ALSEP Performance Summary Reports

1973

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ALSEP PERFORMANCE SUMMARY REPORT

13 April 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunrise of the scientific station's 5th lunation occurred 8 April. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG remains constant. The downlink received signal is reported at -136.0 ± 4.0 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge survey's being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 343.0 ± 8°K. Subsurface temperatures at 230 cm depth is 256.5°K at probe #1 and 250.8°K at probe #2.

Preliminary analysis of LSG data resulting from the test on 6 April indicates that the responses which have been detected are associated with the thermal effects related to the sunrise terminator. Whether the responses are instrumentationally derived or are nearby thermal moonquakes is not now known. A conclusion of the test was that the d.c. offset voltage of the unbalanced bridge feeding into the d.c. - coupled preamplifier stage drove the system into saturation resulting in the output deflection remaining in one direction and not switching polarities with the application and removal of bias voltage. The instrument was then configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 10 resulting in a usable data signal. On 19 April a test is scheduled to change and reduce the mass beam load point by driving both screws toward the bottom position and attempting to rebalance the beam by commanding the mass change mechanism.

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished on 6 and 12 April as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
6	1451	1500	1530	1532	2	None
12	2055	2106	2125	--	1	None
12	--	2315	2326	2327	2	None

The next 30-minute passive listening period is planned for 20 April.

13 April 1973
G.m.t.: 1300

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE gathered data on the composition of the lunar atmosphere throughout the dawn terminator. The electrical background noise ramp continued to be noted on all three mass range data channel outputs. The LACE was commanded OFF at 1014 G.m.t., 11 April, for the remainder of this lunar day when the electronic temperature (AM-41) reached 122°F at a sun angle of 42.1°. The electronics fifth day temperature profile is tracking the third and fourth day profile within ± 3°F.

The Lunar Ejecta and Meteorite Experiment is presently OFF. The experiment's periodic calibrate pulses occurred as anticipated. On 8 April, the LEAM was commanded to STANDBY for a 6 hour and 37 minute period in an effort to avoid the possible phenomena associated with lunar sunrise and lunar dust transport (Apollo 17 SMEAR, ALSEP 45). The LEAM was commanded OFF by the Hawaii tracking station at 0510 G.m.t., 10 April, when the instrument mirror temperature (AJ-11) reached 165.2°F and a sun angle of 27°. The LEAM will remain OFF until just prior to sunset for this lunar day. The instrument's fifth day temperature profile is tracking the fourth lunar day profile within ± 2°F.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 5 April 1973, 1300 G.m.t., to 13 April 1973, 1300 G.m.t.

Central station

Sunrise of the 13th lunar day occurred on 9 April. The DSS-1 heater (10 watts) was commanded OFF at 1059 G.m.t., 9 April, when the central station's average thermal plate temperature increased to 38.2°F. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30 foot antenna tracking stations report a signal strength between -134.0 dbm and -139.5 dbm from transmitter "B". Since the selection of transmitter "B" and processor "Y" on 26 March, the bit stream and signal strength have remained steady.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. On 9 April, the long period y-axis responded to leveling mode commands. Commands to level the y-axis had not been attempted since 27 March. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues to respond to flip calibrations (no cal raster observed) or filter commands. As of 11 April, 361 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is in standby OFF. On 11 April, the experiment was commanded to operate select at 1120 G.m.t. and to high bit rate ON at 1130 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal and no significant signals were noted in real-time. High bit rate operations were terminated at 1200 G.m.t. and the experiment commanded to standby OFF at 1204 G.m.t. The next passive listening period is planned for 18 April.

Apollo 15 ALSEP

Operational status from 5 April 1973, 1300 G.m.t., to 13 April 1973, 1300 G.m.t.

Central station	Sunrise of the station's 22nd lunation occurred 10 April. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -134.0 dbm and -138.5 dbm. The lunar night operational procedure of eliminating the data subsystem's timer outputs by uplinking the timer's reset command (octal 150) was terminated at 1032 G.m.t., 10 April.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors were commanded to 100 gamma range at 1014 G.m.t., 9 April, for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW static since 20 September 1972. The instrument has executed 874 flip calibration sequences since activation. The experiment continues to measure time-dependent solar and induced magnetic fields with increasing activity as the moon enters the earth's bow shock and transition region.
Solar wind spectormeter experiment	The instrument has been in STANDBY since 21 March 1973.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). At the beginning of real-time support on 11 April it was noted that the command register contained reset frame counter to 9 (SIDE Load 4). A command verification word (octal 104) was not reported in the ALSEP downlink. The spurious functional occurred between real-time support periods on 10 April and 11 April. The instrument was commanded to STANDBY and back to ON at 1231 G.m.t., 11 April, to return the experiment to its normal configuration without incident.

Operational status from 5 April 1973, 1300 G.m.t., to 13 April 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 305.2°K as indicated by the cable thermocouples. The sub-surface temperature is 253.2°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.8°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 5 April 1973, 1300 G.m.t., to 13 April 1973, 1300 G.m.t.

Central station	Sunrise at the Apollo 14 site occurred on 11 April (28th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -136.0 dbm and -141.7 dbm. The DSS-1 heater (10 watts) was commanded OFF for lunar day operation at 1941 G.m.t., 12 April. Average thermal plate temperature was 77.1°F. Data processor "Y" was verified by command at 1951 G.m.t., 12 April.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater will be commanded to FORCED OFF on 15 April to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale leveled position since 22 March. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 12 April 1973, the experiment was commanded to ON at 2159 G.m.t. and to high bit rate ON at 2207 G.m.t. for a passive listening mode. No significant signal was noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 2245 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 2245 G.m.t., 12 April. The next listening period is scheduled for 16 April 1973.
Supratherma ion detector/cold cathode gauge experiment	The experiment is currently in the full automatic stepping sequence with Channeltron high voltages commanded ON. Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment.
Charge particle lunar environmental experiment	The CPLEE has remained in STANDBY select since 15 March 1973.

Apollo 12 ALSEP

Operational status from 5 April 1973, 1300 G.m.t., to 13 April 1973, 1300 G.m.t.

Central station	Sunrise of the 43rd lunar day occurred on 12 April. Power output from the RTG remains steady. A signal strength of -136.5 ± 3.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 1936 G.m.t., 12 April, when the average thermal plate temperature was 51.2°F. Data processor "Y" was verified by command at 1950 G.m.t., 12 April.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded OFF for lunar day operation at 1929 G.m.t., 12 April. No significant seismic events were noted during the periodic real-time support periods of this instrument. At 1150 G.m.t., 10 April, the instrument responded to a spurious command (octal 071, y leveling motor ON). The Carnarvon tracking station confirmed receipt of the command in the ALSEP downlink. The leveling motor was turned OFF by command through the tracking station at 1204 G.m.t., 10 April, at the direction of mission control without incident.
Lunar surface magnetometer experiment	Scientific and engineering data have been invalid since 4 June 1972.
Solar wind spectrometer experiment	This experiment continues to return scientific data on solar wind plasma magnetosphere plasma and magnetopause crossings, by sensing the direction and energies of both electrons and positive ions. The instrument is currently in the low gain mode (7 August 1972) and is recording solar wind plasma data for subsequent long term analysis.
Suprathermal ion detector experiment	Currently the SIDE is in OPERATE select, automatic stepping sequence, gathering scientific data of the dawn terminator. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 14 April in an effort to preclude instrument mode changes at internal temperatures above 55°C. On 8 April, the Canary ground station reported a spurious command verification work (octal 053), SIDE STANDBY. The spurious functional change was corrected by Mode 1 command at 2036 G.m.t., 8 April, through the Canary tracking station without incident.

Status as of 2130 G.m.t., 12 April 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1240	797	621	356
Total Commands to Date	16763	8926	15172	6028
Sun Angle	2.7°	10.6°	32.3°	44.0°
Input Power	68.4w	69.4w	71.9w	69.6w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	51.2°F	77.1°F	85.4°F	85.9°F
PSE Sensor Temp (DL-07)	126.3°F	124.3°F	126.1°F	127.3°F
LSM Internal Temp (DM-05)	Invalid	N/A	45.8°C	49.5°C
SWS Module 300 Temp (DW-13)	3.2°C	N/A	Standby	N/A
SIDE Temp (DI-05)	13.8°C	Invalid	64.5°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	347.4°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-18.0°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	302.6°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	121
Total Commands to Date	6301
Sun Angle	59.6°
Input Power	76.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE & LEAM OFF
Avg Thermal Plate Temp	113.8°F
LMS Temp (AM-41)	56.7°F
LEAM Temp (AJ-11)	171.7°F
HFE Temp Ref 1 (DH-13)	320.1°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	114.9°F

ALSEP PERFORMANCE SUMMARY REPORT

19 April 1973
G.m.t.: 1300

Apollo 17 ALSEP

Noon of the scientific station's 5th lunation occurred on 15 April. All experiments and the central station are operating as expected. Power from the RTG is stabilized at 76.29 watts. The downlink received signal is reported between -142.5 and -147.0 dbm. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses), continues during real-time support periods. The central station's temperature profile is tracking that of the previous lunation.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge survey's being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 357 ± 8°K. Subsurface temperature at 230 cm depth is 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 10. On 19 April a test is scheduled to change and reduce the mass beam load point by driving both screws toward the bottom position and attempting to rebalance the beam by commanding the mass change mechanism. The experiments sensor temperature is stabilized at 49.190°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY. No passive listening mode was scheduled during this reporting period: the next passive listening mode is scheduled for 30 minutes on 20 April.

