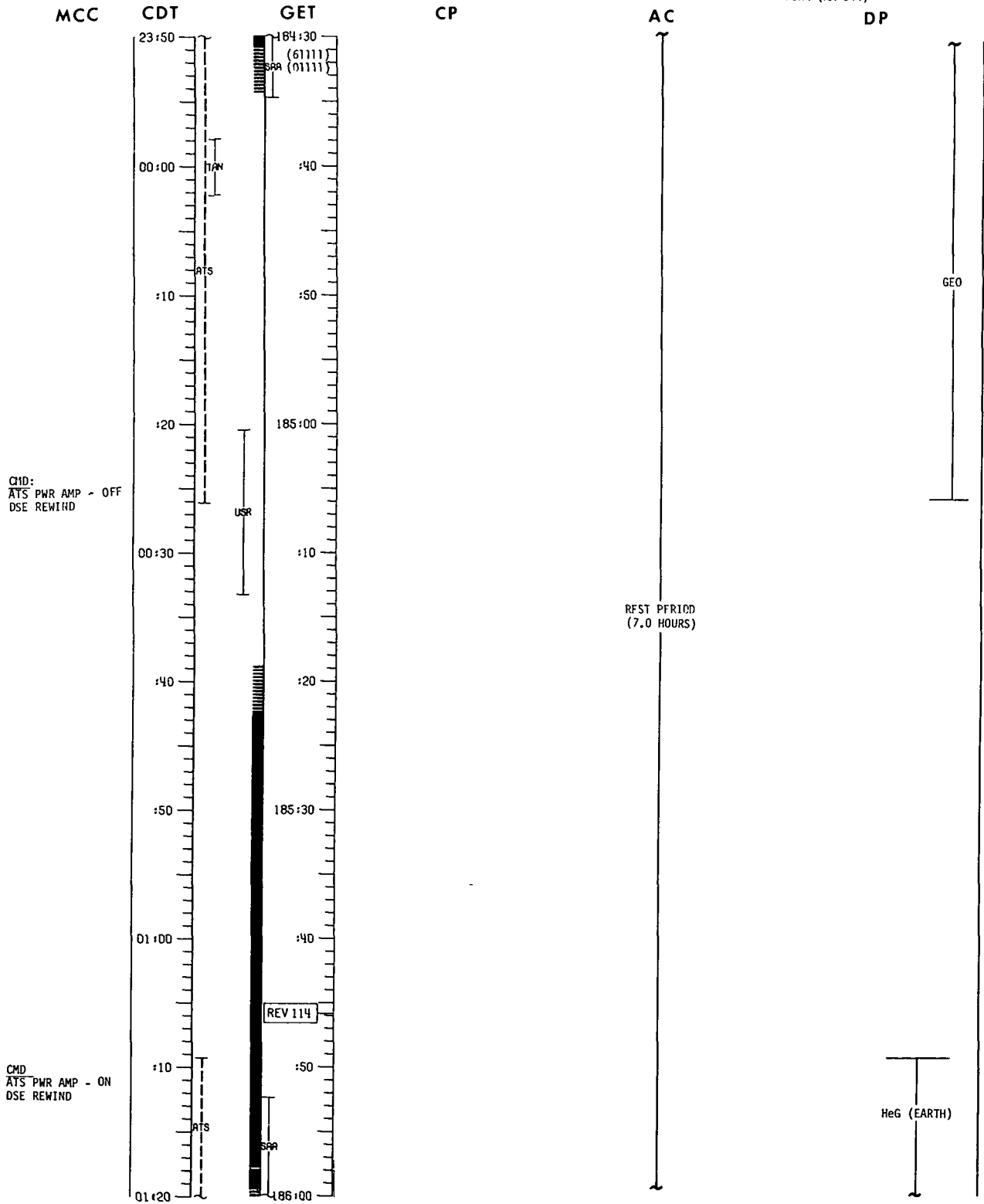


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-53

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 22, 1975	113-114

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

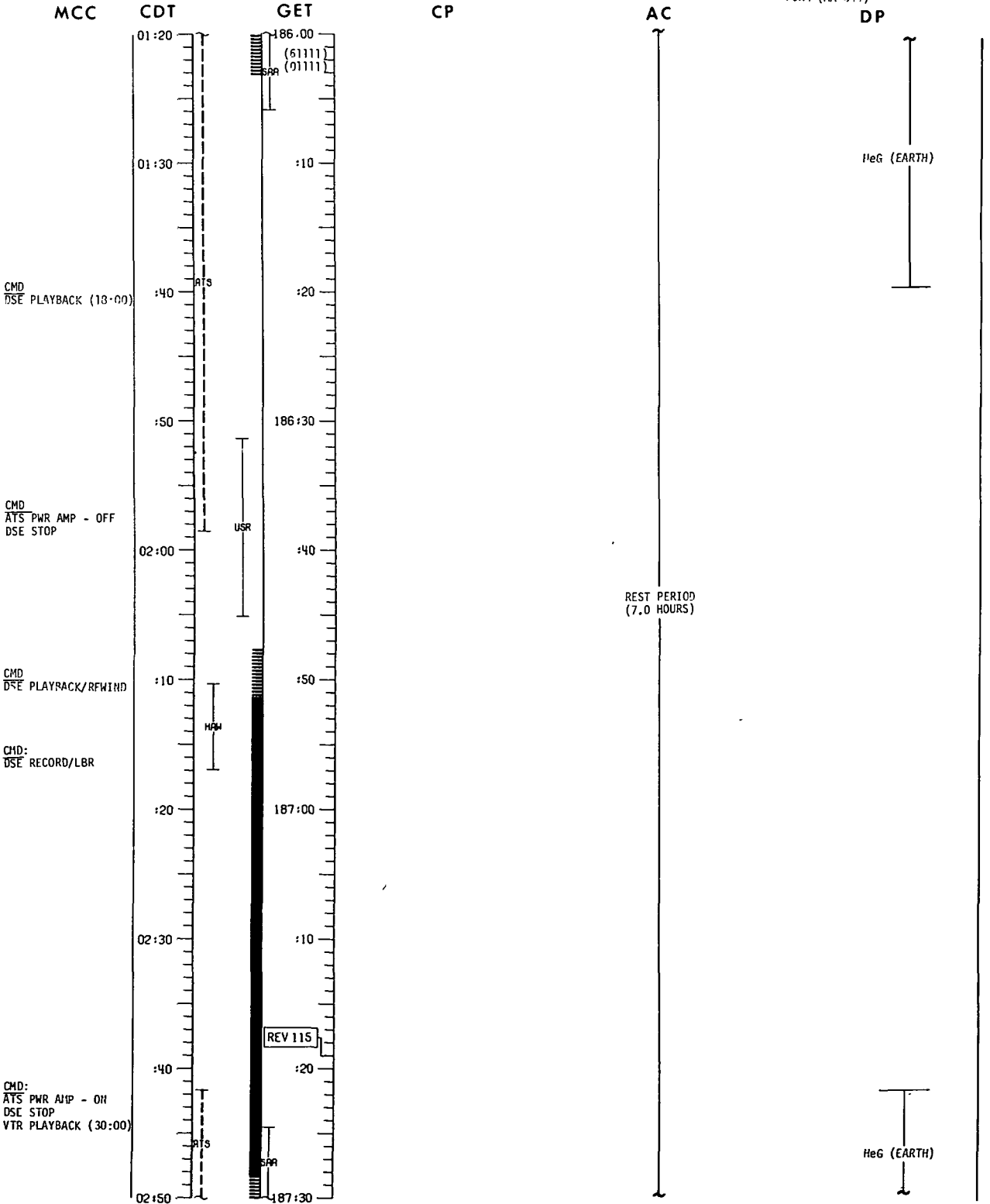


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-54

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	114-119

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

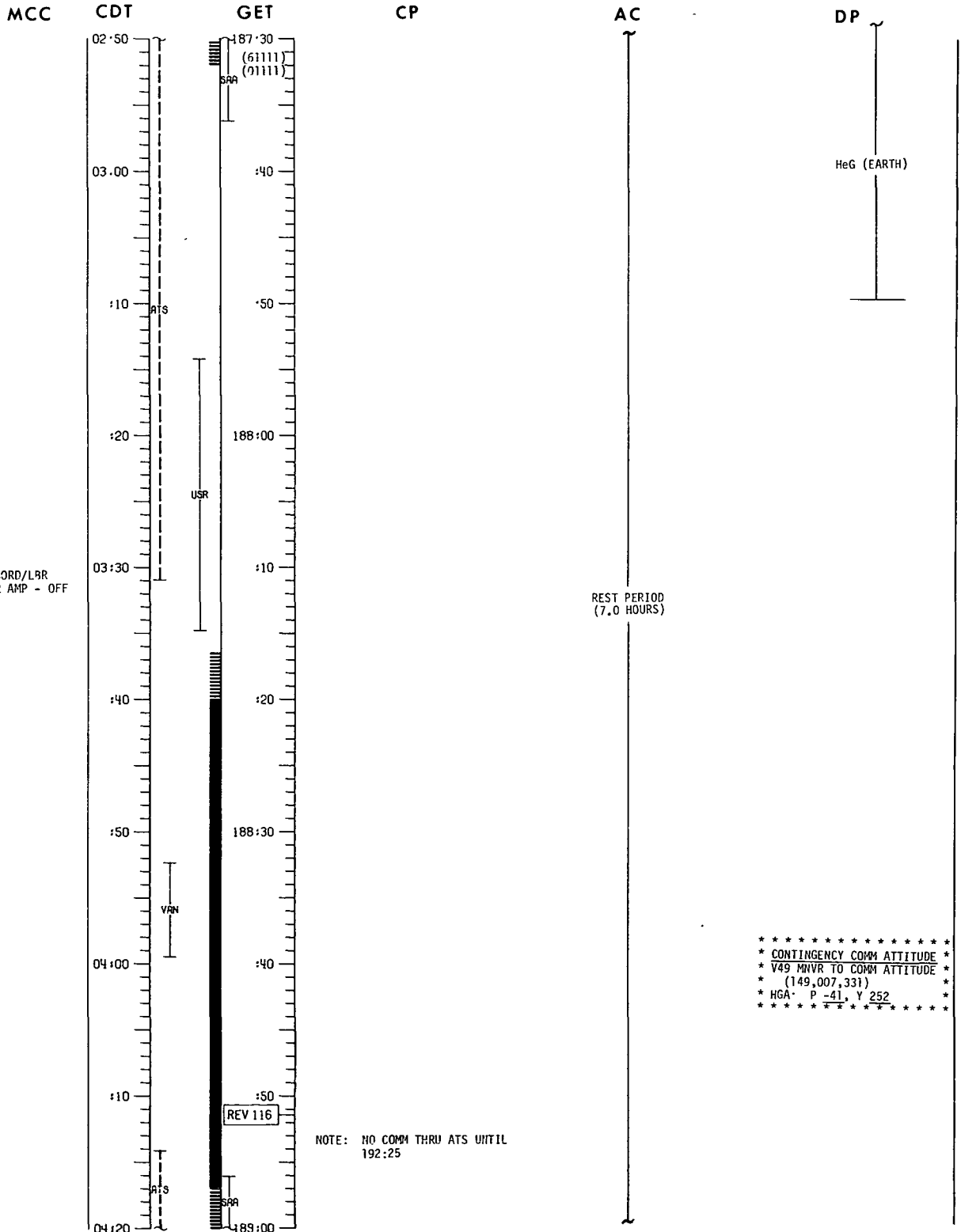


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-55

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 27, 1975	115-116

X-RAY, EUV, HeG
FURN (MA 04A)



CMD:
DSF RECORD/LBR
ATS PWR AMP - OFF

REST PERIOD
(7.0 HOURS)

* CONTINGENCY COMM ATTITUDE *
* V49 MNVR TO COMM ATTITUDE *
* (149,007,331) *
* HGA: P -41, Y 252 *

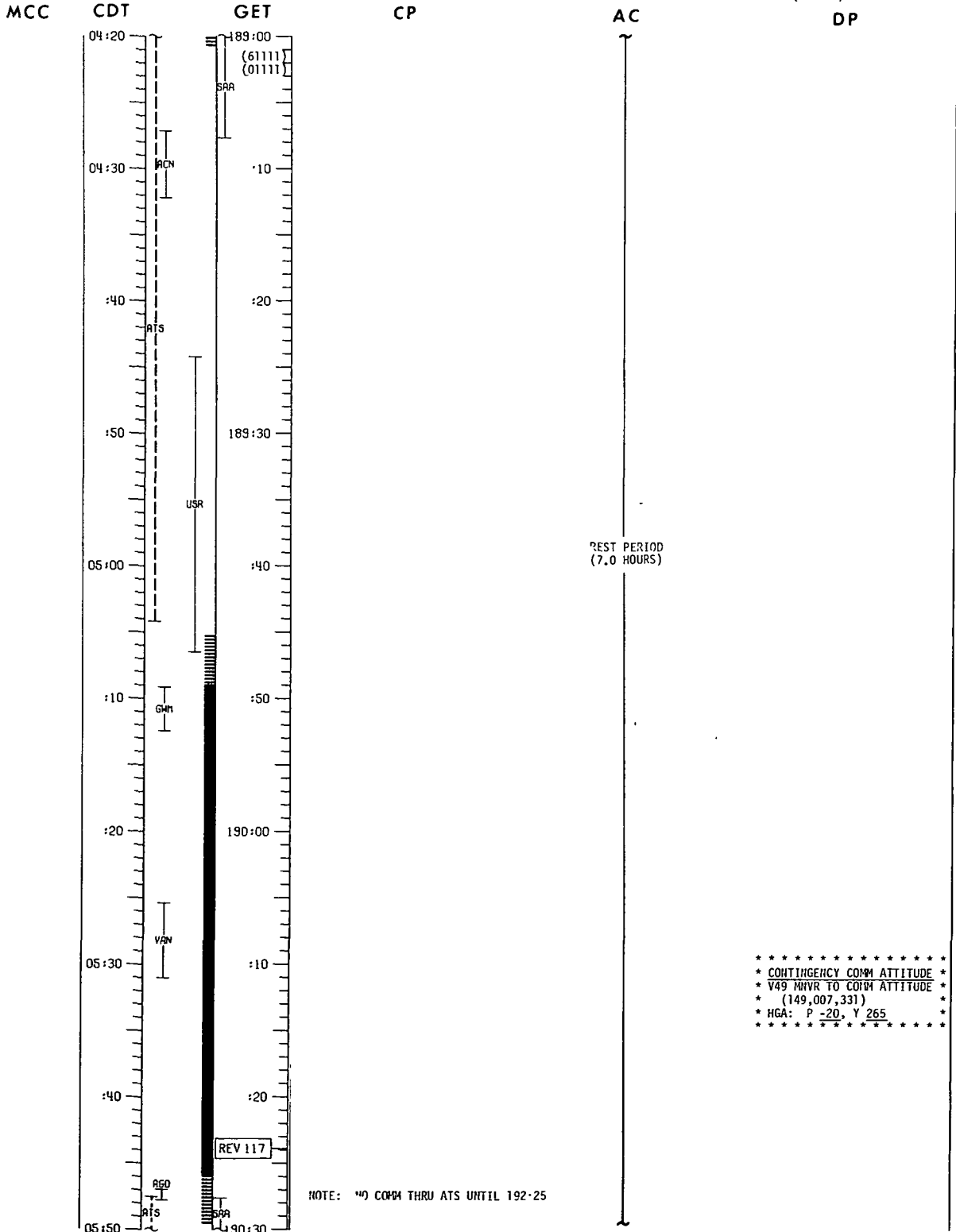
NOTE: NO COMM THRU ATS UNTIL
192:25

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-56

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	116-117

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



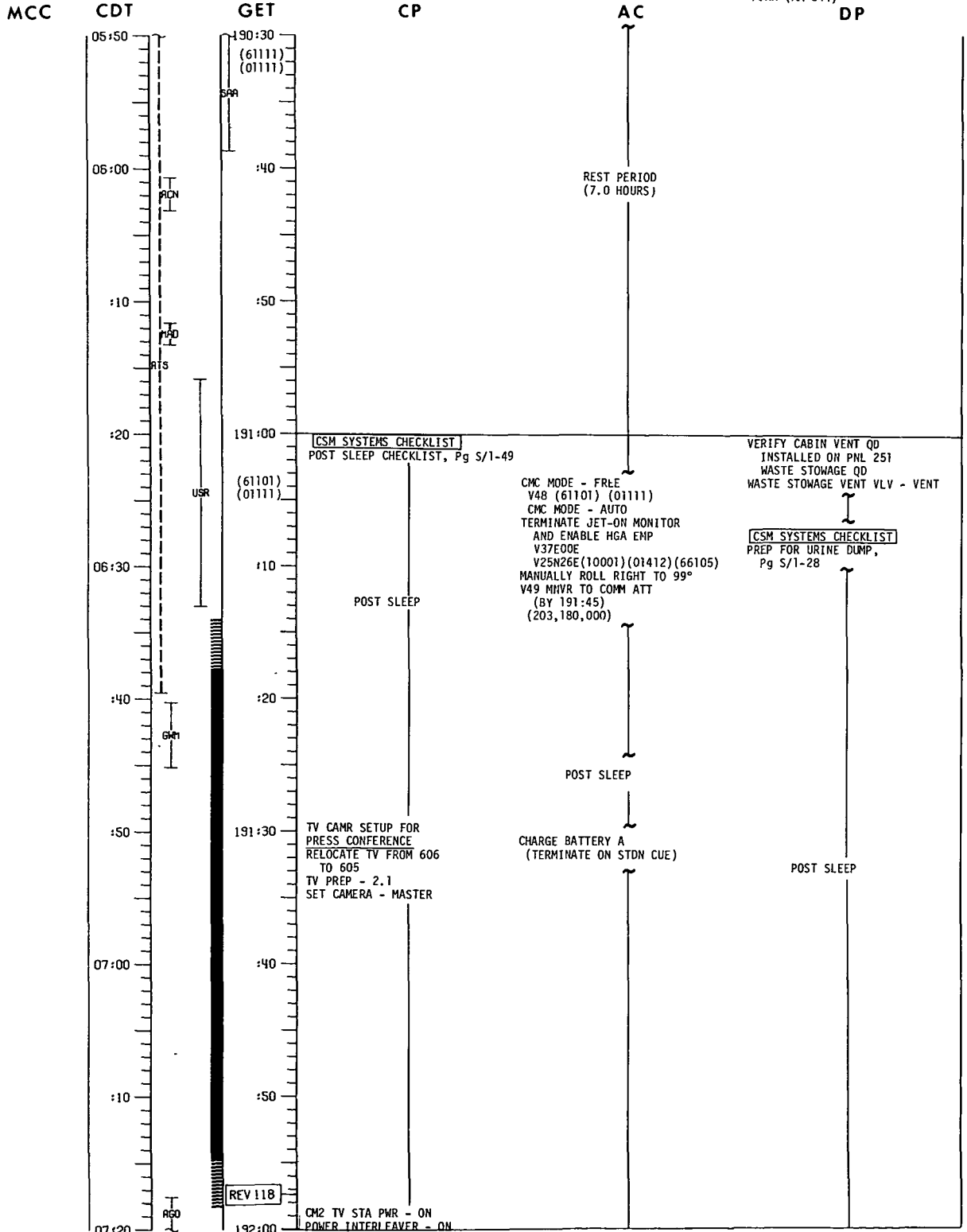
 * CONTINGENCY COMM ATTITUDE *
 * V49 MHR TO COMM ATTITUDE *
 * (149,007,331) *
 * HGA: P -20, Y 265 *

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-57

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	117-118

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

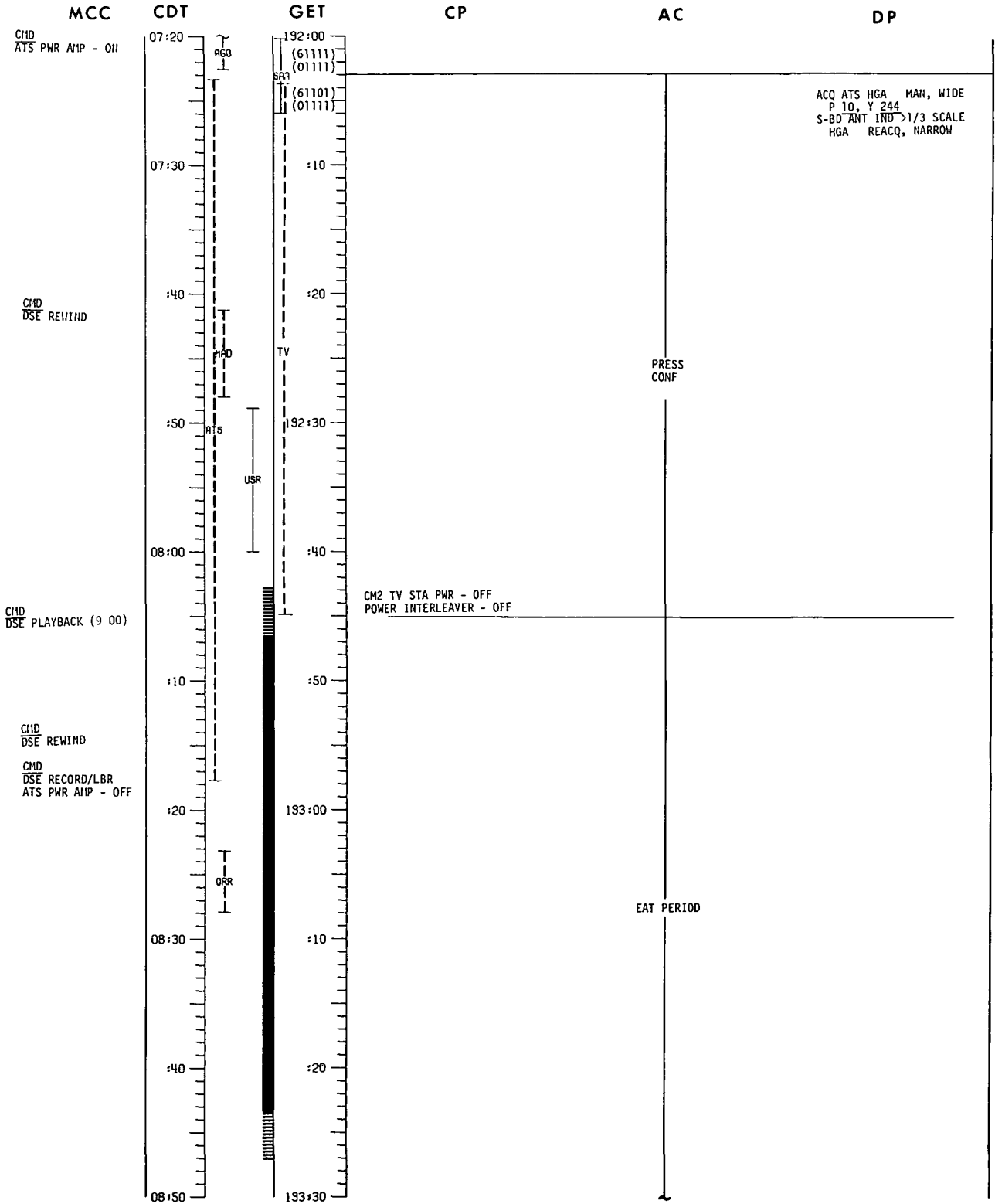


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-58

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	118

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



ACQ ATS HGA MAN, WIDE
 P 10, Y 244
 S-BD ANT IND >1/3 SCALE
 HGA REACQ, NARROW

CM2 TV STA PWR - OFF
 POWER INTERLEAVER - OFF

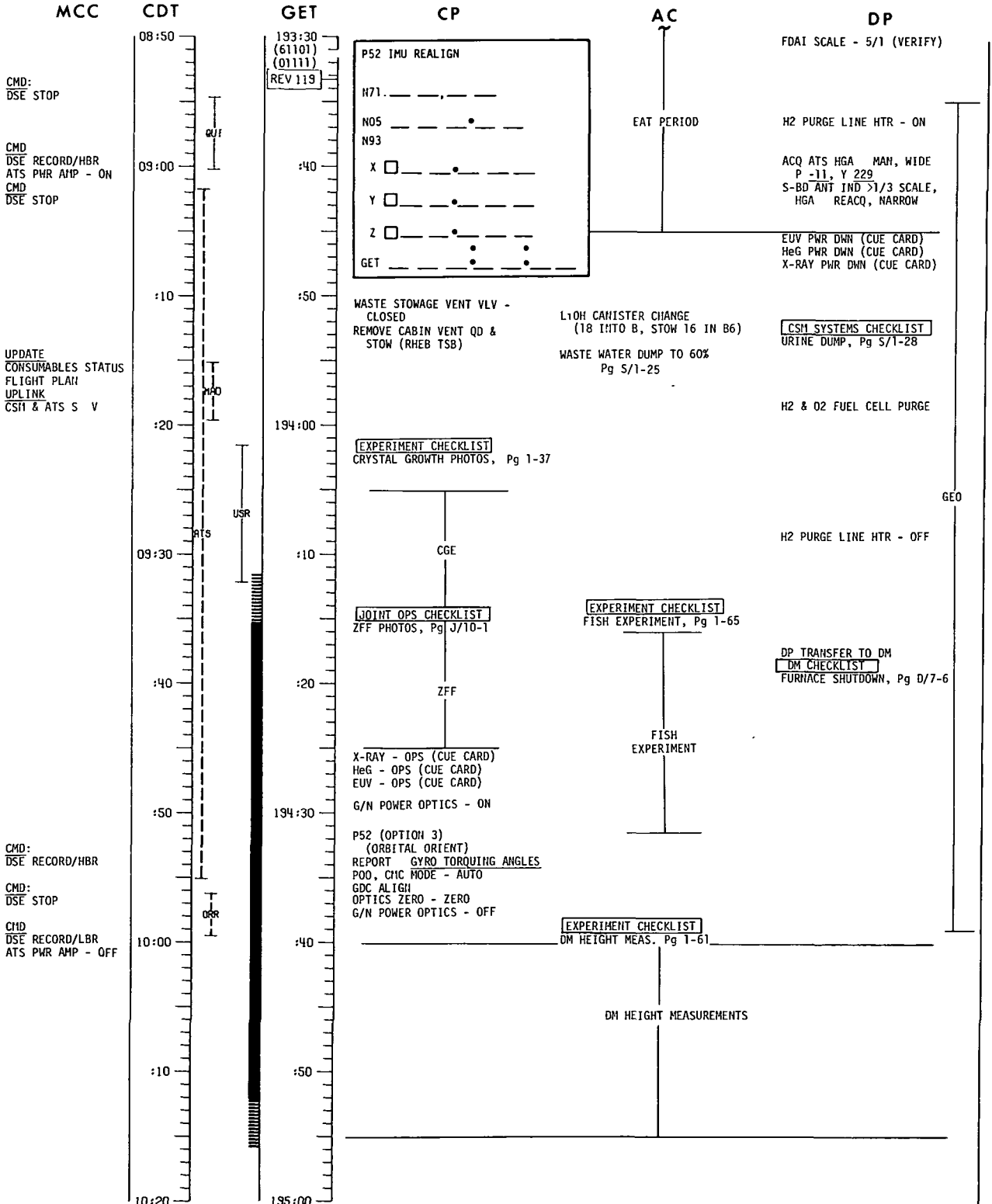
EAT PERIOD

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-59

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	118-119

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

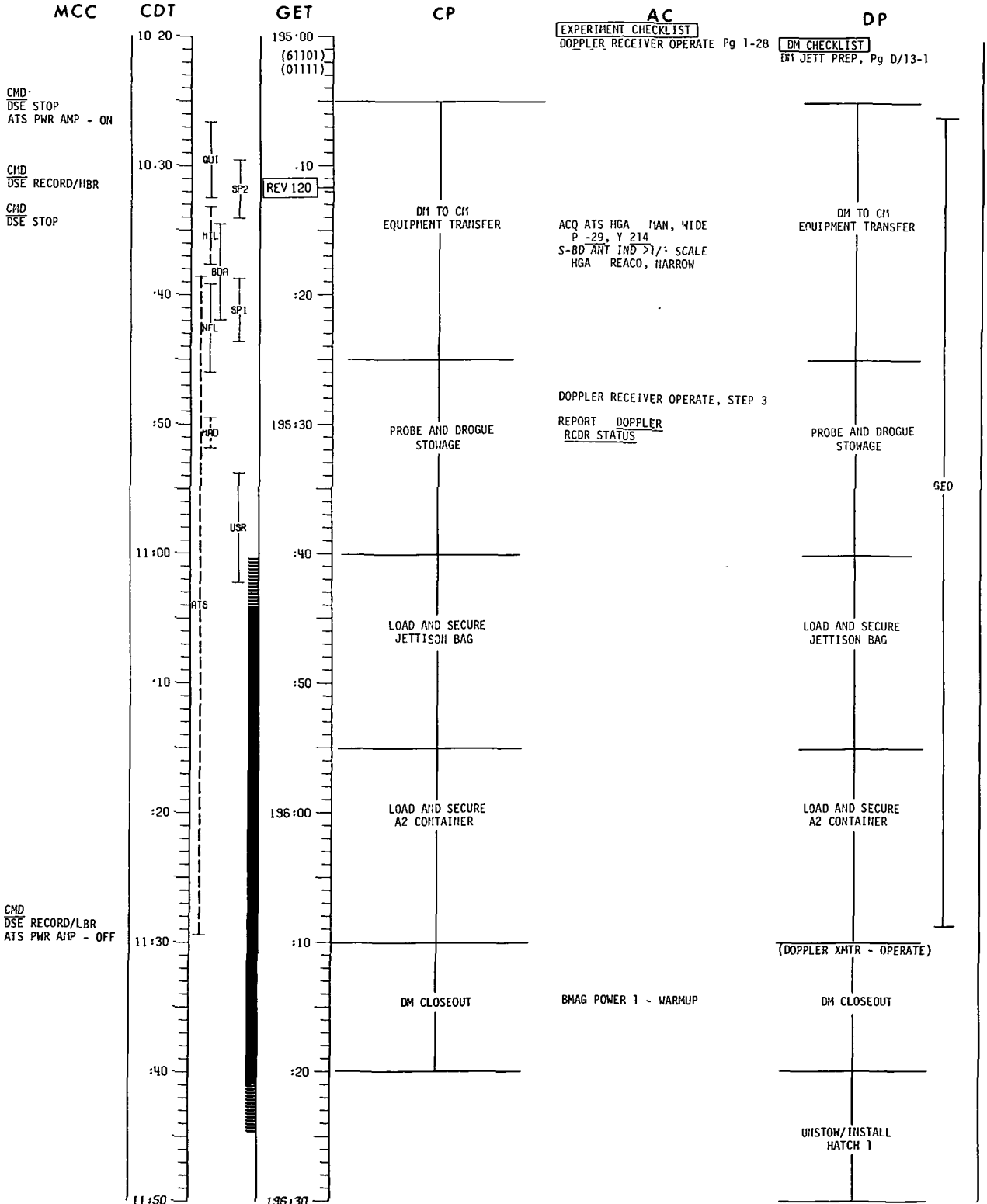


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-60

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	119-120

X-RAY, HeG, EUV

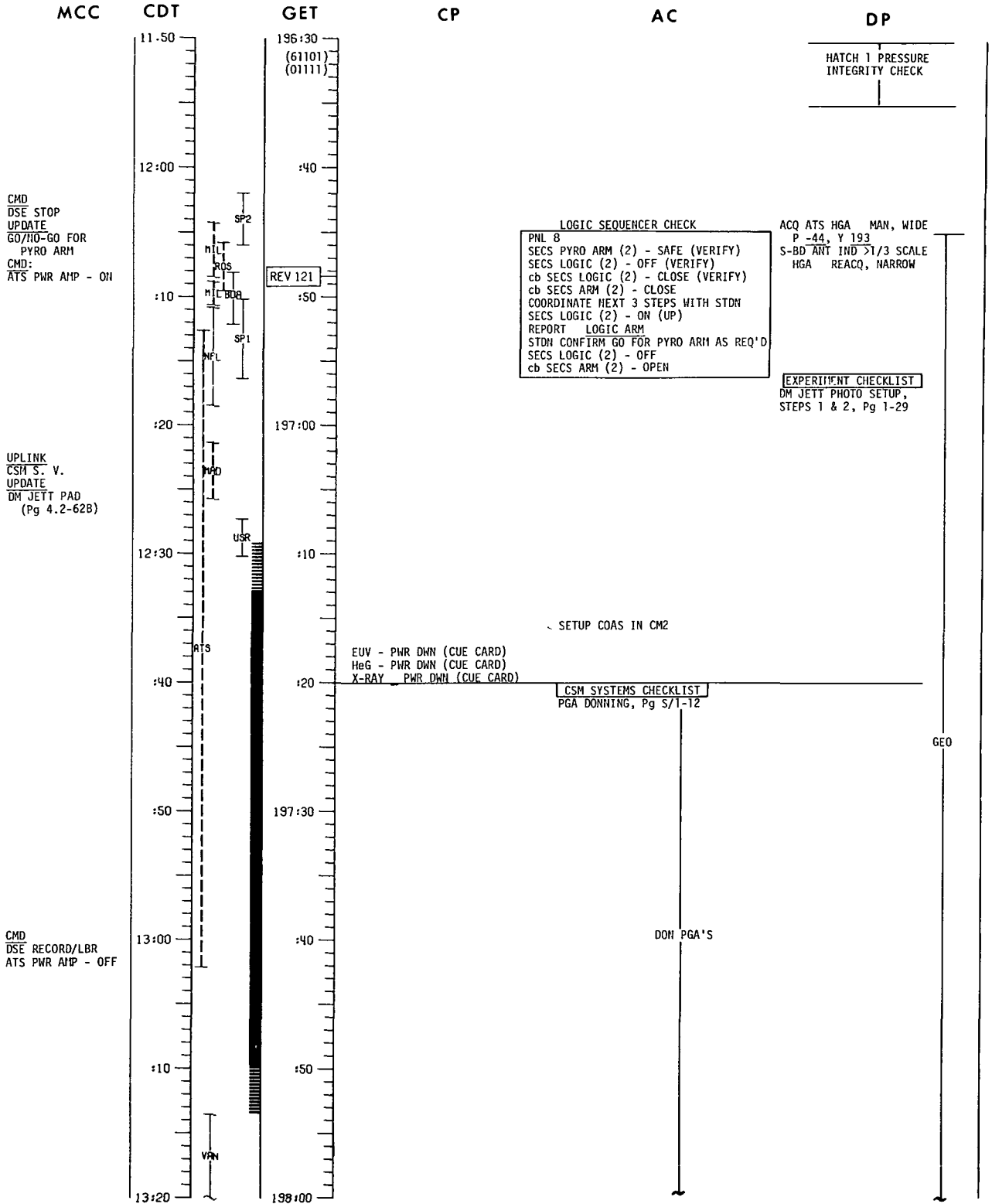


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-61

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	120-121

X-RAY, HeG, EUV



CMD
DSE STOP
UPDATE
GO/HO-GO FOR
PYRO ARM
CMD:
ATS PWR AMP - ON

UPLINK
CSM S. V.
UPDATE
DM JETT PAD
(Pg 4.2-62B)

