

**APOLLO 8**

**CREW LOG**

**PART NO.**

**S/N**

**SKB 32100040-201**

**1006**

# PAGES

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S-23

## GENERAL CAMERA INFORMATION

### Spotmeter

- 1 For film setting be sure to set ASA number
- 2 For luminance reading set ASA 100

### Hasselblad Electric

Film magazine - 160 frames color  
200 frames B&W

Ring Sight - Inner Ring - 4°  
2nd Ring - 7.5°  
3rd Ring - 10°

*(B&W mag exp table) in Earthorbit*  
Red Filter - Use only for B&W; open shutter  
2.5 f - stops for correction

*Photar 2A - C121, Earthorbit, mag exp table*

<u>Lens</u>	<u>FOV</u>	<u>PWR</u>	<u>RINGS</u>
80 (2) mm	37°	1	
150 mm	21.2°	2	
250 mm	12.5°	3	3rd

### 16 mm Camera

Film magazine - 130 feet film

<u>Frame Rate</u>	<u>Run Time</u>
1 FPS	87 min
6 FPS	15 min
12 FPS	7.5 min
24 FPS	3.65 min

<u>Lens</u>	<u>FOV</u>	<u>PWR</u>	<u>RINGS</u>
5 mm	117.5 x 80.2°	<1	
18 mm	32.5 x 23.5°	<1	
75 mm	7.9 x 5.7°	3	2nd
200 mm	2.1 x 2.9°	8	Inner

Low film "Red Light" on at 6 feet remaining

22 1968

Basic Date - Nov. 6, 1968

Changed -

1-103

PHOTO

PHOTO LOG

PHOTO STORAGE

SUMMARY



PHOTO STOWAGE LIST (Cont'd)

ITEM	LOCATION
100mm lens. . . . .	.A7
160° Wide Angle lens . . . . .	.A7
TV Cable. . . . .	.A7
TV Camera Mount . . . . .	.A7
70mm Camera Mount . . . . .	

MAGAZINE SUMMARY

SIZE (mm)	TYPE	ASA	NO. MAGS	FRAME-FT	PER MAG	REMARKS	USED
70	S0368 c	64	2	160			
70	S0121 c	45	1	160		EARTH - PHOTAR 2A FILTER, MAG EXPO TABLE	
70	3400 b/w	75	3	200		EARTH - RED (25A) FILTER, MAG EXPO TABLE	
70	2485 b/w		1	120		EXTERIOR	
16	S0368 c	64	9	130		EXTERIOR	
16	S0168 c	1000	2	130		INTERIOR	

PHOTO

PHOTO LOG

STOWAGE

MAG SUMMARY

FILM INVENTORY

PHOTO PROC

GET

FILM BUDGET

FILM BUDGET

MAG SUMMARY

PHOTO STORAGE

PHOTO LOG

PHOTO

16MM FILM MAGAZINES REMAINING AT PM PRIOR TO REV,

MAG TYPE	TOTAL LOI	1	2	3	4	5	6	7	8	9	10	TOTAL TEI
H CEX	0											0
I "	1		2/3	0								0
J "	1				1/2	0						0
K "	1					1/3	0					0
L "	1						2/3	1/3	0			0
M "	1									2/3	0	0
N "	1											2/3
O "	1											1
P "	2/3											2/3
Q CIN	0											0
R "	1											1

CREW SELECTION

FILM BUDGET TABLES

FILM MAGAZINE INVENTORY

MAG ID (FR. FT.)	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS
70 BW <u>C</u> (200)						
70 BW <u>D</u> (200)						
70 BW <u>E</u> (200)						
70 C <u>A</u> (160)						
70 C <u>B</u> (160)						
70 C 121 <u>F</u> (160)						
70 HS <u>G</u> (120)						
16 CEX <u>H</u> (130)						