The Lunar Atmospheric Composition Experiment remains OFF since commanded to this mode at 1014 G.m.t. on 11 April. The electronics temperature (AM-41) reached a value of 74.4°F near lunar noon, decreasing to 72.9° at a sun angle of 103.6°. AM-41 is tracking the previous day's profile by ± 3°F. Per the present operational plan, the experiment will be commanded ON just prior to lunar sunset on 22 April.

The Lunar Ejecta and Meteorites Experiment remains OFF since commanded to this mode on 10 April. Subsequent to the OFF command, the instrument's mirror temperature (AJ-11) decreased, reaching 152.2°F at a sun angle of 30.5°, and then continued to increase as the sun angle increased toward lunar noon. The instrument's 5th day temperature profile is in close agreement with that of the previous lunation. The LEAM will remain OFF until just prior to sunset on 22 April.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 13 April 1973, 1300 G.m.t., to 18 April 1973, 1300 G.m.t.

Central station	Noon of the 13th lunar day occurred on 16 April at the Descartes Site. The DSS-1 heater (10 watts) has been OFF since 9 April. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30 foot antenna tracking stations report a signal strength between -135.0 dbm and -140.0 dbm from transmitter "B". Since the selection of transmitter "B" and processor "Y" on 26 March, the bit stream and signal strength have remained steady.
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 9 April. The instrument's assembly temperature (DL-07) was off-scale HIGH on 15 April when the sun angle was 78.3°: it is expected to return on-scale on 23 April. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been static since 16 February 1973. The LSM's scientific data continues to respond to flip calibrations (no cal raster observed) or filter commands. As of 18 April, 367 flip calibration sequences have been executed and verified by the experiment's engineering data.
Active seismic experiment	The experiment is in standby OFF. On 18 April, the experiment was commanded to operate select at 1121 G.m.t. and to high bit rate ON at 1130 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal and no significant signals were noted in real-time. High bit rate operations were terminated at 1200 G.m.t. and the experiment commanded to standby OFF at 1205 G.m.t. The next passive listening period is planned for 26 April.

Apollo 15 ALSEP

Operational status from 13 April 1973, 1300 G.m.t., to 18 April 1973, 1300 G.m.t.

Central station

Noon of the station's 22nd lunation occurred 17 April. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -135.5 dbm and -139.0 dbm. The data subsystem's timer outputs have occurred as expected since termination of the lunar night operational procedure on 10 April.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. On 16 April the sensor temperature (DL-07) was off-scale HIGH (sun angle = 76.3°): it is expected to return on-scale on 21 April. During the intermittent real-time support periods this past week no significant seismic events were noted.

Lunar surface magnetometer experiment

The experiment sensors were commanded from the 100 to the 200 gamma range at 1428 G.m.t., 13 April, to observe magnetic response to solar flare activity. They were returned to the 100 gamma range at 1151 G.m.t. on 16 April. The y-axis sensor head is fixed at the 180 degree position; it does not respond to flip cal commands and has indicated off-scale LOW static since 20 September 1972. The instrument has exeucted 880 flip calibration sequences since activation. Double flip calibration sequences were suspended on 15 April when the internal temperature exceeded 60°C. The experiment continues to measure time-dependent solar and induced magnetic fields as the moon passes through the transition region to the earth's bow shock.

Solar wind spectrometer experiment

At 1017 G.m.t. on 16 April, the experiment was commanded ON for a period of 3 minutes to provide additional data required in analysis of anomalous operation previously observed. The telemetry data continuously indicated cut of sync data: the power demand was excessively high at 13 watts. Following the operating period, the instrument was commanded back to STANDBY (Apollo 15 SMEAR, ALSEP 46).

Apollo 15 ALSEP (continued)

Operational status from 13 April 1973, 1300 G.m.t., to 18 April 1973, 1300 G.m.t.

Suprathermal ion detector/cold cathode gauge	The instrument is currently operating with the Channeltron high voltages commanded ON in full automatic stepping sequence (0-127 frames). Instrument response to solar flare activity was observed on 13 April.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 367.8°K as indicated by the cable thermocouples. The sub-surface temperature is 253.2°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.8°K at its lower-most point. Ring bridge surveys are obtained preiodically.

Apollo 14 ALSEP

Operational status from 13 April 1973, 1300 G.m.t., to 18 April 1973, 1300 G.m.t.

Central station

Noon at the Apollo 14 site will occur on 19 April (28th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -136.0 dbm and -140.0 dbm. The DSS-1 heater (10 watts) remains OFF for lunar day operation. Data processor "Y" was verified on 12 April. At 0604 G.m.t. on 18 April the Central Station responded to a spurious command (octal 056, DSS-2, 5-watt heater ON). The Texas ground station reported receipt of a CVW in the downlink. After verification during real-time support, the heater was commanded OFF by transmission of octal 057 at 0949 G.m.t., 18 April, without incident.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF on 16 April at 1015 G.m.t., to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale position since 22 March, however, the y-axis failed to respond to leveling commands on 17 April. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. On 16 April 1973, the experiment was commanded to ON at 1024 G.m.t. and to high bit rate ON at 1030 G.m.t. for a passive listening mode. No significant signal was noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 1100 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1102 G.m.t., 16 April. The next listening period is scheduled for 23 April 1973.

Suprathermal ion detector/cold cathode gauge experiment

At 0555 G.m.t., 15 April, the instrument went to STANDBY without being commanded. The instrument was commanded to ON with some difficulty (3 commands) by mission control at 1449 G.m.t., 15 April. At 1610 G.m.t., 15 April, the instrument returned to STANDBY without being commanded. The sun angle at 0555 G.m.t., was 41° and, at 1610 G.m.t., the sun angle was 46°. It is planned to leave the instrument in STANDBY until the sun angle reaches approximately 139° at which time an attempt will be made to command it to ON. The cause for the inadvertent changes to STANDBY are not known at this time.

Charge particle lunar enviornmental experiment

The CPLEE has remained in STANDBY select since 15 March 1973.

Apollo 12 ALSEP

Operational status from 13 April 1973, 1300 G.m.t., to 18 April 1973, 1300 G.m.t.

Central station	Noon of the 43rd lunar day will occur on 19 April. Power output from the RTG remains steady. A signal strength of -140.0 ± 3.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) remains OFF for lunar day operations. Data processor "Y" was verified on 12 April.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor remains OFF for lunar day operation. No significant seismic events were noted during the periodic real-time support periods of this instrument. At 1628 G.m.t., 16 April, the instrument responded to a spurious command (octal 075, Y leveling speed HIGH). The Guam tracking station confirmed receipt of the command in the ALSEP downlink. After verification during real-time support, the leveling speed was commanded to LOW by mission control at 0935 G.m.t., 17 April, without incident.
Lunar surface magnetometer experiment	Scientific and engineering data have been invalid since 4 June 1972.
Solar wind spectrometer experiment	This experiment continues to return scientific data on solar wind plasma, magnetosphere plasma and magnetopause crossings, by sensing the direction and energies of both electrons and positive ions. The instrument was commanded to extended range mode at 1506 G.m.t., 13 April to record a solar flare activity. At 1050 G.m.t., 14 April the instrument was commanded to normal gain mode.
Suprathermal ion detector experiment	Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated at 1041 G.m.t., 14 April, in an effort to preclude instrument mode changes at internal temperatures above 55°C. During real-time support on 18 April the instrument experienced an unexpected mode register load of X10. The instrument was commanded to OFF at 1214 G.m.t., 18 April without incident: it will remain OFF until real-time support on 19 April to allow the instrument to cool below 55°C.

Status as of 1300 G.m.t., 18 April 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1246	803	627	362
Total Commands to Date	16839	8986	15294	6127
Sun Angle	72.9°	78.8°	100.1°	112.6°
Input Power	67.6w	69.5w	71.9w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	SIDE,ASE&CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	92.8°F	120.6°F	115.6°F	98.7°F
PSE Sensor Temp (DL-07)	133.8°F	127.4°F	Offscale HIGH	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	69.5°C	49.5°C
SWS Module 300 Temp (DW-13)	64.3°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	89.5°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	364.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	82.0°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	329.8°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	127
Total Commands to Date	6360
Sun Angle	127.1°
Input Power	76.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE & LEAM OFF
Avg Thermal Plate Temp	114.9°F
LMS Temp (AM-41)	61.4°F
LEAM Temp (AJ-11)	180.5°F
HFE Temp Ref 1 (DH-13)	318.0°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	116.2°F

ALSEP PERFORMANCE SUMMARY REPORT

27 April 1973
G.m.t.: 0100

On April 21, the Apollo 16 ALSEP completed one year of uninterrupted operations.