CMD
DSE RECORD/LBR
ATS PWR AMP - OFF

LOGIC SEQUENCER CHECK
PNL 8
SECS PYRO ARM (2) - SAFE (VERIFY)
SECS LOGIC (2) - OFF (VERIFY)
cb SECS LOGIC (2) - CLOSE (VERIFY)
cb SECS ARM (2) - CLOSE
COORDINATE NEXT 3 STEPS WITH STDN
SECS LOGIC (2) - ON (UP)
REPORT LOGIC ARM
STDN CONFIRM GO FOR PYRO ARM AS REQ'D
SECS LOGIC (2) - OFF
cb SECS ARM (2) - OPEN

ACQ ATS HGA MAN, WIDE
P -44, Y 193
S-BD ART IND 2/3 SCALE
HGA REACQ, NARROW

EXPERIMENT CHECKLIST
DM JETT PHOTO SETUP,
STEPS 1 & 2, Pg 1-29

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-62

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APOLLO DETAILED CREW ACTIVITIES PLAN

DM JETTISON PAD						
+	0	0				HRS GETT
+	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

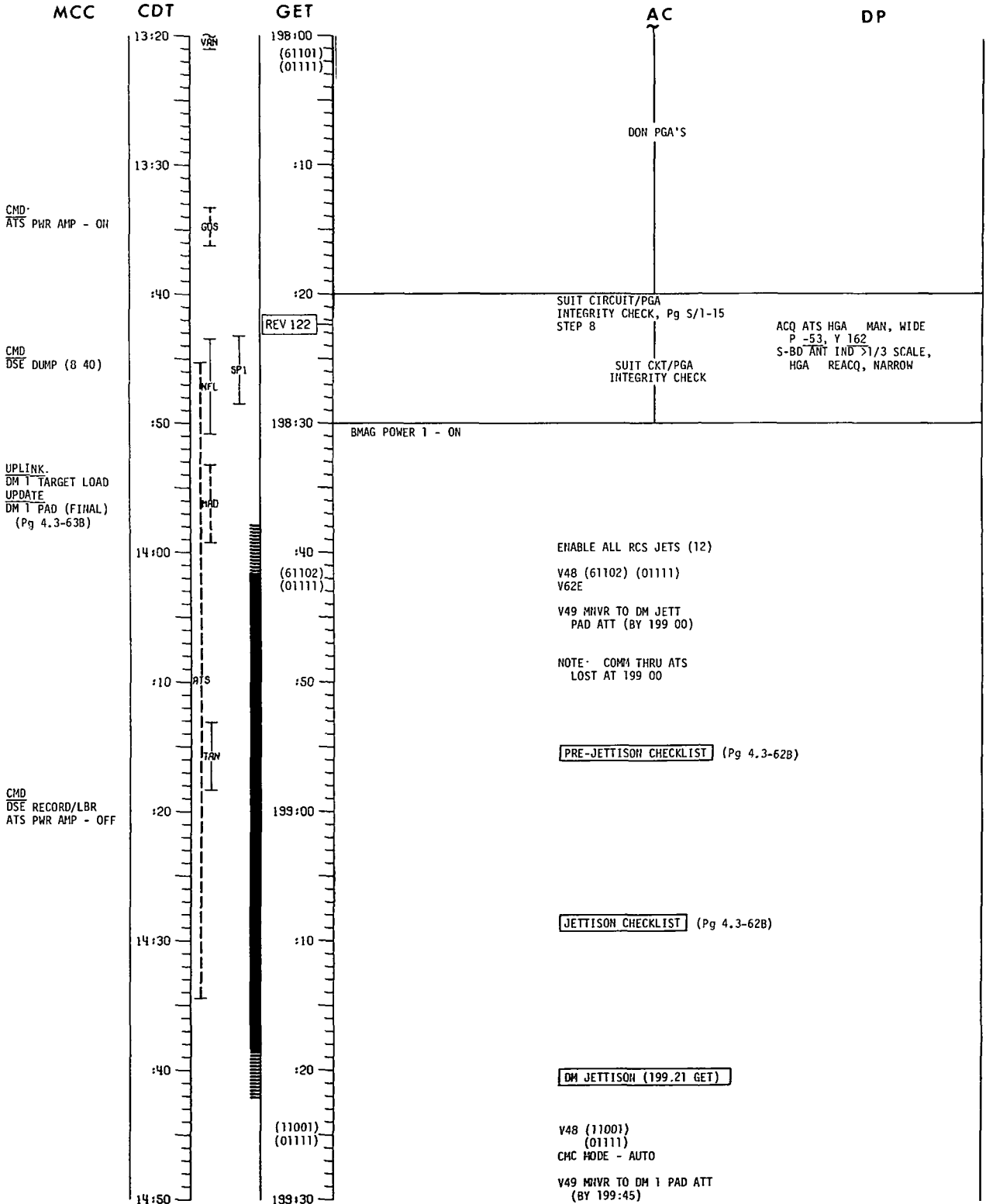
PRE-JETTISON CHECKLIST
SET DET COUNTING UP TO JETT TIME
BMAG MODE (3) - RATE 2
FDAI SCALE - 5/1
SC CONT - CMC/AUTO (VERIFY)
RHC PWR DIR - MNA/MNB
RHC - ARMED
cb CSI/DM FINAL SEP (2) - CLOSE
cb SECS ARM (2) - CLOSE
SEC LOGIC (2) - ON
SECS PYRO ARM (2) - ARM
CAMERA UTILITY PWR - ON (VERIFY)

JETTISON CHECKLIST	
40:00	P20 (OPTION 2)
	V24H78 (+00000) (+27000)
	V24H79 (+50000) (+00050)
	V25H34 () () ()
	(+00199) (+00019) (+048000)
50:00	INITIALIZE ORDEAL
55:00	SET ORDEAL TO 340°
58:50	CONFIGURE DSE (HBR/RCD/F40/CMD RESET)
59:30	DAC ON (VOICE MARK)
	DM JETT
	WHEN YAW ERROR NEEDLES CROSS 0° - (00 00)
	CSI/DM FHL SEP (2) - ON (UP)
00:01	CMC MODE - HOLD
	TRACK DM IN COAS FOV FOR TWO DM TUMBLES
03:00	CONFIGURE DSE (LBR/RCD/F40/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 CSI/DM FINAL SEP (2) - OPEN
	GO TO FLIGHT PLAN, Pg 4.3-63, 199-25 GET

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-62B

APOLLO DETAILED CREW ACTIVITIES PLAN

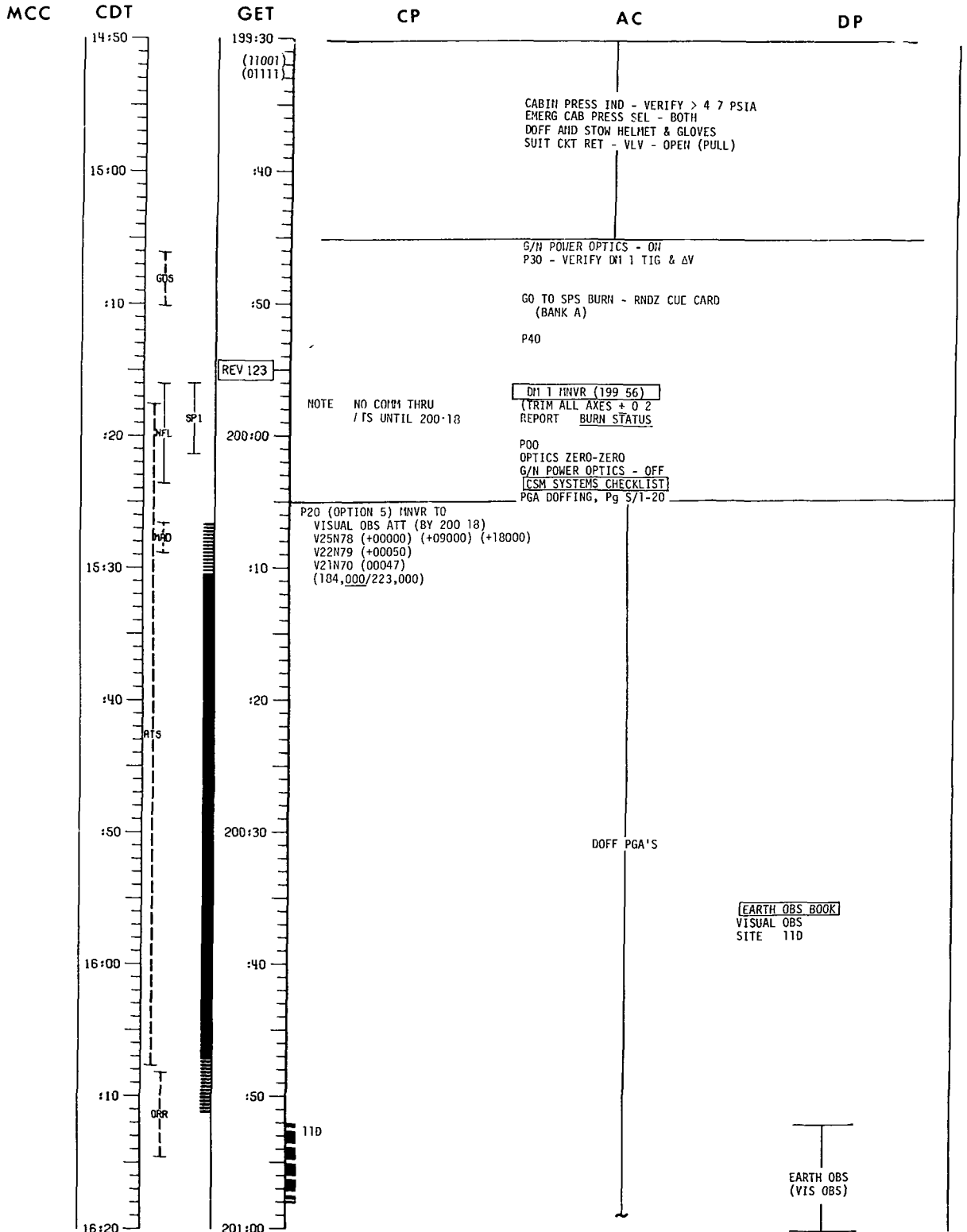
HOUSTON DATE	REV
JULY 23, 1975	121-122



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-63

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	122-123



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-64

APOLLO DETAILED CREW ACTIVITIES PLAN

DMI PAD

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

ΔV_C AT IGN	+	X	X	X	X	X	X	X	X	X	X	X	X	X
ΔV_C TAILOFF	-	X	X	X	X	X	X	X	X	X	X	X	X	X

WT	+													
----	---	--	--	--	--	--	--	--	--	--	--	--	--	--

PT														
----	--	--	--	--	--	--	--	--	--	--	--	--	--	--

YT														
----	--	--	--	--	--	--	--	--	--	--	--	--	--	--

BURN ATT CHECK

STAR		X	X	X	X	X	X	X	X	X	X	X	X	X
SA	+												0	0
TA	+												0	0

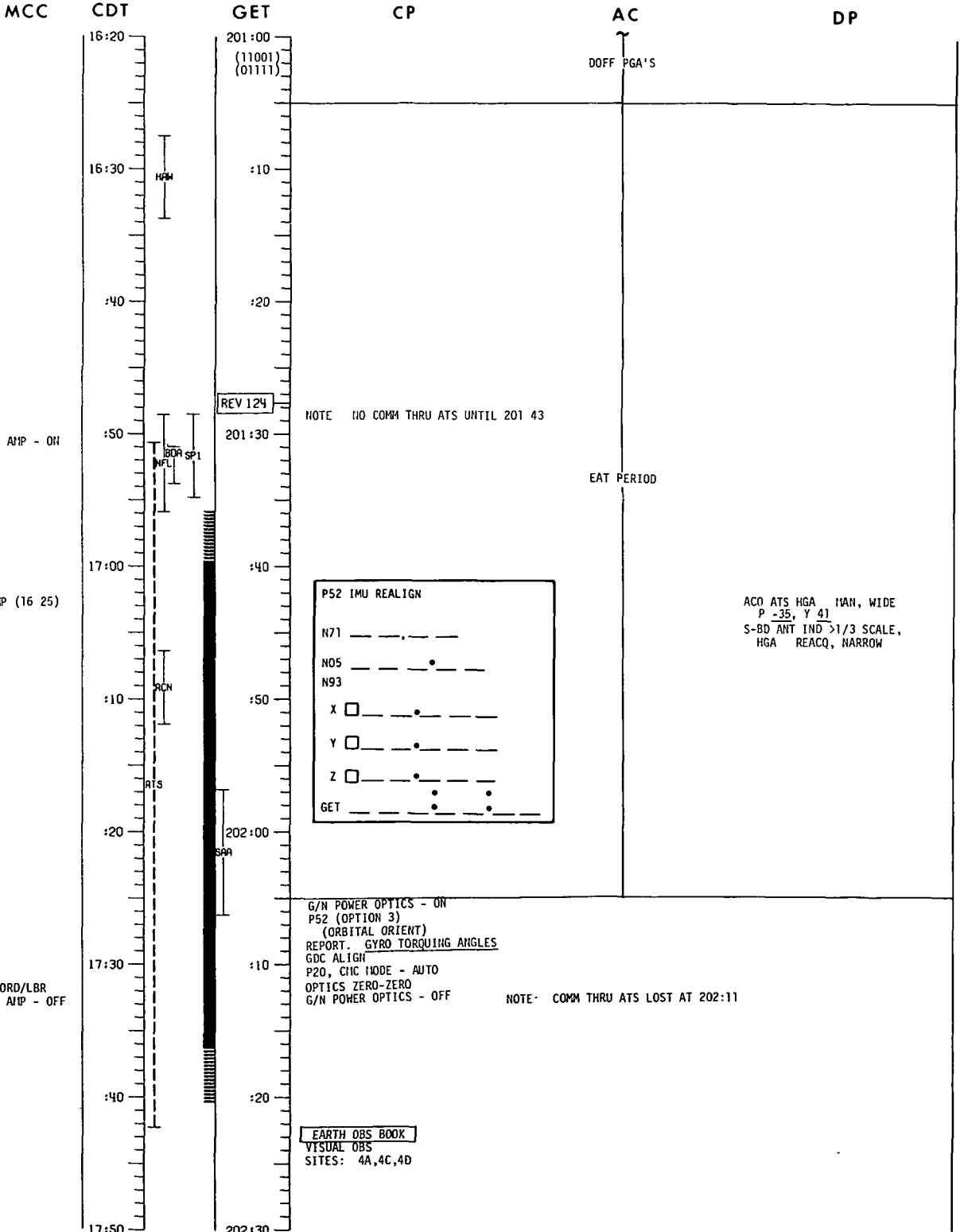
SPS BURN STATUS

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

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-64A

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	123-124



CMD
 ATS PWR AMP - ON

CMD
 DSE DUMP (16 25)

CMD:
 DSE RECORD/LBR
 ATS PWR AMP - OFF

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-65

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APOLLO DETAILED CREW ACTIVITIES PLAN

DM2 PAD

NOMINAL				FINAL			
N33	HR	+	2	0	4	+	
T1G		+	2	2		+	
	SEC	-	5	5	3	+	
N81	ΔV_X	-	0	2	0	+	
ΔV	ΔV_Y	+	0	0	0	+	
	ΔV_Z	+	0	0	0	+	
N22	R	+	0	0	0	+	0 0
	P	+	1	3	3	+	0 0
	Y	+	3	5	5	-	0 0
	ΔV_C	+	0	2	0	+	
	BT	+	0	0	0	+	1

