JUN 3 1969

TO: Distribution

FROM: MA/Apollo Program Director

SUBJECT: Minutes of the Apollo Site Selection Board Meeting of June 3, 1969

On June 3, 1969, the Apollo Site Selection Board met at NASA Headquarters. The meeting agenda is attached as Attachment A and attendees are listed in Attachment B.

Standardization of Site Nomenclature

J. H. Sasser-MSC proposed and the Board accepted, that the Apollo landing site designations remain, from east to west, Site 1, 2, 3, 4, and 5. Relocated sites include those sites proposed for subsequent missions which are close to present Apollo sites and will be designated by the Apollo site number followed by "R". Those currently include Sites 3R and 4R. An additional site which previously has been considered under the general category of relocated sites, is on the eastern scarp of the "Flamsteed Ring". This will be known as Site 6R.

It was further proposed that Surveyor sites be designated by "S" followed by the Surveyor mission number 1, 3, 5, 6, or 7. Discussion resulted in an accepted proposal to use the standard JPL Surveyor numbering system of Roman numerals. Thus Surveyor sites will be known as S-I, S-III, S-V, S-VI, and S-VII.

INDEXING DATA

DATE	OPR	#	T	PGM	SUBJECT	SIGNATOR	LOC
06-03-69	HQS		M	LMP	(Above)	HQS	071-41

Sites included in the Set B for the Lunar Exploration Program will be named after the nearest named lunar feature. To prevent confusion as to the specific target or target area, the coordinates of the site should be listed if possible. The proposed, and accepted, site names are listed in Table I.

Status of Site Selection for Apollo 11

O. E. Maynard - MSC noted that the Set C sites were reviewed at the last ASSB but since that time Site 1 has been dropped since it is not necessary for recycle opportunities. The sites for the Apollo 11 launch are thus Sites 2, 3, and 5. Site 4 would not become advantageous until December 1969 or January 1970. Pertinent data for July, August, and September is shown in Table II.

General Phillips asked what MSC considers maximum and minimum sun angles for landing. The response indicated that 5° - 13° is considered optimum, that 14° - 18° is to be avoided on account of washout, and that 19° - 25° is a maximum. This maximum results in a lack of observable shadow and is not being considered for use on G-1.

C. Netherton-KSC reported that a full-scale scrub-turnaround now calls for 66 hours instead of the 59.5 reported in September 1968. The increase is caused by increase in cryo reservice preparation (+3 1/2 hours) and in MSS platform availability (+3.0 hours). Netherton noted that on Apollo 12 radiation clearance (during RTG loading) may add another hour.

Two basic recycle plans, a two-day and a three-day, are being considered which should take care of basic recycle requirements for G-1 and H missions. The two-day plan (40 hour turnaround) allows for a scrub after LV cryo loading but before ignition. The CSM cryos do not get reserviced (proved on Apollo 10) but LM SHe is reserviced and topped off. The count is picked up at T-9 hours, allowing RP-1 replenish for S-IC load leveling if required. The RTG is either not removed or will be handled in parallel with other tasks.

The 3-day plan (66 hour) allows for a worst-condition scrub which is one occurring after crew ingress but before S-IC ignition. Both CSM and LM cryos are reserviced.

O. E. Maynard-MSC presented material prepared by H. H. Schmitt-MSC regarding site dependent crew training for both G-1 and H-1. It was noted that redesignation would be used only for safety (obstacle avoidance) on G-1. The crew for G-1 feels that they can train for three sites with no problem but it was stressed that they are emphasizing Site 2. Helpful on G-1 is the minimum of Site-Dependent Science. The desire to obtain crew determined landing site position was noted. The CMP has 15 training hours allotted for landmark recognition, specifically 10 hours for orbital navigation and 5 hours landing site recognition for LM location. The CDR/LMP each spend 35 hours total including 10 on LM descent track monitoring, 5 on altitude check area

recognition, 15 on landing site recognition, and 5 on site-specific science training.

On H-1, if all is nominal, an early redesignation to a pre-selected point may be attempted as an operational test. Several points in each ellipse will be selected prior to the mission.

Present H-1 plans call for two landing sites per month, to be picked after a successful G mission. It was emphasized that the ellipses must be G-type and that again the first, or eastern-most site would be emphasized. Procedures will be developed for post-DOI navigational techniques in order to work towards reduction of ellipse size.

For H-1, 5 hours are added for the CMP site dependent training. This is for use in LM post-DOI navigation landmark testing. 15 hours are added over G-1 for the CDR/LMP with 5 going for LM post-DOI landmark recognition for procedures test, 5 more on landing site recognition, and an additional 5 on site specific science training.

The question was raised as to how many sites can the astronauts train for on post-G missions. While two are being planned now for H-1, it was noted that a single site would be better both for science training and on account of simulator flow problems.

Recognizing both the desirability of a single site per mission and the desire for recycle, G. Hage asked MSC to take a hard look at afternoon landings at the same site used for a morning opportunity (Action - J. P. Loftus, MSC). J. P. Loftus-MSC indicated that MSC is already working the problem and that they should be finished by the end of the month.

J. H. Sasser-MSC reported on the progress of the Site Data Book. The Data Book is now being revised after being in editorial limbo due to the pressure of other work. Sasser indicated that it would be three to four months, at best, before completion. Discussion followed on the value of the Data Book and whether or not it should be pursued any further. General Phillips concluded the discussion by noting that the Site Data Book is intended to be a documentation of the charter of the ASSB, that valuable effort has already been invested, and that it should be completed but not on a high priority basis.