Apollo 17 ALSEP

Midnight will occur 30 April at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures have stabilized and are tracking the temperature profile of the fourth lunar night. Downlink RF signal strength is reported between -136.5 and -145.0 dbm from transmitter "A". Thermoelectric power source output is 76.9 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 114.5 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. On 19 April a test was conducted to change and reduce the mass beam load point by driving both screws toward the bottom position and attempting to rebalance the beam by commanding the mass change mechanism. The Lunar Seismic Profiling Experiment was operated in High Bit Rate (HBR) ON for 65 minutes at optical terminator on 22 April to support the Lunar Surface Gravimeter tests (Apollo 17 SMEAR, ALSEP 48). Correlation of events between the LSG and the LSP should provide corroborative evidence for the 1.5 Hz natural frequency of the LSG, allow spectral comparisons of recorded background noise and provide a means of comparing relative gain levels of the two instruments. Several events were noted during the sunset terminator crossing. However, the periodicity of these events were not the same as the periodicity of the events which were noted during the 8 April sunrise terminator crossing. The experiments sensor temperature is stabilized at 49.190°C (slave heater ON).

ALSEP PERFORMANCE SUMMARY REPORT (continued)

27 April 1973
G.m.t.: 0100

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished on 20 and 22 April as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
20	1138	1200	1230	1232	2	Response
22	1412	1420	1525	1532	2	Response

The next 30-minute passive listening period is planned for 27 April.

The Lunar Atmospheric Composition Experiment was commanded ON at 1533 G.m.t., 22 April for the lunar night. The LACE continues to collect data on the lunar atmospheric composition. The present configuration is automatic sweep; high voltage power supply, ON; ion source filaments, ON; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater OFF. The LACE electronics temperature (AM-41) is currently -2.3°F as the internal electronics heater is not on. The heater will be commanded ON during real-time support 27 April.

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunar night at 1607 G.m.t., 22 April. The instrument was commanded to STANDBY for a 6 hour and 53 minute period, 22 April in an effort to avoid the possible phenomena associated with lunar sunset and lunar dust transport (Apollo 17 SMEAR, ALSEP 45). The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 18 April 1973, 1300 G.m.t., to 26 April 1973, 0100 G.m.t.

Central station

The Descartes Site experienced sunset on 24 April. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 1933 G.m.t., 23 April, for lunar night operations when the average thermal plate decreased to 38.0°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is -133.5 to -140.0 dbm as reported by the 30-foot antenna tracking stations. The bit stream and signal strength have remained steady since the selection of transmitter "B" and processor "Y" on 26 March 1973.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 9 April. The instrument's assembly temperature (DL-07) was on-scale on 23 April at the beginning of real-time support at a sun angle of 177.0°. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 25 April, 373 flip calibration sequences have been executed and verified by the experiment's engineering data. The instrument sensor, base, and internal temperatures are currently reading much lower than at any other previous lunation. The thermal control XYO status is X and the heater is ON.

Active seismic experiment

The experiment is in standby OFF. The next 30-minute passive listening period is planned for 27 April.

Apollo 15 ALSEP

Operational status from 18 April 1973, 1300 G.m.t., to 26 April 1973, 0100 G.m.t.

Central station

Sunset of the site's 22nd lunation occurred on 24 April. The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -136.5 ± 3.5 dbm by the tracking stations with 30-foot antenna. The lunar night operational procedure of eliminating the data subsystem timer outputs, by uplink of the timer reset command (octal 150) twice daily at 1400 G.m.t. and 2200 G.m.t., will be initiated on 27 April. Between real-time support periods at 0507 G.m.t., 23 April and 1810 G.m.t., 23 April, the central station responded to a spurious command (octal 062, PCU 2 Select). No CVW could be reported in the downlink. After verification during real-time support, the command (octal 060, PCU 1 Select) was executed by mission control at 1912 G.m.t., 23 April, without incident. Downlink data was not interrupted during the transfer to PCU 2 Select and back to PCU 1 Select.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. On 20 April the sensor temperature (DL-07) returned on-scale (sun angle = 124.9°). During the intermittent real-time support periods this past week no significant seismic events were noted.

Lunar surface magnetometer experiment

The experiment sensors were commanded to the 50 gamma range at 1509 G.m.t., 25 April 1973, for lunar night operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW static since 20 September 1972. Flip calibration sequences were resumed for this lunation, 20 April, as the sensor internal temperature decreased below 62°C. The instrument has executed 892 flip calibration sequences since activation.

Solar wind spectrometer experiment

The instrument has been in STANDBY since 21 March 1973.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).

Apollo 15 ALSEP (continued)

Operational status from 18 April 1973, 1300 G.m.t., to 26 April 1973, 0100 G.m.t.

Heat flow experiment

The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 101.8°K as indicated by the cable thermocouples. The sub-surface temperature is 253.2°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.8°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 18 April 1973, 1300 G.m.t., to 26 April 1973, 0100 G.m.t.

Central station	Sunset at the Apollo 14 site will occur later today, 26 April. RTG power output is steady. Transmitter "A" signal strength was reported at -136.5 to -142.0 dbm. The DSS-1 heater (10 watts) will be commanded ON for lunar night operation on 27 April.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to AUTO ON at 1015 G.m.t., on 22 April to maximize heating during lunar night operations. The long-period y-axis has remained in the on-scale position since 22 March. The y-axis failed to respond to leveling commands since 17 April but responded on 25 April. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 23 April 1973, the experiment was commanded to ON at 1956 G.m.t. and to high bit rate ON at 1958 G.m.t. for a passive listening mode. No significant signal was noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 2028 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 2033 G.m.t., 23 April. The next listening period is scheduled for 14 May 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment has been in STANDBY select since 15 April 1973. On 25 April the experiment was commanded to OPERATE select. After numerous attempts, the instrument would either remain in STANDBY or after a few minutes of operation would return to STANDBY. The instrument is currently ON with SIDE HV OFF and CCIG HV ON.
Charge particle lunar environmental experiment	The instrument has remained in STANDBY select since 15 March 1973. It is planned to command the instrument to OPERATE select during real-time support on 27 April for further analysis.

Apollo 12 ALSEP

Operational status from 18 April 1973, 1300 G.m.t., to 26 April 1973, 0100 G.m.t.

Central station	Sunset of the 43rd lunar day will occur on 27 April. Power output from the RTG remains steady. A signal strength of -138.5 to -144.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded ON for lunar night operations on 27 April.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded ON for lunar night operation on 27 April. At 1342 G.m.t., 25 April, during the real-time support period, the sensor temperature (DL-07) was noted to have returned onscale. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs have been invalid since 4 June 1972.
Solar wind spectrometer experiment	This experiment continues to return scientific data on solar wind plasma, magnetosphere plasma and magnetopause crossings, by sensing the direction and energies of both electrons and positive ions. The instrument has been in the normal gain mode since 14 April following the solar flare activity.
Suprathermal ion detector/cold cathode gauge experiment	The instrument was commanded to operate select and full automatic stepping sequence (0-127 frames) at 1340 G.m.t., 25 April, for lunar night operation. During real-time support on 19 April the instrument experienced an unexpected mode register load of X10. The instrument was commanded to OFF at 1616 G.m.t., 19 April without incident and remained OFF until real-time support on 20 April to allow the instrument to cool below 55°C.

Status as of 1600 G.m.t., 25 April 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1253	810	734	369
Total Commands to Date	16903	9061	15415	6228
Sun Angle	160.2°	166.3°	187.2°	199.2°
Input Power	67.6w	69.6w	73.0w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	54.7°F	58.3°F	11.0°F	38.6°F
PSE Sensor Temp (DL-07)	139.9°F	125.0°F	124.8°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	16.5°C	-24.6°C
SWS Module 300 Temp (DW-13)	43.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	10.8°C	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	136.8°K	N/A
CPLEE Elect Temp (AC-06)	N/A	OFF	N/A	N/A
ASE GLA Temp (AS-03)	N/A	47.6°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	284.8°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	134
Total Commands to Date	7354
Sun Angle	215.5°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	30.3°F
LMS Temp (AM-41)	-2.3°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	289.1°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	31.7°F

ALSEP PERFORMANCE SUMMARY REPORT

4 May 1973
G.m.t.: 1300

Apollo 17 ALSEP

The central station continues operating normally, with the station's electronics and structural components temperatures stabilized in the lunar night environment. Downlink RF signal strength, as reported by the 30-foot antenna tracking station, is between -134.0 dbm and -140.0 dbm. Power from the RTG remains constant. The station's command decoder switch inhibit pulse occurred as anticipated, verified by a status change in telemetry point AB-18. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 108 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. Correlation of events during the 22 April tests between the Lunar Surface Gravimeter and the Lunar Seismic Profiling Experiment are currently being analyzed by the Principal Investigator to confirm the evidence for the 1.5 Hz natural frequency of the LSG, allow spectral comparisons of recorded background noise and provide a means of comparing relative gain levels of the two instruments. In order to obtain a greater comprehensive background for data analysis of this experiment, the test accomplished on 22 April, will be repeated on 7 May, during the terminator crossing (Apollo 17 SMEAR 48). The experiment's sensor temperature is stabilized at 49.190°C (slave heater ON).

The Lunar Seismic Profiling Experiment is currently in STANDBY select. An LSPE passive listening mode operation was conducted on 27 April as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
27	0428	0430	0500	0505	2	None

The next 30-minute passive listening period is planned for later today.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

4 May 1973
G.m.t.: 1300

The Lunar Atmospheric Composition Experiment is ON for lunar night operations. The LACE continues to collect data on the lunar atmospheric composition. The present configuration is automatic sweep; high voltage power supply ON; ion source filaments, ON; multipliers, HIGH; low voltage power supply ON; discriminator level, HIGH; and back-up heater ON. The LACE electronics temperature (AM-41) with the heater OFF stabilized at -2.3°F. On 27 April the heater was commanded ON, and the internal electronics temperature increased to its previous lunar night time operational level (AM-41 = 13.4°F). The heater OFF configuration was performed to determine if the heater affected the electrical background noise ramp on the three mass range data channel outputs. No noticeable effect was observed in real-time during the heater OFF configuration.