ΔV_C AT IGN	+						
ΔV_C TAILOFF	-						

WT	+						
----	---	--	--	--	--	--	--

PT							
----	--	--	--	--	--	--	--

YT							
----	--	--	--	--	--	--	--

BURN ATT CHECK

STAR	+						
SA	+						0
TA	+						0 0

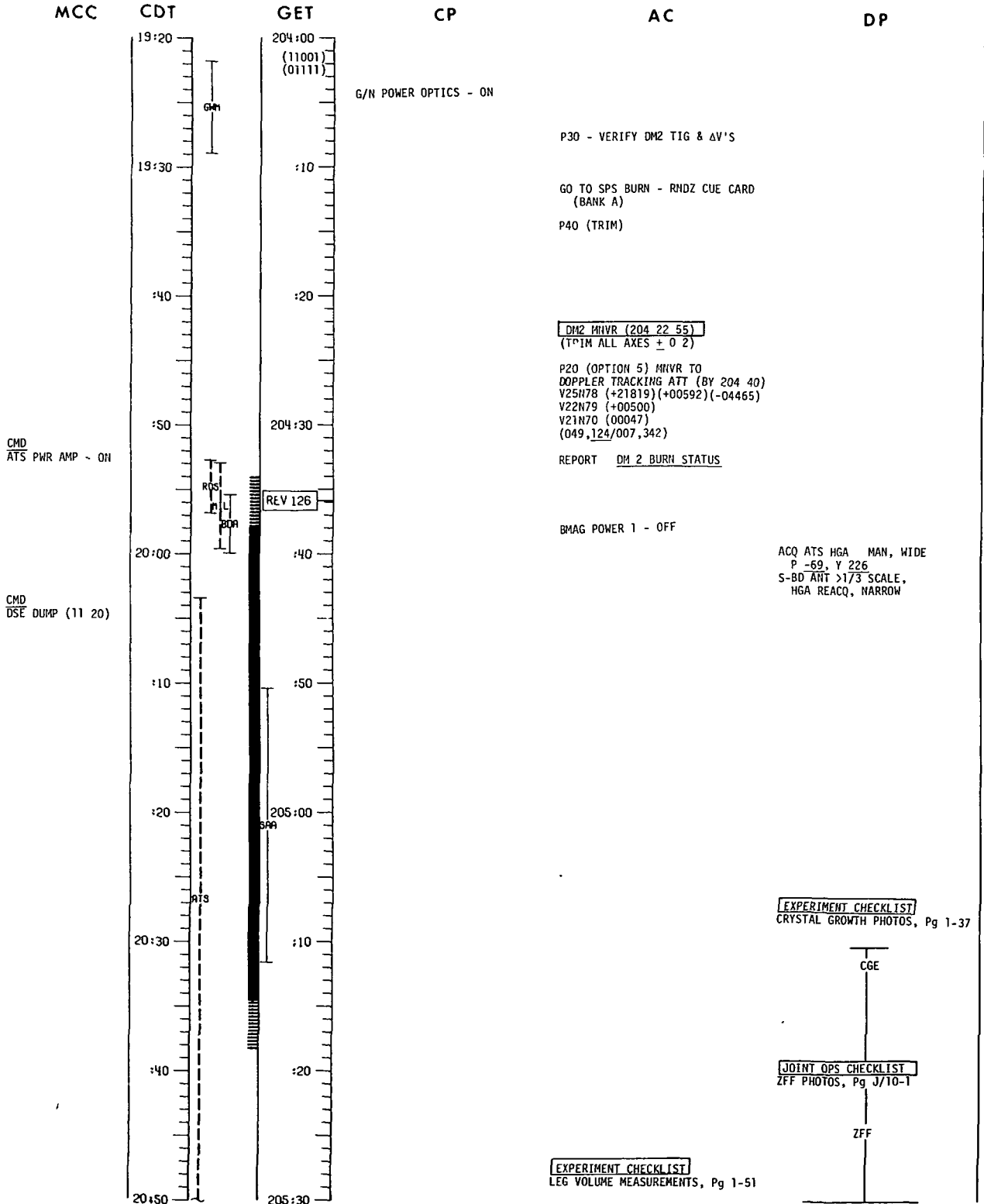
SPS BURN STATUS

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

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-66B

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	125-126

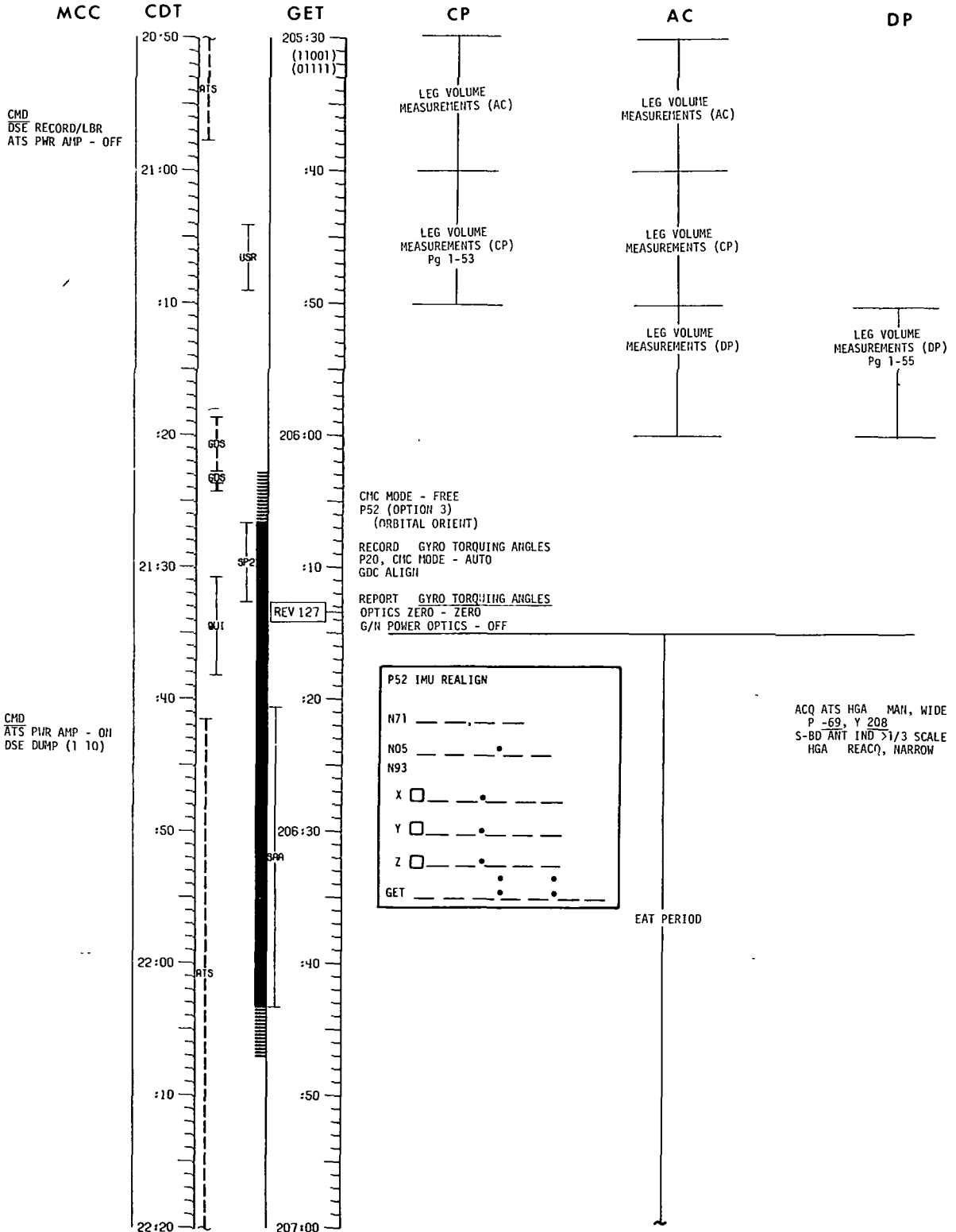


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-67

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	126-127

DOPPLER TRK

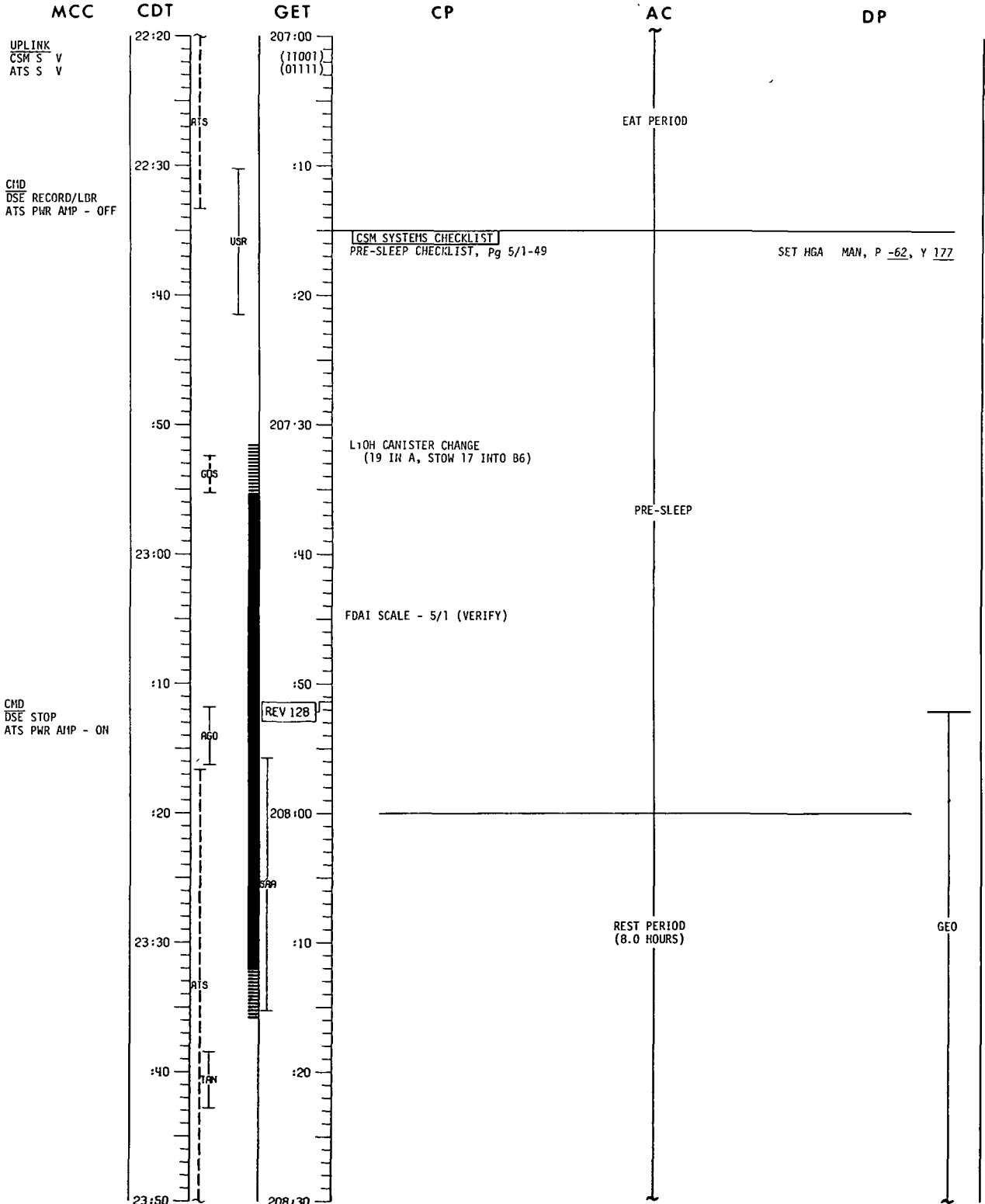


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-68

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	127-128

DOPPLER TRK

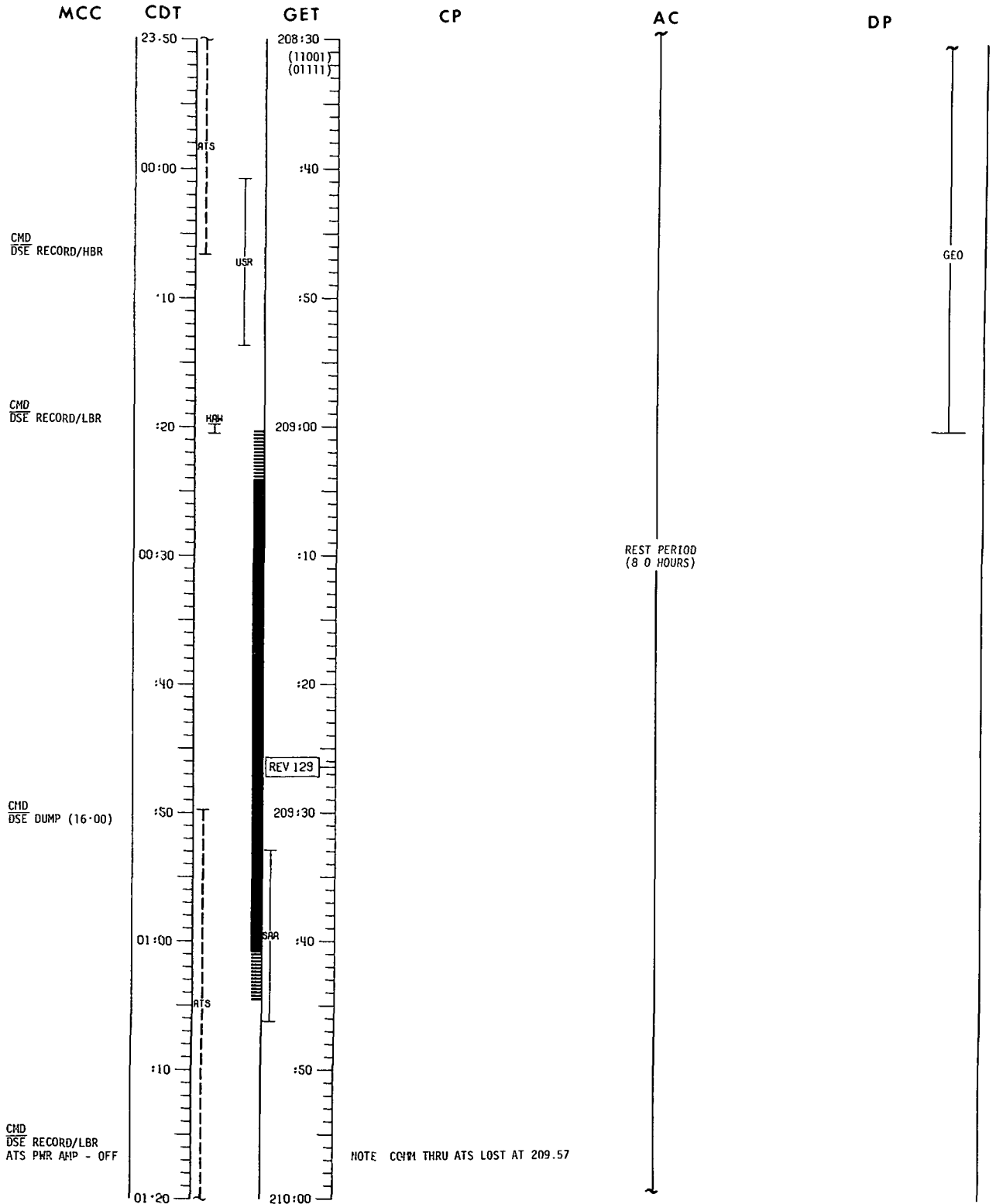


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-69

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 23, 1975	128-129

DOPPLER TRK

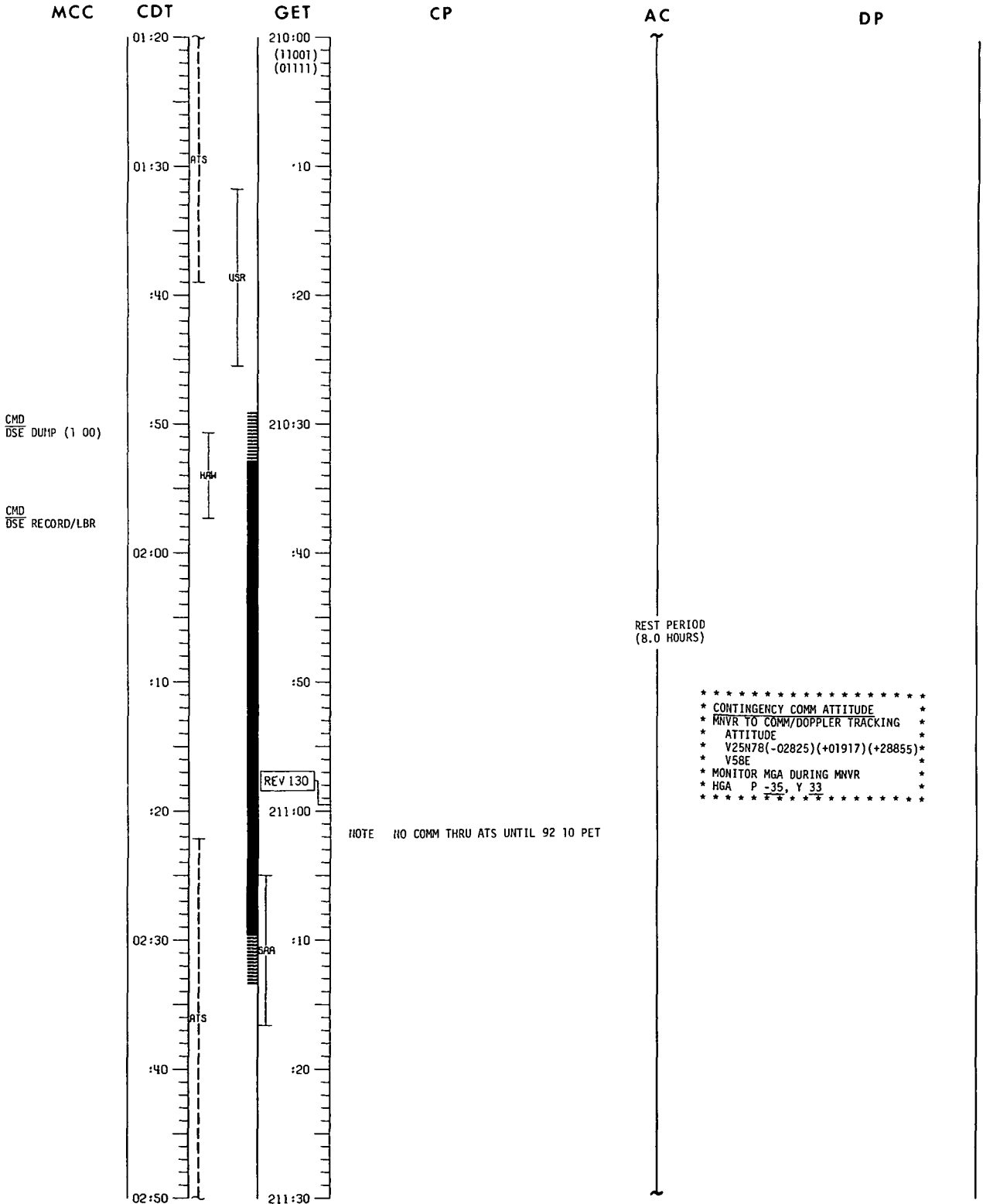


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-70

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	129-130

DOPPLER TRK



CMD
DSE DUHP (1 00)

CMD
DSE RECORD/LBR

REST PERIOD
(8.0 HOURS)

 * CONTINGENCY COMM ATTITUDE *
 * MNVR TO COMM/DOPPLER TRACKING *
 * ATTITUDE *
 * V25N78(-02825)(+01917)(+28855)*
 * V58E *
 * MONITOR MGA DURING MNVR *
 * HGA P -35, Y 33 *

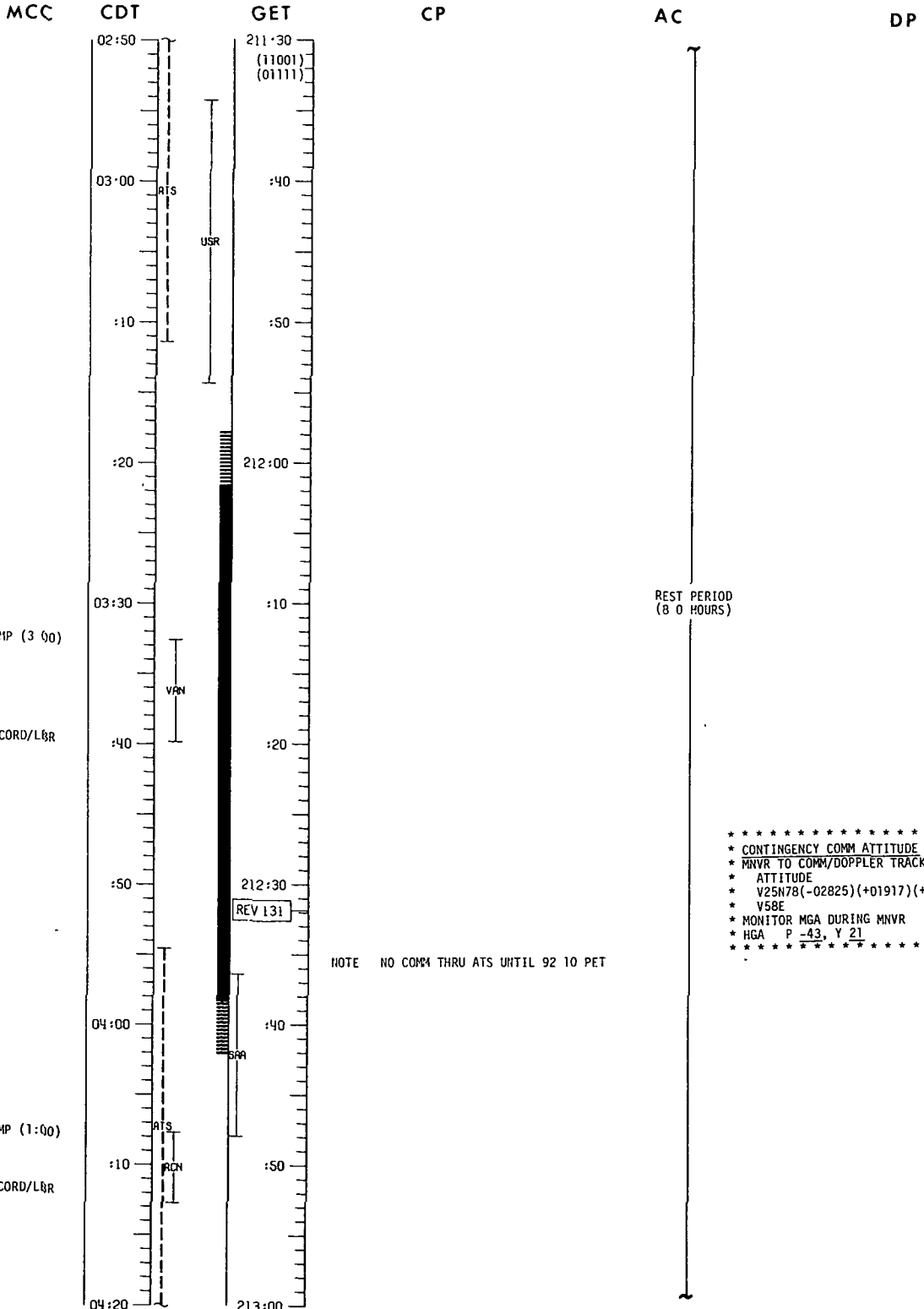
NOTE NO COMM THRU ATS UNTIL 92 10 PET

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-71

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	130-131

DOPPLER TRK

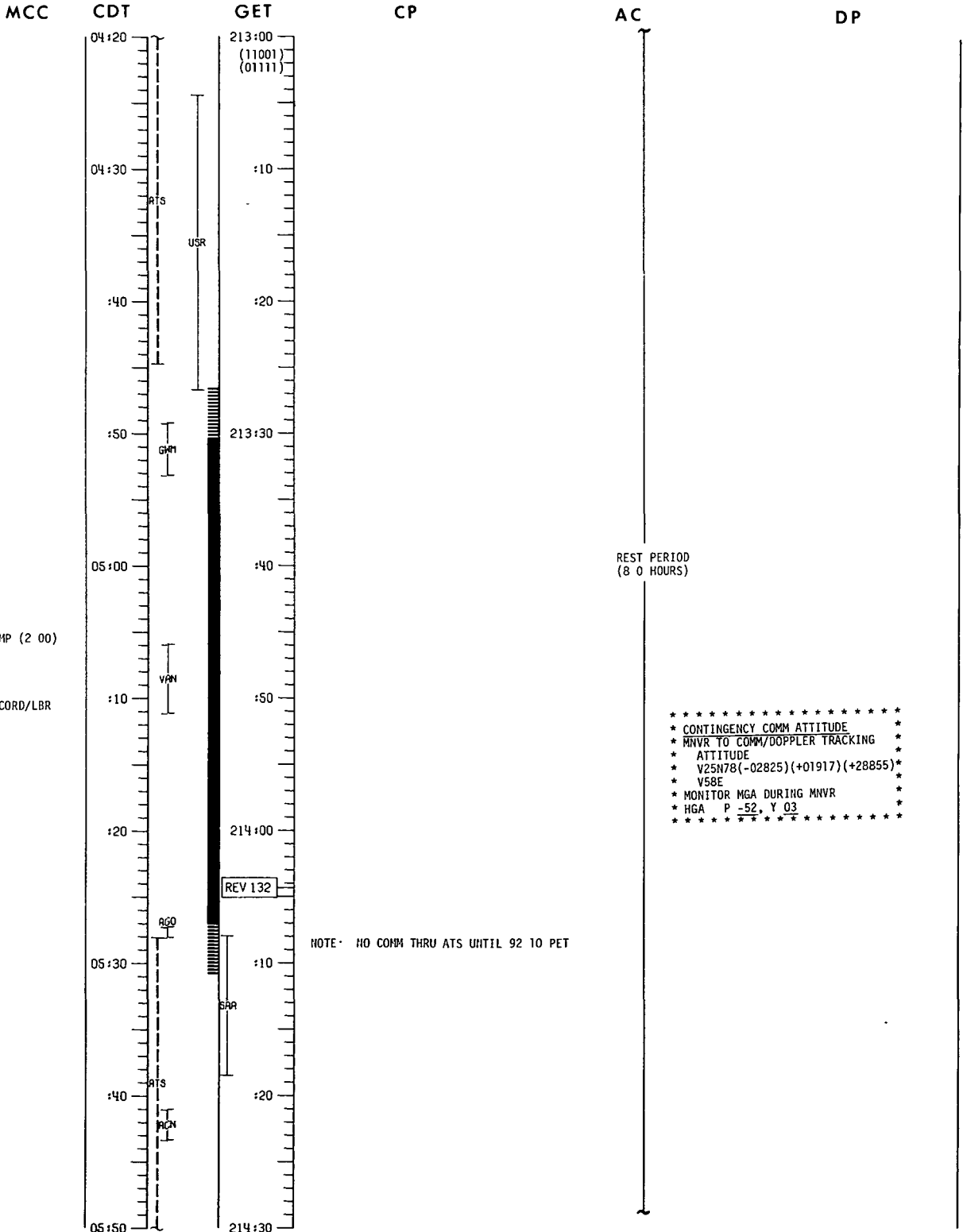


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-72

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	131-132

DOPPLER TRK



CMD:
DSE DUMP (2 00)

CMD:
DSE RECORD/LBR

* CONTINGENCY COMM ATTITUDE *
* MNVR TO COMM/DOPPLER TRACKING *
* ATTITUDE *
* V25N78(-02825)(+01917)(+28855)*
* V58E *
* MONITOR MGA DURING MNVR *
* HGA P -52, Y 03 *

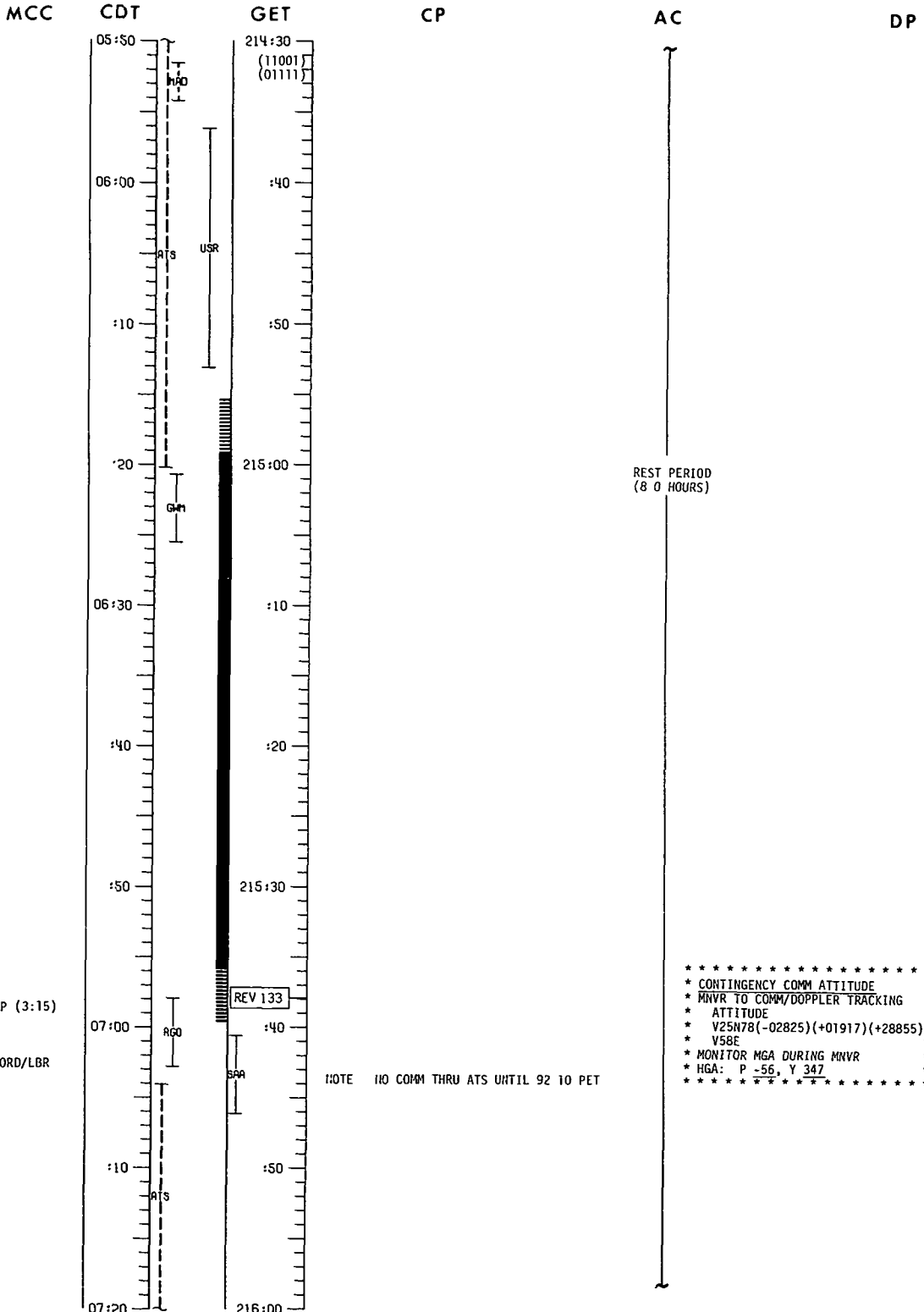
NOTE - NO COMM THRU ATS UNTIL 92 TO PET

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-73

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	132-133

DOPPLER TRK



CMD
DSE DU:IP (3:15)

C1D:
DSE RECORD/LBR

REST PERIOD
(8 0 HOURS)

NOTE: NO COMM THRU ATS UNTIL 92 10 PET

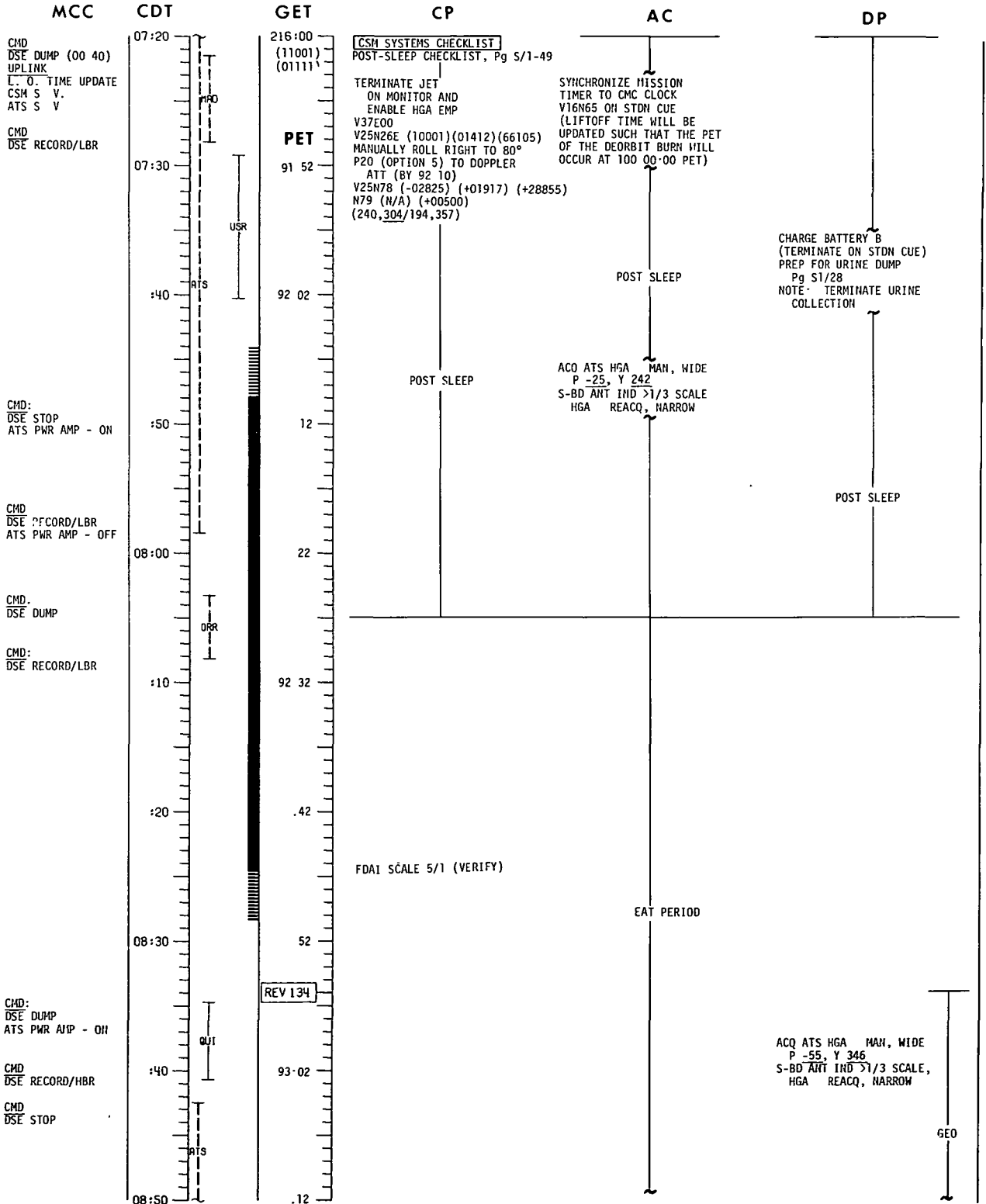
 * CONTINGENCY COMM ATTITUDE *
 * MNVR TO COMM/DOPPLER TRACKING *
 * ATTITUDE *
 * V25N78(-02825)(+01917)(+28855)*
 * V58E *
 * MONITOR MGA DURING MNVR *
 * HGA: P -56, Y 347 *

MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-74

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	133-134

DOPPLER TRK



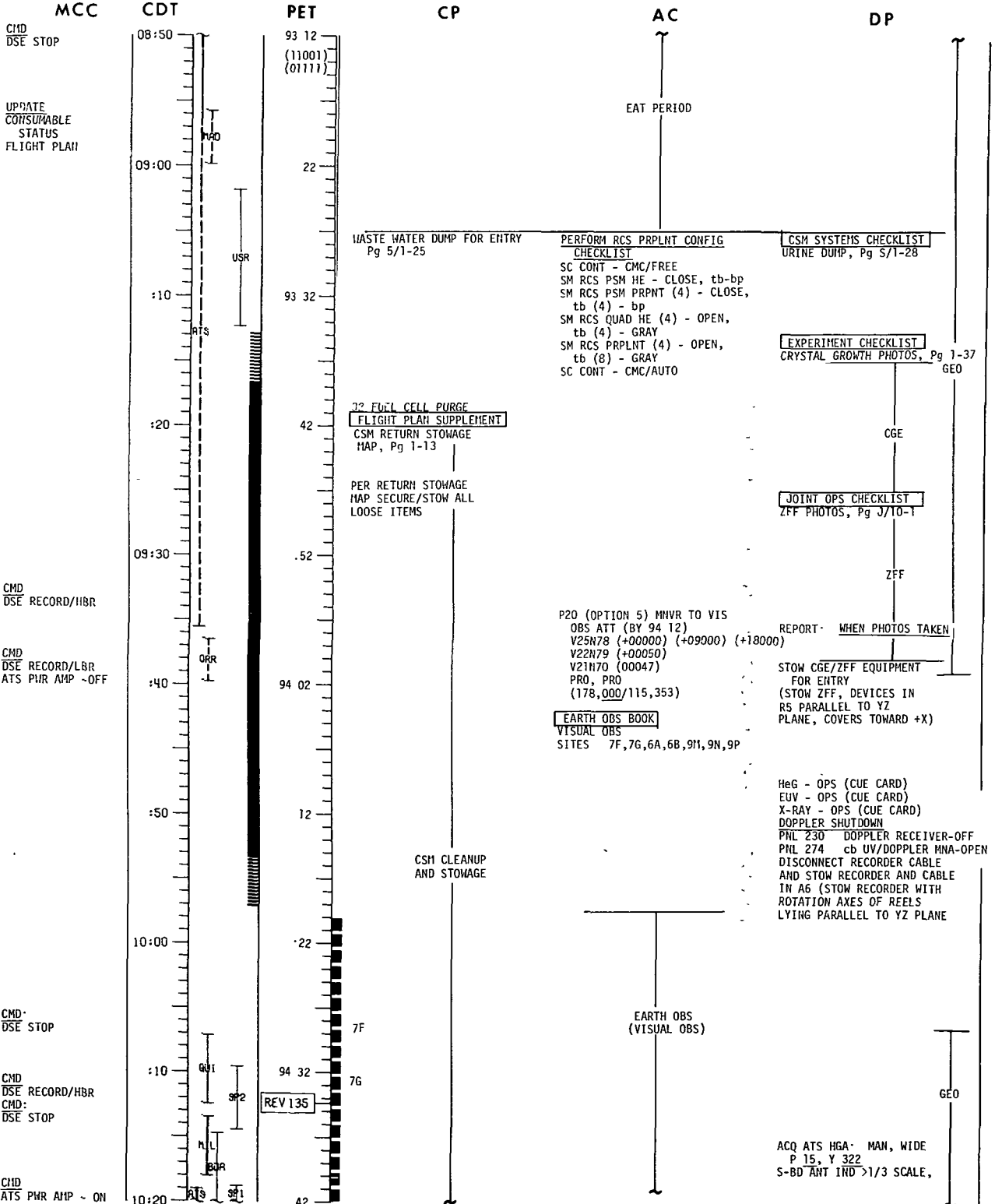
MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-75

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	134-135

GET 217 30

DOPPLER TRK, X-RAY

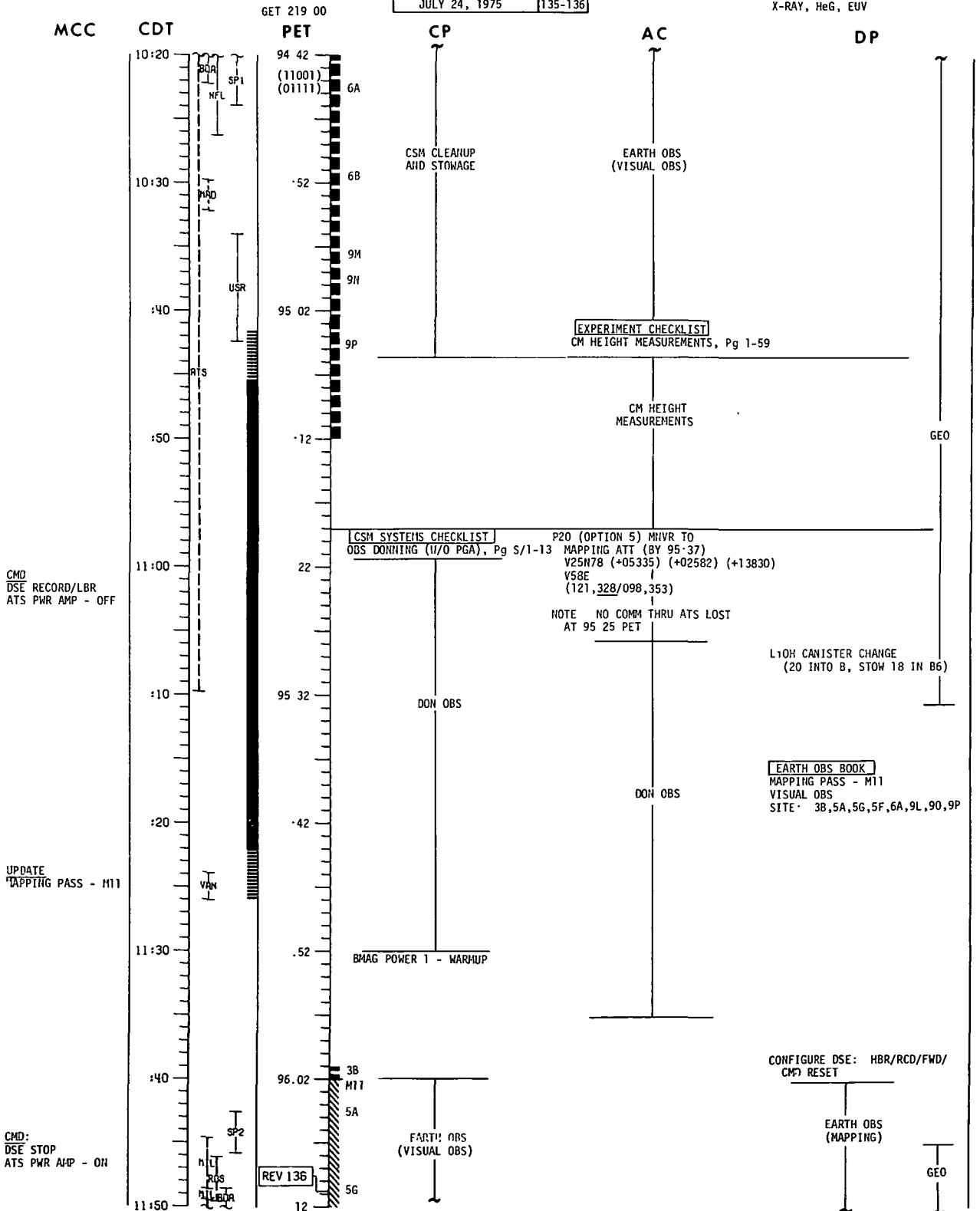


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-76

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	135-136

X-RAY, HeG, EUV



CMD
DSE RECORD/LBR
ATS PWR AMP - OFF

UPDATE
MAPPING PASS - M11

CMD:
DSE STOP
ATS PWR AMP - ON

CSM SYSTEMS CHECKLIST
OBS DONNING (I/O PGA), Pg S/1-13

P20 (OPTION 5) MNVR TO
MAPPING ATT (BY 95:37)
V25N78 (+05335) (+02582) (+13830)
V58E
(121,328/098,353)