OBS TARGET

PHOTO PROC

FILM INVENTORY

FILM BUDGET

FILM INVENTORY

MAG SUMMARY

PHOTO STORAGE

PHOTO LOG

PHOTO

MAG ID (FR. FT.)	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS
16 CEX <u>I</u> (130)						
16 CEX <u>J</u> (130)						
16 CEX <u>K</u> (130)						
16 CEX <u>L</u> (130)						
16 CEX <u>M</u> (130)						
16 CEX <u>N</u> (130)						
16 CEX <u>O</u> (130)						
16 CEX <u>P</u> (130)						

FILM MAG INVENTORY

MAG ID (FR. FT.)	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS
16 CIN <u>Q</u> (130)						
16 CIN <u>R</u> (130)						

OBS TARGET

PHOTO PROC

FILM INVENTORY

MAG ID (FR. FT.)	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS
70 BW <u>C</u> (200)						
70 BW <u>D</u> (200)						
70 BW <u>E</u> (200)						
70 C <u>A</u> (160)						
70 C <u>B</u> (160)						
70 C 121 <u>F</u> (160)						
70 HS <u>G</u> (120)						
16 CEX <u>H</u> (130)						

OBS  
TARGET

PHOTO  
PROC

FILM  
BUDGET

FILM  
INVENTORY

MAG  
SUMMARY

PHOTO  
STORAGE

PHOTO  
LOG

PHOTO

MAG ID (FR. FT.)	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS
16 CEX I (130)						
16 CEX J (130)						
16 CEX K (130)						
16 CEX L (130)						
16 CEX M (130)						
16 CEX N (130)						
16 CEX O (130)						
16 CEX P (130)						

FILM MAG INVENTORY

MAG ID (FR. FT.)	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS	GET ON/ FR. NO.	GET OFF/ FR. NO.	REMARKS
16 CIN Q (130)						
16 CIN R (130)						

OBS  
TARGET

PHOTO  
PROC



ORIGINAL  
FILM LOG  
STORAGE  
MAG SUMMARY  
FILM INVENTORY  
FILM BUDGET

TRANSLUNAR/TRANSEARTH

Long Distance Earth And Moon

1/80/C121 Or C SPOT

As Target Is Available

50 Frames Allocated (From Each Film Type)

Log Time

Approximate Times:

3:45	7:00	7:30	8:00	12:00	12:30	13:00
17:00	17:30	18:00	25:00	25:30	26:00	29:00
29:30	30:00	33:00	33:30	34:00	44:00	44:30
45:00	48:00	48:30	49:00	61:00	61:30	62:00

92:00	92:30	93:00	109:00	109:30	110:00
125:00	125:30	126:00	132:00	132:30	133:00
141:30	142:00	142:30			

1/250/G121 Or C SPOT

As Moon Is Available After 35:00 GET

8 Frames Allocated

Log Time

Approximate Times:

35:00	44:00	48:00	61:00	61:30	62:00
92:00	92:30	93:00	109:00	125:00	

16/75/CEX SPOT

As Target Is Available

.2 Mag Allocated At 1 FPS

Log Time

Approximate Times:

3:45	12:00	17:00	25:00	29:00
34:00	44:00	48:00	61:00	92:00
109:00	125:00	132:00	141:30	

PHOTO  
PROC

OBS  
TARGET

LUNAR DARKSIDE

GEGENSCHWEIN - S20.115

Photograph and try to observe gegenschein and/or  
Moulton point in vicinity of earth's anti-sun point.

MODE A - Hand-held

1/80/HS

SC in lunar orbit and not in  
earthshine if possible.

Interior lighting subdued

f2.8, B, infinity.

Inertial

- (1) Aim successively at RA 6h Dec +23°,  
RA 7h Dec +22°, and RA 8h Dec +21°  
near Gemini. Stabilize within 2°;  
1/2° if possible.
- (2) Take 1 1/2 to 2 min exposures.
- (3) Take 6 sec exposure at third  
position
- (4) Repeat to total of 12 frames.

OBS  
TARGET

DIM LIGHT EARTH

DIM LIGHT EARTH PHOTOGRAPHY - S20.115

Photograph lightning on the earth darkside and the night air glow.

MODE A - Air Glow (Do before Mode B).

1/80/HS BRKT

f2.8, B, infinity.