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates since turn-on for lunar night operation on 22 April 1973. The instrument's mirror temperature (AJ-11) is stabilized at -20.8°F which is also the minimum temperature attained during the previous lunar nights. The instrument will be left in the operate select ON mode through this terminator crossing 7 May, per the agreed plan (Apollo 17 SMEAR 49).

It is requested than any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 27 April 1973, 0100 G.m.t., to 4 May 1973, 1300 G.m.t.

Central station

Midnight of the 13th lunation occurred on 1 May at the Descartes Site. The DSS-1 (10 watts) heater remains ON for lunar night operation. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength of -136.3 ± 2.3 dbm from transmitter "B". The thermoelectric power source output remains essentially unchanged.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. Since 27 April, the LP y-axis has not responded to leveling commands. This is a reoccurring anomaly during night time operations. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues to not respond to flip calibrations (no cal raster observed) or filter commands. The instrument is currently configured with the digital filter OUT, flip cal inhibit logic commanded ON, and sensors in the 200 gamma range. During real-time support on 27 April it was observed that the instrument's temperatures were lower than previous lunar night operations (20 to 30°C differential). On 27 April, 0315 G.m.t., the XYO status was commanded to the Y heater ON; instrument internal temperature was -28.0°C. Since configuring to the Y heater ON, the instrument temperatures have increased as expected and are presently stabilized in the lunar night environment. As of 2 May, 379 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic

The Active Seismic Experiment is currently in STANDBY OFF. ASE passive listening mode operations were accomplished on 27 April and 2 May as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
27 April	0321	0345	0415	0425	2	None
2 May	1426	1445	1515	1518	2	None

The next 30-minute passive listening period is planned for 11 May.

Apollo 15 ALSEP

Operational status from 27 April 1973, 0100 G.m.t., to 4 May 1973, 1300 G.m.t.

Central station	Midnight of the station's 23rd lunation occurred 2 May; power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -133.0 dbm and -139.0 dbm. The lunar night operational procedure of eliminating the data subsystem's timer outputs by uplinking the timer's reset command, octal 150, twice daily at 1400 G.m.t. and 2200 G.m.t. is in effect.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry will remain in the OT state to deliver maximum heat into the sensor assembly for lunar night operations. No major seismic signals have been noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment's sensors are presently in the 50 gamma range for this lunar night operation. Currently the instrument has executed 902 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands. The instrument's y-axis sensor has indicated off-scale LOW (static) since 20 September 1972.
Solar wind spectrometer experiment	The instrument has been in STANDBY since 21 March 1973.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 87.8°K as indicated by the cable thermocouples. The sub-surface temperature is 253.2°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 27 April 1973, 0100 G.m.t., to 4 May 1973, 1300 G.m.t.

Central station

Midnight at the Apollo 14 site occurred today, 4 May. RTG power output is steady. Transmitter "A" signal strength was reported at -139.6 ± 4.4 dbm. The DSS-1 heater (10 watts) is ON for lunar night operation.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The long-period y-axis has remained in the on-scale leveled position since 22 March. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 14 May 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is currently ON with SIDE HV OFF and CCIG HV ON. On 25 April the experiment was commanded to OPERATE select. After numerous attemps of commanding to the instrument to maintain normal operation, it would either remain in STANDBY, or after a few minutes of operation would return to STANDBY. It is planned to leave the instrument in the present configuration throughout lunar night pending further analysis of this anomalous activity (Apollo 14 ALSEP SMEAR 82).

Charged particle lunar environmental experiment

The CPLEE is currently in STANDBY select. During real-time support at 1501 G.m.t., 27 April, the instrument was commanded to operate select and remained in that configuration until 1509 G.m.t., 28 April, when the CPLEE was commanded to STANDBY select. Since 30 April 1973 (per the agreed operational procedure) the experiment has been commanded to OPERATE select only during real-time support periods, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage Turn ON	Analyzer A Voltage STANDBY	Operational Mode
27 April	1501		2480.6		-35 Volt Range
28 April		1509		2280.9	-35 Volt Range
30 April	1245	1500	2480.6	2364.1	Auto
2 May	1313	1616	2380.8		Auto

Apollo 12 ALSEP

Operational status from 27 April 1973, 0100 G.m.t., to 4 May 1973, 1300 G.m.t.

Central station	Midnight of the 43rd lunar night occurred today, 4 May. Power output from the RTG remains steady. A signal strength of -139.0 ± 3 dbm from transmitter "B" was reported by the tracking stations. The central station DSS-1 heater (10 watts) is ON for lunar night operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is ON for lunar night operations. No significant seismic events were noted during this periodic real-time support period.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	Uninterrupted operations in the normal gain mode, since 14 April, recording solar wind plasma, and magnetopause crossings, by sensing the direction and energies of both electrons and positive ions. Since 22 April, the sum cup modulation voltages in proton energy levels 12, 13, and 14 have been operating normally.
Suprathermal ion detector/cold cathode gauge experiment	Since 25 April 1973, the instrument is in operate select and the full automatic stepping sequence (0-127 frames) for lunar night operation.

Status as of 1800 G.m.t., 2 May 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1260	817	641	376
Total Commands to Date	16983	9098	15528	6318
Sun Angle	245.6°	251.4°	272.6°	285.0°
Input Power	67.9w	69.9w	72.9w	70.4w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	14.1°F	34.2°F	-0.8°F	36.7°F
PSE Sensor Temp (DL-07)	126.1°F	124.1°F	124.5°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	-23.0°C
SWS Module 300 Temp (DW-13)	-15.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.2°C	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	108.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	OFF	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-64.5°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.2°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	141
Total Commands to Date	7465
Sun Angle	300.0°
Input Power	77.2w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	25.8°F
LMS Temp (AM-41)	13.4°F
LEAM Temp (AJ-11)	-20.8°F
HFE Temp Ref 1 (DH-13)	289.6°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	26.5°F

ALSEP PERFORMANCE SUMMARY REPORT

11 May 1973
G.m.t.: 1200

Apollo 17 ALSEP

Sunrise of the scientific station's 6th lunation occurred 7 May. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG remains constant. The downlink received signal is reported between -134.0 and -143.5 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge survey's being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE thermocouples is $200^{\circ} \pm 8^{\circ}K$. Subsurface temperatures at 230 cm depth is $256.2^{\circ}K$ at probe #1 and $256.9^{\circ}K$ at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The Lunar Seismic Profiling Experiment was operated in High Bit Rate (HBR) ON for 51 minutes at optical terminator on 7 May to support the Lunar Surface Gravimeter tests (Apollo 17 SMEAR, ALSEP 48). Correlation of events between the LSG and the LSP should provide corroborative evidence for the 1.5 Hz natural frequency of the LSG, allow spectral comparisons of recorded background noise and provide a means of comparing relative gain levels of the two instruments. Several events were noted during the sunset terminator crossing. The periodicity of these events were the same as the periodicity of the events which were noted during the 8 April sunrise terminator crossing, but were not the same as the 22 April sunset terminator crossing. The LSPE was operated in HBR ON for six hours on 9 and 10 May to obtain the incidence of natural seismic events at the Apollo 17 site to corroborate in-depth analysis of LSG data (Apollo 17 SMEAR, ALSEP 50). Phase IV operations with Mode I commanding was accomplished by the Texas ground station and no real-time observations of recorders were made. The experiments sensor temperature is stabilized at $49.190^{\circ}C$ (slave heater ON).

ALSEP PERFORMANCE SUMMARY REPORT (continued)

11 May 1973
G.m.t.: 1200

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished on 4, 7, 9, and 10 May as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
4	1353	1410	1440	1443	2	None
7	2138	2146	2237	2241	2	Responses
9	1331	1405	1435	1439	2	Responses
9	2355	----	----	----	0	----
10	----	0007	0607	0610	0	----

The next 30-minute passive listening period is planned for 18 May.

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE gathered data on the composition of the lunar atmosphere throughout the dawn terminator. The electrical background noise ramp continued to be noted on all three mass range data channel outputs. The LACE was commanded OFF at 1513 G.m.t., 10 May, for the remainder of this lunar day when the electronic temperature (AM-41) reached 108.7 ^{o}F at a sun angle of 38.5^{o}. The electronics 6th day temperature profile is tracking the previous day profiles within ± 3^{o}F.

The Lunar Ejecta and Meteorite Experiment is presently OFF. The instrument was left in the operate select ON mode through the 7 May terminator crossing per the agreed plan (Apollo 17 SMEAR 49). The LEAM was commanded OFF at 0002 G.m.t., 10 May, when the instrument mirror temperature (AJ-11) reached 167.0^{o}F. The LEAM will remain OFF until the mirror temperature decreases to 150^{o}F at which time the instrument will be commanded ON for the remainder of this lunation.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 4 May 1973, 1300 G.m.t., to 11 May 1973, 1200 G.m.t.