NOTE NO COMM THRU ATS LOST
AT 95 25 PET

L10H CANISTER CHANGE
(20 INTO B, STOW 18 IN B6)

EARTH OBS BOOK
MAPPING PASS - M11
VISUAL OBS
SITE 3B, 5A, 5G, 5F, 6A, 9L, 90, 9P

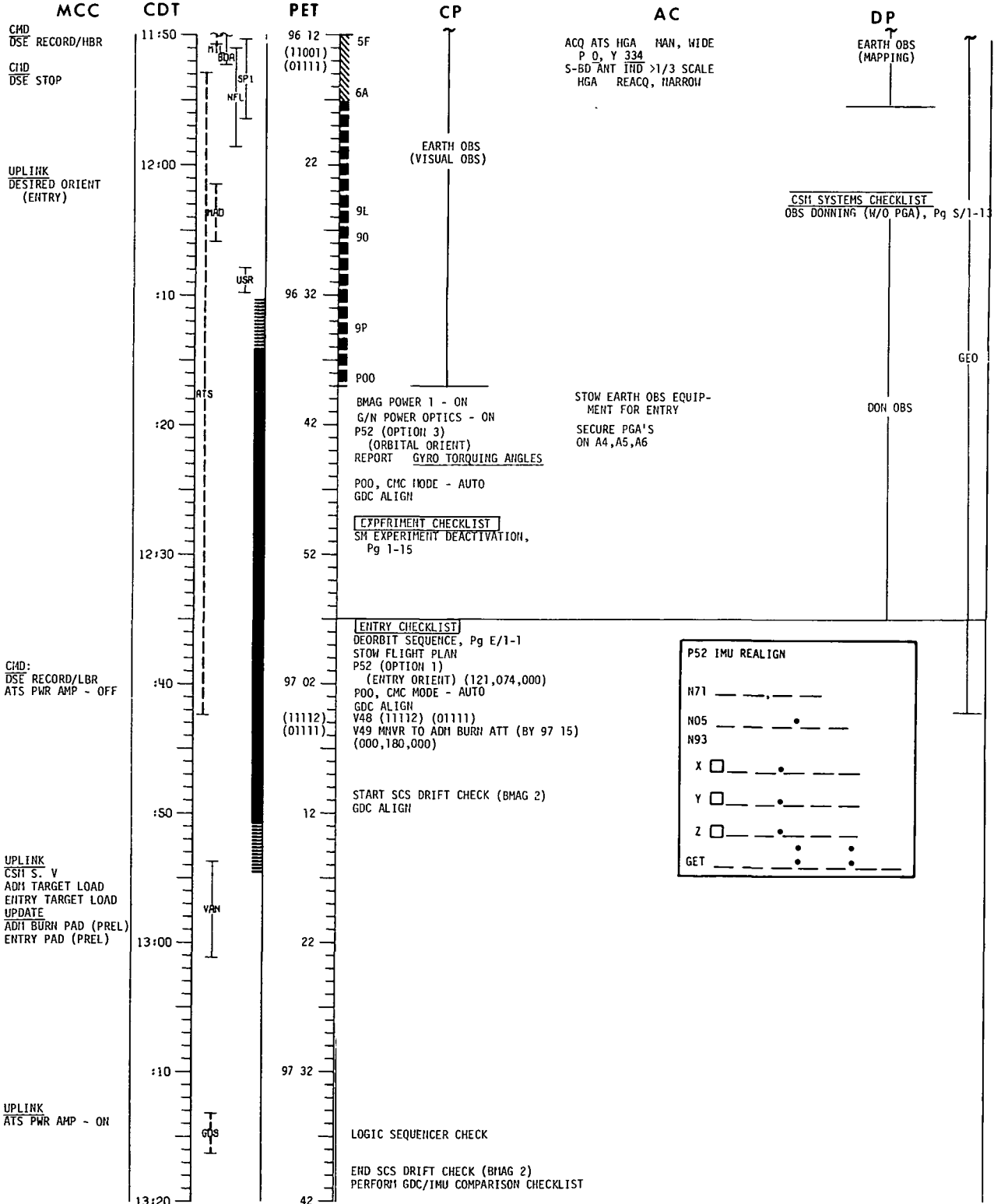
CONFIGURE DSE: HBR/RCD/FWD/
CMP) RESET

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

X-RAY, HeG, EUV



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4 3-78

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	136-137

GET 222:00

MCC

CDT

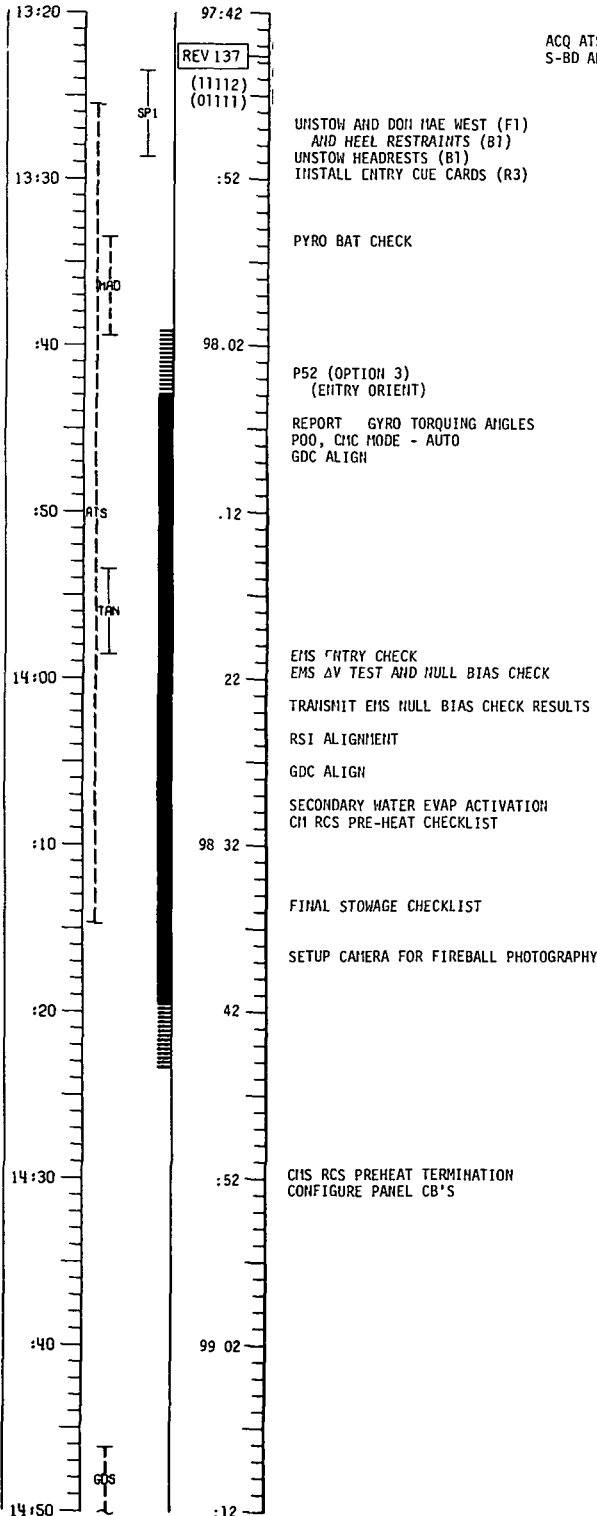
PET

ACQ ATS HGA MAN, WIDE P -25, Y 4
S-BD ANT IND >1/3 SCALE, HGA REACQ, NARROW

CMD.
DSE DUMP (25.00)

CMD.
DSE RECORD/LBR
ATS PWR AMP - OFF

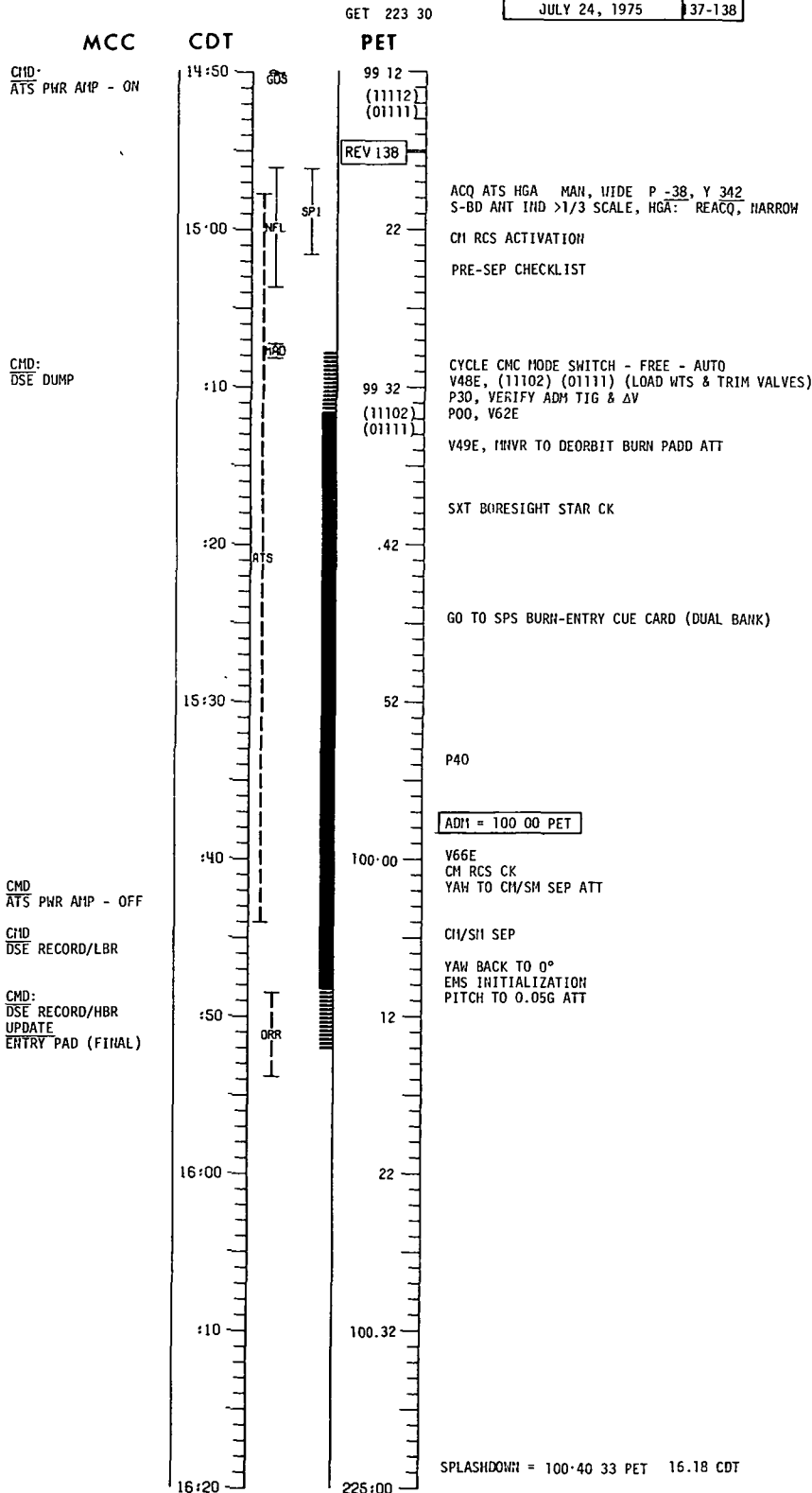
UPLINK:
CSH S. V.
SPS TARGET LOAD
UPDATE:
DEORBIT BURN
(FINAL PAD)
FINAL ENTRY PAD



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-79

APOLLO DETAILED CREW ACTIVITIES PLAN

HOUSTON DATE	REV
JULY 24, 1975	37-138



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	4.3-80

SECTION 5 - SUMMARY FLIGHT PLAN

SUMMARY FLIGHT PLAN

DATE	REV
7/15/75	0-3

CDT
07:20
08:20
09:20
10:20
11:20
12:20
13:20

GET
00:00
01:00
02:00
03:00
04:00
05:00
06:00

SOYUZ LIFT-OFF

SOYUZ SM1 (05:23)

CDT
13:20
14:20
15:20
16:20
17:20
18:20
19:20

BQA
NFL
MRD
VAN
RGS
NFL
TAN
VAN
GDS
NFL
MRD
ORR
HAW

SP1
USR
SP1
MRD
SP1

GET
6:00
7:00
PET
0:00
00:30
01:30
02:30
03:30
04:30

APOLLO LIFT-OFF (00:00 PET)
APOLLO INSERTION (00:09:52 PET)

P52 (OPTION 3)

HGA ACTIVATION

REV 2

TD&E

AEM (02:34:00 PET)

V49 MNVR TO ACM ATT

REV 3

P52 (OPTION 3)

ACM (03:45 PET)

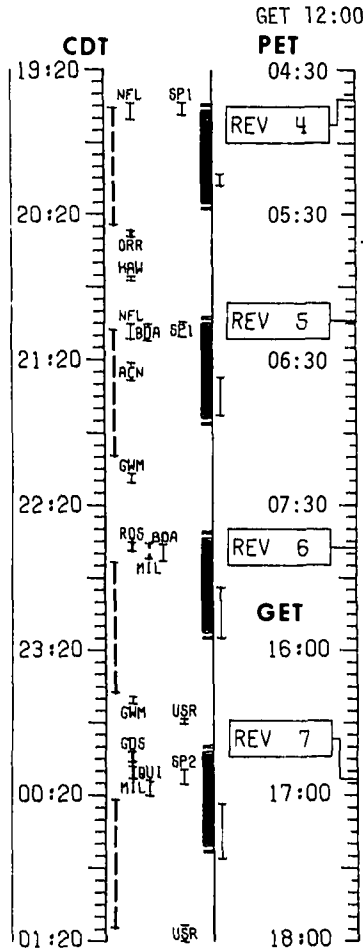
DOFF PGA'S

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

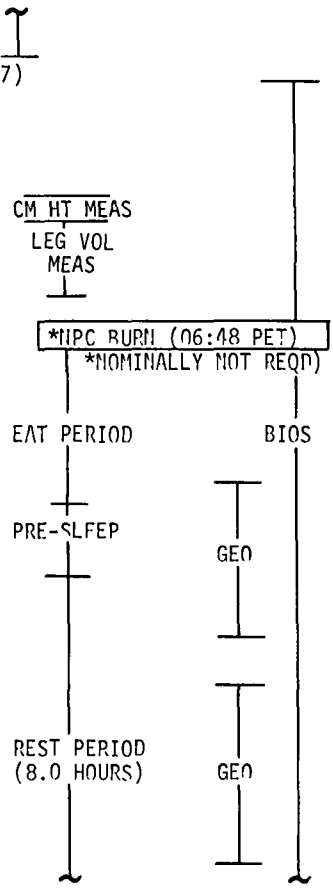


BIOSTACK-ON (MA 107)
UNSTOW & PHOTO ZFF
P52 (OPTION 3)

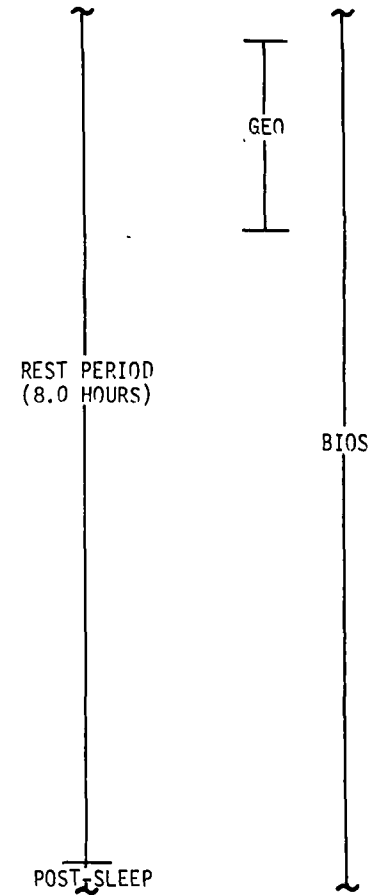
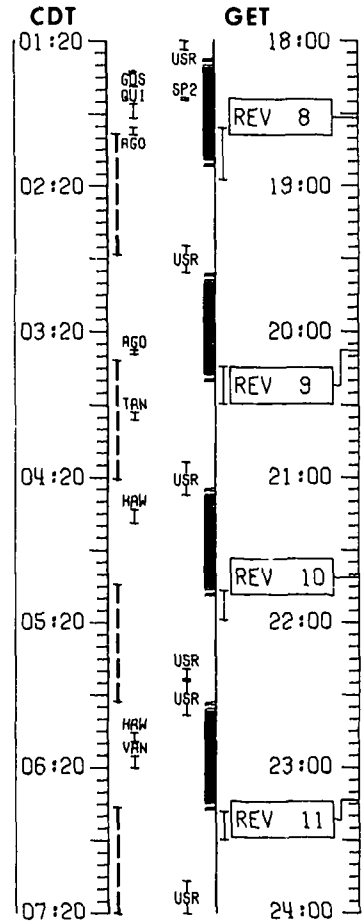
NCT (05:41 PET)

V49 MNVR TO
+X FWD SLEEP ATT
P52 (OPTION 3)

P52 (OPTION 1)



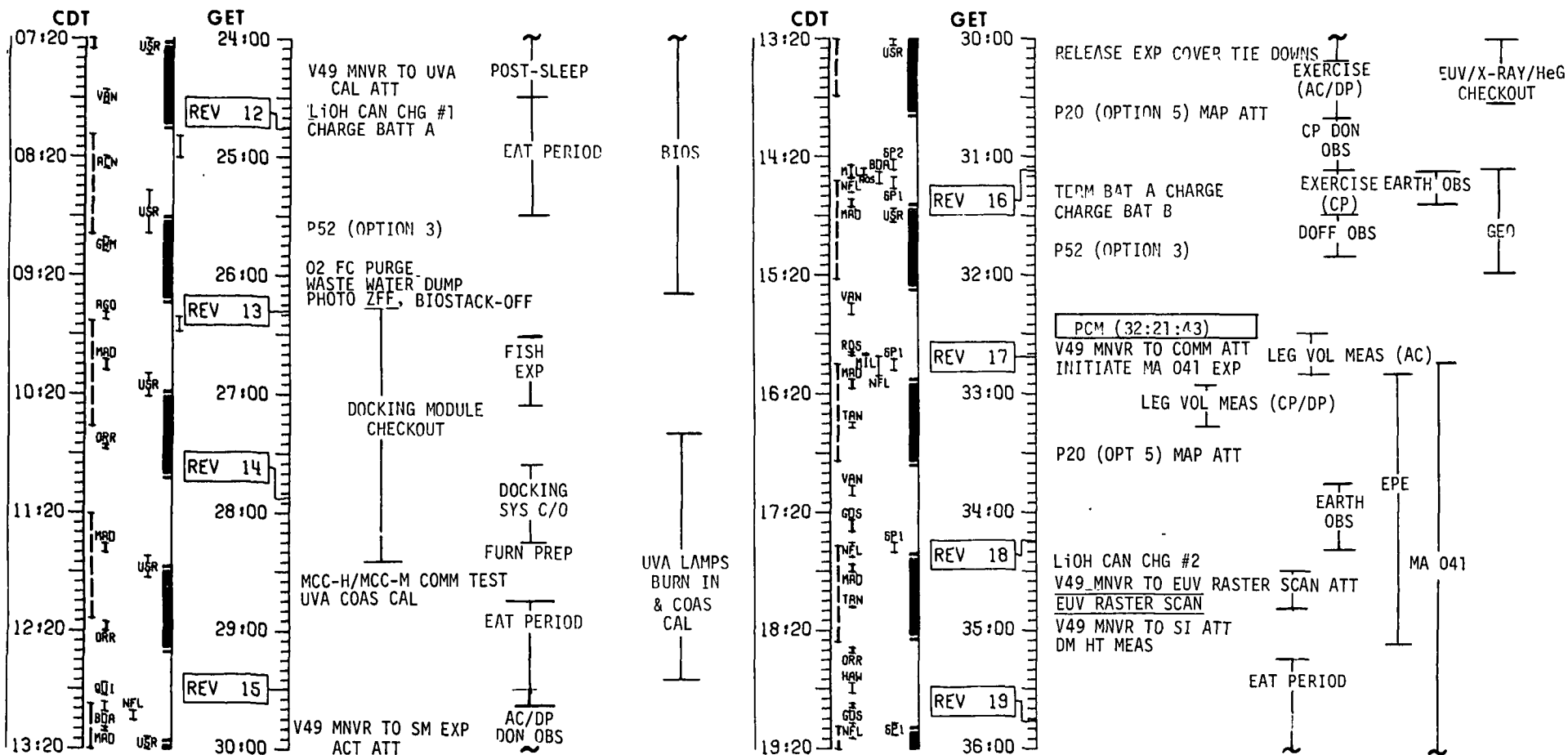
SYNC APOLLO PET
TO SOYUZ GET



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

SUMMARY FLIGHT PLAN

DATE	REV
7/16/75	11-19

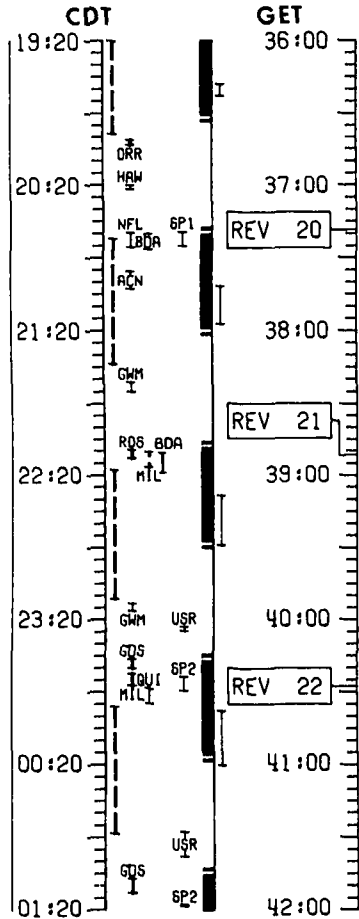


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-3

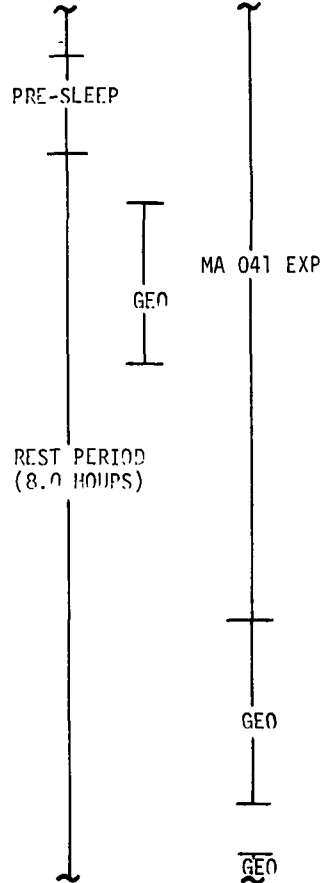
FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/16/75	19-26



TERM BAT B CHG.
PHOTO ZFF



V49 MNVR TO COMM ATT

P5? (OPTION 3)

LION CAN CHG #3
FURNACE SHUTDOWN;
DM CLOSEOUT;
PHOTO ZFF
P5? (OPTION 3)
H2 & O2 FC PURGE
WASTE WATER DUMP

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

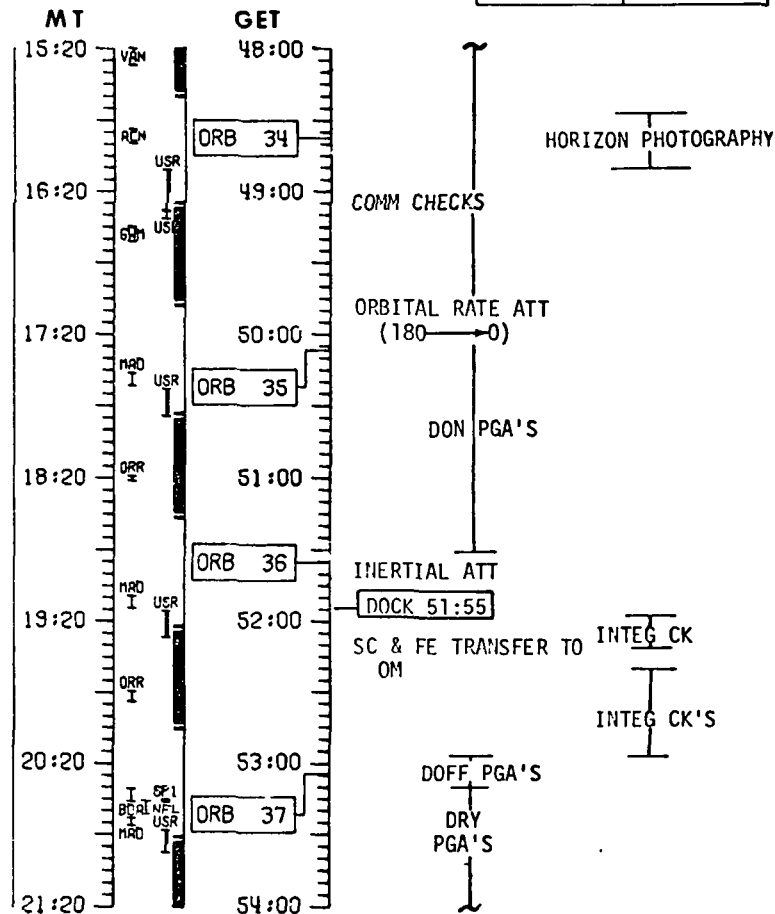
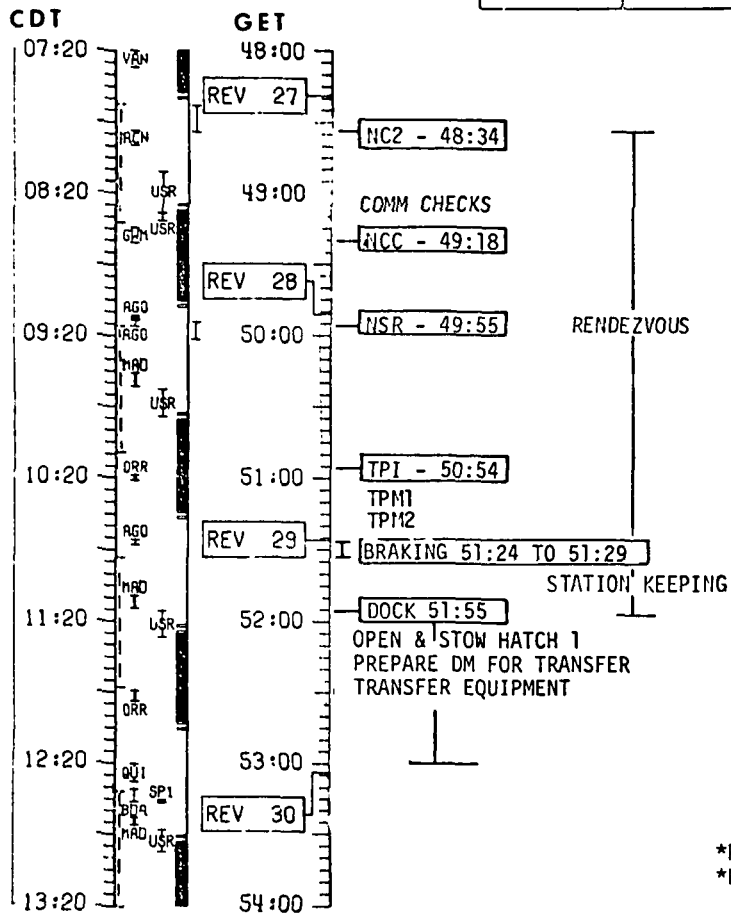
SUMMARY CREW ACTIVITIES PLAN