Lunar Exploration

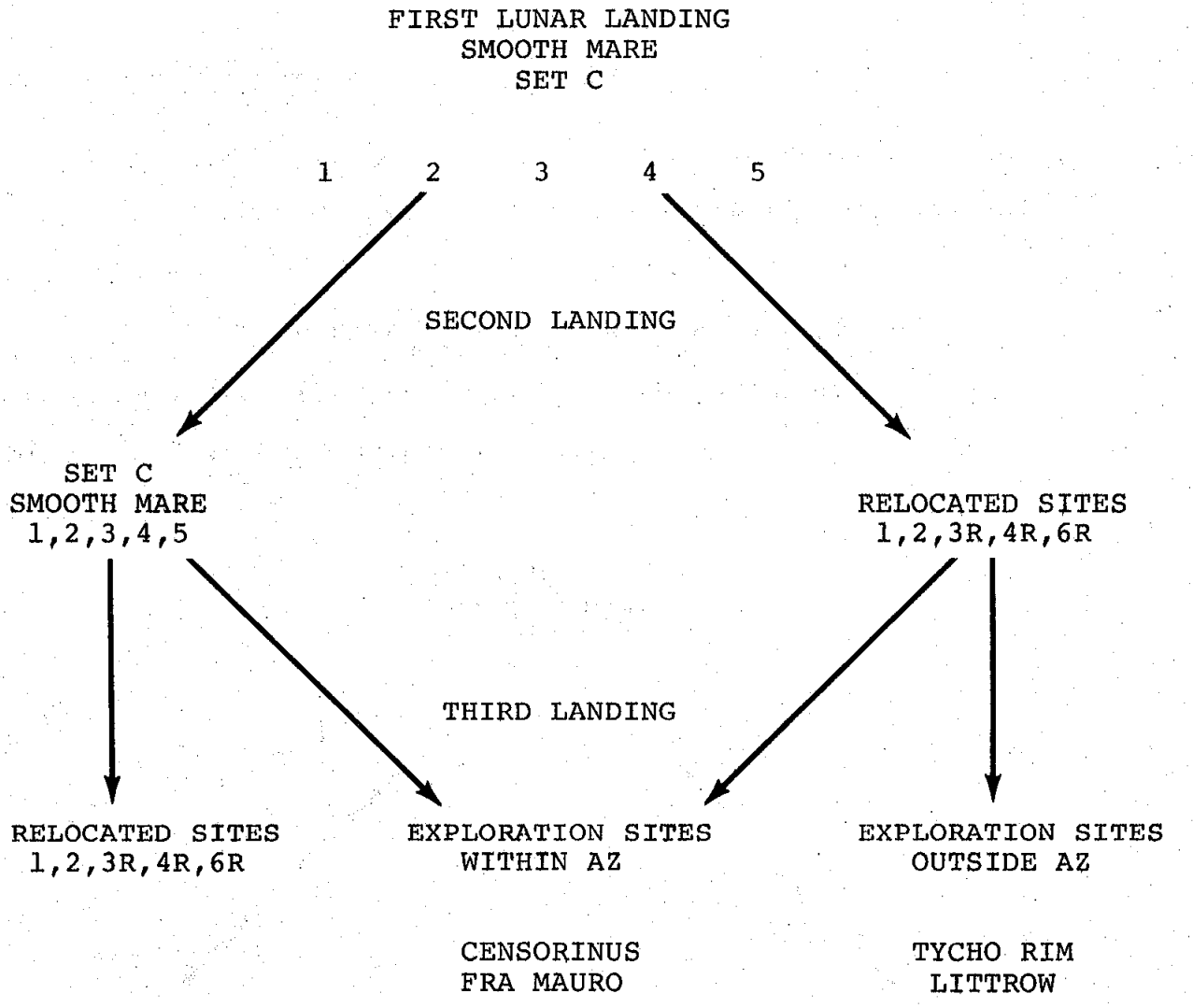
A. P. Boysen, Jr.-Bellcomm/MAS, used an example mission assignments (Table III), for the 10 lunar missions as a basis for discussion of the interrelations between the science objectives and operational constraints. It was noted in particular that

use of most of the sites being considered requires a change in philosophy regarding recycle (single site per mission desired), nature of the target (point landings instead of large ellipses), approach paths (undulating to rough or precipitous instead of smooth), touchdown points (low "N" numbers relative to Apollo), accessibility (non-free return and hybrid trajectories as a routine), and photography (2-4m resolution instead of 1m). Boysen emphasized the need to get going and suggested that the ASSB might need to reshape its charter in order to cope with the Lunar Exploration Program.

General Phillips agreed to the need to re-examine the nature of the Board's activities in light of the change in emphasis to lunar exploration. O. E. Maynard agreed but stressed keeping in mind that the H-missions use basic Apollo hardware. There was a consensus, expressed by General Phillips, that the ASSB cannot work the problem without understanding the overall lunar exploration rationale and that the Board must meet more frequently in view of the increased pace of activity. In order to get a start, General Phillips requested that the ASSB attempt to meet once a month and that at the next meeting the Board be given a thorough briefing on the scientific objectives, sites, site sequencing, etc. for the Lunar Exploration Program (Action - L. R. Scherer/MAL). General Phillips agreed that a mission assignments would be valuable in focusing the activity in lunar exploration. Such an assignment should reflect the input of as many

scientific interests as we can obtain. In addition, the preliminary photographic requirements for the sites should be developed (Action - O. E. Maynard/MSC).

N. W. Hinners-Bellcomm/MAS, presented the GLEP recommendations for the second and third lunar landing missions which are summarized below:



Hinners stressed that on the second landing the scientifically preferred sites are 4 or 5 and/or 4R or 6R if the first landing is at site 2 or 3. (Site 1 is no longer under consideration.) Alternatively, if the first landing is at site 4 or 5, then site 2, 3, or 3R would be preferred. This preference is based upon a desire to use the two missions to sample as different a lunar terrain as is possible. All the sites mentioned above are basically mare sites but sites 1, 2, 3, and 3R, so-called "eastern" mare, differ as a class from sites 4, 4R, 5, and 6R, the so-called "western" mare. The difference between the two classes is predominantly one of apparent age with the "eastern" being older than the "western". The "eastern" mare are characterized as older on the basis of thicker debris layers, fewer boulders, and a more subdued topography than the "western" mare. Additionally, the "eastern" mare are bluer. The significance of the subtle color difference is not established but is hypothesized to be caused by a slight compositional difference.

Discussion of the significance and occurrence of "eastern" and "western" mare brought out the fact that this represents an unfortunate usage of terms since the "eastern" mare extends to ∿25° west longitude or to the general boundary of the mare characterized by Oceanus Procellarum. It was agreed that in the future the terminology "older" and "younger" would be more appropriate.

Third mission candidate site preferences (discussed in more detail at a prior ASSB meeting) emphasized highlands material which would

be obtainable, in the Apollo zone, at Censorinus or Fra Mauro and at Tycho Rim outside the zone. Littrow is an example of very young appearing mare, wrinkle ridges, and highlands bench material. Along with Tycho, it is a preferred geophysical site in that it would establish a seismic station significantly far off the equator.