Central station	Sunrise of the 14th lunar day occurred on 8 May. The DSS-1 heater (10 watts) was commanded OFF at 1152 G.m.t., 9 May, when the central station's average thermal plate temperature increased to 60.6°F. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30 foot antenna tracking stations report a signal strength between -134.0 dbm and -137.5 dbm from transmitter "B". Since the selection of transmitter "B" and processor "Y" on 26 March, the bit stream and signal strength have remained steady.
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. On 9 May, the long period y-axis responded to leveling mode commands. Commands to level the y-axis had not been successful since 27 April. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been static since 16 February 1973. The LSM's scientific data continues to not respond to flip calibrations (no cal raster observed) or filter commands. Since configuring to the Y heater ON, the instrument temperatures increased and stabilized in the lunar night environment. As of 10 May, 385 flip calibration sequences have been executed and verified by the experiment's engineering data.
Active seismic experiment	The next passive listening period is planned for later today, 11 May 1973.

Apollo 15 ALSEP

Operational status from 4 May 1973, 1300 G.m.t., to 11 May 1973, 1200 G.m.t.

Central station	Sunrise of the station's 23rd lunation occurred 9 May. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -131.0 dbm and -142.0 dbm. The lunar night operational procedure of eliminating the data subsystem's timer outputs by uplinking the timer's reset command (octal 150) was terminated 10 May.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors were commanded to 100 gamma range at 1239 G.m.t., 9 May, for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 910 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 83.9°K on 9 May, as indicated by the cable thermocouples. The sub-surface temperature was 253.0°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.8°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 4 May 1973, 1300 G.m.t., to 11 May 1973, 1200 G.m.t.

Central station

Sunrise at the Apollo 14 site occurred today (29th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -135.5 dbm and -141.0 dbm. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operation on 13 May. Data processor "Y" will be verified by command 13 May.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater will be commanded to FORCED OFF on 16 May to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale leveled position since 22 March. The long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 13 May 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is currently ON with SIDE HV (+4.5 Kv) OFF and CCIG HV (-3.5 Kv) ON. Between real-time support periods of 4 May and 7 May the instrument received a functional command to place the command register to SIDE command load 009 (Master Reset). Mission control cleared the command register at 1945 G.m.t., 7 May without incident, and returned the instrument to the present configuration. A CVW was not reported in the ALSEP downlink.

Charge particle lunar

The CPLEE is currently in STANDBY select. The experiment has been commanded to OPERATE select only during real-time support periods, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage Turn ON	Analyzer A Voltage STANDBY	Operational Mode
4 May	1252	1546	2380.8	2364.1	Auto
7 May	1654	2245	2380.8	2314.2	Auto
9 May	1205	1450	2380.8	2247.7	Auto
10 May	1446	1544	2380.8	2247.7	Auto

Apollo 12 ALSEP

Operational status from 4 May 1973, 1300 G.m.t., to 11 May 1973, 1200 G.m.t.

Central station	Sunrise of the 44th lunar day will occur later today. Power output from the RTG remains steady. A signal strength of -138.0 ± 3.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operations on 13 May. Data processor "Y" will be verified by command on 13 May.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded OFF for lunar day operation on 13 May. Between real-time support periods of 4 May and 7 May the instrument experienced a spurious command (octal 063) placing the experiment's long period X and Y axes gain to the -10 db range. The experiment was commanded back to the 0 db gain at 1845 G.m.t., 7 May 1973, with no adverse effects. No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	This experiment continues to return scientific data on solar wind plasma magnetosphere plasma and magnetopause crossings, by sensing the direction and energies of both electrons and positive ions. The instrument is currently in the normal gain mode (14 April 1973) and is recording solar wind plasma data for subsequent long term analysis.
Suprathermal ion detector/cold cathode gauge experiment	Currently the SIDE is in OPERATE select, automatic stepping sequence, gathering scientific data of the dawn terminator. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 14 May in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1700 G.m.t., 10 May 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1268	825	649	384
Total Commands to Date	16998	9126	15740	6378
Sun Angle	344.3°	349.9°	11.5°	23.5°
Input Power	67.9w	69.9w	71.9w	69.6w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	All OFF
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	12.5°F	33.3°F	34.7°F	60.6°F
PSE Sensor Temp (DL-07)	126.0°F	124.1°F	125.4°F	126.5°F
LSM Internal Temp (DM-05)	Invalid	N/A	20.0°C	27.2°C
SWS Module 300 Temp (DW-13)	-16.1°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	18.8°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	308.8°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-66.4°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	298.3°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	149
Total Commands to Date	7646
Sun Angle	38.3°
Input Power	75.8w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE & LEAM OFF
Avg Thermal Plate Temp	82.2°F
LMS Temp (AM-41)	108.1°F
LEAM Temp (AJ-11)	155.5°F
HFE Temp Ref 1 (DH-13)	299.0°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	82.2°F

ALSEP PERFORMANCE SUMMARY REPORT

18 May 1973
G.m.t.: 0900

Apollo 17 ALSEP

Noon of the scientific station's 6th lunation occurred on 14 May. All experiments and the central station are operating as expected. Power from the RTG is stabilized at 76.3 watts. The downlink received signal is reported between -141.0 and -147.5 dbm. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses), continues during real-time support periods. The central station's temperature profile is tracking within ± 3°F that of previous lunations.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge survey's being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 359 ° ± 8°K. Subsurface temperature at 230 cm is 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. Evaluation of the data recorded by the Lunar Surface Gravimeter and the Lunar Seismic Profiling Experiment (Apollo 17 SMEARS, ALSEP 48 & 50)for correlation and comparative analysis continues. The experiment's sensor temperature remains stabilized at 49.190°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY. No passive listening mode was accomplished during this reporting period. The next passive listening mode is scheduled for later today.

The Lunar Atmospheric Composition Experiment remains OFF, since commanded to this mode at 1052 G.m.t., 14 May. The LACE was commanded ON at 0832 G.m.t., 14 May, in order to activate the Bake Out heater. This experiment configuration change was requested by the Principal Investigator in an effort to reduce and/or eliminate the outgassing that is observed on all three mass range data channel outputs (the Bake Out heater mode was ON for 1 hour 59 minutes). Per the agreed operational plan, the experiment will be commanded ON just prior to lunar sunset on 22 May. The instrument's electronic temperature profile for this lunar day is tracking that of the previous day within ± 3°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

18 May 1973
G.m.t.: 0900

The Lunar Ejecta and Meteorites Experiment remains OFF since commanded to this mode on 10 May. The instrument's 6th day temperature profile is in close agreement with that of the previous lunations. The LEAM will remain OFF until the mirror temperature decreases to 150°F at which time the instrument will be commanded ON for the remainder of this lunation (Apollo 17 SMEAR ALSEP 49).

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 11 May 1973, 1200 G.m.t., to 18 May 1973, 0900 G.m.t.

Central station

Noon of the 14th lunar day occurred on 16 May at the Descartes Site. The thermoelectric power source output is normal. Inhibiting of the 18-hour timer output pulses is continuing. The 30 foot antenna tracking stations report a signal strength between -136.0 dbm and -142.5dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 9 May. The instrument's assembly temperature (DL-07) was off-scale HIGH on 15 May when the sun angle was 80.8°; it is expected to return on-scale on 22 May. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues to respond to flip calibrations (no cal raster observed) or filter commands. As of 17 May, 391 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is currently STANDBY OFF. ASE passive listening mode operations were accomplished on 11 and 17 May as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
11	1504	1515	1545	1547	2	Response
17	1335	1400	1430	1432	2	None

The next 30-minute passive listening period is planned for 25 May.

Apollo 15 ALSEP

Operational status from 11 May 1973, 1200 G.m.t., to 18 May 1973, 0900 G.m.t.

Central station

Noon of the station's 23rd lunation occurred 17 May. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -133.5 dbm and -139.5dbm. The data subsystem's 18 hour timer outputs have occurred as expected since termination of the lunar night operational procedure on 11 May.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. On 17 May the sensor temperature (DL-07) was off-scale HIGH (sun angle = 95.6°): It is expected to return on-scale on 22 May. Between real-time support periods at 1100 G.m.t., 16 May and 1256 G.m.t., 17 May, the seismometer responded to a spurious command (octal 071, PSE "Y" Motor ON). No CVW was reported in the downlink. After verification during real-time support, the command (octal 071, PSE "Y" Motor OFF) was executed by mission control at 1302 G.m.t., 17 May, without incident. During the intermittent real-time support periods this past week no significant events were noted.

Lunar surface magnetometer experiment

The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 920 flip calibration sequences since activation.

Solar wind spectrometer experiment

The instrument remains in STANDBY.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).

Heat flow experiment

The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 367.3°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 11 May 1973, 1200 G.m.t., to 18 May 1973, 0900 G.m.t.

Central station

Noon of the 29th lunar day at the Apollo 14 landing site will occur today, 18 May 1973. Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported at -137.5 ± 2.5 dbm. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 0507 G.m.t., 12 May, when the central station's average thermal plate temperature increased to 72.1°F. Data processor "Y" was verified by command on 12 May.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF on 16 May at 0939 G.m.t., to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale position since 22 March. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active siesmic experiment

The experiment is currently in STANDBY. On 12 May 1973, the experiment was commanded to ON at 0630 G.m.t. and to high bit rate ON at 0640 G.m.t. for a passive listening mode. No significant signal was noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 0710 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 0713 G.m.t., 12 May. The next listening period is scheduled for 21 May 1973.