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

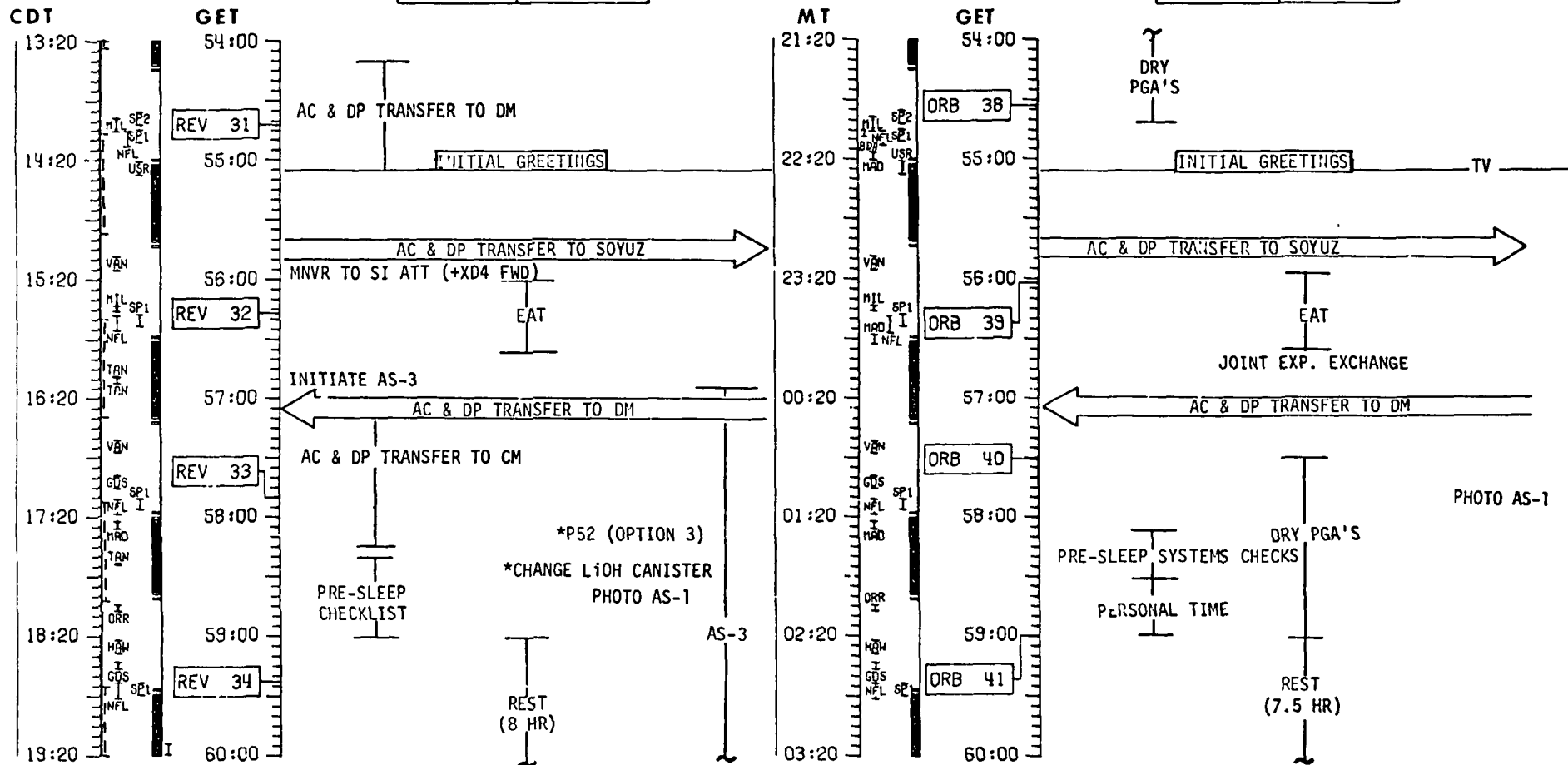
SUMMARY CREW ACTIVITIES PLAN

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

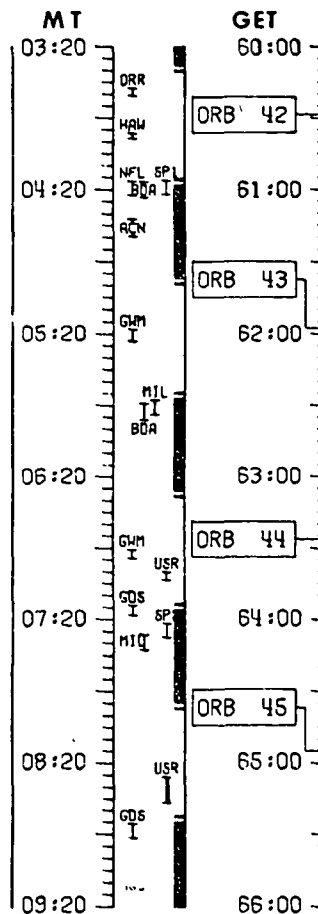
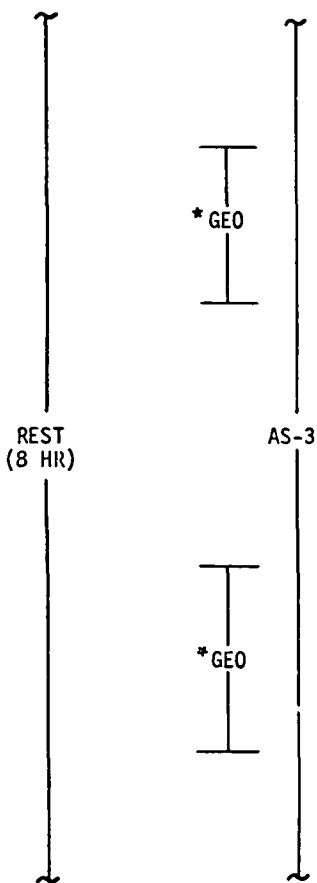
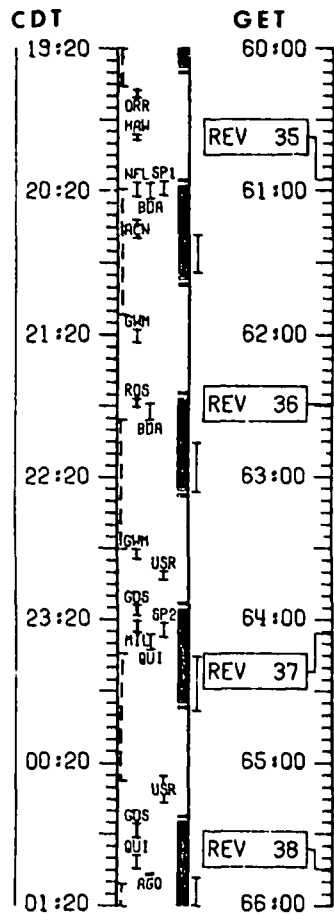
SUMMARY CREW ACTIVITIES PLAN

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

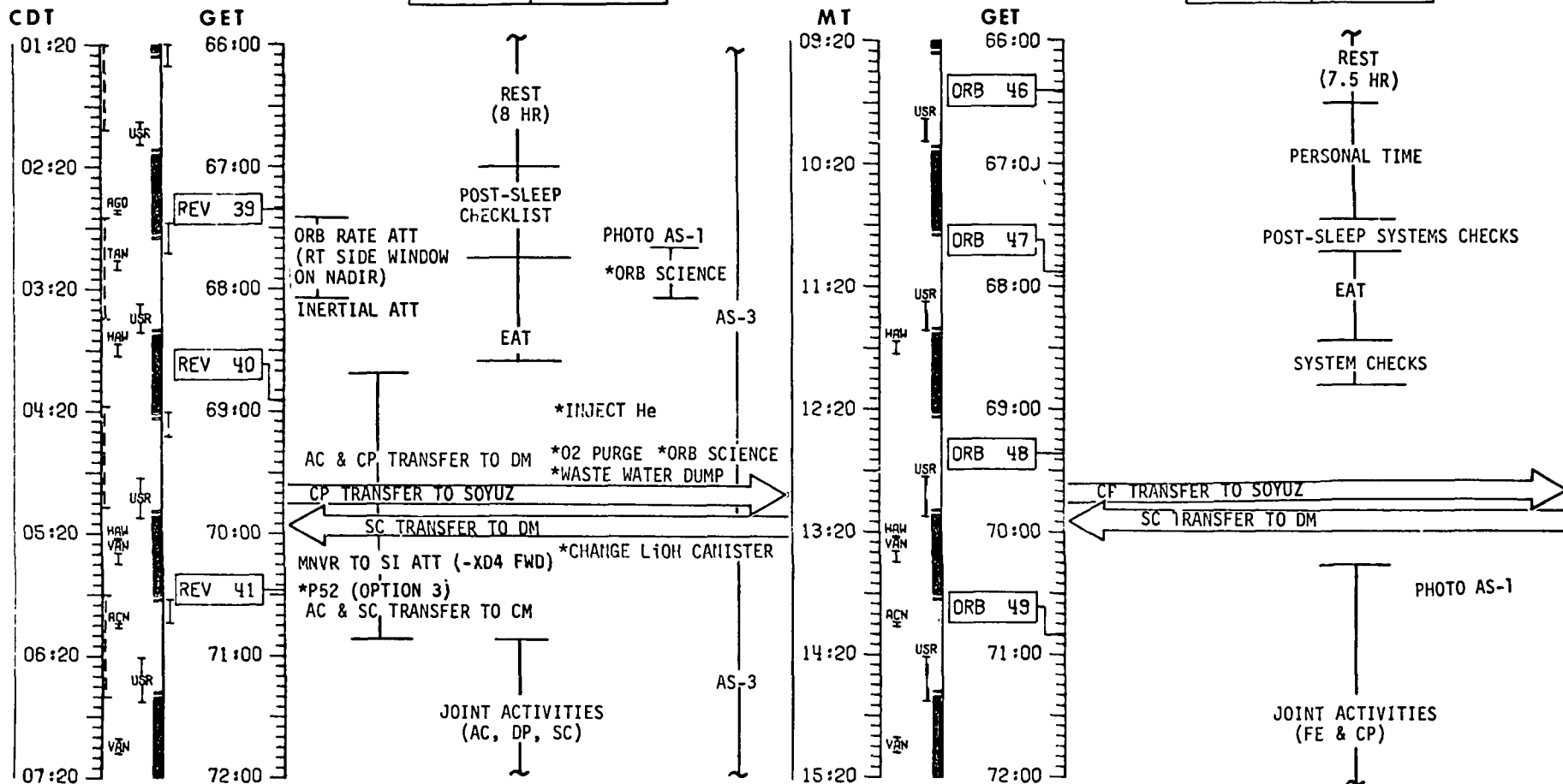
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/18/75	38-41

SOYUZ

DATE	ORB
7/18/75	45-49



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

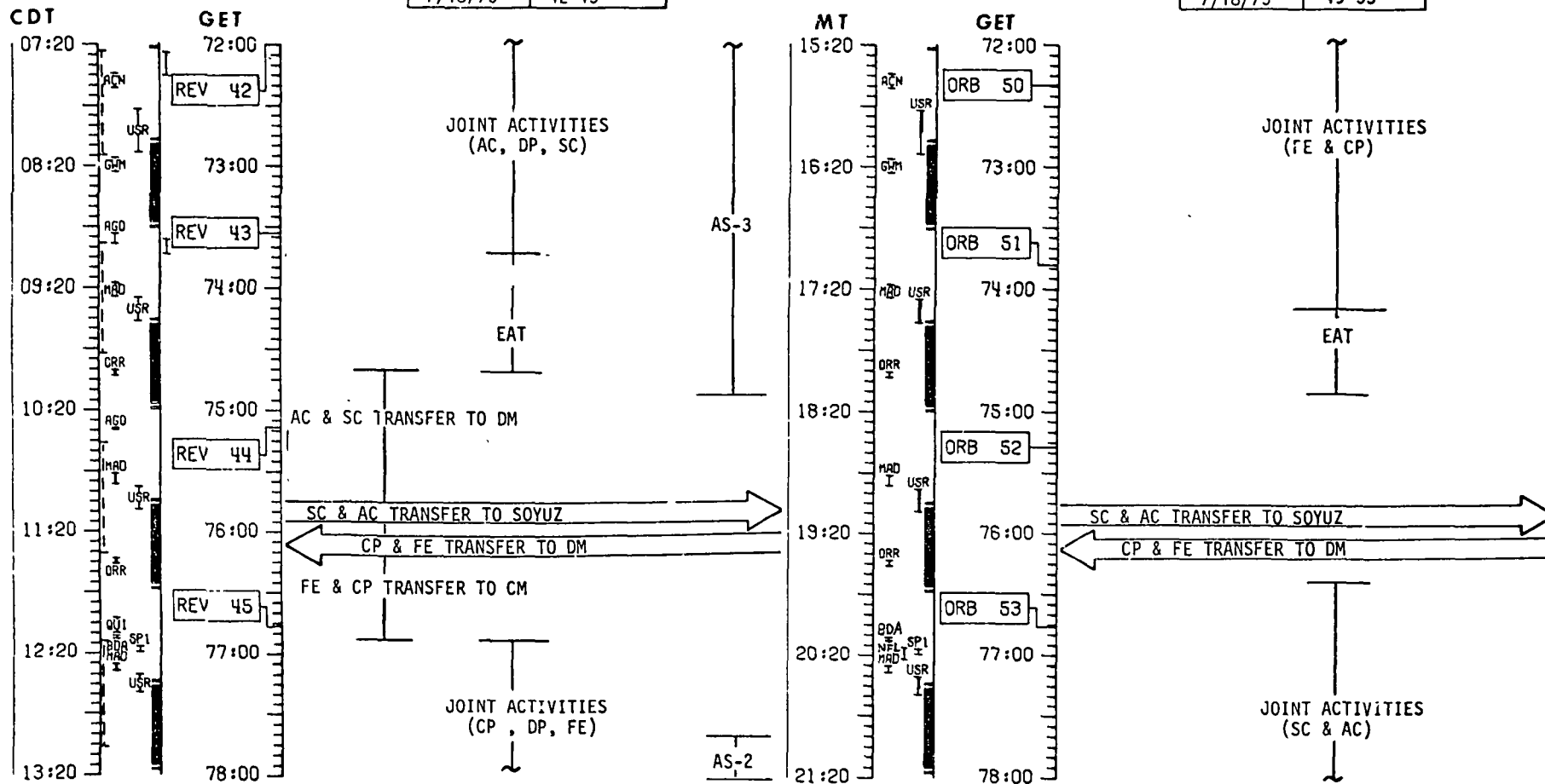
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/18/75	42-45

SOYUZ

DATE	ORB
7/18/75	49-53



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

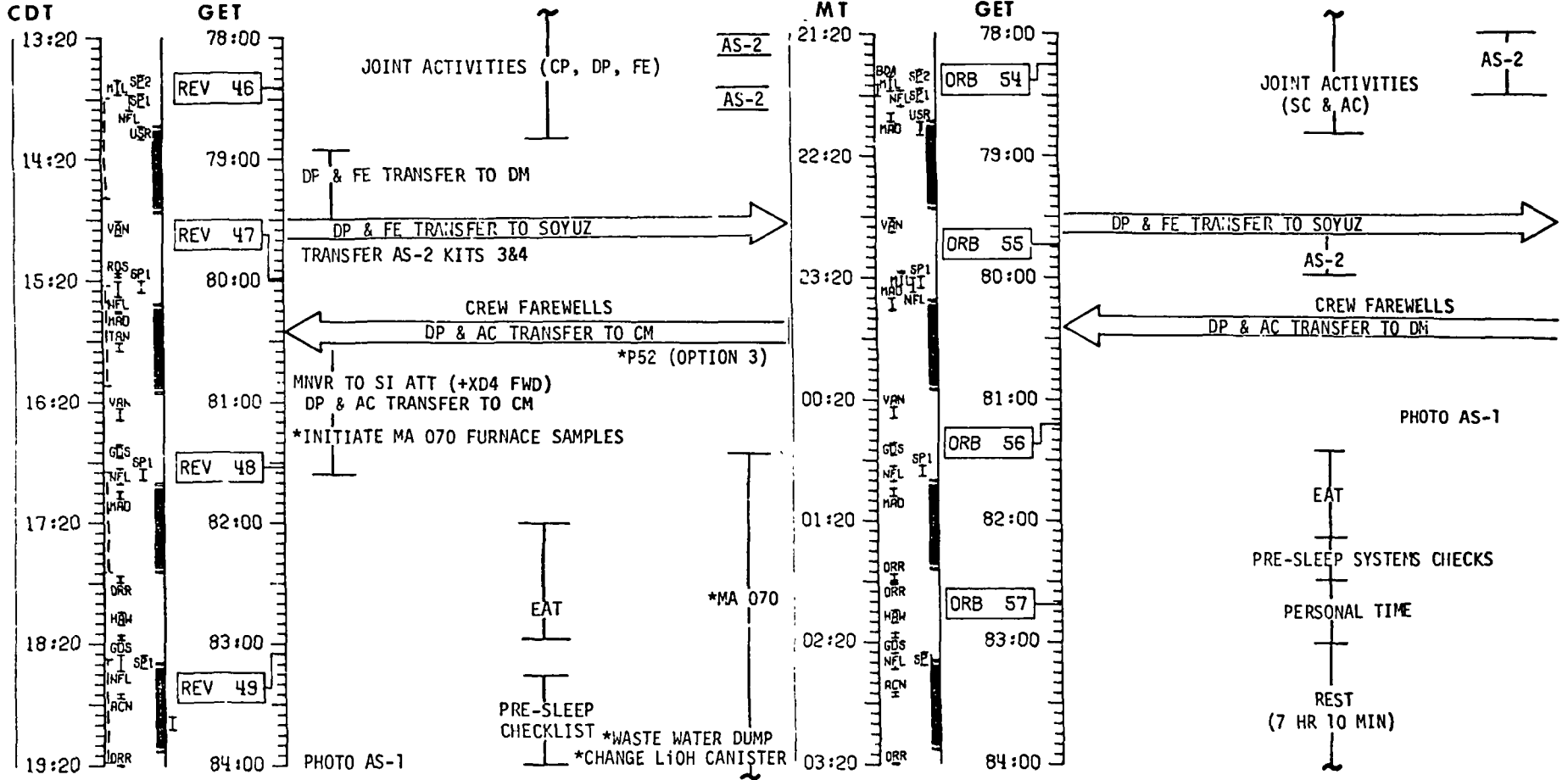
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/18/75	45-49

SOYUZ

DATE	ORB
7/18/75	53-57

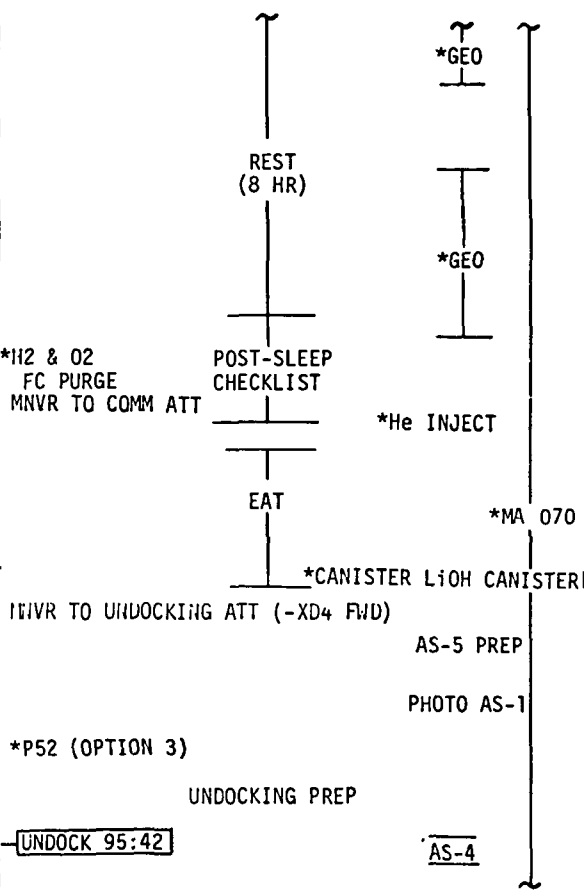
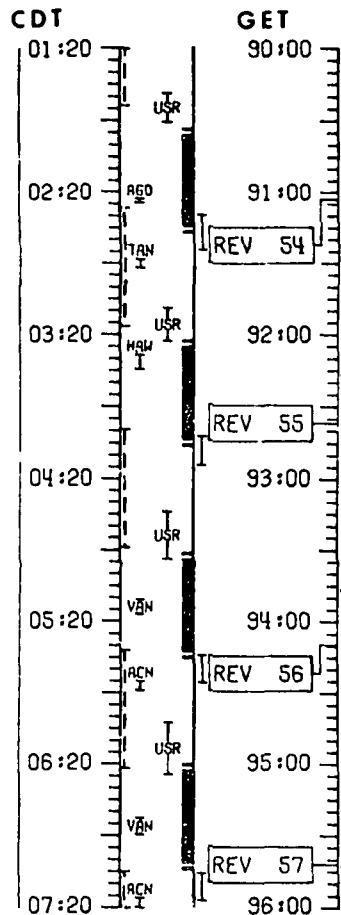


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-10

SUMMARY CREW ACTIVITIES PLAN

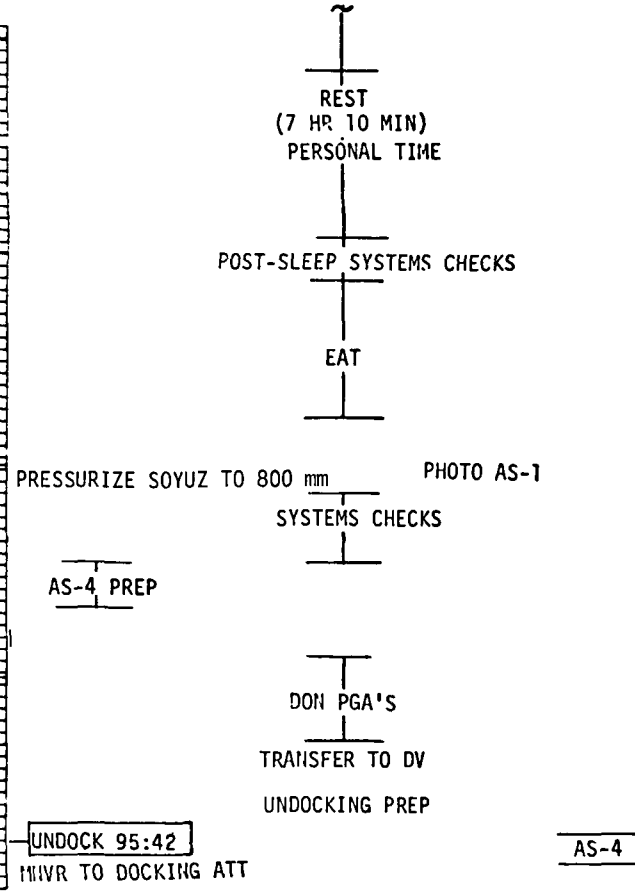
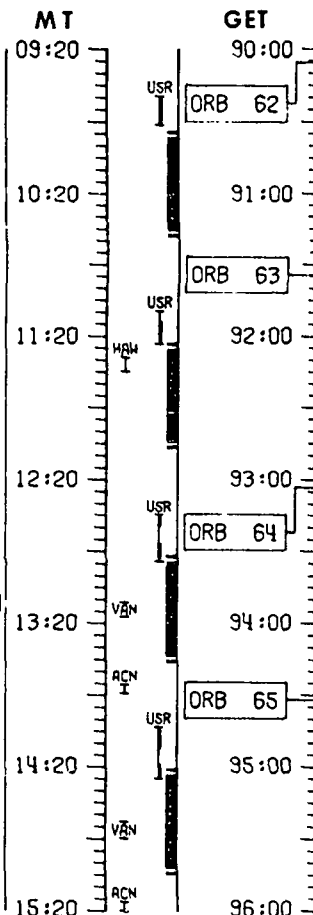
APOLLO

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

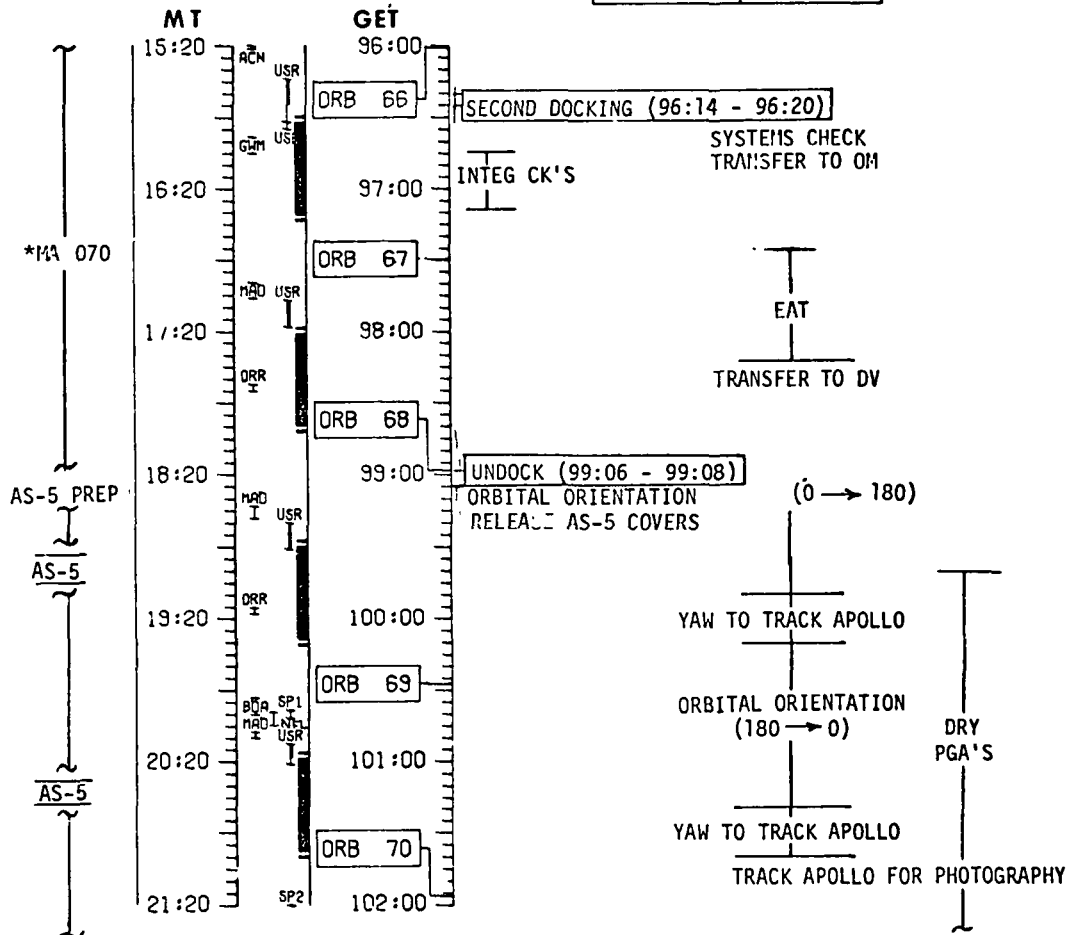
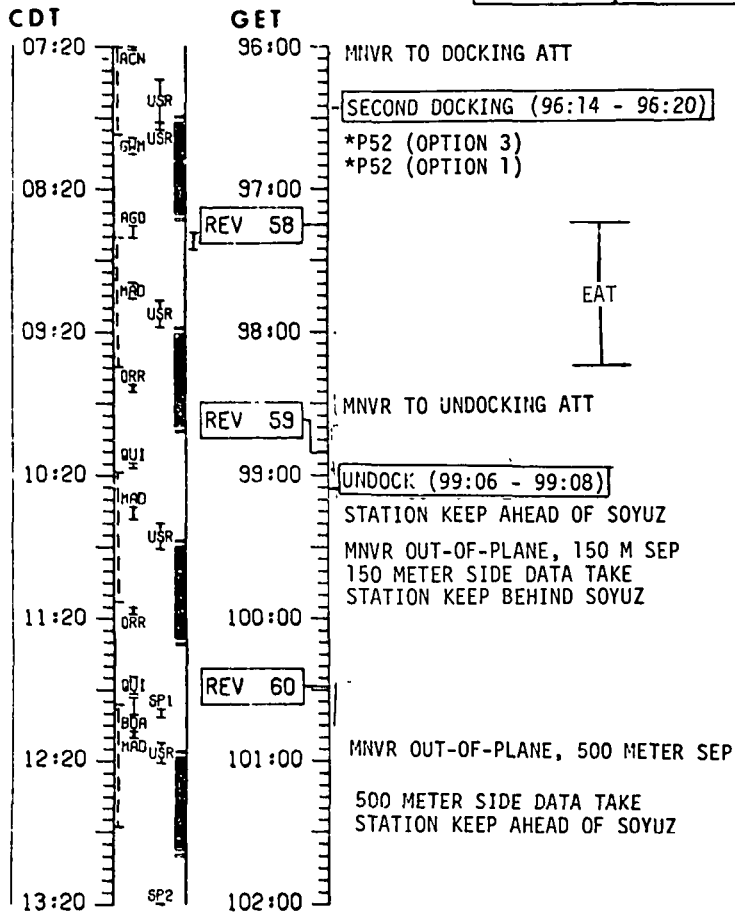
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/19/75	57-60

SOYUZ

DATE	ORB
7/19/75	65-70



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-13

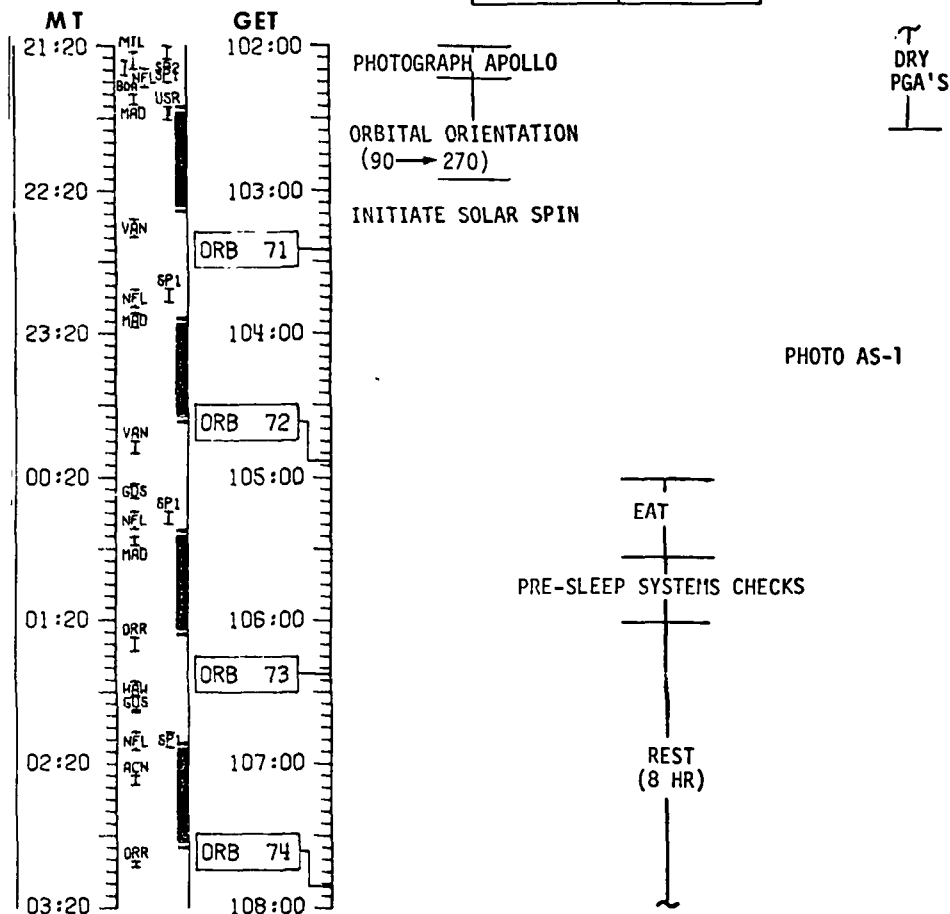
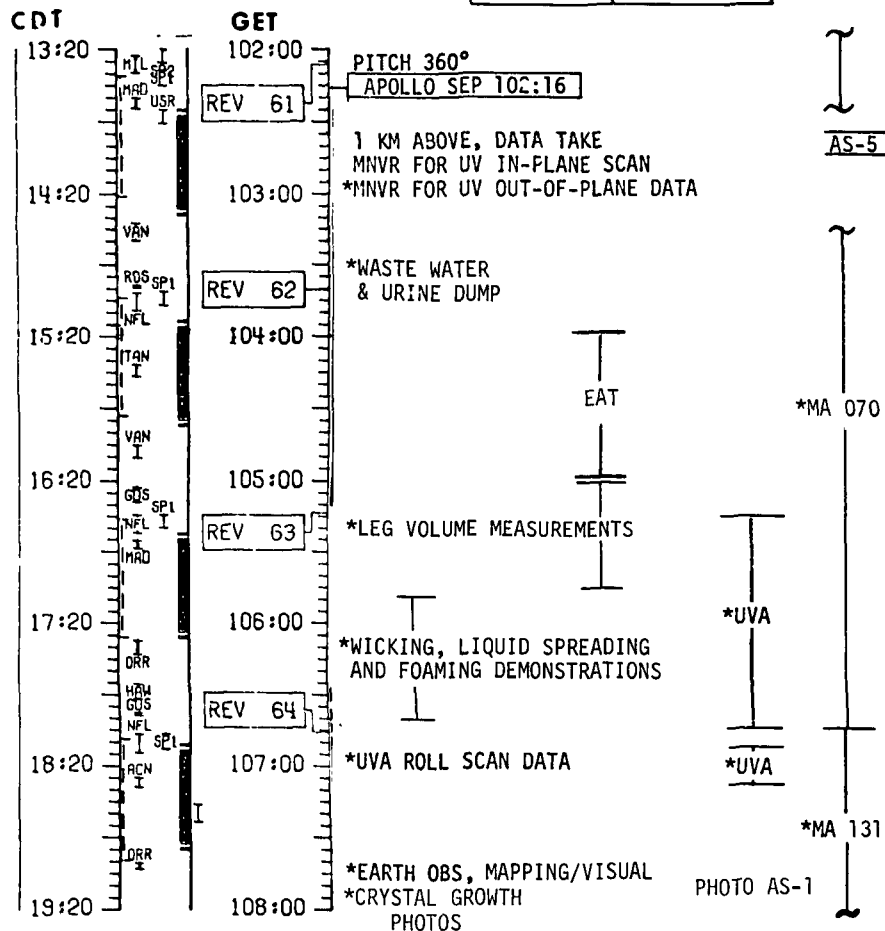
SUMMARY CREW ACTIVITIES PLAN