B. Milwitzky-HQ/MAL, discussed the scientific and technological advantages which would result from the investigation of a Surveyor spacecraft. He noted in particular that the spacecraft can provide engineering information relevant to extended lunar stays, especially to a lunar base. Scientifically Surveyors can increase mission return by allowing a high degree of mission pre-planning of details of surface operations. Milwitzky noted that the following general points can be made for the Surveyors:

1. Examination of spacecraft surfaces for effects of:
   a. micrometeoroid erosion
   b. physical or chemical changes due to solar and cosmic radiation
   c. effects of many cycles of thermal stress due to lunar day/night temperature extremes
2. Examination for sinkage of spacecraft due to thermal stresses, seismic or tectonic disturbances.
3. Examination of movable elements of the Surveyors to determine the extent of vacuum welding which may have occurred.

4. Search for evidence of creep of lunar surface fine particulate due to postulated electrostatic charging of surface.
5. Assessment of dust deposits on spacecraft after long exposure on the lunar surface.
6. Examination of footpad imprints, surface sampler trenches, vernier-engine blast areas and other disturbances of the lunar surface to determine differences which may have occurred since landing.
7. Examination of darker underlying material which appeared whenever lunar surface was disturbed to determine whether any changes have occurred with time.
8. Examine masses seen after disturbance of lunar surface to determine whether they are consolidated (rocks) or clods formed by vacuum welding.
9. Rephotograph areas televised by Surveyors to determine whether new craters, blocks or other changes in surface features have occurred.
10. Rephotograph areas televised by Surveyors to determine correlation between film and television with regard to photometry, colorimetry, polarimetry.
11. Return to Earth rocks and clumps viewed by Surveyor to permit assessment of the original analyses and interpretations of the Surveyor Science Team. Bring in original Surveyor Team members.

12. Return of Surveyor photometric/colorimetric charts to determine effect of exposure on the lunar surface.
13. Bearing strength measurements for comparison with Surveyor data.

Milwitzky went on to specify specific activities for each of the Surveyor spacecraft. Discussion brought out that particularly advantageous is Surveyor VII because it is in a geologically complex and fascinating area (Tycho Rim) and has more moving parts and has left more surface "artifacts" than any of the others.

O. E. Maynard-MSC, presented the MSC recommendations for Apollo 12. If Apollo 11 is unsuccessful, then the sites would remain sites 2, 3, and 5. Maynard said that MSC proposes building up slowly to point landing capability such that one could plan on using it for point landing by H-4. On Apollo 12 (H-1) MSC proposes to use ellipses essentially the same as Apollo ellipses thus ruling out relocated sites (which result in lower N numbers and a possible requirement for redesignation). MSC proposed that if Apollo 11 lands at site 2 or 3, we use sites S-III and S-I for Apollo 12, placing the ellipse center short (1,000 ft) and to the right (500 ft) of the Surveyor. In response to a question, Maynard stated that redesignation would be used only for obstacle

avoidance. The two Surveyor sites would give one 2-day recycle opportunity. If Apollo 11 lands at site 5, MSC proposed using sites 2, 3R, and S-I for Apollo 12.

Hinners noted that site S-III is "older" mare, like sites 2 and 3, and thus is not as scientifically desirable as sites 4, 4R, 5, or 6R if Apollo 11 lands at sites 2 or 3. Masursky concurred and noted that scientifically a priority would be "younger" mare (sites 4, 4R, 5, or 6R), Fra Mauro, Hipparchus, and site 1. Discussion indicated that Fra Mauro and Hipparchus are blanket deposits and that Apollo-type ellipses would suffice for scientific considerations. A recycle would be available if they were used on conjunction with sites 4, 4R, 5, or 6R. Further discussion on S-III and S-I resulted in a divergence of opinion. Those in favor cited Milwitzky's points while those opposed thought that on the one hand failure to get to the Surveyor (highly probable) would look like a mission failure and that on the other hand getting to it and spending time investigating the spacecraft would detract significantly from the science tasks already planned. They further pointed out that S-VII is a better target and is currently one of the Set B sites. It became obvious that the crux of the problem is in the recycle requirement since this forces preference on eastern-most sites in any set. Boysen suggested that if Apollo 11 gets off on

time, it might make sense to target to one site (4 or 5) the first month and then, if unsuccessful, target for three sites the second month.

General Phillips was not enthusiastic about adding new sites to the Apollo 12 list but did not rule them out. He requested that for the time being sites 2, 3, and 5 remain for Apollo 12 that S-III and S-I be dropped from consideration, and that a look be taken at the possibility of including Hipparchus and/or Fra Mauro (Action - O. E. Maynard/MSC). Since targeting information must be sent to MSFC by June 15, General Phillips requested that MSC's recommendations be given by telecon on June 12.

L. C. Wade-MSC, presented orbital photo plans for G-1 and H-1. On G-1 emphasis will be put on photographing scientific targets-of-opportunity including highland 250 mm strips not obtained on F, LM location photography, and selected stereo approach sequences to highland sites. On H-1 plans are to conduct further target-of-opportunity photography, high resolution (500 mm) photography of selected highlands areas for site certification, astronomical and dim-light photography, and S-158 (old S-065) multispectral photography. Wade noted that there is a potential problem in stowing both the 500 mm and S-158. General Phillips requested that they go ahead with

both for the time being. It was also requested that at the next meeting the requirements for highlands photography be discussed (Action - W. N. Hess/MSC).

Summary of Action Items

1. MSC (J. P. Loftus) will continue to investigate and will report at the July meeting on the possibility of making lunar afternoon landings as a method of obtaining recycle capability with a single site.
2. MSC (O. E. Maynard) will define the operational requirements (preliminary) for photographic coverage of lunar exploration landing sites.
3. Capt. L. R. Scherer/MAL will be responsible for arranging a briefing for the SSB on the science rationale behind the lunar exploration program. Science objectives, site selection, site sequencing, and landing site size will be considered.
4. MSC (O. E. Maynard) will investigate the possibility of using either the Fra Mauro formation or Hipparchus as a second mission landing site, such site to be either additional to sites 2, 3, and 5 or as a substitute for site 3. A teleconference will be held on June 12.
5. MSC (W. N. Hess) will define the science requirements for additional highlands photography.