Operational status from 11 May 1973, 1200 G.m.t., to 18 May 1973, 0900 G.m.t.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is in STANDBY, and present plans are to leave it in this configuration throughout this lunar day. Investigation of the anomalous functional mode change to the STANDBY mode continues to be evaluated. The following is a sequential list of the anomalous activities of the instrument during this reporting period:

Date	G.m.t.	Mode	CCIG HV	SIDE HV	Comments
11 May	1508	ON	ON	OFF	
12 May	0523	STDBY	--	--	Anomalous functional change between 11/12 May real-time support periods.
	0533	ON	ON	OFF	Six ground commands were executed before experiment would turn ON.
	0710	STDBY	--	--	Anomalous functional change during ASE high bit rate.
	0716	ON	ON	OFF	One ground command executed for turn ON.
	1230	STDBY	--	--	Anomalous functional change through the Guam tracking station's Phase III support.

Charge particle lunar environmental experiment

The CPLEE is currently in STANDBY select. The experiment has been commanded to OPERATE select only during the real-time support period, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage Turn ON	Analyzer A Voltage STANDBY	Operational Mode
12 May	0512	0517	2330.9	2297.6	Auto

Present plans are to leave the experiment in STANDBY select until after sunset this lunar day.

Apollo 12 ALSEP

Operational status from 11 May 1973, 1200 G.m.t., to 18 May 1973, 0900 G.m.t.

Central station	Noon of the 44th lunar day will occur on 19 May. Power output from the RTG remains steady. A signal strength of -139.8 ± 2.8 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 0459 G.m.t., 12 May, when the average thermal plate temperature was 39.4 °F. Data processor "Y" was verified by command on 12 May.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded OFF at 0455 G.m.t., 12 May for lunar day operation. No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode (14 April 1973) and is recording solar wind plasma data for subsequent long term analysis.
Suprathermal ion detector/cold cathode gauge experiment	Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 14 May in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1500 G.m.t., 17 May 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1275	832	656	391
Total Commands to Date	17098	9277	15886	6526
Sun Angle	68.5°	74.5°	95.6°	107.6°
Input Power	67.6w	69.5w	72.3w	69.9w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE,SIDE&CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	91.6°F	111.0°F	114.2°F	99.3°F
PSE Sensor Temp (DL-07)	131.2°F	127.7°F	Offscale HIGH	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	67.7°C	49.5°C
SWS Module 300 Temp (DW-13)	63.5°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	88.2°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	364.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	80.4°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	328.9°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	156
Total Commands to Date	7727
Sun Angle	123.0°
Input Power	76.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE & LEAM OFF
Avg Thermal Plate Temp	115.0°F
LMS Temp (AM-41)	63.1°F
LEAM Temp (AJ-11)	180.5°F
HFE Temp Ref 1 (DH-13)	319.0°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	116.9°F

ALSEP PERFORMANCE SUMMARY REPORT

25 May 1973
G.m.t.: 0300

Apollo 17 ALSEP

Sunset of the 6th lunation occurred 22 May at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of the fifth lunation. Downlink RF signal strength is reported at -139.5 ± 4.5 dbm from transmitter "A". Thermoelectric power source output is 77.4 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 116.0 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature has increased to 49.194°C (slave heater ON) and is now stabilized.

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished on 18 and 22 May as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
18	1114	1115	1145	1146	2	Response
22	0546	0600	0630	0632	2	Response

The next 30-minute passive listening period is planned for 1 June.

The Lunar Atmospheric Composition Experiment was commanded ON at 0912 G.m.t., 23 May for the lunar night. The LACE continues to collect data on the lunar atmospheric composition. The present configuration is automatic sweep; high voltage power supply, OFF; ion source filaments, OFF; multipliers, HIGH; low voltage power supply, ON; discriminator level, LOW; and backup heater OFF. The LACE electronics temperature (AM-41) is currently 1.4°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

25 May 1973
G.m.t.: 0300

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 0936 G.m.t., 19 May, when the mirror temperature (AJ-11) decreased to 162.0°F at a sun angle of 133.5°. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 18 May 1973, 0900 G.m.t., to 25 May 1973, 0300 G.m.t.

Central station	The Descartes Site experienced sunset on 23 May. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 0953 G.m.t., 23 May, for lunar night operations when the average thermal plate decreased to 34.7°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is -133.5 to -139.0 dbm as reported by the 30-foot antenna tracking stations.
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 7 May. The instrument's assembly temperature (DL-07) was on-scale on 23 May at the beginning of real-time support at a sun angle of 179.0°. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been static since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 24 May, 397 flip calibration sequences have been executed and verified by the experiment's engineering data.
Active seismic experiment	The experiment is in standby OFF. The next 30-minute passive listening period is planned for later today, 25 May.

Apollo 15 ALSEP

Operational status from 18 May 1973, 0900 G.m.t., to 25 May 1973, 0300 G.m.t.

Central station	Sunset of the site's 23rd lunation occurred on 24 May. The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -135.5 ± 3.5 dbm by the tracking stations with 30-foot antenna. The lunar night operational procedure of eliminating the data subsystem timer outputs, by uplink of the timer reset command (octal 150) twice daily at 1400 G.m.t. and 2200 G.m.t., will be initiated on 27 May.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. On 21 May the sensor temperature (DL-07) returned on-scale (sun angle = 129.9°). During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors will be commanded to the 50 gamma range later today, 25 May, for lunar night operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW static since 20 September 1972. The instrument has executed 930 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 132.9°K as indicated by the cable thermocouples. The sub-surface temperature is 253.1°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 18 May 1973, 0900 G.m.t., to 25 May 1973, 0300 G.m.t.

Central station	Sunset at the Apollo 14 site will occur on 26 May. RTG power output is steady. Transmitter "A" signal strength was reported as -135.6 to -142.0 dbm. The DSS-1 heater (10 watts) will be commanded ON for lunar night operation later today, 25 May.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to AUTO ON at 1027 G.m.t., on 23 May to maximize heating during lunar night operations. The long-period y-axis has remained in the on-scale position since 22 March. The y-axis has responded to leveling commands since 25 April. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 21 May 1973, the experiment was commanded to ON at 0902 G.m.t. and to high bit rate ON at 0915 G.m.t. for a passive listening mode. No significant signal was noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 0945 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 0947 G.m.t., 23 April. The next listening period is scheduled for 10 June 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment remains in STANDBY select. On 26 May the experiment will be commanded to OPERATE select for the remainder of the lunar night (Apollo 14 SMEAR, ALSEP 83).
Charge particle lunar environmental experiment	The instrument remains in STANDBY select.

Apollo 12 ALSEP

Operational status from 18 May 1973, 0900 G.m.t., to 25 May 1973, 0300 G.m.t.

Central station	Sunset of the 44th lunar day will occur on 26 May. Power output from the RTG remains steady. A signal strength of -135.2 to -144.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded ON for lunar night operations on 26 May.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded ON for lunar night operation on 26 May. At 0833 G.m.t., 20 May, during the real-time support period, the sensor temperature (DL-07) was noted to have been off-scale HIGH and returned on-scale (DL-07 = 141.1°F) at 1304 G.m.t., 24 May, at a sun angle of 154.0°. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	At 1310 G.m.t., 24 May, the SIDE was commanded to OPERATE select and automatic stepping sequence for the remainder of this lunation. The instrument had previously been cycled by command to the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF to preclude instrument mode changes at internal temperatures above 55°C during this lunar day.

Status as of 1500 G.m.t., 24 May 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1282	839	663	398
Total Commands to Date	17156	9323	16052	6623
Sun Angle	154.0°	160.0°	180.2°	192.7°
Input Power	67.6w	69.1w	73.0w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE,SIDE&CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	66.5°F	65.5°F	34.6°F	36.7°F
PSE Sensor Temp (DL-07)	141.1°F	125.1°F	124.8°F	126.0°F
LSM Internal Temp (DM-05)	Invalid	N/A	35.4°C	15.0°C
SWS Module 300 Temp (DW-13)	48.0°C	N/A	Standby	N/A
SIDE Temp (DI-05)	18.2°C	Invalid	25.3°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	191.8°K	N/A
CPLEE Elect Temp (AC-06)	N/A	OFF	N/A	N/A
ASE GLA Temp (AS-03)	N/A	54.3°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	291.3°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	163
Total Commands to Date	7854
Sun Angle	207.5°
Input Power	77.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	34.8°F
LMS Temp (AM-41)	1.4°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	289.6°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	37.0°F

ALSEP PERFORMANCE SUMMARY REPORT

1 June 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	GMT LOS	GMT AOS	Data Loss
Apollo 14 & 17 ALSEP	24 May	2105	2125	20^m
Apollo 12 thru 17 ALSEP	27 May	0718	0730	12^m
Apollo 12 thru 17 ALSEP	30 May	0721	0755	34^m

Apollo 17 ALSEP

The central station continues operating normally, with the station's electronics structural components temperatures stabilized. Downlink RF signal strength is reported between -133.0 dbm and -140.0 dbm. Power from the RTG remains constant. The station's command decoder switch inhibit pulse occurred as anticipated, verified by a status change in telemetry point AB-18. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 110.0 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.194°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select with a thirty minute passive listening mode scheduled for today, 1 June.