APOLLO

DATE	REV
7/19/75	60-64

SOYUZ

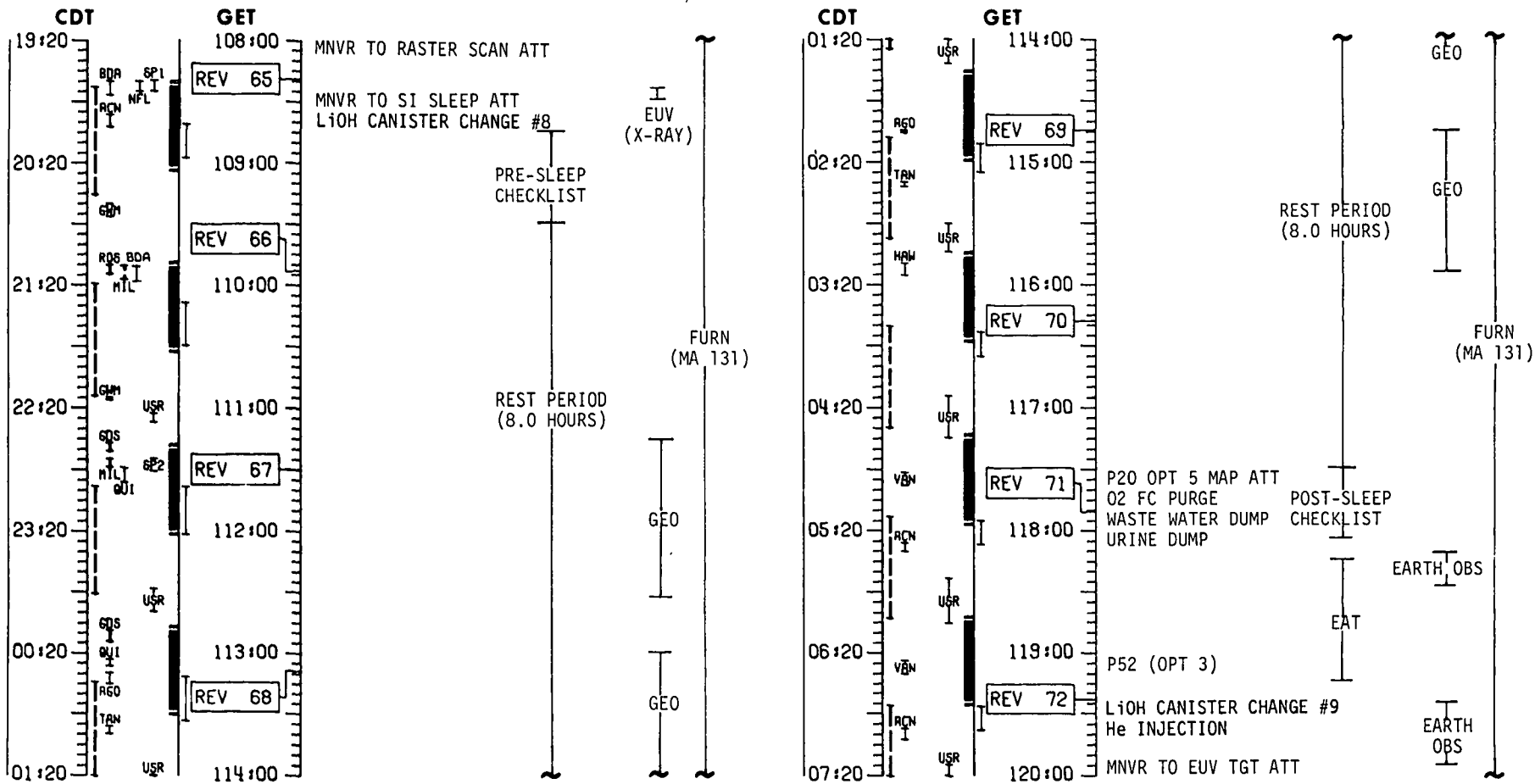
DATE	ORB
7/19/75	70-74



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-14

SUMMARY FLIGHT PLAN

DATE	REV
7/19/75	64-72

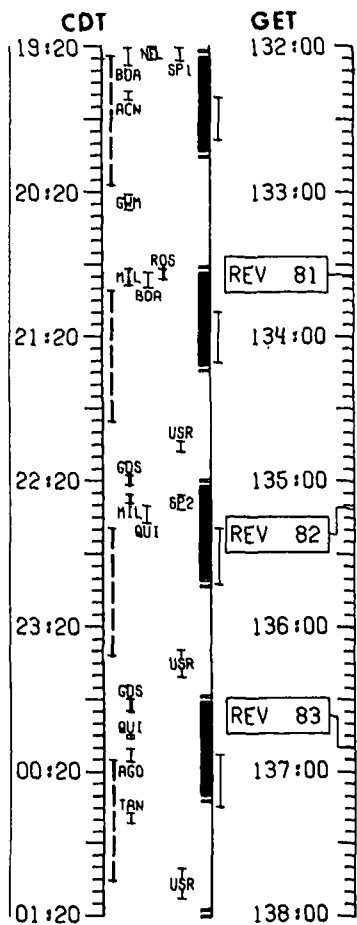


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-15

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

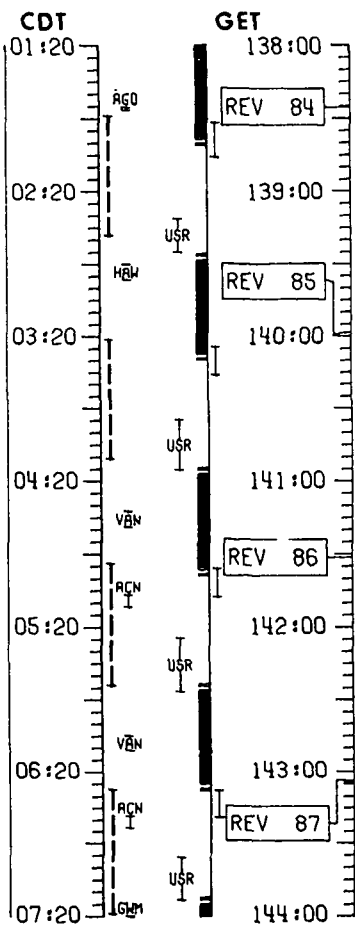
DATE	REV
7/20/75	80-87



BIOSTACK - ON
CGE PHOTOS
ZFF PHOTOS
MNVR TO SI SLEEP ATT

EAT
PRE-SLEEP CHECKLIST
REST PERIOD (8.0 HOURS)

EUV (X-RAY)
FURN (MA 085)
BIOS
GEO



P20 OPT 5
VIS OBS ATT
H2 & O2 FC PURGE
WASTE WATER DUMP
URINE DUMP

REST PERIOD (8.0 HOURS)
POST-SLEEP CHECKLIST
EAT

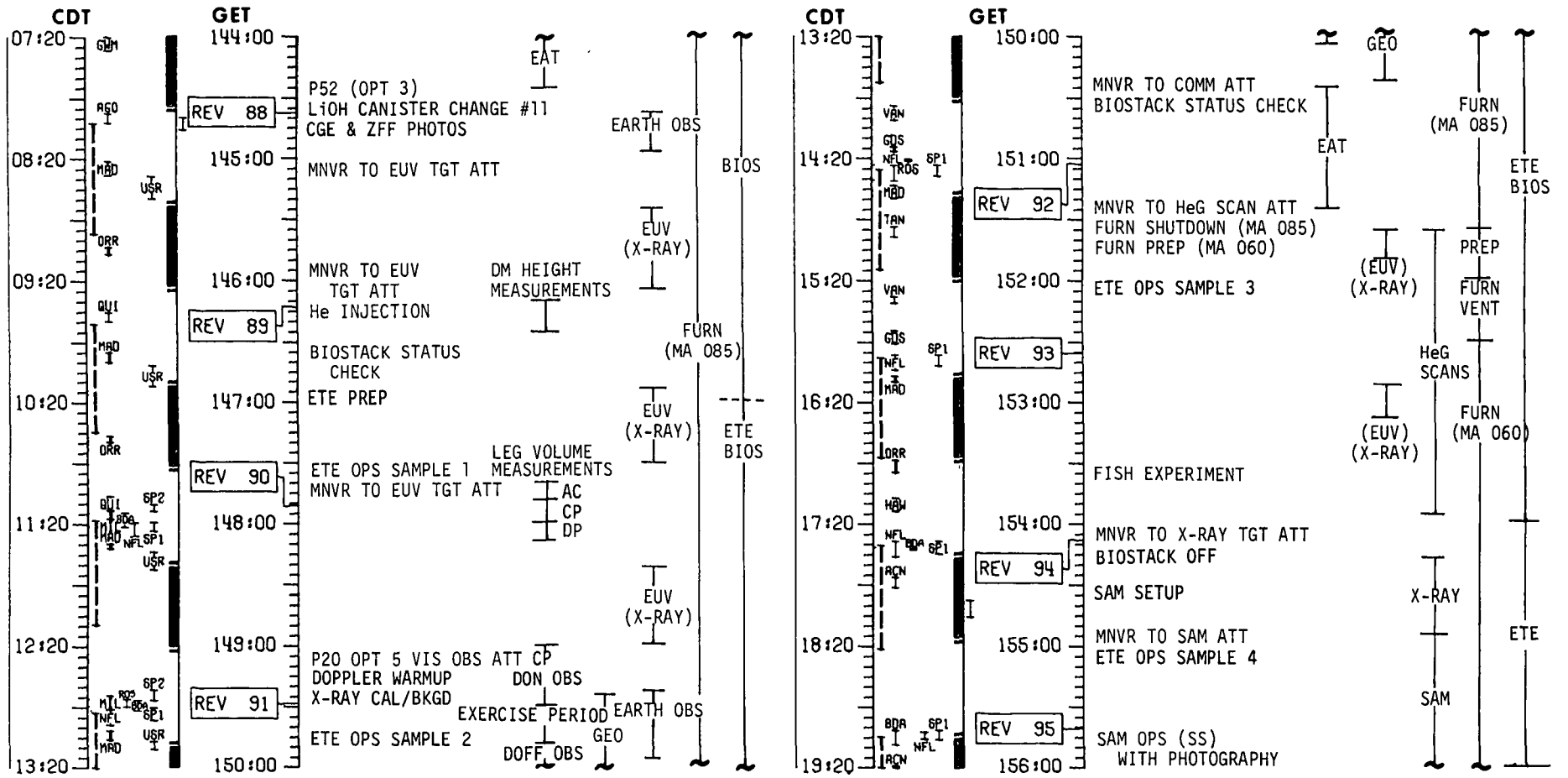
FURN (MA 085)
BIOS

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

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

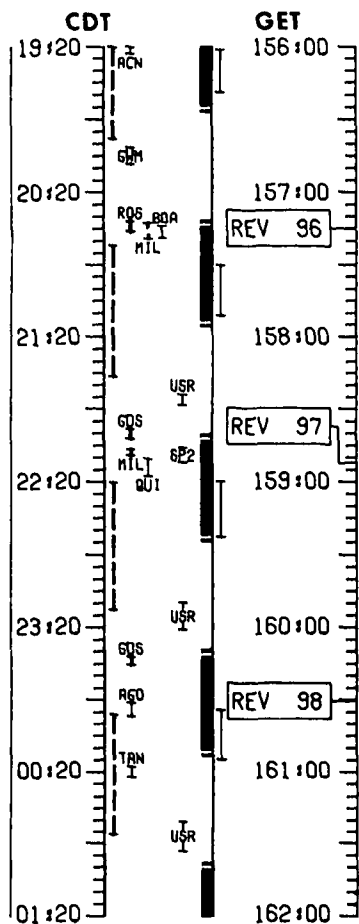
DATE	REV
7/21/75	87-95



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-18

SUMMARY FLIGHT PLAN

DATE	REV
7/21/75	92-102



ETE TERMINATE
SAM OPS (SR)
WITH PHOTOGRAPHY

157:00
REV 96

SAM OPS (SS)
WITH PHOTOGRAPHY
ZFF & CGE PHOTOS
FURN OPS (MA 060)

158:00

SAM OPS (SR) WITH PHOTOGRAPHY
MNVR TO SI SLEEP AT
LiOH CANISTER CHANGE #12
P52 (OPT 3)

159:00
REV 97

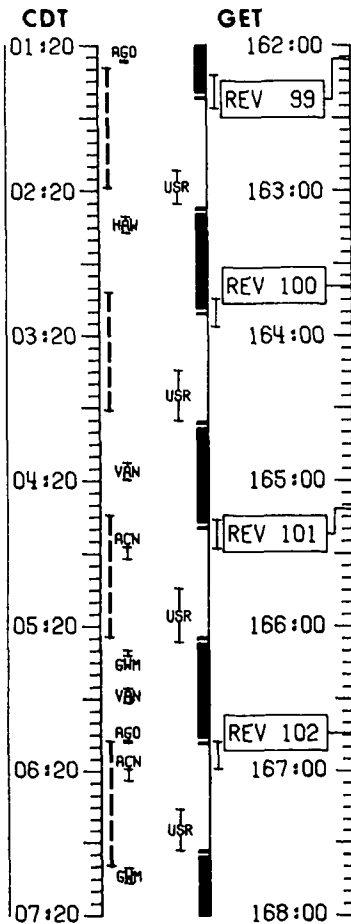
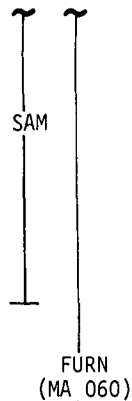
159:00

160:00

161:00
REV 98

161:00

162:00



REST PERIOD
(8.0 HOURS)

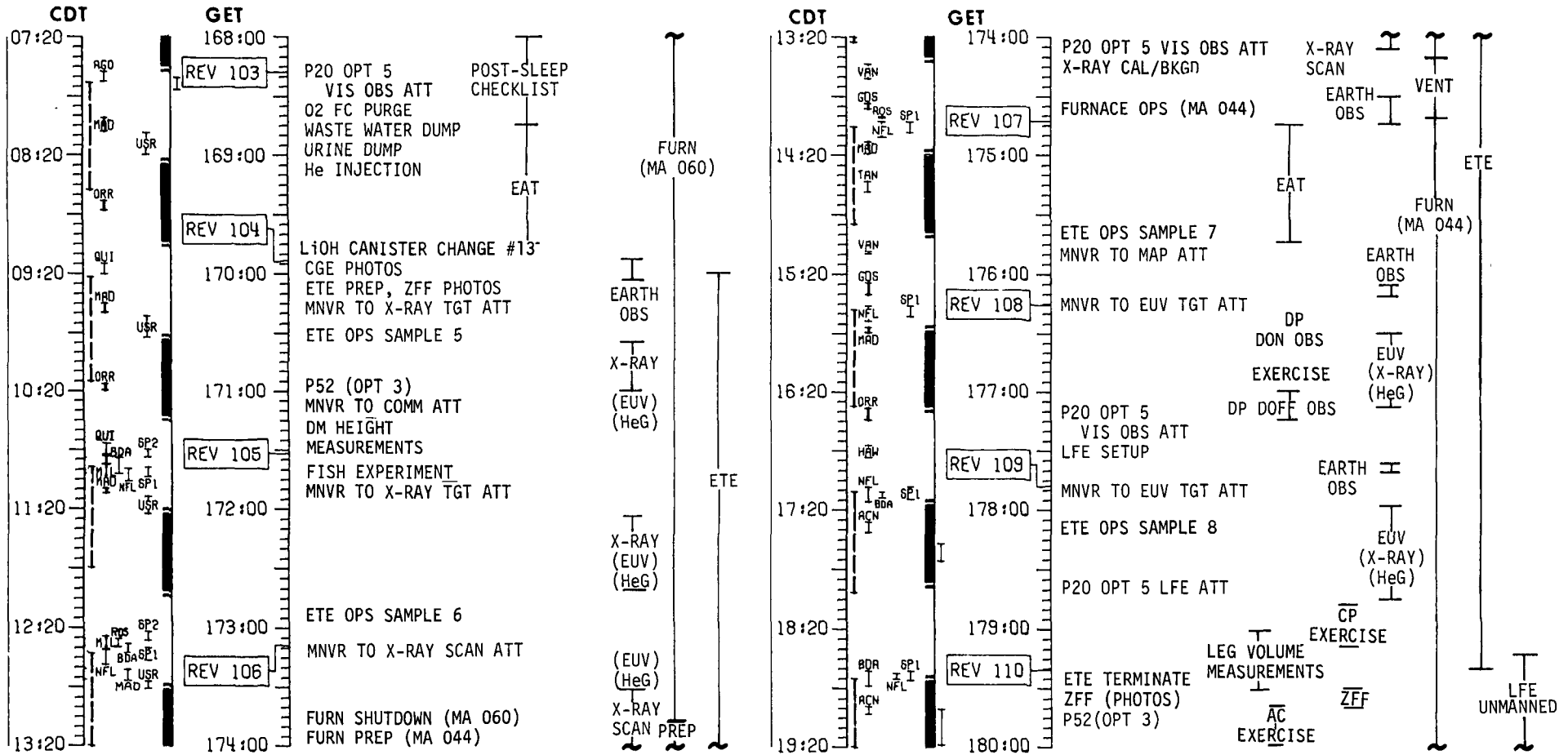
FURN
(MA 060)

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

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

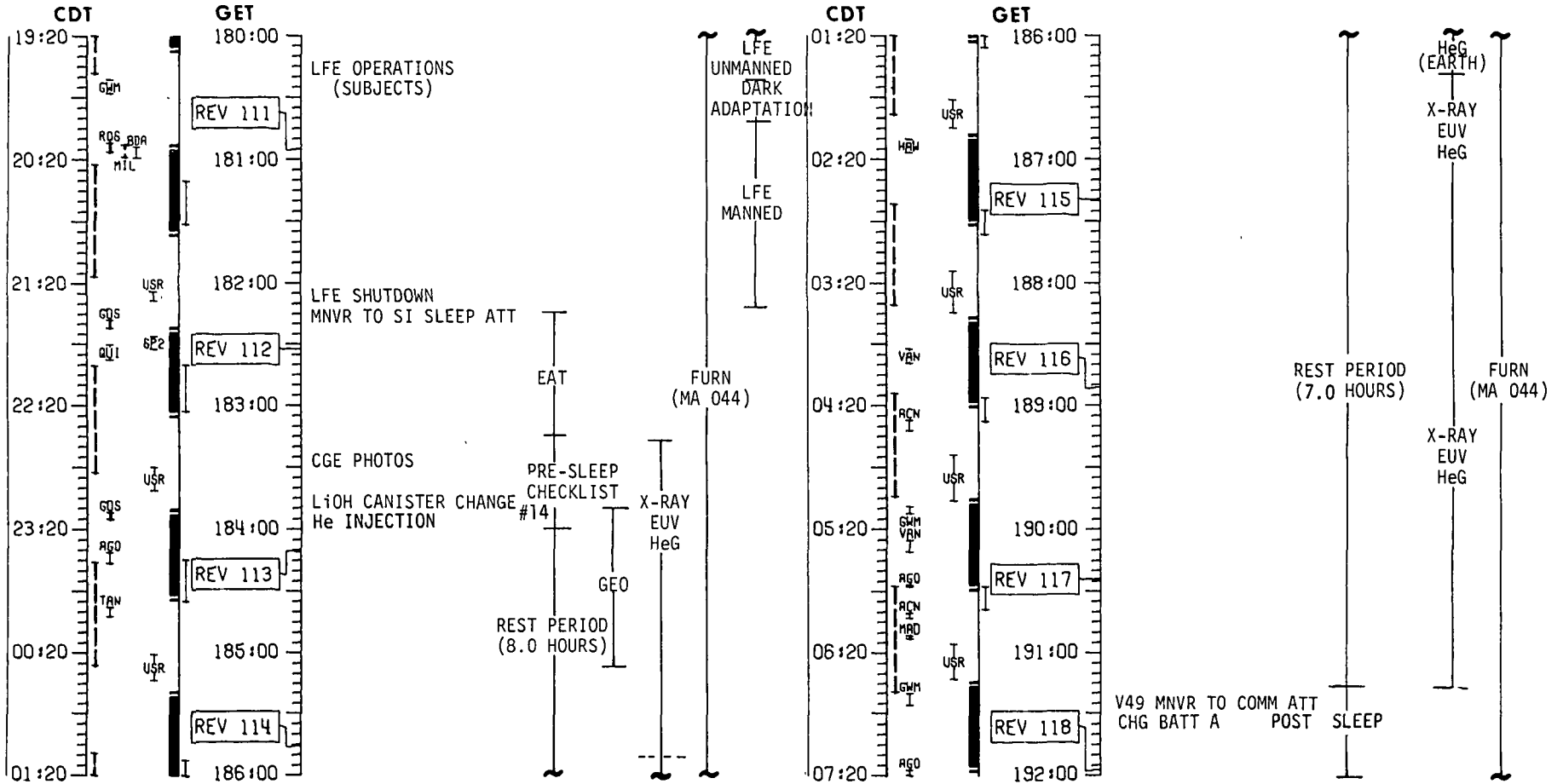
DATE	REV
7/22/75	102-110



MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-20

SUMMARY FLIGHT PLAN

DATE	REV
7/22/75	110-117

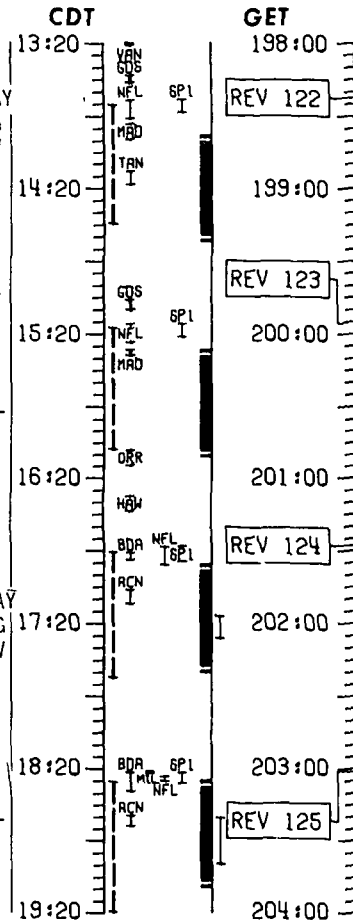
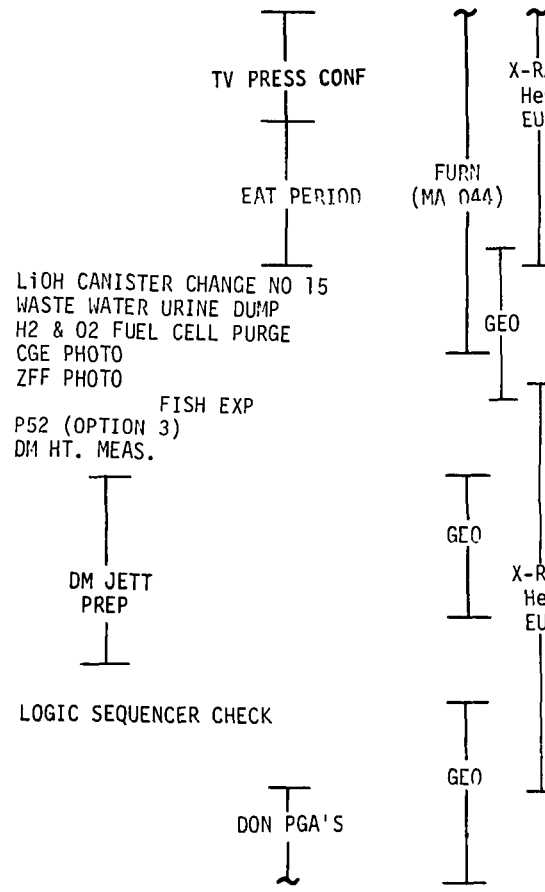
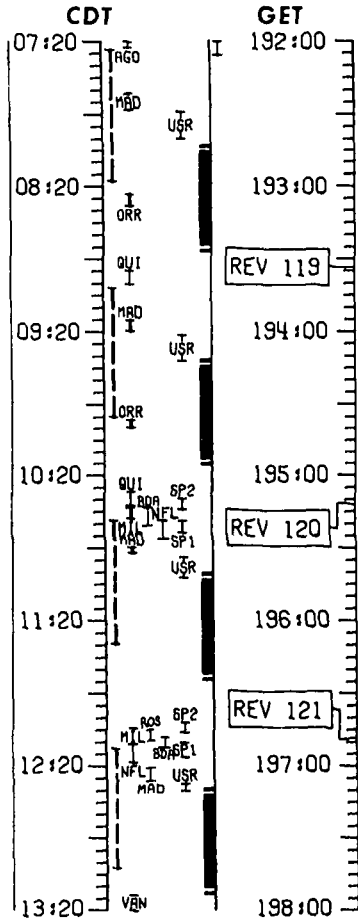


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-21

FLIGHT PLANNING BRANCH

SUMMARY FLIGHT PLAN

DATE	REV
7/23/75	117-125

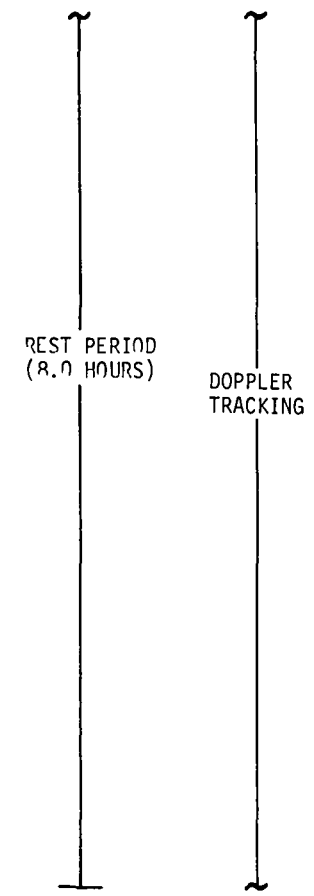
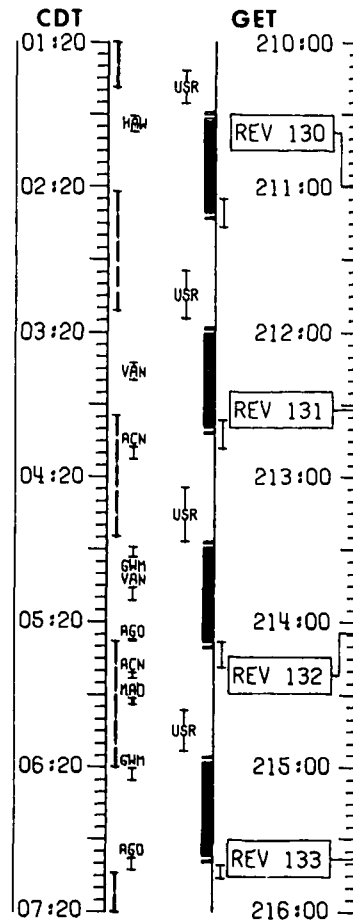
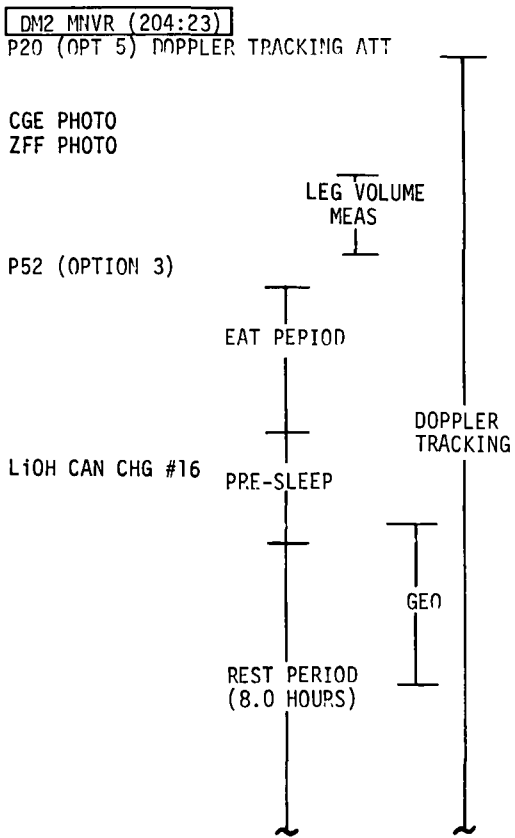
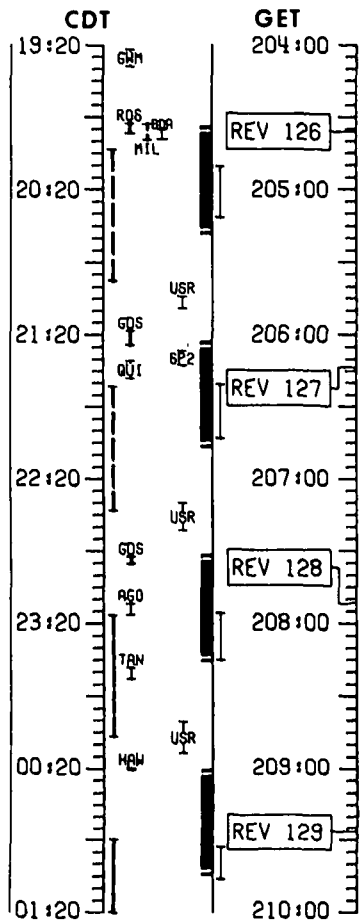