ATTACHMENT A

APOLLO SITE SELECTION BOARD

AGENDA

I.	STANDARDIZATION OF SITE NOMENCLATURE	
	J. H. Sasser - MSC	15 min.
II.	STATUS OF SITE SELECTION FOR APOLLO 11	
	A. Targeting Plans (Recycle and Lighting)	
	O. E. Maynard - MSC	10 min.
	B. Turnaround Plans	
	C. B. Netherton - KSC	15 min.
	C. Crew Training	
	H. H. Schmitt - MSC	15 min.
	D. Site Data Book	
	J. H. Sasser - MSC	10 min.
III.	LUNAR EXPLORATION	
	A. Mission Assignments	
	A. P. Boysen, Jr. - Bellcomm	20 min.
	B. GLEP Recommendations, Apollo 12, 13	
	N. W. Hinners - Bellcomm	15 min.
	C. Rationale for Landing at a Surveyor	
	B. Milwitzky - HQ/MAL	15 min.
	D. MSC Apollo 12 Site Recommendations	
	O. E. Maynard - MSC	20 min.
IV.	ORBITAL PHOTOGRAPHY PLANS FOR G-1 and H-1	
	L. C. Wade - MSC	30 min.

ATTACHMENT B

Board Members Present
Lt. General S. C. Phillips, MA, Chairman
Capt. L. R.Scherer, MAL, Secretary
Mr. Oran W. Nicks, SD
Mr. John D. Hodge, MSC
Mr. Owen E. Maynard, MSC
Dr. Wilmot N. Hess, MSC

Board Members Absent
Maj. General John D. Stevenson, MO
Mr. John Disher, ML
Dr.Ernst Stuhlinger, MSFC
Adm. Roderick O. Middleton, KSC
Dr. Donald U. Wise, MAL

Other Attendees
G. H. Hage, NASA HQ/MA
C. M. Lee, NASA HQ/MA
D. A. Beattie, NASA HQ/MAL
B. Milwitzky, NASA HQ/MAL
M. W. Molloy, NASA HQ/MAL
W. H. Shirey, NASA HQ/MAL
A. T. Strickland, NASA HQ/MAL
G. P. Chandler, NASA HQ/MAO
E. W. Land, NASA HQ/MAO
R. B.Sheridan, NASA HQ/MAO
D. R. Anselmo, Bellcomm/MAS
R. A. Bass, Bellcomm/MAS
A. P. Boysen, Jr., Bellcomm/MAS
C. H. Eley, Bellcomm/MAS
V. Hamza, Bellcomm/MAS
N. W. Hinners, Bellcomm/MAS
J. L. Marshall, Bellcomm/MAS
V. S. Mummert, Bellcomm/MAS
H. W. Radin, Bellcomm/MAS
P. E. Reynolds, Bellcomm/MAS
R. L. Wagner, Bellcomm/MAS
C. B. Netherton, KSC/LO-PLN
C. R. Huss, MSC/FM
J. P. Loftus, MSC/HA
C. H. Glancy, MSC/PD
J. H. Sasser, MSC/TJ
L. C. Wade, MSC/TJ
H. Masursky, USGS

TABLE I

SITE	LATITUDE	LONGITUDE
*Censorinus	00°17'S	32°39'E
Rima Littrow	21°35'N	28°56'E
*Abulfeda	14°50'S	14°00'E
Rima Hyginus	07°52'N	06°07'E
Rima Hadley	25°02'N	02°55'E
Tycho	41°08'S	11°35'W
Copernicus Peak	09°36'N	19°53'W
Copernicus Wall	10°22'N	19°59'W
Schröter's Valley	24°36'N	49°03'W
Marius F	15°10'N	56°31'W
*Fra Mauro	03°45'S	17°36'W
*Mösting C	01°55'S	08°03'W
Hipparchus	04°36'S	03°40'E
Prinz	25°57'N	43°40'W
Gassendi	17°50'S	40°20'W
Dionysius	02°31'N	17°49'E
Alexander	37°46'N	14°06'E
Alphonsus	13°35'S	04°11'W
Rima Bode II	12°47'N	03°49'W
*Copernicus CD	06°32'N	14°58'W
Tobias Mayer P	13°18'N	31°11'W
Aristarchus	24°24'N	47°50'W

*LAC 1:1,000,000. All others are from 1:200,000 AMS Uncontrolled Mosaics.

TABLE II

	Site 5	Site 3	Site 2
July			
Date	21	18	16
Sun Angle	6.3°-9.0°	8.3°-11°	9.9°-12.6°
Recycle	|←——68 hr——→|	←—44 hr——|	
August			
Date	20	16	14
Sun Angle	9.0°-12.0°	6.2°-8.9°	6.2°-8.9°
Recycle	|←——93 hr——→|	←—44 hr——|	
September			
Date	18	15	13
Sun Angle	6.8°-9.7°	6.3°-9.2°	6.8°-9.6°
Recycle	|←——72 hr——→|	←—44 hr——|	

TABLE III

SSION	POTENTIAL SITES	ACCESSIBILITY (PRELIMINARY)	RECYCLE	AVAILABLE PHOTOGRAPHY	ORBITAL SCIENCE	TARGET/APPROACH/TOUCHDOWN
G-1	E. MARE SITE 2	FR	3	1M	250 MM	AREA/SMOOTH/SMOOTH
H-1	W. MARE (FLAMSTEED)	FR	?	1M	500 MM MULTISPEC. PHOTOG.	POINT/RIDGE/SMOOTH
H-2	FRA MAURO FM.	FR	|	1M, S-4	500 MM MULTISPEC. PHOTOG.	AREA/UNDULATING/UNDULATING
H-3	CENSORINUS	FR	|	2-3M, S	500 MM	POINT/ROUGH/BLOCKY
H-4	RIMA BODE II	H	|	2-3M, F-4	500 MM	POINT/UNDULATING/SMOOTH
J-1	TYCHO (RIM)	NFR	|	5M, F-4, SURVEYOR	CSM	POINT/UNDULATING/BLOCKY
J-2	COPERNICUS (PEAKS)	NFR	|	2-3M, F-8	CSM	POINT/CRATER WALL/SMOOTH
J-3	MARIUS HILLS	NFR	|	2-3M, F-8	CSM	POINT/DOMES/SMOOTH
J-4	DESCARTES	H	|	∿40M (L.O. IV)	CSM	POINT/HILLY/UNDULATING
J-5	RIMA PRINZ I	NFR	↓	3-4M, F-8	CSM	POINT/RIDGE&RILLE/SMOOTH