The Lunar Atmospheric Composition Experiment continues to collect data on the lunar atmospheric composition since turn-on (23 May) for lunar night operations. The present configuration is automatic sweep; high voltage power supply, ON; ion source filament, ON; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater ON. The mass range data channels continue to display electronic background noise. The LACE electronics temperature (AM-41) has currently stabilized at 15.0°F. This temperature is 1.6°F higher than previous lunations.

1 June 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates since turn-on for lunar night operation on 19 May 1973. The instrument's mirror temperature (AJ-11) is currently stabilized at -20.8°F, which is the minimum temperature attained during previous lunar nights.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 25 May 1973, 0300 G.m.t., to 1 June 1973, 1300 G.m.t.

Central station

Midnight of the 14th lunation occurred on 30 May at the Descartes Site. The thermoelectric power source output is normal. Inhibiting of the 18-hour timer output pulses is continuing. The 30-foot antenna tracking stations report a signal strength between -134.5 dbm and -139.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 9 May. The typical night-time pattern of low background noise with occassional small, high frequency signals, is currently being sensed by the passive seismometer. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 30 May, 403 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The active seismic experiment is currently in standby OFF, with a 30 minute passive listening mode operation planned for today. The experiment was commanded to operate select at 0119 G.m.t., 27 May, and to high bit rate ON at 0130 G.m.t. for a passive listening mode operation. Data output of all geophones appeared normal. Two geophone calibration pulses were sent to the instrument during the listening mode operation. High bit rate operations were terminated at 0200 G.m.t. and the experiment commanded to standby OFF at 0203 G.m.t. No significant signals were noted in real time.

Apollo 15 ALSEP

Operational status from 25 May 1973, 0300 G.m.t., to 1 June 1973, 1300 G.m.t.

Central station	Midnight of the station's 23rd lunation occurred 31 May; power from the RTG continues steady and transmitter "A" downlink signal strength is reported at -136.0 ± 2.5 dbm. After verification of the 18-hour timer's output pulse on 27 May, the lunar night's operational procedure of eliminating the data subsystem's timer outputs by uplinking the timer's reset command (Octal 150) twice daily at 1400 G.m.t. and 2200 G.m.t. was initiated. The data subsystem's average thermal plate temperature is presently stabilized at -0.8°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry was commanded to the OT state to deliver maximum heat into the sensor assembly on 27 May. No meaningful seismic signals have been noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment sensors were commanded to the 50 gamma range at 0419 G.m.t., 25 May, for lunar night operations. Currently the instrument has executed 940 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The experiments are and have operated continuously in the full automatic stepping sequence since 14 March 1973 with no command register loads or mode changes observed during real-time support.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 88.9°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.9°K at its lower-most point. Ring bridge surveys are being conducted periodically.

Apollo 14 ALSEP

Operational status from 25 May 1973, 0300 G.m.t., to 1 June 1973, 1300 G.m.t.

Central station

Midnight at the Apollo 14 site will occur on 2 June. RTG power output is steady. Transmitter "A" signal strength was reported at -140.5 ± 4.5 dbm. The DSS-1 heater (10 watts) is ON for lunar night operation.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The long-period y-axis has remained on-scale and leveled since 22 March. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 10 June 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is currently operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. The following is a chronological order of the instrument's configuration (Apollo 14 SMEAR, ALSEP 83).

Date	G.m.t.	Mode
26 May	0443	CCIG HV ON (-3.5 Kv)
27 May	0050	Ground Plane Stepper OFF
	0052	Velocity Filter OFF
	0053	LECPA OFF
	0054	HECPA OFF
	0057	Channeltron HV ON (+4.5 Kv)

Operated in the above configuration 1 hour 11 minutes

	0208	Ground Plane Stepper ON
	0211	Velocity Filter ON
	0215	LECPA ON
	0219	HECPA ON

Operational status from 25 May 1973, 0300 G.m.t., to 1 June 1973, 1300 G.m.t.

Charged particle lunar environmental experiment

The CPLEE is currently in STANDBY select. Since 15 March 1973 (per the agreed operational procedure) the experiment has been commanded to OPERATE select only during real-time support periods, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage	Operational Mode
27 May	0046		2497	AUTO
	0047		2497	-35 vdc range
	--	1156	2247	N/A
29 May	0348	--	2430	AUTO
	--	0616	2280	N/A
30 May	1159	--	2380	AUTO
	--	1334	2314	N/A

Apollo 12 ALSEP

Operational status from 25 May 1973, 0300 G.m.t., to 1 June 1973, 1300 G.m.t.

Central station	Midnight of the 44th lunar day will occur 3 June 1973; RTG power output is constant and, transmitter "B" signal strength was reported at -139.8 ± 2.3 dbm. The central station's DSS-1 heater (10 watts) was commanded ON at 0438 G.m.t., 26 May, when the average thermal plate temperature decreased to 39.7°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded ON 26 May to maximize the heat input to the sensor assembly during lunar night operations. DL-07 indicates 126.2°F z-motor ON. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is operating in full automatic stepping sequence with the Channeltron high voltage ON. The experiment remains ON for continuous lunar night operations.

Status as of 1400 G.m.t., 30 May 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1288	845	669	405
Total Commands to Date	17229	9403	16174	6701
Sun Angle	227.8°	233.7°	254.8°	266.7°
Input Power	67.9w	69.9w	72.4w	70.1w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	13.4°F	33.3°F	-0.8°F	10.4°F
PSE Sensor Temp (DL-07)	126.2°F	124.1°F	124.5°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	12.1°C
SWS Module 300 Temp (DW-13)	-15.2°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	110.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	OFF	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-63.0°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.2°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	166
Total Commands to Date	7936
Sun Angle	281.7°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.2°F
LMS Temp (AM-41)	15.0°F
LEAM Temp (AJ-11)	-20.8°F
HFE Temp Ref 1 (DH-13)	288.3°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	27.8°F

ALSEP PERFORMANCE SUMMARY REPORT

8 June 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunrise of the scientific station's 7th lunation occurred on 6 June. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 76.2 watts. The downlink received signal is reported between -134.6 and -142.0 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE thermocouples is 293° ± 8°K. Subsurface temperatures at 230 cm depth is 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.194°C (slave heater ON).

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished on 1 and 6 June as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
1	2258	2310	2340	2342	2	Response
6	1540	1545	1615	1617	2	None

The next 30-minute passive listening period is planned for 13 June.

The Lunar Atmospheric Composition Experiment is currently ON with the discriminator level LOW; ion source filaments, OFF; and high voltage power supply, OFF (Apollo 17 SMEAR, ALSEP 51). The LACE gathered data on the composition of the lunar atmosphere throughout this lunar night. The electrical background noise ramp continued to be noted on all three mass range data channel outputs. The LACE will be commanded OFF later today, 8 June, for the remainder of this lunar day as the electronic temperature (AM-41) approaches 125.0°F. The electronics 7th day temperature profile is tracking the previous day temperature profiles.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

8 June 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorite Experiment is presently ON. The instrument was left in the operate select ON mode through the 7 May terminator crossing per the agreed plan (Apollo 17 SMEAR, ALSEP 49). The LEAM will be commanded OFF later today, 8 June, when the instrument mirror temperature (AJ-11) reaches 175.0°F. The LEAM will remain OFF until the mirror temperature decreases to 155°F at which time the instrument will be commanded ON for the remainder of this lunation.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 1 June 1973, 1300 G.m.t., to 8 June 1973, 1300 G.m.t.

Central station	Sunrise of the 15th lunation occurred on 7 June. The DSS-1 heater (10 watts) was commanded OFF on 7 June by remote ground station command. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30 foot antenna tracking stations report a signal strength of -136.5 ± 2.5 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis continues to respond to leveling mode commands. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been static since 16 February 1973. The LSM's scientific data continues to not respond to flip calibrations (no cal raster observed) or filter commands. 409 flip calibration sequences have been executed and verified by the experiment's engineering data as of 6 June.
Active seismic experiment	The active seismic experiment is currently in standby OFF, with a 30 minute passive listening mode operation planned for today. The experiment was commanded to operate select at 2105 G.m.t., 1 June, and to high bit rate ON at 2115 G.m.t. for a passive listening mode operation. Data output of all geophones appeared normal. Two geophone calibration pulses were sent to the instrument during the listening mode operation. High bit rate operations were terminated at 2145 G.m.t. and the experiment commanded to standby OFF at 2156 G.m.t. No significant signals were noted in real time.

Apollo 15 ALSEP

Operational status from 1 June 1973, 1300 G.m.t., to 8 June 1973, 1300 G.m.t.

Central station	Sunrise of the station's 24th lunation occurs today. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -132.0 dbm and -140.5 dbm. The lunar night operational procedure of eliminating the data subsystem's timer outputs by uplinking the timer's reset command (octal 150) will be terminated today.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is configured to the OT state to deliver maximum heat into the sensor assembly. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors were commanded to 100 gamma range at 1520 G.m.t., 6 June, for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 950 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 84.0°K on 7 June, as indicated by the cable thermocouples. The sub-surface temperature was 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically. An unexpected functional change of the HFE occurred at 0712 G.m.t., 3 June, when the Guam tracking station noted a command verification word of octal 142 in the downlink signal. The HFE's probe #1 select command was corrected by ground command with no further problems at 1113 G.m.t., 4 June.

Apollo 14 ALSEP

Operational status from 1 June 1973, 1300 G.m.t., to 8 June 1973, 1300 G.m.t.