MISSION	EDITION	PUBLICATION DATE	PAGE
ASTP	FINAL	MAY 15, 1975	5-22

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

SECTION 6 - ASTRONOMY EXPERIMENT PADS

DET	V49 MNVR TO			DATA
	R	P	Y	
				: :)
SET DET				COUNTING UP TO 120 14 16 (SS)
35:00				X-RAY CAL/BACKGROUND (CUE CARD) (THRU ATS)
41:00	248.40	250.10	000	
55:00				X-RAY, EUV - OPS
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET
1:00	245.40			
3:00	242.40	---	---	
4:15	245.40			
6:30	248.40	---	---	
6:45				V21N46E (61102), V46E
7:45	289.50	189.60	---	
10:10				V21N46E (61101), V46E
11:25	292.50	---	---	
14:10	295.50	---	---	
14:25				V21N46E (61102), V46E
15:40	297.30	149.20	---	
17:02				V21N46E (61101), V46E
18:02	294.30	---	---	
20:32	291.30	---	---	
22:42	294.30	---	---	
25:12	297.30	---	---	
25:27				V21N46E (61102), V46E
26:27	294.20	092.70	050.00	
(CON'T)				

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
16	255			
		11:33		357A
			1:00	357A
		:15	1:45	357
		:15	1:00	357B
		:15	2:00	357
		:15		357A
			1:00	
		2:25		198A
			1:15	
		:15	2:30	198
		:15		198B
			1:15	
		1:22		356A
			1:00	
		:15	2:15	356
		:15	1:55	356B
		:15	2:15	356
		:15		356A
			1:00	
		2:32		340A

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

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		5:08		354A
19	279	---	1:00	354A
23	280	:15	1:00	354
26	280	:15	1:00	354B
27	301	3:19	1:00	351
23	310	3:37	1:00	362A
26	314	:15	2:30	362
		:15	2:00	362B
		:15	2:30	362
		:15		
			1:00	
		2:37		358A
		:15	2:30	358
		:15	2:00	358B
		:15	2:30	358
		:15	1:00	358A

Page Intentionally Left Blank

SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (123:28:00 (SS+16))																																																	
DET	DATA			DET	DATA																																												
40:00	V49 MNVR <table border="1"> <tr><td>+</td><td>2</td><td>2</td><td>5</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>1</td><td>8</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>5</td><td>6</td><td>0</td><td>0</td></tr> </table>			+	2	2	5	0	0	+	1	8	1	0	0	+	3	5	6	0	0	14:50	EUV, X-RAY - PWR DWN																										
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55:00	X-RAY, HeG, EUV - OPS			17:35	LOAD P20 OPT 2: 120° SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0																		
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06:10	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)			_: _																																													
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14:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)			_: _	CONTINUE WITH PAD ON NEXT PAGE																																												

DET	DATA	DET	DATA
<u>50:32</u>	LOAD P20 OPT 2: 120° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 + 0 5 0 0 0 0 + 0 0 0 0 0 0 + 0 0 0 0 5 0	<u>15:40</u>	LOAD P20 OPT 2: 120° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 - 0 5 0 0 0 0 + 0 0 0 0 0 0 + 0 0 0 0 5 0
<u>52:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 1 5 9 0 0 0 + 1 7 2 0 0 0 + 3 1 7 0 0 0	<u>18:54</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) V48E, V21N46E 6 1 1 0 1
		<u>22:54</u>	P00 DSE (STOP/REWIND/CMD RESET)
<u>57:00</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	<u>23:04</u>	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	
<u>02:41</u>	LOAD P20 OPT 2: 100° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 + 0 5 0 0 0 0 + 0 0 0 0 0 0 + 0 0 0 0 5 0		
<u>08:54</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 3 4 4 0 0 0 + 1 7 7 0 0 0 + 3 3 7 0 0 0 V48E, V21N46E 6 1 1 0 2		
<u>13:24</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)		
<u>15:22</u>	X-RAY - EUV - OPS		

X-RAY PAD - REV 76

DET	V49 MNVR TO			DATA
	R	P	Y	
				: :
SET DET				COUNTING UP TO 126 09 42 (SS)
55:00	211	118	000	VERIFY ATTITUDE X-RAY, EUV - OPS (VERIFY)
0:00	---	---	---	V21N46E (61102), V46E
2:00	203	156	---	
5:17	206	137	---	
10:56	350	124	---	
15:46				V21N46E (61101), V46E
17:46	345	121	---	
23:18	348	100	---	
27:27	356	106	---	
30:19	357	103	---	
31:00				VERIFY DSE TAPE MOTION
32:35	355	100	---	
34:54	355	097	---	
35:09				V21N46E (61102), V46E
37:09	020	---	---	CONFIGURE DSE: STOP/CMD RESET
				EUV, X-RAY - PWR DWN
				GO TO HeG PAD -
				REV 76/77 FOR
				NEXT MNVR

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
				301
-2	202		2:00	301
-26	188	1:17	2:00	304
-10	194	:39	5:00	302
-27	168	4:50		256
			2:00	
-23	173	:32	5:00	257
-44	177	2:09	2:00	259
-37	172	:52	2:00	260
-40	173	:16	2:00	263
		:19	2:00	261
		:15		262
			2:00	
		:50		

SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (127:00:32 (SS-38))																																													
DET	DATA	DET	DATA																																										
<u>50:00</u>	V49 MNVR <table border="1"> <tr><td>+</td><td>1</td><td>2</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>2</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>4</td><td>2</td><td>0</td><td>0</td></tr> </table>	+	1	2	1	0	0	+	2	9	0	0	0	+	3	4	2	0	0	—:—																									
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<u>55:00</u>	HeG - OPS	<u>14:35</u>	LOAD P20 OPT 2: <u>40° SCAN</u> N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	+	0	5	0	0	0	+	0	0	0	5	0																		
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<u>57:00</u>	LOAD P20 OPT 2: <u>80° SCAN</u> N73 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	+	0	5	0	0	0	+	0	0	0	5	0	<u>19:30</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>1</td><td>6</td><td>8</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>4</td><td>8</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>4</td><td>8</td><td>0</td><td>0</td></tr> </table>	+	1	6	8	0	0	+	0	4	8	0	0	+	3	4	8	0	0
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<u>04:30</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	—:—																																											
—:—		<u>25:58</u>	LOAD P20 OPT 2: <u>80° SCAN</u> N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1"> <tr><td>-</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	-	0	5	0	0	0	+	0	0	0	5	0																		
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<u>05:57</u>	LOAD P20 OPT 2: <u>60° SCAN</u> N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1"> <tr><td>-</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	-	0	5	0	0	0	+	0	0	0	5	0	<u>29:30</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>1</td><td>4</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>1</td><td>3</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>1</td><td>2</td><td>0</td><td>0</td></tr> </table>	+	1	4	1	0	0	+	1	3	2	0	0	+	0	1	2	0	0
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<u>13:00</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	—:—	CONTINUE WITH PAD ON NEXT PAGE																																										

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<u>35:00</u>	LOAD P20 OPT 2: 60° SCAN N78 (R1 & R2) N79 <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	+	0	5	0	0	0	+	0	0	0	5	0	<u>54:57</u>	LOAD P20 OPT 2: 80° SCAN N78 (R1 & R2) N79 <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	+	0	5	0	0	0	+	0	0	0	5	0
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<u>39:30</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>1</td><td>5</td><td>8</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>2</td><td>3</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>5</td><td>0</td><td>0</td></tr> </table>	+	1	5	8	0	0	+	3	2	3	0	0	+	0	0	5	0	0	<u>59:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>1</td><td>3</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>2</td><td>4</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>5</td><td>5</td><td>0</td><td>0</td></tr> </table> V48E, V21N46E 6 1 1 0 1	+	1	3	2	0	0	+	2	4	2	0	0	+	3	5	5	0	0												
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+	3	5	5	0	0																																														
<u>44:00</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	<u>03:30</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)																																																
<u>44:20</u>	X-RAY, EUV - OPS	—:—																																																	
<u>45:31</u>	LOAD P20 OPT 2: 40° SCAN N78 (R1 & R2) N79 <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>-</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	-	0	5	0	0	0	+	0	0	0	5	0	<u>06:59</u>	LOAD P20 OPT 2: 60° SCAN N78 (R1 & R2) N79 <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>-</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	-	0	5	0	0	0	+	0	0	0	5	0
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<u>49:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>1</td><td>6</td><td>9</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>5</td><td>6</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>5</td><td>2</td><td>0</td><td>0</td></tr> </table>	+	1	6	9	0	0	+	0	5	6	0	0	+	3	5	2	0	0	<u>09:30</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>1</td><td>5</td><td>8</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>2</td><td>9</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>7</td><td>0</td><td>0</td></tr> </table>	+	1	5	8	0	0	+	3	2	9	0	0	+	0	0	7	0	0												
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+	3	2	9	0	0																																														
+	0	0	7	0	0																																														
<u>53:00</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	<u>13:30</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)																																																
—:—		<u>13:50</u>	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 <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>9</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-</td><td>0</td><td>3</td><td>7</td><td>7</td><td>5</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	9	0	0	0	-	0	3	7	7	5	+	0	5	0	0	0	+	0	0	0	5	0
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19:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>4</td><td>5</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>1</td><td>8</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>5</td><td>6</td><td>0</td><td>0</td></tr> </table>	+	0	4	5	0	0	+	1	8	1	0	0	+	3	5	6	0	0						
+	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 <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>	+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0
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38:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) V48E, V21N46E <table border="1" style="display: inline-table; margin-left: 20px;"> <tr><td>6</td><td>1</td><td>1</td><td>0</td><td>2</td></tr> </table>	6	1	1	0	2																			
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

DET	V49 MNVR TO			DATA
	R	P	Y	
				: :
SET DET				COUNTING UP TO 129 07 24 (SS)
45:00	110	129	000	
50:00				ACQ ATS
59:30				X-RAY - OPS
0:00	---	---	---	V21N46E (61101) V46E
2:00	104	115	---	
5:14	099	112	---	
7:44	094	114	---	
8:09				V21N46E (61102), V46E
10:09	064	019	---	
14:26	080	332	---	
16:06				V21N46E (61101), V46E
17:06	078	328	---	
19:29	084	319	---	
21:24	077	318	---	
24:00	079	313	---	
25:27	089	308	---	
27:25	076	308	---	
30:15	076	304	---	
32:03	075	275	---	
35:27				X-RAY - OFF
				GO TO FP FOR NEXT MNVR

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		4:10		249
-30	199			
-30	199		2:00	249
-25	187	1:14	2:00	252
-25	186	:30	2:00	253
-25	190	:25		251
			2:00	
-52	96	3:17	1:00	219
-36	41	1:40		222
			1:00	
-35	333	:23	2:00	221
-31	26	:55	1:00	220
-33	20	:36	2:00	218
-32	15	:27	1:00	217
-29	15	:58	1:00	215
-31	7	1:50	1:00	216
-30	2	:48	1:00	214
-23	334	2:24	1:00	211

SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (130:36:14 (SS))																															
DET	DATA			DET	DATA																										
46:00	V49 MNVR <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>2</td><td>3</td><td>8</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>4</td><td>3</td><td>0</td><td>0</td></tr> </table>			+	0	5	0	0	0	+	2	3	8	0	0	+	3	4	3	0	0	_: _									
+	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			21:35	LOAD P20 OPT 2: 207 SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0
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+	0	0	0	0	0																										
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+	0	0	0	5	0																										
55:00	LOAD P20 OPT 2: 191 SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>-</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	-	0	5	0	0	0	+	0	0	0	5	0	29:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET)		
+	0	0	0	0	0																										
+	0	0	0	0	0																										
-	0	5	0	0	0																										
+	0	0	0	5	0																										
00:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>2</td><td>1</td><td>9</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>2</td><td>5</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>4</td><td>8</td><td>0</td><td>0</td></tr> </table> V48E, V21N46E 61101			+	2	1	9	0	0	+	2	5	2	0	0	+	3	4	8	0	0	34:00	P00 DSE (STOP/CMD RESET)								
+	2	1	9	0	0																										
+	2	5	2	0	0																										
+	3	4	8	0	0																										
06:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)			34:10	EUV, X-RAY - PWR DWN GO TO FP FOR NEXT MNVR																										
_: _																															
07:58	LOAD P20 OPT 2: 192 SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0				
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09:50	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>6</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>2</td><td>3</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>2</td><td>3</td><td>0</td><td>0</td></tr> </table> V48E, V21N46E 61102			+	0	0	6	0	0	+	0	2	3	0	0	+	0	2	3	0	0										
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+	0	2	3	0	0																										
16:50	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)																														

DSE 15 + 19:10 = 34:10

EUV PAD - REV 88

DET	V49 MNVR TO			DATA
	R	P	Y	
				: : COUNTING UP TO 145 24 39 (SS)
SET DET				X-RAY CAL/BACKGROUND (CUE CARD)(THRU MAD)
37:00				
41:00	125.9	118.8	000	
58:00				X-RAY, EUV - OPS
0:00	---	---	---	CONFIGURE DSE: HBR/RCD/FWD/CMD RESET
1:15	128.9	---	---	
4:30	131.9	---	---	
6:00	145.5	97.4	---	
9:07	148.5	---	---	
10:52	151.5	---	---	
11:07				V21N46E (61102), V46E
12:07	98.6	359.9	---	
15:43				V21N46E (61101), V46E
16:43	95.6	---	---	
19:28	92.6	---	---	
21:43	95.6	---	---	
24:28	98.6	---	---	
24:43				V21N46E (61102), V46E
25:43	350.1	070.2	310.0	DSE: STOP/CMD RESET X-RAY - PWR DWN
30:49				V21N46E (61101), V46E
33:00				DSE: FWD/CMD RESET
34:30	---	---	---	
35:30	356.1	---	---	
37:00	359.1	---	---	
(CONT'D)				

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		12:08		348A
			1:15	348A
		:15	3:00	348
		:15	1:15	348B
		2:07	1:00	368A
		:15	1:30	368
		:15		368B
			1:00	
		3:36		364A
			1:00	
		:15	2:30	364
		:15	2:00	364B
		:15	2:30	364
		:15		364A
			1:00	
		5:06		343A
			3:41	
			1:00	343A
		:30	1:00	343
		:30	1:00	343B

EUV PAD - REV 89

DET	V49 MNVR TO			DATA
	R	P	Y	
				: :
SET DET				COUNTING UP TO 146 53 29 (SS)
55:00	178.10	037.60	000	VERIFY ATTITUDE
				X-RAY, EUV - OPS
0:00	---	---	---	
1:00	181.10	---	---	
3:45	184.10	---	---	
6:00	181.10	---	---	
8:45	178.10	---	---	
10:00	172.10	030.60	---	
11:50	169.10	---	---	
14:05	166.10	---	---	
15:20	169.10	---	---	
17:35	172.10	---	---	
18:50	174.30	025.50	---	
20:20	171.30	---	---	
21:12				VERIFY DSE TAPE MOTION
22:35	168.30	---	---	
22:50				V21N46E (61102), V46E
23:50	167.40	278.40	---	
27:25				V21N46E (61101), V46E
28:25	170.40	---	---	
29:40	173.40	---	---	
29:55				V21N46E (61102), V46E
31:15	178.20	250.00	---	
(CONT'D)				

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
				365A
21	303		1:00	
18	303	:15	2:30	365
15	304	:15	2:00	365B
17	305	:15	2:30	365
20	308	:15	1:00	365A
20	311	:50	1:00	352A
23	313	:15	2:00	352
25	315	:15	1:00	352B
23	315	:15	2:00	352
22	315	:15	1:00	352A
17	316	:30	1:00	353A
20	318	:15	2:00	353
		:15		353B
			1:00	
		3:35		338A
			1:00	
		:15	1:00	338
		:15		338B
			1:20	
		1:00		902

EUV PAD - REV 90

DET	V49 MNVR TO			DATA
	R	P	Y	
				: : COUNTING UP TO 148 22 19 (SS)
55:00	210.90	060.50	000	VERIFY ATTITUDE X-RAY, EUV - OPS
0:00	---	---	---	
1:00	207.90	---	---	
3:15	204.90	---	---	
4:30	203.70	051.60	---	
6:15	200.70	---	---	
9:00	197.70	---	---	
11:15	200.70	---	---	
14:00	203.70	---	---	
15:15	209.00	025.70	---	
18:45	206.00	---	---	
21:30	203.00	---	---	
21:45				V21N46E (61102), V46E
23:20	191.20	263.70	---	
27:06				VERIFY DSE TAPE MOTION
27:30				V21N46E (61101), V46E
29:00	194.20	---	---	
31:45	197.20	---	---	
33:00	194.20	---	---	
35:45	191.20	---	---	
37:00				CONFIGURE DSE: LBR/RCD/FWD/CMD RESET
				EUV, X-RAY - PWR DWN
				GO TO FP FOR NEXT MNVR

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
				355A
21	274		1:00	
24	275	:15	2:00	355
27	276	:15	1:00	355B
27	285	:45	1:00	361A
30	287	:15	2:30	361
33	289	:15	2:00	361B
31	290	:15	2:30	361
29	290	:15	1:00	361A
13	310	2:15	1:15	901A
16	312	:15	2:30	901
20	313	:15		901B
			1:35	
		4:10		JUP-A
			1:30	
		:15	2:30	JUP
		:15	1:00	JUP-B
		:15	2:30	JUP
		:15	1:00	JUP-A

DSE 10:00

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SET DET COUNTING UP TO _ _ _ : _ _ : _ _ (151:35:59 (SS + 16))																																																						
DET	DATA			DET	DATA																																																	
<u>50:00</u>	V49 MNVR <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>4</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>4</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>4</td><td>4</td><td>0</td><td>0</td></tr> </table>			+	0	5	4	0	0	+	0	0	4	0	0	+	3	4	4	0	0	—:—																																
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+	3	4	4	0	0																																																	
<u>55:00</u>	X-RAY, HeG, EUV - OPS			<u>26:39</u>	LOAD P20 OPT 2: 20°SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0																							
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+	0	5	0	0	0																																																	
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<u>56:00</u>	LOAD P20 OPT 2: 340°SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0	<u>30:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>2</td><td>6</td><td>4</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>9</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>2</td><td>4</td><td>0</td><td>0</td></tr> </table> V48E, V21N46E <table border="1"><tr><td>6</td><td>1</td><td>1</td><td>0</td><td>1</td></tr></table>			+	2	6	4	0	0	+	0	0	9	0	0	+	3	2	4	0	0	6	1	1	0	1
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<u>00:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>1</td><td>4</td><td>8</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>9</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>2</td><td>4</td><td>0</td><td>0</td></tr> </table>			+	1	4	8	0	0	+	0	0	9	0	0	+	3	2	4	0	0	<u>34:30</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)																															
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+	0	0	9	0	0																																																	
+	3	2	4	0	0																																																	
<u>06:10</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)			—:—																																																		
<u>06:30</u>	EUV, X-RAY - PWR DWN			<u>41:40</u>	LOAD P20 OPT 2: 0°SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0																							
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<u>14:35</u>	LOAD P20 OPT 2: 0°SCAN N78 (R1 & R2) N79 <table border="1"> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> <table border="1"> <tr><td>+</td><td>0</td><td>5</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>0</td><td>0</td><td>5</td><td>0</td></tr> </table>			+	0	0	0	0	0	+	0	0	0	0	0	+	0	5	0	0	0	+	0	0	0	5	0	<u>46:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>3</td><td>3</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>1</td><td>6</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>0</td><td>5</td><td>0</td><td>0</td></tr> </table>			+	3	3	2	0	0	+	0	1	6	0	0	+	3	0	5	0	0					
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<u>19:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E <table border="1"> <tr><td>+</td><td>2</td><td>1</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>0</td><td>1</td><td>6</td><td>0</td><td>0</td></tr> <tr><td>+</td><td>3</td><td>0</td><td>5</td><td>0</td><td>0</td></tr> </table> V48E, V21N46E <table border="1"><tr><td>6</td><td>1</td><td>1</td><td>0</td><td>2</td></tr></table>			+	2	1	2	0	0	+	0	1	6	0	0	+	3	0	5	0	0	6	1	1	0	2	<u>50:55</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)																										
+	2	1	2	0	0																																																	
+	0	1	6	0	0																																																	
+	3	0	5	0	0																																																	
6	1	1	0	2																																																		
<u>23:30</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)			—:—	CONTINUE WITH PAD ON NEXT PAGE																																																	

DET	DATA	DET	DATA
58:25	LOAD P20 OPT 2: 20° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 + 0 5 0 0 0 0 + 0 0 0 0 0 0 + 0 0 0 0 5 0	23:15	LOAD P20 OPT 2: 20° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 + 0 5 0 0 0 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 3 2 0 0 0 + 0 0 9 0 0 0 + 3 2 4 0 0 0 V48E, V21N46E 6 1 1 0 2	28:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 2 3 4 0 0 0 + 0 0 4 0 0 0 + 3 4 4 0 0 0
04:30	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	32:30	P00 V49E, PRO, PRO DSE (LBR/CMD RESET)
—:—		32:50	EUV, X-RAY - PWR DWN
07:25	LOAD P20 OPT 2: 0° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 + 0 5 0 0 0 0 + 0 0 0 0 0 0 + 0 0 0 0 5 0	36:35	LOAD P20 OPT 2: 340° SCAN N78 (R1 & R2) N79 + 0 0 0 0 0 0 + 0 5 0 0 0 0 + 0 0 0 0 0 0 + 0 0 0 0 5 0
11:30	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E + 0 9 2 0 0 0 + 0 1 6 0 0 0 + 3 0 5 0 0 0 V48E, V21N46E 6 1 1 0 1	13:00	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET)
16:00	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)	19:10	P00 DSE (STOP/CMD RESET) UPTLM - RELAY
17:00	X-RAY, EUV - OPS	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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6-25

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	276	240	---				:55	2:00	267
22:58	270	220	---				:42		269
23:40				V21N46E (61101), V46E				2:00	
25:40				DSE: STOP/REWIND/CMD RESET EUV, HeG, X-RAY - PWR DWN					
				GO TO FP FOR P52					

DSE 25:40

X-RAY PAD - REV 105

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

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		2:30		232
			2:00	232
		1:48		230
			2:00	
		1:03		228
			2:00	
		1:15		233
			5:00	
		:36		237
			1:00	
		:54	2:00	246
		:15	1:00	245
		:40	1:00	322
		:41	1:00	243
		:41	2:00	236
		:25	1:00	234
		:25	1:00	238
		:26	2:00	240
		:32	1:00	235
		:33	1:00	242

SET DET COUNTING UP TO ___ : ___ : ___ (173:32:12 (SS))							
DET	DATA			DET	DATA		
<u>40:00</u>	V49 MNVR			___:___			
	+ 2 6 4 0 0						
	+ 1 0 4 0 0						
	+ 3 1 6 0 0						
<u>55:00</u>	X-RAY, HeG, EUV - OPS			<u>25:44</u>	LOAD P20 OPT 2:	203 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	
<u>55:00</u>	LOAD P20 OPT 2:	201 SCAN		<u>30:20</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET)		
	N78 (R1 & R2)	N79					
	+ 0 0 0 0 0	- 0 5 0 0 0					
	+ 0 0 0 0 0	+ 0 0 0 5 0					
<u>00:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E			<u>36:30</u>	P00 DSE (STOP/REWIND/CMD RESET)		
	+ 1 1 5 0 0						
	+ 0 9 7 0 0						
	+ 3 2 2 0 0						
<u>06:00</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)			<u>36:40</u>	EUV, HeG, X-RAY - PWR DWN GO TO FP FOR NEXT MNVR		

<u>09:18</u>	LOAD P20 OPT 2:	202 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					
<u>14:00</u>	N34 (PRO) DSE (HBR/RCD/FWD/CMD RESET) LOAD V25N22E						
	+ 0 3 9 0 0						
	+ 0 9 3 0 0						
	+ 3 2 9 0 0						
<u>22:20</u>	P00 V49E, PRO, PRO DSE (STOP/CMD RESET)						

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

DET	V49 MNVR TO			DATA
	R	P	Y	
SET DET				COUNTING UP TO 176 29 48 (SS)
45:00	103.70	113.40	000	V21N46E (61102), V46E (MNVR AFTER EARTH OBS)
48:00				ACO ATS
57:00				V21N46E (61101), V46E X-RAY, HeG, EUV - OPS
0:00	---	---	---	
1:15	100.70	---	---	
4:30	097.70	---	---	
4:45				V21N46E (61102), V46E
6:00	020.60	163.40	---	
9:10				V21N46E (61101), V46E
10:40	017.60	---	---	
13:55	014.60	---	---	
16:10	017.60	---	---	
19:25	020.60	---	---	
21:10	007.20	112.20	---	
26:35	351.00	108.60	---	
28:58	297.10	098.40	---	
34:32	294.10	---	---	
35:47	291.10	---	---	
37:02				EUV, HeG, X-RAY - PWR DWN
				GO TO FP FOR NEXT MNVR

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		5:56		347A
-30	290			
			1:15	347A
-19	182	:15	3:00	347
		:15		347B
			1:15	
		3:10		350A
			1:30	
25	224	:15	3:00	350
		:15	2:00	350B
25	223	:15	3:00	350
		:15	1:30	350A
-9	202	4:25	1:00	344
-6	204	1:23	1:00	341
		4:34	1:00	338A
5	207	:15	1:00	338
		:15	1:00	338B

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EUV PAD - REV 109

DET	V49 MNVR TO			DATA
	R	P	Y	
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
52:00				ACQ ATS HGA
55:00				V21N46E (61101), V46E
57:00				HeG, EUV - OPS
0:00	---	---	---	X-RAY - OPS
1:00	077.00	---	---	
2:15	080.00	---	---	
2:30				V21N46E (61102), V46E
3:30	132.90	079.60	000	
5:50				V21N46E (61101), V46E
6:50	135.90	---	---	
9:05	138.90	---	---	
10:20	135.90	---	---	
12:35	132.90	---	---	
12:50				V21N46E (61102), V46E
13:50	086.50	339.60	---	
17:26				V21N46E (61101), V46E
18:26	094.60	332.50	---	
20:20	091.60	---	---	
23:05	088.60	---	---	
25:20	091.60	---	---	
28:05	094.60	---	---	
(CON'T)				

HGA		FP INFO		
P	Y	MNVR	DATA	TGT
		5:54		367A
-81	190			
-84	213		1:00	367A
-85	188	:15	1:00	367
		:15		367B
-85	151		1:00	
		2:20		383A
-32	148		1:00	
-32	146	:15	2:00	383
-32	144	:15	1:00	383B
-32	144	:15	2:00	383
		:15		383A
-32	144		1:00	
		3:36		195
-44	63		1:00	
-37	59	:54	1:00	382A
-40	57	:15	2:30	382
-42	54	:15	2:00	382B
-40	54	:15	2:30	382
		:15		382A

SECTION 7 - SOLAR ECLIPSE/UVA CHECKLIST

FIRST UNDOCKING PAD (SR + 1:15)

UNDOCK TIME (GET)	NOMINAL				FINAL				
	HR	XX	XX	0	9	5	+	XX	XX
MIN	+	XX	XX	XX	4	2	+	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
	Y	+	2	0	2	0	0		0

AT TV DP INFORM SOYUZ: UNDOCKING TIME . . . GET
 (FROM FIRST UNDOCKING PAD TIME)
 ВРЕМЯ ПАССТЫКОВКИ ПОЛЕТНОГО ВРЕМЕНИ.
 S1 P00 ВРЕМЯ ПАССТЫКОВКИ DO NOT
 V48E. LOAD N46 (61102), PRO, PRO - DO NOT
 (11111) ACTIVATE

P52 (OPT 3) (35, 36, 40) (RECORD)
 (ORBITAL ORIENT)

P52 (OPT 3)

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

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 СЕРЖКИ ВРЕМЕНИ ОСТАЛОСЬ 5 МИНУТ.

PRIMARY EVAP DEACT CHECKLIST

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

ACTIVE UNDOCK SWITCH CONFIGURATION

EMS FUNC/MODE - AV SET/STBY	
SET AV = +100.0 FPS	
EMS FUNC - AV	
RHC PHR NORMAL #2 - AC/DC	
RHC PHR DIRECT #2 - MNA/B	
DBD/RATE - MIN/LOW	
HAN ATT (P8Y) - RATE CMD (VER)	
HAN ATT (ROLL) - MIN IMP (VER)	
THC PHR - ON (UP)	
COAS PHR - ON (UP)	
RHC #2 - ARMED	
THC - ARMED	
EXT LTS RUN/EVA - OFF (VER)	

DP INFORM SOYUZ: I WILL GIVE YOU A COUNTDOWN, ARE YOU READY?
 AFTER RESPONSE: 5, 4, 3, 2, 1 MARK (DET 49:00)
 ДАЮ СЧЕТ. БЫ ТОЛОБЫ?
 5, 4, 3, 2, 1 МАРК. /МТБ = 40.00/
 REPORT GYRO TORQUE ANGLES AND TIME OF GYRO TORQUE

STON UPDATE
 GO/NO-GO FOR UNDOCK

PRIMARY EVAP DEACTIVATION CHECKLIST

ACTIVE UNDOCKING SWITCH CONFIGURATION

ACTIVE UNDOCKING PREP CHECKLIST

ACTIVE UNDOCKING PREP CHECKLIST

CAUTION
 GUIDE RING-EXTD/BETR 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.