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MAL/D. U. Wise
MO/Maj. Gen. J. D. Stevenson
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SD/O. W. Nicks
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MA/G. H. Hage
MA/W. E. Stoney
ML/W. C. Schneider
MAO/J. K. Holcomb
MAO/G. P. Chandler
MAL/B. Milwitzky
MAL/W. T. O'Bryant
MAL/R. J. Allenby
MAL/D. A. Beattie
MAL/A. T. Strickland
MAS/R. L. Wagner
MAS/A. P. Boysen, Jr.
MAS/V. S. Mummert
MAS/R. V. Sperry
MAS/D. B. James
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MAS/D. R. Anselmo
MAS/C. H. Eley
MAS/F. El-Baz
MAS/N. W. Hinners
MSC-PA/G. M. Low
MSC-AE/J. M. West
MSC-PD/J. R. Sevier
MSC-PD/R. J. Ward
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MSC-CB/H. H. Schmitt
MSC-CF/W. J. North
MSC-CF32/R. G. Zedekar
MSC-DA/C. A. Berry
MSC-EA/M. A. Faget
MSC-EG2/D. C. Cheatham
MSC-ES/J. N. Kotanchik
MSC-FA/C. C. Kraft
MSC-FM/J. P. Mayer
MSC-FM2/F. V. Bennett
MSC-FM4/J. C. McPherson
MSC-FM5/Q. S. Holmes
MSC-HA/J. P. Loftus
MSC-TJ/J. H. Sasser
MSC-TJ/L. C. Wade
KSC-LO-PLN/R. E. Moser
KSC-LO-PLN-3/C. B. Netherton
USGS/H. Masursky
USGS/E. M. Shoemaker

APOLLO

SITE SELECTION

BOARD

PRESENTATION

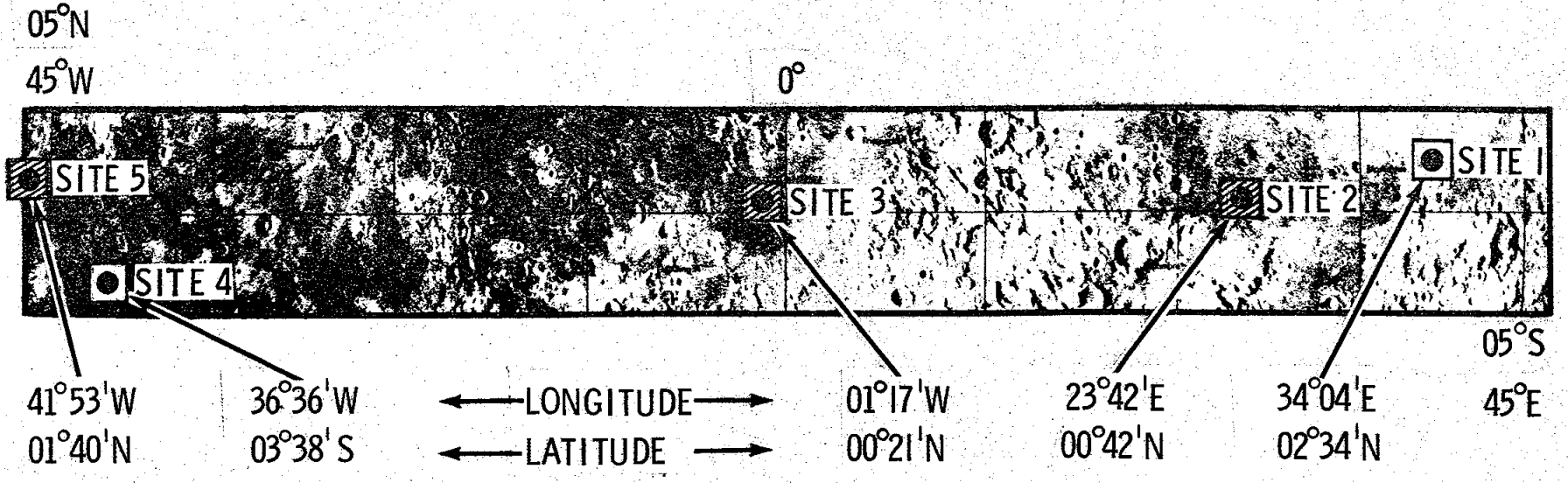
JUNE 3, 1969

APOLLO 11

SITE SELECTION

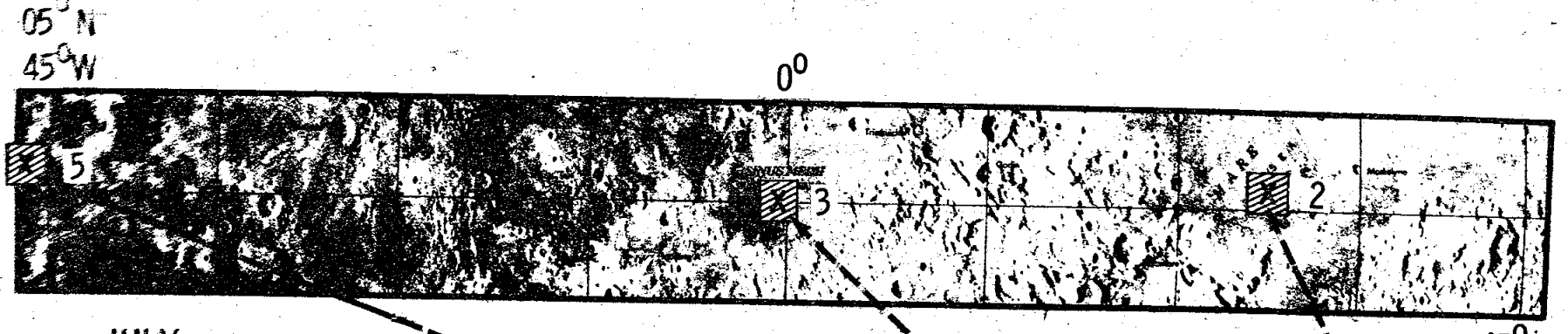
STATUS

APOLLO 11 SET C SITES ACCEPTED AT LAST SSB



SELECTED SITES

APOLLO 11 SELECTED SITES - RECYCLE CONSIDERATIONS



JULY

DATE	21	18	16
SUN ANGLE	6.3°-9.0°	8.3°-11.0°	9.9°-12.6°
RECYCLE		68 HR	44 HR

AUGUST

DATE	20	16	14
SUN ANGLE	9.0°-12.0°	6.2°-8.9°	6.2°-8.9°
RECYCLE		93 HR	44 HR

SEPTEMBER

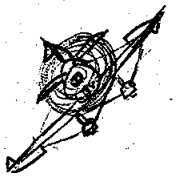
DATE	18	15	13
SUN ANGLE	6.8°-9.7°	6.3°-9.2°	6.8°-9.6°
RECYCLE		72 HR	44 HR