Interior lighting subdued

Photography window shaded from earthshine and sunshine.

- (1) Maneuver SC to get only the dark side of earth in field of view of camera.
- (2) Take 5 exposures of 3 seconds each.

MODE B - Lightning

- (1) Maneuver SC to get only the dark side of earth in field of view of camera.
- (2) Take 1 min and 5 min exposures until film is depleted.

MODE C - Aurora

1/80 or 250/HS F2.8

Expose at 1/8 sec to 90 sec for brightest to faintest aurora.

MILKY WAY

1/80/HS F2.8

MAXIMUM EXPOSURE 90 SEC.

EXHAUST EFFECTS

EXHAUST EFFECTS/CSM WINDOWS - S20.116

Photograph and scan the SC windows with the spotmeter to record window deposits.

16/5/CEX SPOT

f/11, 1/250, 1 fps.

Ground update: R, P, Y if desired.

0.1 mag allocated

During TL and TE flight:

- (1) Maneuver S/C so that sun angle on window is approximately 85° from normal.
- (2) Hold D.A. Camera 1 foot from LH Rendz window (other windows HD).
- (3) Turn on camera for approximately 10 seconds.
- (4) Immediately after photography scan window (4 spots) with spotmeter.
  - (a) Set objective focus on 3 ft
  - (b) Set ASA on 100
  - (c) Hold spotmeter such that window frame is in focus (approx 3 ft).
  - (d) Read light level in foot-lamberts, from intensity scale.

Log: Spotmeter readings and window scanned.  
~~2 feet allocated~~

OBS  
TARGET

D  
D  
P

SC EXT ATM

SC EXTERIOR ATMOSPHERIC  
PARTICULATE MATTER - S20.115  
Photograph SC exterior atmosphere

1/80/HS

Interior lights subdued  
f2.8, B (initially), infinity

The following sequence is to be done 90° from  
sun once in total darkness, once in sunshine  
and, if possible, once in earthshine alone.

Photography window in shade during sunlit  
and earthlit sequences.

9 frames allocated.

- (1) Photograph stars in constellation  
Ursa Major with the following exposures,  
in order: 6 sec, 1 sec, 1/60 sec.
- (2) Log: GET start, frame no first exposure,  
target ID, window condition, visual ob-  
servations.

*Approximate Times:*

3:45

78:45 79:00 79:15

90:00 133:00

OBSERVATION TARGETS

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IMPACT CRATERS (LARGE, FRESH) (IC)	1
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FRINGE LOG

STORAGE

MAG SUMMARY

FILM INVENTORY

PHOTO PROC

FILM BUDGET

OBS TARGET

(A) APOLLO SITES

- NOTE CONTACTS OTHER THAN THOSE NOW KNOWN (SEE APOLLO SITE LANDMARK CHART)
- *JUDGE LIGHTING LIMITS FOR LM LANDING*
- NOTE ALBEDO CONTRASTS AT ZERO PHASE

REGIONAL CONTACTS, COLOR VARIATIONS, \*LANDMARKS

(S) SURVEYORS

- OBSERVE AND PLOT LOCATION OF WHITE SPACECRAFT, THE SPACECRAFT SHADOW, OR SPECULAR FLASHES

\*LOCATION - FLASHES, SHADOW, WHITE SPOT

POSITION - SURVEYOR V

(C3) CONTACTS

- NOTE OTHER CONTRASTS BESIDES ALBEDO AND/OR TOPOGRAPHY

CONTRAST - COLOR, RELIEF, PATTERNS, CRATERING, BOULDERS

GEOMETRY - \*SHARPNESS, SHAPE, ELEVATION CHANGE

(IC) IMPACT CRATERS (LARGE, RAYED)

- DETERMINE OVERLAPING RELATIONSHIPS BETWEEN PONDS AND OTHER RIM MATERIALS
- IDENTIFY FLOW STRUCTURES IN RIM MATERIALS
- IDENTIFY ANY LAYERS, COLOR DIFFERENCES OR CAVES ON CRATER WALL SCARPS
- IDENTIFY ANY ERUPTIVE CONES, FLOWS OR DOMES AT BASE OF CRATER WALL SCARPS