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:
 CB MAIN B BAT BUS B-CLOSE (VER)
 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:
 ПОДГОТОВИТЕСЬ К ПАССТЫКОВКЕ.
 DOCKING SYSTEM PREPARATION:

DOCKING SYSTEM A:
 CB IND LOGIC MNA - CLOSE
 CB IND PHR AC1 - CLOSE
 CB CONTROL BAT A - CLOSE
 CB MOTORS AC1 (3) - CLOSE

DOCKING SYSTEM B:
 CB IND LOGIC MNB - CLOSE
 CB IND PHR AC2 - CLOSE
 CB CONTROL BAT B - CLOSE
 CB MOTORS AC2 (3) - CLOSE

DSE: (HBR/RCD/FMD/CHD RESET)
 UP TLM - RELAY

ACTIVE UNDOCKING/ECLIPSE CHECKLIST

- DOCKING STATUS LIGHTS:
- OUT OUT GUIDE RING CAPTURE LT - ON (VERIFY)
- OUT LIT STRUCT RING CONTACT LT - ON (VERIFY)
- LII-LII STRUCT LATCH CLOSE LT - ON (VERIFY)
- * IF SOYUZ CLOSED ACTIVE HOOKS:
- * DP INFORM SOYUZ: OPEN YOUR ACTIVE HOOKS.
- * ОТКРЫВАЙТЕ ВАШИ АКТИВНЫЕ КРЮКИ.
- * INFORM APOLLO: ACTIVE HOOKS OPEN.
- * ОТКРЫВАЮ АКТИВНЫЕ КРЮКИ.
- 55:00 DP INFORM SOYUZ: OPENING ACTIVE HOOKS.
- 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:
- LII-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) - MVA/B, B/D ROLL (4) - OFF
- 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
- VTR HEAD WHEEL DRIVE MOTOR - ON
- VTR TAPE MODE - RECORD
- DAC - ON
- 59:55 DP INFORM SOYUZ: INITIATING UNDOCKING
- 5, 4, 3, 2, 1 MARK НАЧИНАЮ ПАСОУДКОВКУ,
- 5, 4, 3, 2, 1 MARK.
- 00:00 CAPTURE LATCH A8B - RELEASE (MDH)
- LIT LIT GUIDE RING CAPTURE LT - OUT
- OUT OUT STRUCT RING CONTACT LT - OUT
- OUT-OUT MONITOR UNDOCKING ΔVC = +100.2 FPS
- DP INFORM SOYUZ: UNDOCKING COMPLETED.
- 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)
- DP INFORM SOYUZ: ILLUMINATED.
- 03:00 DSE - LBR ЕСТЬ ЗАСВЕТКА.
- DAC - OFF
- MAN ATT (3) - RATE CMD
- AUTO RCS SEL (16) - MVA/B
- RHC - CENTER SOYUZ IN COAS
- 04:00 THC - THRUST (+X) (4 JET) FOR 16 SEC
- PERFORM LOS RATE CONTROL AND BRAKING

SET HGA: MAN, WIDE P=-18, Y=+220
HGA: REACO, NARROW

ACTIVE UNDOCKING/ECLIPSE CHECKLIST

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

SOLAR ECLIPSE

ON MCC REQUEST: UP TLM - UP TLM (CTR)

STATION KEEP AT ~164 FT (50M)

DP INFORM SOYUZ: APOLLO STATION KEEPING.

ИНИЦИАТИВНО ЗАБЫВАНИЕ АПОЛЛОНА.
НАЧНИТЕ ОРИЕНТАЦИЮ ДЛЯ СТЫКОВКИ.

PRIMARY EVAP ACTIVATION

GLY EVAP H2O FLOW - AUTO

GLY EVAP 5TH PRESS - AUTO

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

SET DET COUNTING UP TO 96:08

MNVR TO STATION KEEP ON SOYUZ APDS

DP INFORM SOYUZ: INITIATING OUR ORIENTATION MNVR.

НАЧНИТЕ ОРИЕНТАЦИЮ АПОЛЛОНА.
MNVR TO DOCKING ATTITUDE (197, 205, 014) HGA P=-4, Y=+251

95+30

11111

00146

00000

05000

00020

61102

11111

95+40

95+50

96+00

ACN TV S)	USR	PASSIVE DOCKING CHECKLIST	PASSIVE DOCKED CONFIG CHECKLIST
96+00- 61102 11111		<p>PASSIVE DOCKING CHECKLIST</p> <p>1 EMS FUNC/MODE - AV SET/STBY SET AVC = -100.0 FPS EMS FUNC - AV DP INFORM SOYUZ: INITIATING ORIENTATION OF APOLLO. НАЧЕМО ОРЕНТАЦИЮ АПОЛЛОНА.</p> <p>LIT LIT DOCKING STATUS LTS: OUT OUT STRUCT LATCH OPEN LT - ON(VER) OUT OUT PASSIVE LT - ON (VERIFY) OUT OUT -OP INFORM SOYUZ: ОРЕНТАЦИЯ УСТАНОВЛЕНА. ОРИЕНТАЦИЯ ГОТОВ К СТЫКОВКЕ. ОРИЕНТАЦИЯ УСТАНОВЛЕНА. РЕАДИ FOR DOCKING. ARE YOU READY? Есть ли вы готовы?</p>	<p>PASSIVE DOCKED CONFIG CHECKLIST</p> <p>P00 V44E, LOAD N87 (11111) (00146) (00000) (00000) LOAD N89 (05000) (00050)</p> <p>V45E(ACTIVATE DOCKED DAP) RHC #2 - LOCKED THC - LOCKED EMS FUNC/MODE - OFF/STBY MAN ATT (ROLL) - MIN IMP MAN ATT (P&Y) - RATE CHD 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 * MAIN BUS TIE(2)-OFF(VER) * AUTO RCS SEL: A/C ROLL(4)-MNA/B B/D ROLL(4)-MNA/B COAS PWR - OFF</p> <p>DOCKING_SYSTEM_A: CB IND LOGIC MNA - OPEN CB IND PWR ACT - OPEN CB CONTROL BAT A - OPEN CB MOTORS ACT1(3) - OPEN</p> <p>DOCKING_SYSTEM_B: CB IND LOGIC MNB - OPEN CB IND PWR ACT - OPEN CB CONTROL BAT B - OPEN CB MOTORS ACT2(3) - OPEN</p> <p>DP INFORM SOYUZ: DOCKING SYSTEM POWER OFF. ПРИТЯЖИТЕ СТЫКОВОЙ СИСТЕМЫ ЗАКОНЧИТЕЛИЮ.</p>
96+10		<p>CONTACT (96:08)</p>	<p>1 55:00 EMS MODE - NORMAL THC - THRUST (+X) (4 JET) (AVC = -100.5 FPS) THC/RHC-MAINTAIN REL ALIGNMENT (CLOSING AV = 0.5 FPS) AT CONTACT: INFORM APOLLO: CONTACT I</p>
11111 00146 00000 03000 00050		<p>00:00 DP INFORM SOYUZ: CONTACT. ЕСТЬ КАЧАНИЕ. THC - THRUST (+X) (4 JET) AT CONTACT FOR 5 SEC MAX. GUIDE RING CAPTURE LT - ON (CAPTURE LT MAY BLINK) OR WHEN SOYUZ REPORTS CAPTURE * IF SCS CONTROL REQ 0: * MAN ATT (3) - MIN IMP * AUTO RCS SEL ROLL: * (<2 SEC AFTER CAPTURE) * A3,C4,B3,D4,B/D ROLL(4)-OFF * DBD/RATE - MIN/HI * BMAG MODE (3) - ATT 1/RATE 2 * MAN ATT (3) - RATE CHD * SC CONT - SCS SC CONT - CMC/FREE (<2 SEC AFTER CAPTURE)</p>	<p>274 CB IND LOGIC MNA - OPEN CB IND PWR ACT - OPEN CB CONTROL BAT A - OPEN CB MOTORS ACT1(3) - OPEN</p> <p>DOCKING_SYSTEM_A: CB IND LOGIC MNB - OPEN CB IND PWR ACT - OPEN CB CONTROL BAT B - OPEN CB MOTORS ACT2(3) - OPEN</p> <p>DP INFORM SOYUZ: DOCKING SYSTEM POWER OFF. ПРИТЯЖИТЕ СТЫКОВОЙ СИСТЕМЫ ЗАКОНЧИТЕЛИЮ.</p>
96+20		<p>SECOND DOCKING (96:14 - 96:20) PASSIVE DOCKED CONFIGURATION CHECKLIST</p>	<p>8 1 AUTO RCS SEL: A3,C4,B3,D4 - OFF SC CONT - CMC/AUTO (<2 SEC AFTER CAPTURE)</p> <p>INFORM APOLLO: CAPTURE I</p> <p>DP INFORM SOYUZ: CAPTURE ЕСТЬ СТЫКОВКА.</p> <p>INFORM APOLLO: CONTACT I INITIATING RETRACTION I</p> <p>LIT LIT MONITOR RETRACTION (<6 MIN): OUT OUT STRUCT RING CONTACT LT - ON</p> <p>INFORM APOLLO: INTERFACE SEAT COMPRESSED DOCKING SYSTEM POWER OFF</p> <p>SOYUZ SYSTEM CHECK СТЫКОВКА ВЫПОЛНЕНА. DP INFORM SOYUZ: DOCKING COMPLETED</p>
96+30			

OP INFORM SOYUZ: TURN ON DUAL VHF SIMPLEX.
 VHF AM A - SIMPLEX ВКЛЮЧИТЕ ДВОЙНОЙ УКВ СИМПЛЕКС.
 VHF AM B - OFF

P52 (OPT 3) (41, 44, 45) (RECORD)
 (ORBITAL ORIENT)

REPORT GYRO TORQUE ANGLES AND TIME OF GYRO TORQUE
 STON UPDATE SECOND UNDOCKING PAD (PG 7-7)
 P52 (OPT 1) (038, 278, 304) ON UVA ORIENT

SC CONT - CMC/AUTO (VERIFY)
 P00
 ALIGN GDC TO IMU

HATCH 1 REMOVAL CHECKLIST

UVA PREP CHECKLIST

P52 (OPT 3)

N71 1ST STAR	XX	0	0	0	0
N71 2ND STAR	XX	0	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 AP +/- 1 PSI
 TUNNEL HATCH REMOVAL (DECAL)
 STOW HATCH 1 (TOP OF A5)
 INITIATE CH/DH ATMOSPHERE MIXING

UVA PREP CHECKLIST

OPTAIN DRAG-THRU POWER UMBILICAL
 (CAFT 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 POWER - ON
 UV ABSORPTION LAMPS - ON
 MOUNT BRACKET AND PENLIGHT
 IN LH RNDZ WINDOW

96*30-
 U I A S T S
 11111
 00146
 00000
 05000
 00030

96*40-
 G W M

96*50-
 U I A S T S

97*00-
 U I A S T S

CUNEIFORM DAC (SOYUZ PHOTOS)
CH2/DAC/25mm/CX04 - BRKT, MIR
(T8, 1/250/INFINITY) 12 FPS (FULL MAG)

--EAT PERIOD

ACQUIRE ATIS HGA: MAN, WIDE P=-13, Y=+240
S-80 ANT IND > 1/3 SCALE, HGA: REACO, NARROW

97+00-
11111
00146
00000
03000
00050

97+10-

97+20-

97+30-

AGD

A T S

EAT PERIOD

STDN UPLINK
P27 (SV, EMP 76)

=====

==== A T S =====

----- M A D ----- U S R -----

97*30

11111
00146
00000
05000
00050

97*40

97*50

98*00

SOLAR ECLIPSE/UVA CHECKLIST

EAT PERIOD

=====

98+06
11111
00146
00000
05000
00050

98+10

98+20

98+30

V62E (N22/N20 ERROR NEEDLES)
UNSTON BINOCULARS (A1)

STDN UPDATE
GO/NO-GO FOR UNDOCK

OP INFORM SOYUZ: READY FOR UNDOCKING ORIENTATION.
ГОТОВ К ОРИЕНТАЦИИ ДЛЯ СТЫКОВКИ.
V49 MNR TO SECOND UNDOCKING PAD ATT BY 98:35

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

SECOND UNDOCKING PAD (EQUATOR CROSSING - 36 MIN)

UNDOCK TIME (GET)	NOMINAL						FINAL					
	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

98*40

98*50

99*00

OP INFORM SOYUZ: ORIENTATION ESTABLISHED. ОРИЕНТАЦИЯ УСТАНОВЛЕНА.
 SC CONT - CMC/HOLD
 PZ0 OPT 5 (QUAD C TO EARTH, -X (CSM) ALONG V, 0.2 DEG DBD)
 N78 (+90.00, -82.75, +180.00)
 N79 (R2 = +00020)
 N70 (00047)
 ENTER ON F50 18 (OO NOT MNVR)

OP INFORM SOYUZ: TURN ON VHF RANGING. ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
 CONFIGURE VHF FOR RANGING
 VHF AM A - OFF (CTRX)
 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

ALIGN GDC TO IMU

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

PASSIVE UNDOCKING SWITCH CONFIGURATION

1 HATCH 3 - CLOSED (VERIFY)
 HATCH 3 PEV - CLOSED (VERIFY)
 EMS FUNC/MODE - AV SET/STBY
 SET AVC = +101.3 FPS
 EMS FUNC - AV
 RHC PHR NORMAL #2 - AC/DC
 RHC PHR DIRECT #2 - MNA/B
 SC CONT - CMC/HOLD (VERIFY)
 MAN ATT (3) - MIN IMP
 DR0 RATE - MIN/LOW
 BMAG MODE (3) - ATT 1/RATE 2
 THC PHR - ON (UP)
 COAS PHR - ON (UP)
 RHC #2 - LOCKED
 THC - ARMED
 V16 N4E

INFORM SOYUZ: PREPARING FOR UNDOCKING. I

DOCKING SYSTEM PREPARATION:
 DOCKING_SYSTEM_A:
 CB IND LOGIC MNA - CLOSE
 CB IND PHR AC1 - CLOSE
 CB CONTROL BAT A - CLOSE
 CB MOTORS AC1 (3) - CLOSE

DOCKING_SYSTEM_B:
 CB IND LOGIC MNB - CLOSE
 CB IND PHR AC2 - CLOSE
 CB CONTROL BAT B - CLOSE
 CB MOTORS AC2 (3) - CLOSE

- * IF ACTIVE_HOOKS_CLOSED:
- * OP 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_LIS:
 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)

274

99+00
1111
00146
00000
05000
00050

00:00

99+10
30:00

99+20
00:00

~06:30

99+30

PASSIVE UNDOCKING CHECKLIST

SOYUZ BEGINS UNDOCKING SEQUENCE (99:03)

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

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

PRIMARY EVAP DEACTIVATION CHECKLIST

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

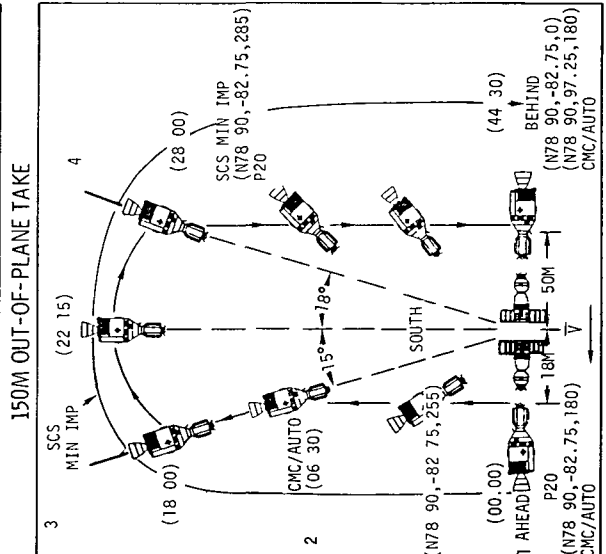
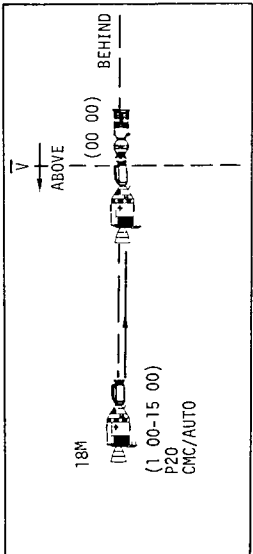
THC -Y(L) 6 PULSES (2 SEC BETWEEN PULSES)

SC CONT - SCS
RHC - TRACK SOYUZ, NULL ROLL RATE
V16N4E, V23N78E, +2500E
RHC - KEEP ROLL ERROR NULLED, TRACK SOYUZ
IF ATS LOCK LOST: SET HGA: MAN, WIDE P=+26, Y=+214
(ACQUIRE AT 99:31)
OP INFORM SOYUZ: TURN ON BEACONS AND ORIENTATION LTS. ВКЛЮЧИТЕ МАРКУ И
EXT LTS RUN/EVA - RUN/EVA ОТНИ ОРИЕНТАЦИИ.
EXT LTS RNDZ RNDZ
AFTER SOYUZ REPORTS OPENING REFLECTOR COVERS:
OBSERVE OPENING OF TOP SIDE COVER (WITH BINOCULARS)
WHEN YAW ERROR (N04,R3) ~ 0 DEG
SC CONT - CMC/HOLD

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

RHC - LOCKED
V38E (P20/OPT 5) MAINTAINS QUAD C TO EARTH, -X 75 DEG S OF V

PASSIVE UNDOCK & STATIONKEEP



ВКЛЮЧИТЕ МАРКУ И
ОТНИ ОРИЕНТАЦИИ.

PASSIVE UNDOCKING CHECKLIST

INFORM APOLLO: READY FOR UNDOCKING. I
TOPOR K PACCIBIKOBOS.
INFORM APOLLO: INITIATING UNDOCKING. I
AUTO RCS SEL (16) - MNA/B

55:00 OP INFORM SOYUZ: READY FOR UNDOCKING.
56:00 INFORM APOLLO: INITIATING UNDOCKING. I
AUTO RCS SEL (16) - MNA/B

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

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

OUT OUT
OUT OUT

INFORM APOLLO: UNDOCKING COMPLETED. I
OP INFORM SOYUZ: UNDOCKING COMPLETED.
V46E PACCIBIKOBKA BYITOLIBENA.
SC CONT - CMC/AUTO
V38E (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, PRO, PRO
(LOAD ZEROES INTO N87)
V45E
V31E (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)

04:00 OP INFORM SOYUZ: OPEN REFLECTOR COVERS
AS PROGRAMMED.
OTKPOITE KPEBKI OTPAKATELEI
DOCKING SYSTEM A: ПО ПРОГРАММЕ.

DOCKING SYSTEM B:
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

U S R A T S
 99+30- 00000
 00000
 00000
 05000
 00050
 17:30
 18:00-
 99+40-
 ~22:15-
 ~27:00-
 ~28:00-
 99+50-
 100+00-

V16N4E
 THC - CENTER SOYUZ IN COAS, NULL LOS RATES
 (1 DEG/MIN ~ 0.1 FPS)

SC CONT - CMC/AUTO
 THC - Z(U) 3 PULSES (2 SEC BETWEEN PULSES)
 -Y(L) 4 PULSES (2 SEC BETWEEN PULSES)
 SC CONT - SCS
 AUTO RCS SEL A3, C4, B3, O4 - OFF
 DP INFORM SOYUZ; TURN OFF BEACONS AND ORIENTATION LTS.
 150M DATA TAKE CHECKLIST ВЫКЛЮЧИТЕ МАШКА И
 ОТНИ ОРИЕНТАЦИИ.
 V23N78E, +27000E
 CHECK N04 R2 DECREASING & R3->0 DEG
 CHECK N04 R2 MINIMUM (~5.5 DEG) & R3->0 DEG
 V23N78E, +28500E; RECORD VHF RANGE NM
 CHECK N04 R2 INCREASING TOWARDS -1.0 DEG

*IF EARLY FINAL SEP 0 *
 *PERFORM EARLY FINAL SEP *
 *CHECKLIST (PG 7-11) *
 * * * * *

WHEN N04 R2=-1.0 DEG AND INCREASING, DATA TAKE
 COMPLETION CHECKLIST
 SC CONT - CMC/AUTO
 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 V)

THC - NULL LOS RATES (3 MINUTES MAX)
 V16N4E СБОР ДАННЫХ ВЫПОЛНЕН, ВКЛЮЧИТЕ МАШКА
 И ОГНИ ОРИЕНТАЦИИ.
 RHC - TRACK SOYUZ & KEEP ROLL ERROR NULLED
 DP INFORM SOYUZ; DATA TAKE COMPLETED, TURN ON BEACONS
 AND ORIENTATION LTS.
 IF REQUIRED DP INFORM SOYUZ; READY TO TURN ON SPOTLIGHT. ГОТОВ ВКЛЮЧИТЬ
 ПРОЖЕКТОР.
 WHEN N04 YAW ERROR ~5 DEG AND INCREASING, INCREMENT
 N78, R3 BY 10 DEG
 MONITOR N04 PITCH ERROR
 MAN ATT P - RATE CMD
 MAN ATT P - MIN IMP

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
 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/CHD RESET *
 * * * * *
 274 EXT LTS RNDZ - OFF
 AFTER_DP_INHIBITS_RCS_JETS:
 230 UV ABSORPTION POWER - OFF
 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)
 SYSTEM TEST METER - C,8 (VERIFY)
 101 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 >5.0 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))
 UV ABSORPTION POWER - ON
 274 INFORM DP - DATA TAKE COMPLETE AND UV COVER
 CLOSED; TURN RCS JETS BACK ON.
 EXT LTS RNDZ - RNDZ
 IF DP INFORMS SOYUZ ~READY TO TURN ON
 SPOTLIGHT, WAIT FOR RESPONSE THEN:
 EXT LTS RNDZ - SPOT

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

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

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 - CHC
RHC - LOCKED
V58E (P20 (OPT 5) MAINTAINS QUAD C TO EARTH,
-X ALONG -V)

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,
DP INFORM SOYUZ: TURN ON DUAL VHF SIMPLEX.

VHF COMM CHECKLIST
EXT LTS RNDZ - OFF ВКЛЮЧИТЕ МАЯКИ И ОГНИ ОРИЕНТАЦИИ.
ALIGN GDC TO IMU *IF EARLY FINAL SEP REQ D *
*PERFORM EARLY FINAL SEP *
*CHECKLIST *
* * * * *

SET DET COUNTING UP TO 100:50:00

FDAT SCALE - 5/5
V25N78E, +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
FDAT SCALE - 5/1
THC - MAINTAIN STATION KEEP AT 50M

VHF COMM CHECKLIST

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

EARLY FINAL SEP CHECKLIST

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

DO NOT PERFORM SKEEP TERMINATION BURN
MAN ATT (3) - MIN IMP (VERIFY)
BAG 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)
BAG 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)
BAG MODE (3) - ATT 1/RATE 2 (VERIFY)
SC CONT - SCS (VERIFY)
V16N44E

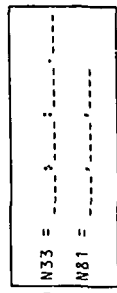
RHC - TRACK SOYUZ IN COAS
THC - MAINTAIN SAFE RANGE
CONTACT STON FOR SEP BURN P30 LOAD N33 =
AFTER STON UPDATES P30 LOAD:
V31E (TERMINATE MIN IMP THC EMP) N81 =

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

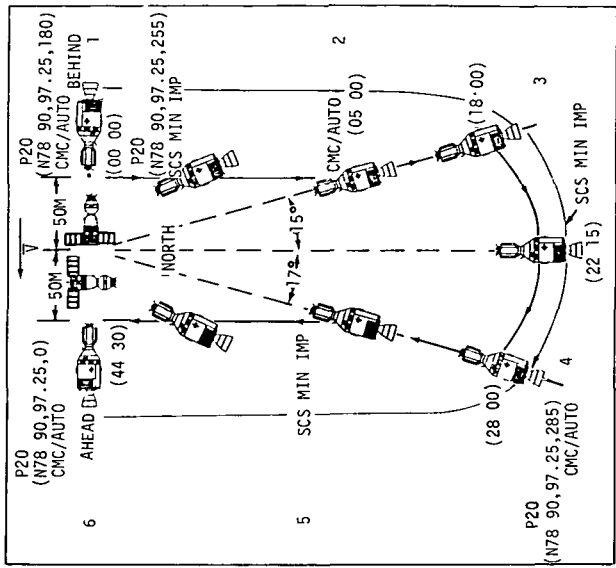


100+00
00000
00000
00000
05000
00050
~44:30
100+10
25:00
100+20
35:00
100+30

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



ACQUIRE ATS HGA: MAN, WIDE P=+10, Y=+316
 S-BD ANT IND > 1/3 SCALE, HGA: REACO, NARROW

PRIMARY EVAP DEACTIVATION CHECKLIST

SC CONT - SCS
 MAN ATT (3) - RATE CMD
 RHC - ARMED

THC +Y(CR) 9 SEC

MAN ATT (3) - MIN IMP
 RHC - TRACK SOYUZ, NULL ROLL RATE
 V16N4E

V23N78E, +25500E

RHC - KEEP ROLL ERROR NULLED, TRACK SOYUZ
 EXT LTS RNDZ - RNDZ
 OP INFORM SOYUZ: BEACON ON. МАЯК ВКЛЮЧЕН.

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

V58E (P20 (OPT 5) MAINTAINS QUAD A TO EARTH,
 -X 105 DEG W OF V)

THC-CENTER SOYUZ IN COAS, NULL LOS RATES(1 DEG/MIN~0.3 FPS)

100+30	00000	00000	00000	05000	00050	45:00	100+40	55:00	59:30	100+30	~05:30	101+00	
U	I	B	D	A	S	P	1	N	F	L	M	A	D
A T S = = = = = E T = = = = =													

VHF RANGE CHECKLIST

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

500 M DATA TAKE CHECKLIST

- IF COMM - VERIFY DSE TAPE MOTION
- IF NO COMM - TAPE RCOR - HBR/RCD/FWD/CMD RESET
- EXT LTS RNDZ - OFF
- AFTER_OP-INHIBITS-RCS-JETS:
- 230 UV ABSORPTION POWER - OFF
UV COVER - OPEN (TB BP <15 SEC THEN GRAY,
IF NOT GRAY IN 15 SEC - OFF (CTR))
- 101 UV ABSORPTION POWER - ON
UV ABSORPTION LAMPS - ON (VERIFY)
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

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))
- UV ABSORPTION POWER - ON
- 274 INFORM DP - DATA TAKE COMPLETE AND UV COVER
CLOSED; TURN RCS JETS BACK ON.
EXT LTS RNDZ - RNDZ
IF DP INFORMS SOYUZ -READY TO TURN ON
SPOTLIGHT~ WAIT FOR RESPONSE THEN:
EXT LTS RNDZ - SPOT

V16N4E
DP INFORM SOYUZ: TURN ON VHF RANGING. ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
VHF RANGING CHECKLIST
DP INFORM SOYUZ: RANGING LOCKUP ESTABLISHED.
РЕЖИМ ИЗМЕРЕНИЯ ДАЛЬНОСТИ УСТАНОВЛЕН.

SC CONT - SC5 RATE CMD
MAN ATT (3) 5 SEC
THC -Z(U) 7 SEC
+Y(R) 7 SEC
MAN ATT (3) - MIN IMP
AUTO RCS SEL A3, C4, B3, D4 - OFF
DP INFORM SOYUZ: TURN OFF BEACONS AND ORIENTATION LTS.
500M DATA TAKE CHECKLIST ВКЛЮЧИТЕ МАЯКИ И
V23N78E +27000E ОТГНИ ОРИЕНТАЦИЮ.
CHECK N04 R2 DECREASING (MORE NEG) & R3->0 DEG
CHECK N04 R2 MINIMUM (<-5.5 DEG) & R3->0 DEG
V23N78E; +28500E; RECORD VHF RANGE NM
CHECK N04 R2 INCREASING TOWARDS -1.0 DEG

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

MAN ATT (3) - MIN IMP
SC CONT - CMD
RHC - LOCKED
V58E (P20 (OPT 5) MAINTAINS QUAD A TO EARTH,
-X 75 DEG N OF V)

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.

СЕР ДАННЫХ ВЫПОЛНЕН, ВКЛЮЧИТЕ МАЯКИ И ОГНИ ОРИЕНТАЦИИ.
DP INFORM SOYUZ: READY TO TURN ON SPOTLIGHT.
ГОТОВ ВКЛЮЧИТЬ ПРОЖЕКТОР.
PRIMARY EVAP ACTIVATION
GLY EVAP H2O FLOW - AUTO
GLY EVAP 5TH PRESS - AUTO

101+00
00000
00000
00000
05000
00050
17:30
18:00
101+10
~22:15
~27:00
~28:00
101+20
101+30

101+30-
00000
00000
00000
03000
00050

~44:30

101+40-

101+50-
35:00-

102+00-

WHEN BODY DIAMETER = 2 DEG OR VHF RANGE = .04 NM:
SC CONT - SCS
MAN ATT (3) - RATE CMD
THC -X(A) 3 SEC
-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
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

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)
OP INFORM SOYUZ: TURN ON DUAL VHF SIMPLEX.

VHF COMM CHECKLIST
EXT LTS.RNDZ - OFF
ALIGN GOC TO 0,0,0
VHF COMM CHECKLIST
ВКЛЮЧИТЕ ДВОЙНОЙ УКВ СИМПЛЕКС,
ВЫКЛЮЧИТЕ МАЯКИ И ОГНИ ОРИЕНТАЦИИ.

SET DET COUNTING UP TO 102:16:00

--- S O Y U Z P H O T O S ---

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

DP INFORM SOYUZ: TURN ON VHF RANGING. ВКЛЮЧИТЕ ИЗМЕРЕНИЕ ДАЛЬНОСТИ.
 VHF RANGING CHECKLIST
 DP INFORM SOYUZ: RANGING LOCKUP ESTABLISHED.
 PZ5 N77, R, ROOT РЕЖИМ ИЗМЕРЕНИЯ ДАЛЬНОСТИ УСТАНОВЛЕН.
 V83E

AUTO RCS SEL A3, C4, B3, D4, - OFF
 DP INFORM SOYUZ: TURN OFF BEACONS AND ORIENTATION LTS.
 ВЫКЛЮЧИТЕ МАЯКИ И
 1000M DATA TAKE CHECKLIST ОГНИ ОРИЕНТАЦИИ.

DATA TAKE COMPLETE WHEN R3 OF N83 > 285 DEG
 DP INFORM SOYUZ: AS-5 COMPLETED: TURN ON DUAL VHF SIMPLEX.
 VHF COMM CHECKLIST AC-5 ВЫПОЛНЕН, ВКЛЮЧИТЕ ДВОЙНОЙ УКВ СИМПЛЕКС.
 EXT LTS RUN/EVA - OFF
 P00
 SC CONT - CMC/AUTO
 MAN ATT (3) - RATE CMD
 BMAG MODE (3) - RATE 2
 V49 MNVR TO UV IN-PLANE SCAN ATTITUDE BY 102:52:00
 (181, 270, 315)

AFTER MNVR COMPLETE:
 UV ABSORPTION PMR - OFF
 UVA COVER - CLOSE
 UV ABSORPTION PMR - ON
 DSE - RCD/LBR
 V49 MNVR TO OUT-OF-PLANE DATA ATTITUDE BY 102:56:00
 (278, 268, 045)
 SET HGA: MAN, WIDE P--30, Y=+249
 HGA: REACQ, NARROW

GO TO FLIGHT PLAN VOL I, PG 4.2-54.

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_RESETS:
 230 UV ABSORPTION POWER - OFF
 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)
 SYSTEM TEST METER - C, 8 (VERIFY)
 101 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

102+30
 6112
 01111

21:00

102+40

30:00

33:00
 102+50

36:00

41:00

103+00