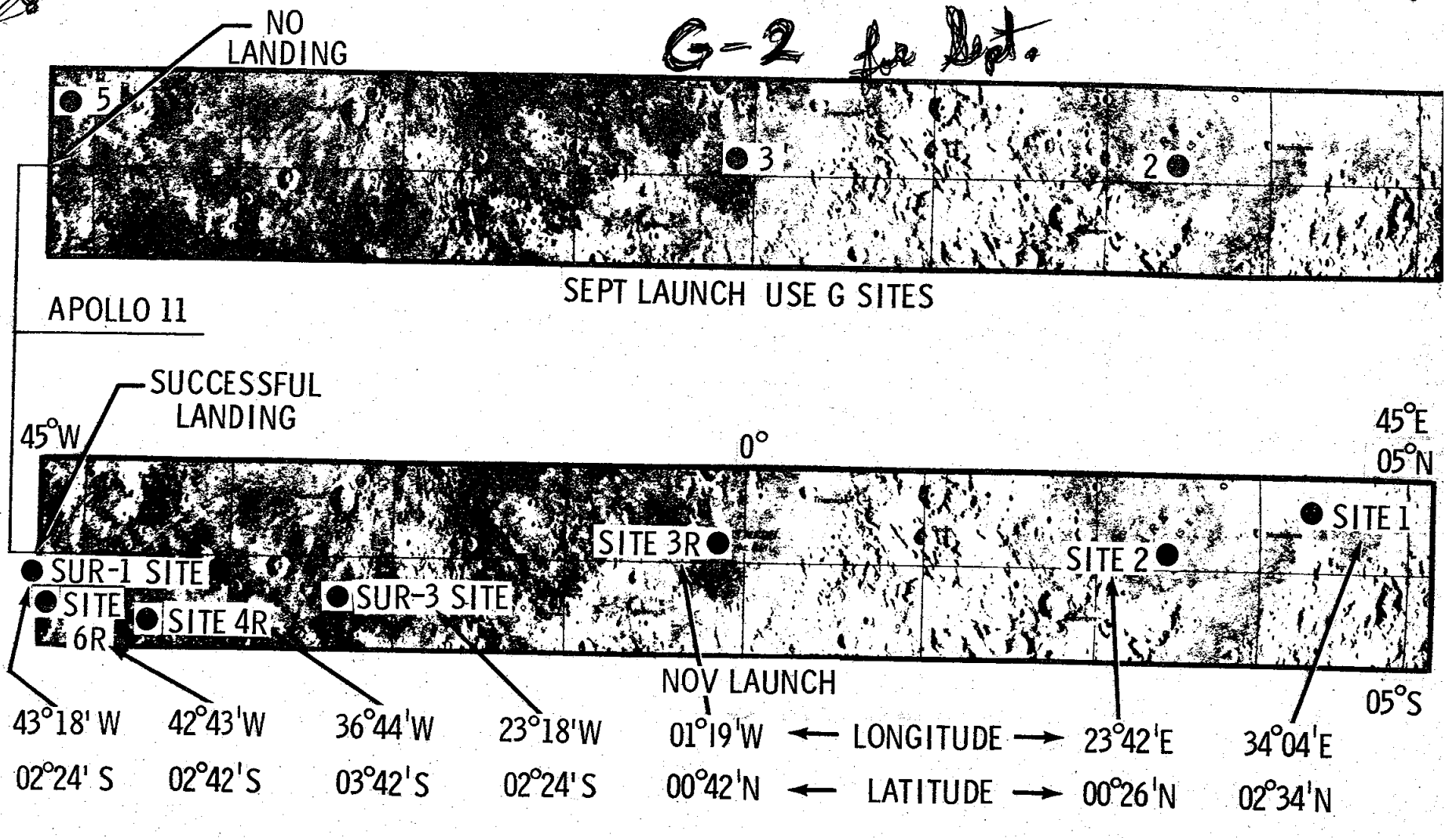
APOLLO 12

SITE SELECTION

STATUS

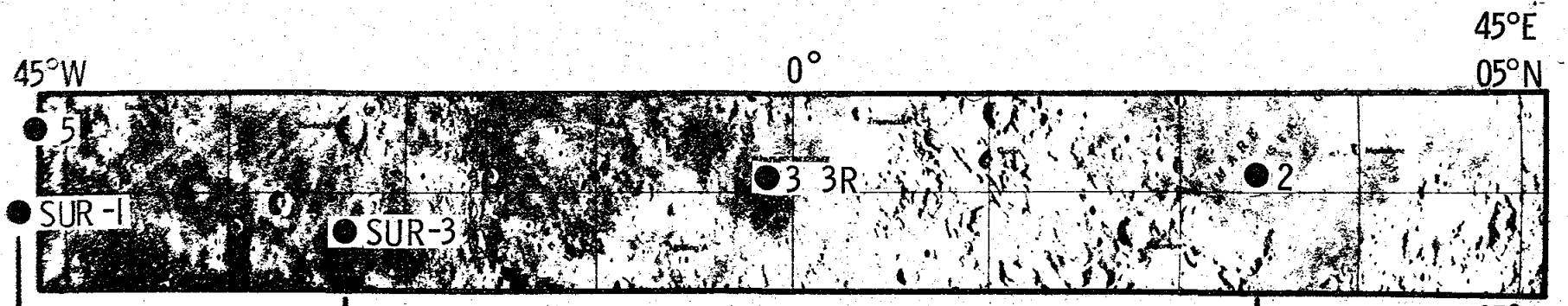
APOLLO 12 MISSION SEQUENCE CONSIDERATION