TYPE - RAYED, BRIGHT-HALO, SHARP-RIMMED, LOW-RIMMED, SUBDUED

SHAPE - CIRCULAR, ASYMETRIC, POLYGONAL, TERRACED

(CONT)

PHOTO LOG

STORAGE

MAG SUMMARY

FILM INVENTORY

PHOTO PROC

OBS TARGET

2 SECONDARIES - FIELDS, LOOPS, BRANCHINGS, CLUSTERS

RIM - RADIAL PATTERNS, CONCENTRIC PATTERNS, BOULDER FIELDS, DUNE FIELDS, \*FLOW PATTERNS, \*COLORS

\*PONDS - SIZE LIMIT, SURFACE TEXTURE, FLOW PATTERNS, BOULDERS, SUPERPOSITION, SOURCES

WALLS - TEXTURES, PATTERNS, \*LAYERS, CONTACTS, FLOWS, CHANNELS, \*CAVES, \*COLORS

BENCHES - RIM RELATION, \*POND RELATION, \*WALL CONTACT, CHANNELS, \*ERUPTIVE FEATURES

FLOOR - TEXTURES, FLOW PATTERNS, FRACTURE PATTERNS, BOULDER FIELDS, \*ERUPTIVE FEATURES, COLORS

CENTRAL PEAK - \*LAYERS, \*LAYER ORIENTATION, CONTACTS, COLORS

(HR) HIGH RELIEF SURFACES

- DETERMINE ANY LOCAL VARIATIONS IN ALBEDO OR COLOR

TYPE - \*KNOBBY TERRA, \*DOMED TERRA, CRATERED TERRA, HUMMOCKY TERRA, PARALLEL RIDGES, ARCULATE RIDGES

ASSOCIATIONS - \*ERUPTIVE FEATURES, PATTERNS, BOULDER FIELDS, CRATER FIELDS, SUPERPOSITION, ELONGATE CRATERS

COLOR - VARIATION, CHANGE SHARPNESS, ASSOCIATIONS, SHAPE

\*SOURCE - POINT, LINE, MULTIPLE, COVERED, DIRECTION

(LR) LOW RELIEF SURFACES

- IDENTIFY SOURCE OF ANY OBSERVED FLOWS

TYPE - MARE BASIN, MARE REGION, VERY DARK REGION, LIGHT BASIN, SMOOTH TERRA, VERY LIGHT REGION

(CONT)

RELIEF - LOW DOMES, LOW RIDGES, RIMLESS DEPRESSIONS, PATTERNS, BOULDERS, HALO CRATERS

COLOR - VARIATION, CHANGE SHARPNESS, ASSOCIATIONS, SHAPE

\*SOURCE - POINT, LINE, MULTIPLE, COVERED, DIRECTION

\*BENCHES - TYPE, COLOR CONTRAST, PATTERN CONTRAST, CRATER CONTRAST, FRONT SLOPE RELATIONS, SUPERPOSITION

(DF/TBF/CF) DOMED/TURTLE BACK/CONCENTRIC CRATER FILL

- IDENTIFY ANY ASSOCIATED ERUPTIVE FEATURES

TYPE - CONCENTRIC, DOMED, POLYGONAL, KNOBBY, COMBINATION

ASSOCIATION - CRATER TYPE, \*ERUPTIVE FEATURES, AGE RELATIONS

CHARACTERISTICS - RELIEF, PATTERNS, COLOR, BOULDERS, FILLING LEVEL

(ST) SLOPES (TERRA)

- NOTE ANY INDICATIONS OF LAYERS OR OTHER STRUCTURE

\*LAYERS, \*CONTACTS, \*OUTCROP, BOULDERS, PATTERNS, COLOR

(BF) BOULDER FIELDS

- NOTE MINIMUM AND MAXIMUM SIZES OBSERVED 10 TO 25° FROM THE TERMINATOR
- *JUDGE S&T TRACKING OF LANDED LM*
- NOTE ASSOCIATION AND DIRECTION OF BOULDER TRACKS