NOV H-1

APOLLO 12 LANDING SITE MATRIX



IF APOLLO-11 LANDED AT 2 OR 3

SUR-1 > 40 HR SUR-3

IF APOLLO-11 LANDED AT 5

SUR-1 > 66 HR 3R > 40 HR 2

APOLLO-12 RECYCLE TIMES

13:30	10:48	8:36	5:42	TIME EST
76.9 HRS				
50.7 HRS		51.3 HRS		72° LAUNCH
16	14	13	11	NOV: DATE
15:42	13:00	11:06	7:54	TIME EST
76.6				
50.7		51.2 HRS		72°-LAUNCH
16	14	13	11	DEC: DATE
16:30	14:18	11:48	8:54 EST	TIME EST
66.7				
50.2		50.9		72°-LAUNCH
14	12	11	9	JAN: DATE

NASA-S-69-1916

PHOTOGRAPHIC PLANS FOR F, G, AND H1 MISSIONS

- F - 18 MAY LAUNCH
- G - SITE 2 LANDING
- H1 - WESTERN MARE

NASA-S-69-1917

F PHOTO PLANS

- 1 STEREO STRIP WITH APPROACH PHOTOS TO SITES 2 AND 3
- 1 STEREO APPROACH SEQUENCE TO CENSORINUS AND SITE 3
- 2 OBLIQUE SEQUENCES TO SITES 2 AND 3
- PHOTOS FROM LM DURING DESCENT PASS
- SCIENTIFIC TARGETS OF OPPORTUNITY - INCLUDING HIGHLAND 250-mm STRIPS