ASSOCIATION - ISOLATED, CRATER RIM, CRATER WALL, SLOPE, DARK HALO, TALUS, SLIDE

GEOMETRY - SIZE, SHAPE, PATTERN, \*BOULDER SIZES

(CONT)

4 \*TRACKS - DIRECTION, LENGTH, STARTING POSITION  
SOURCE - EROSION, IMPACT, ERUPTION, \*OUTCROP

(US) UNCRATERED SURFACES

- NOTE POSITION AND DESCRIBE CHARACTERISTICS

\*CHARACTERISTICS - RELIEF, COLOR, ALBEDO,  
REFLECTIONS, PATTERNS, BOULDERS, FRACTURES

(OTC) OUTCROPS

- NOTE LOCATION AND ASSOCIATIONS OF ANY OBSERVED  
OUTCROPS

\*ASSOCIATION - CRATER WALL, CENTRAL PEAK, RILLE  
WALL, TERRA SLOPE, ERUPTIVE FEATURE

\*CHARACTERISTICS - SIZE, SHAPE, COLOR,  
REFLECTIONS, ACCESSIBILITY

(DC/EC/CC) DARK HALO/ELONGATE/CHAIN CRATERS

- IDENTIFY ANY SHALLOW IMPACT CRATER FIELDS NEAR  
BASE OF CONE
  - IDENTIFY ANY ASSOCIATED FLOWS, CHANNELS OR COLOR
  - IDENTIFY ANY LAYERS OR CAVES IN CRATER WALL
- SHAPE - CIRCULAR, ELIPTICAL, ARCUATE, LINEAR
- HALO - SHAPE, LIMITS, RELIEF, PATTERNS, RAYS,  
\*BOULDERS, SMALL CRATERS, COLORS, SUPER-  
POSITION
- CONE - SHAPE, BREACHING, \*CHANNELS, PATTERNS,  
BOULDERS, \*COLORS
- CRATER - SHAPE, WALL TEXTURE, CAVES, CHANNELS,  
BOTTOM, \*COLORS
- \*ASSOCIATIONS - ALIGNMENTS, DOMES, FLOWS, FAULTS,  
CONTACTS, GEOLOGIC UNITS, AGE RELATIONS

(CONT)

(G/F) GRABENS/FAULTS

5

- NOTE NATURE, AGE AND DIRECTION OF OFFSETS
  - DETERMINE ASSOCIATED STRAIN RELATIONSHIPS
- SHAPE - LINEAR, ENECHELON, ANGULAR
- ASSOCIATIONS - ERUPTIVE FEATURES, RILLES,  
PARALLELISM, CONSTANT ANGLES, AGE RELATIONS
- \*OFFSETS - CONTACTS, RIDGES, CRATERS, PATTERNS
- ENDS - SHAPE, TERMINATION POINT

(R) RIDGES

- IDENTIFY ANY ATTACHED OR SUPERIMPOSED FLOWS, CONES OR DIKES
- DETERMINE ASSOCIATED STRAIN RELATIONSHIPS  
TYPE - MARE, TERRA  
SHAPE - ROUNDED, FLAT-TOPPED, WRINKLE, BRANCHING, COMPOSITE  
CHARACTERISTICS - COLORS, AGE RELATION  
\*ASSOCIATION - CONES, DOMES, DIKES, LOCAL FLOWS, RILLES, FRACTURES

(D) DOMES

- IDENTIFY ANY ATTACHED OR SUPERIMPOSED FLOWS, CONES OR DIKES  
TYPE - MARE, TERRA  
SHAPE - ROUNDED, FLAT-TOPPED, ELONGATE BRANCHING, \*LOBATE  
CHARACTERISTICS - SIZE, \*SLOPES, \*LOBES, COLORS, \*AGE RELATIONS  
CENTRAL CRATER - SIZE, SHAPE, RIM, WALL TEXTURE, \*CAVES, CHANNELS, BOTTOM, COLORS  
\*SUPERIMPOSED CONE - (SEE DARK HALO CRATER CHECKLIST)  
\*ASSOCIATIONS - SURFACE, ERUPTIVE FEATURES, DIKES

(DR) DELTA-RIMMED CRATERS

- DETERMINE IF RIM IS A COMPOSITE OF CONES, DOMES AND/OR FLOWS.  
SHAPE - CIRCULAR, POLYGONAL  
\*RIM - EXTENT

(CONT)

\*CREST - CONES, BREACHING, SLUMPS

WALLS - TEXTURES, PATTERNS, \*LAYERS, \*CONES, CONTACTS, CAVES, \*COLORS

FLOOR - FILLING TYPE, FLOW PATTERNS, ERUPTIVE FEATURES, SOURCE

(RL) RILLES

- OBSERVE TAILS OF SINUOUS RILLES FOR EVIDENCE OF ALLUVIAL DEPOSITS
- OBSERVE HEADS OF SINUOUS RILLES FOR EVIDENCE OF EXACT SOURCE OF ANY EROSION AGENTS
- NOTE ANY INTERRUPTIONS IN CONTINUITY OF SMALL SINUOUS RILLES, SUCH AS RIDGES OR BRIDGES
- DETERMINE ANY INTERRUPTIONS IN CONTINUITY OF SMALL SINUOUS RILLES, SUCH AS RIDGES OR BRIDGES
- DETERMINE STRAIN RELATIONSHIPS NEAR ANGULAR AND ARCUATE RILLES  
SHAPE - \*SINUOUS, LINEAR, ANGULAR, ARCUATE, COMBINATION  
HEAD - TYPE, ASSOCIATION, BREACHING, COLORS, AGE RELATIONS  
BODY - SHARPNESS, CONTINUITY, \*FLOOR FEATURES, BRIDGES, LEEVES, LAYERING, COLORS, AGE RELATIONS  
\*TAIL - LOW FANS, FINE BRANCHING, LEEVES, TERMINATIONS, COLORS, AGE RELATIONS  
ASSOCIATIONS - \*CONTROL FEATURES, PARALLELISM, CONSTANT ANGLES, PATTERNS

(CONT)



(C) COLOR

- IF VISIBLE COLOR IS OBSERVED, NOTE ASSOCIATED FEATURES IN AS MUCH DETAIL AS POSSIBLE  
70/80/C/1-250/SPOT
- NOTE ANY COLOR CONTRASTS ON CLIFFS OR STEEP SLOPES

\*ASSOCIATION - MARE BENCH, HALO CRATER, DOME, CLIFF, BOULDER FIELD, RILLE, VERY DARK OR VERY LIGHT/FRESH AREAS

\*COLOR CHART - BEST MATCH, RANGE, PHASE VARIATION

CONTACTS - CHANGE, SHARPNESS, ASSOCIATED VARIATIONS

(Z) ZERO-PHASE

- AT ZERO PHASE POINT ON MARE APPROXIMATELY 16° FROM TERMINATOR, NOTE HORIZONTAL AND VERTICAL LIMITS OF EFFECTIVE WASHOUT 70/80/BW/1-250/F11
- *JUDGE LIGHTING LIMITS FOR LM LANDING*
- NOTE ANY ALBEDO CONTRASTS ON CLIFFS AND STEEP SLOPES

ALBEDO - \*CONTACTS, FEATURES, DETAILED ASSOCIATIONS

\*WASHOUT - HORIZONTAL LIMITS, VERTICAL LIMITS, RANGE FUNCTION, TERRAIN FUNCTION, RELIEF DEFINITION LIMIT

TERMINATOR

- IDENTIFY ANY FLOW FRONTS ON LOW RELIEF SURFACES
- IDENTIFY ANY ALLUVIAL AND/OR BRAIDED FANS AT THE TAILS OF SINUOUS RILLES
- NOTE ANY GLOWS OR OBSCURATIONS AT LUNAR SUNRISE (NEARSIDE) TERMINATOR 70/250/BW/1-60/F5.6/1MG