NASA-S-69-1918

G PHOTO PLANS

- SCIENTIFIC TARGETS OF OPPORTUNITY
  INCLUDING HIGHLAND 250-mm
  STRIPS NOT OBTAINED ON F

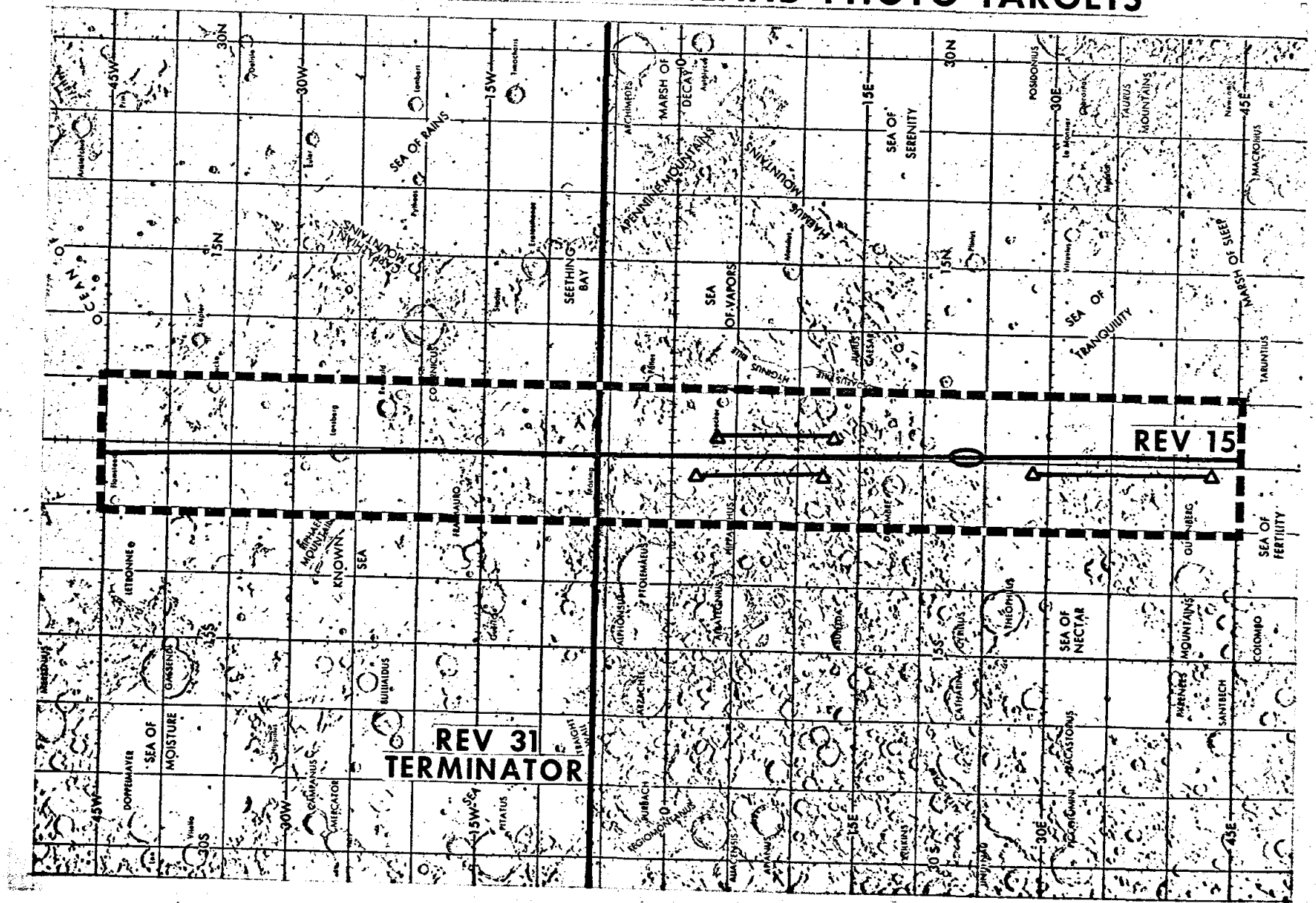
- LM LOCATION PHOTOGRAPHY

- SELECTED STEREO APPROACH SEQUENCES
  TO HIGHLAND SITES

NASA-S-69-1922

APOLLO 10/11

HIGH RESOLUTION HIGHLAND PHOTO TARGETS



NASA-S-69-1919

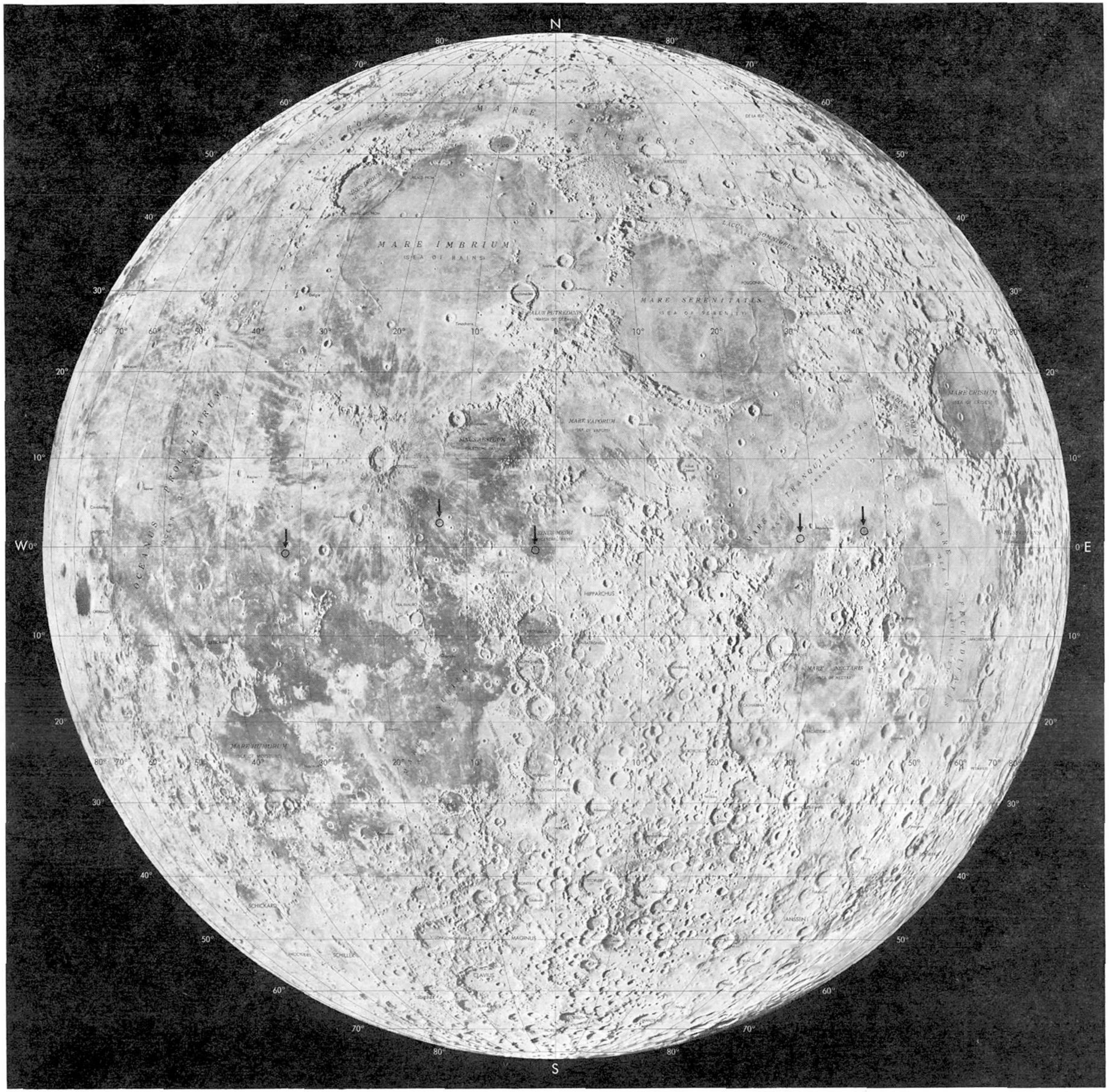
H1 PHOTO POTENTIALS

- HIGH RESOLUTION - 500-mm PHOTOGRAPHY OF SELECTED HIGHLAND AREAS FOR SITE CERTIFICATION
- SO65 MULTIBAND
  - B&W 3400
  - 3 SELECTED BANDS
- SCIENTIFIC TARGETS OF OPPORTUNITY
- ASTRONOMICAL AND DIM LIGHT PHOTOGRAPHY

NASA-S-69-1921

SUMMARY PLAN

- 500-mm-LENS BE PROCURED FOR USE ON H1
- SO65 AND WINDOW MODIFICATIONS BE PLANNED FOR H1
- S&AD/MSC CONTINUE TO COORDINATE PHOTO PLANS FOR INTERESTED SCIENTISTS
- S&AD/MSC ATTEMPT TO INTEGRATE ORBITAL PHOTO REQUIRMENTS TO REDUCE REDUNDANCY - PLAN LOGICAL SEQUENCE OF ONBOARD PHOTO EXPERIMENTS
- LUNAR EXPLORATION SITE SELECTION CONTINUE TO BE KEPT OPEN TO ALLOW INCLUSION OF SITES SELECTED FROM APOLLO MISSION PHOTOGRAPHY


N
S
W
E
MARE FRIGORIS
MARE IMBRIUM
SEA OF RAINS
PALUS PUTREDINIS
MARE SERENITATIS
SEA OF SERENITY
MARE CRISIUM
SEA OF CRISES
MARE VAPORUM
SEA OF VAPORS
MARE TRANQUILLITATIS
OCEANUS PROCELLARUM
HIPPARCHUS
MARE HUMORUM
MARE NECTARIS
SEA OF NECTAR
SCHICKARD
SCHILLER
MAGINUS
JANSSEN

APOLLO SITE SELECTION BOARD

TENTATIVE AGENDA

I. STANDARDIZATION OF SITE NOMENCLATURE

J. H. Sasser - MSC — 15 min.

II. STATUS OF SITE SELECTION FOR APOLLO 11

A. Targeting Plans (Recycle and Lighting)

O. E. Maynard - MSC — 10 min.

B. Turnaround Plans

C. B. Netherton - KSC — 15 min.

C. Crew Training

H. H. Schmitt - MSC — 15 min.

D. Site Data Book

J. H. Sasser - MSC — 10 min.

III. LUNAR EXPLORATION

A. Mission Assignments

A. P. Boysen, Jr. - Bellcomm — 20 min.

B. GLEP Recommendations, Apollo 12, 13

N. W. Hinners - Bellcomm — 15 min.

C. Rationale for Landing at a Surveyor

B. Milwitzky - HQ/MAL — 15 min.

D. MSC Apollo 12 Site Recommendations

O. E. Maynard - MSC — 20 min.

IV. ORBITAL PHOTOGRAPHY PLANS FOR G-1 and H-1

L. C. Wade - MSC — 30 min.