\*SUBTLE RELIEF - BENCHES, FLOWS, PATTERNS, ROUGHNESS, BOULDER FIELDS

\*LUNAR SUNRISE - GLOWS, OBSCURATIONS  
(CONT)

EARTHSHINE

- EVALUATE LANDING AND LANDMARK TRACKING FEASIBILITY 70/80/HS/1-4/F2.8/1MC

WASHOUT - HORIZONTAL LIMITS, VERTICAL LIMITS, RANGE FUNCTION, TERRAIN FUNCTION, RELIEF DEFINITION LIMIT

VISIBILITY - DARK ADAPTATION, FEATURES VISIBLE, MINIMUM CRATER SIZE, EARTH ANGLE FUNCTION

\*FEATURES - KNOWN DETAIL, RELIEF CONTRAST

ZERO PHASE - ALBEDO CONTRAST, WASHOUT, \*SPOTMETER

\*LANDMARKS - SMALLEST CRATER, INITIAL POINTS

TRANSIENTS

- NOTE ASSOCIATED FEATURES AND TEMPORAL VARIATIONS  
70/80/HS/1-4/F2.8/1MC

POSITION - DECLINATION/DIRECTION, \*ASSOCIATION

CHARACTERISTICS - BRIGHTNESS, COLOR, TYPE, SIZE, SHAPE, OBSURATION, FLASH

\*VARIATION - TEMPORAL, MOVEMENT, TERMINATOR POSITION

\*SOURCE - FEATURE, AREA

DARKNESS (SPACECRAFT)

NOTE CELESTIAL POSITION AND COVERAGE OF ANY OBSERVED DIM LIGHT PHENOMENA SUCH AS:

STAR FIELD - GENERAL DENSITY, IDENTIFICATION

GEENSHINE - ANTISOLAR (GEMINI), INTENSITY, SHAPE, 70/80/HS/B60 SEC/F28

ZODIACAL LIGHT - 90° FROM SUN TO CORONA,  
70/80/HS/B60 SEC/F2.8

ATMOSPHERE - STAR HALO, GLOW AFTER SUNSET OR PRIOR TO SUNRISE, 70/80/HS/B2 SEC/F2.8/1MC

*LIBRATION POINTS - CENTRAL GEMINI, BEGIN  
OBSV AT LOS (CONT)*

SUNRISE (SPACECRAFT)

- NOTE CELESTIAL LIMITS OF SOLAR CORONA
- NOTE BEGINNING AND EXTENT OF LIMB BRIGHTENING PRIOR TO SUNRISE
- NOTE FIRST OBSERVATION OF CONTAMINATION CLOUD AND CHANGE IN VISIBILITY IMMEDIATELY AFTER SUNRISE

LIMB BRIGHTENING - START GET, START POSITION, MAX GET, MAX POSITION, COLORS, DIFFUSE LIGHT GET, DIFFUSE LIGHT POSITION, *70/80/HS 1/60 F2.8, 15 SEC BEFORE S/R TO S/R*

SOLAR CORONA - FIRST LIGHT GET, BOUNDARY GET, STREAMER DIRECTION, BEAD GET, BEAD POSITION, COLORS

EXTERIOR CONTAMINATION - CLOUD GET, VISIBILITY CHANGE STAR RECOGNITION, S/C SHADOW

TRANSLUNAR/TRANSEARTH

- NOTE CELESTIAL POSITION AND COVERAGE OF ANY DIM LIGHT PHENOMENA

AURORA - SHAPE, COLOR, LIMITS

EXTERIOR CONTAMINATION - STAR FIELD DEGRADATION, TEMPORAL CHANGES, *70/80/HS 36, 1, 1/60 SEC F2.8*

LIBRATION POINTS - 21.5 HOURS GET, PISCES( $\epsilon$ ), ARIES ( $\sigma$ ), PLEIADES 70/80/HS/B5 MIN/F2.8

CAMERA CALIBRATION - BRACKET, STAR FIELD, 70/80/HS or BW/B2 SEC/F2.8

LUNAR - GENERAL COVERAGE, R&B FILTER, 70/80/B&W SPOT, *4 STARS WIDER*