Central station

Sunrise at the Apollo 14 site will occur on 9 June (30th lunation). RTG power output is steady. Transmitter "A" signal strength was reported at -139.0 ± 3.0 dbm. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operation on 10 June. Data processor "Y" will be verified by command on 10 June.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater is operating in the AUTO ON mode to maximize heating during lunar night operations. The long-period y-axis has remained in the on-scale leveled position since 22 March. The long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 10 June 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is currently operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. The following is a chronological order of the instrument's configuration (Apollo 14 SMEAR, ALSEP 83).

Date	G.m.t.	Mode
26 May	0443	CCIG HV ON (+4.5 Kv) & SIDE HV OFF (-3.5 Kv)
27 May	0050	Ground Plane Stepper OFF
	0052	Velocity Filter OFF
	0053	LECPA OFF
	0054	HECPA OFF
	0057	SIDE HV ON (-3.5 Kv)

Operated in the above configuration 1 hour 11 minutes

27 May	0208	Ground Plane Stepper ON
	0211	Velocity Filter ON
	0215	LECPA ON
	0219	HECPA ON

The Channeltron high voltages will be commanded OFF prior to sunrise on 9 June and operation continued in this mode throughout the lunar day.

Operational status from 1 June 1973, 1300 G.m.t., to 8 June 1973, 1300 G.m.t.

Charged particle lunar environmental experiment

The CPLEE is currently in STANDBY select according to the present operational procedure. The experiment has been commanded to OPERATE select only during real-time support periods, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage	Operational Mode
1 June	1159		2347	AUTO
		1334	2280	
4 June	1049		2314	AUTO
		1216	2347	
5 June	1953		2314	AUTO
		2200	2330	
6 June	1458		2314	AUTO
		1630	2297	
7 June	1015		2297	AUTO
		1121	2314	

Apollo 12 ALSEP

Operational status from 1 June 1973, 1300 G.m.t., to 8 June 1973, 1300 G.m.t.

Central station

Sunrise of the 45th lunar day will occur on 10 June. Power output from the RTG remains steady. A signal strength of -139.0 ± 5.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operations on 10 June. Data processor "Y" will be verified by command on 10 June.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded OFF for lunar day operation on 10 June. No significant seismic events were noted during the periodic real-time support periods of this instrument.

Lunar surface magnetometer experiment

Scientific and engineering data outputs remain invalid.

Solar wind spectrometer experiment

The instrument is currently in the normal gain mode and is recording solar wind plasma data.

Supratherma ion detector/cold cathode gauge experiment

The instrument is operating in full automatic stepping sequence with the Channeltron high voltages ON. Between the end of real-time support at 1341 G.m.t., 30 May and start at 2255 G.m.t., 1 June, the digital electronics of the instrument ceased to process data (all 0's in the downlink). Two analog parameters, AI-01, (low energy counts) and AI-02, (high energy counts), continue to be processed and downlinked through the ALSEP 90 channel multiplexer. This anomaly has occurred previously as listed below:

Data All 0's	Data Valid
9 Sep 72	16 Sep 72
20 Nov 72	15 Dec 72
30 Dec 72	1 Jan 73
10 Jan 73	13 Jan 73
28 Jan 73	30 Jan 73

Apollo 12 ALSEP (continued)

Operational status from 1 June 1973, 1300 G.m.t., to 8 June 1973, 1300 G.m.t.

Suprathermal ion detector/cold cathode gauge experiment	The instrument was commanded to STANDBY at 1203 G.m.t., 4 June and back to OPERATE select at 1208 G.m.t. in an unsuccessful attempt to correct the anomaly. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 12 June in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1300 G.m.t., 7 June 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1296	853	677	412
Total Commands to Date	17256	9433	16276	6756
Sun Angle	323.9°	329.7°	351.1°	3.8°
Input Power	67.5w	69.9w	72.4w	70.1w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	All OFF
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	12.2°F	33.1°F	-1.2°F	15.0°F
PSE Sensor Temp (DL-07)	126.0°F	124.1°F	124.3°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	17.2°C
SWS Module 300 Temp (DW-13)	-16.1°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	106.5°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-66.4°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.1°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	177
Total Commands to Date	8018
Sun Angle	18.0°
Input Power	76.2w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	73.3°F
LMS Temp (AM-41)	87.6°F
LEAM Temp (AJ-11)	135.9°F
HFE Temp Ref 1 (DH-13)	292.8°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	74.1°F

ALSEP PERFORMANCE SUMMARY REPORT

15 June 1973
G.m.t.: 1300

Today, 15 June 1973, a partial penumbral eclipse of the moon will occur. The Apollo 15 and 17 ALSEP lunar scientific stations will be affected by this eclipse (reference Bendix memorandum number 9753-137, dated 28 March 1973).

Apollo 17 ALSEP

All experiments and the central station are operating per the established plan. Power from the RTG remains constant. The downlink received signal is reported at -144.0 ± 3.0 dbm. The station's command decoder switch inhibit pulse is occurring as anticipated. The planned procedure to inhibit the output of this pulse during real-time support periods is being maintained. The central station's average thermal plate temperature profile is tracking that of previous lunations with an identical operational configuration of the LACE and LEAM OFF, and the LSPE in STANDBY.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE thermocouples is 373° ± 8°K. Subsurface temperatures at 230 cm depth is 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.194°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select, with the next 30-minute passive listening period planned for 22 June. The experiment was commanded ON at 0909 G.m.t., 11 June, and to LSPE data format processing (high bit rate) at 0920 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. Data output of the geophones appeared normal with a response observed on all geophones during the real-time operation. LSPE processing was terminated at 0950 G.m.t., and the instrument commanded to STANDBY select at 0951 G.m.t.

The Lunar Atmospheric Composition Experiment remains OFF since being commanded to this mode at 1909 G.m.t., 8 June. It is planned the LACE will remain in the OFF mode until the electronics temperature (AM-41) decreases to 32°F (Apollo 17 SMEAR, ALSEP 51). The LACE will then be placed to STANDBY select prior to the ephemeris sunset. Currently the electronics temperature (AM-41) is tracking previous lunar day thermal profiles.

15 June 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment was commanded OFF at 2152 G.m.t. on 8 June. Prior to the OFF command, the instrument's mirror temperature (AJ-11) increased to 173.8°F. The LEAM will remain OFF until the mirror temperature decreases to 155°F at which time the instrument will be commanded ON for the remainder of this lunation (Apollo 17 SMEAR, ALSEP 49).

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 8 June 1973, 1300 G.m.t., to 15 June 1973, 1300 G.m.t.

Central station

Noon of the 15th lunar day occurred on 14 June at the Descartes Site. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -139.3 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circiut is configured to the OT state. The long period y-axis continues to respond to leveling mode commands. The instrument's assembly temperature (DL-07) was off-scale HIGH on 13 June when the sun angle was 74.4°; and is expected to return on-scale on 21 June. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 13 June, 415 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is currently STANDBY OFF. ASE passive listening mode operations were accomplished on 8 and 13 June as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
8	1957	2030	2100	2103	2	Response
13	0721	0800	0830	0833	2	Response

The next 30-minute passive listening period is planned for 20 June.

Apollo 15 ALSEP

Operational status from 8 June 1973, 1300 G.m.t., to 15 June 1973, 1300 G.m.t.

Central station	Throughout this reporting period effects of a solar magnetic storm have been observed by the LSM and the SIDE/CCIG experiments. Noon of the station's 24th lunation occurs today. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -133.5 dbm and -140.0 dbm. The data subsystem's 18 hour timer outputs have occurred as expected since termination of the lunar night operational procedure on 8 June.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 962 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 364.6°K as indicated by the cable thermocouples. The sub-surface temperature was 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 8 June 1973, 1300 G.m.t., to 15 June 1973, 1300 G.m.t.

Central station	Noon of the 30th lunar day at the Apollo 14 landing site will occur on 17 June 1973. Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported at -138.0 ± 4.0 dbm. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 1700 G.m.t., 10 June, when the central station's average thermal plate temperature increased to 71.4°F. Data processor "Y" was verified by command on 10 June.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF on 14 June at 0958 G.m.t., to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale position since 22 March. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 10 June 1973, the experiment was commanded to ON at 1759 G.m.t. and to high bit rate ON at 1815 G.m.t. for a passive listening mode. No significant signal was noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 1845 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1847 G.m.t., 10 June. The next listening period is scheduled for 18 June 1973.

(Continued)

Operational status from 8 June 1973, 1300 G.m.t., to 15 June 1973, 1300 G.m.t.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is in STANDBY, and present plans are to leave it in this configuration throughout this lunar day. Investigation of the anomalous functional mode change to the STANDBY mode continues to be evaluated. The following is a sequential list of the instruments activities during this reporting period:

Date	G.m.t.	Mode	CCIG HV	SIDE HV	Comments
8 June	N/A	ON	ON	ON	Normal operational configuration.
9 June	1530	ON	OFF	ON	Configuration per Apollo 14 SMEAR, ALSEP 83.
	1533	ON	OFF	OFF	Same as above comment.
10 June	0445	STDBY	--	--	Anomalous functional change with no CVW during the Guam Tracking Station's Phase III support.

Charge particle lunar environmental experiment

The CPLEE is currently in STANDBY select. The experiment has been commanded to OPERATE select only during the real-time support period, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage Turn ON	Analyzer A Voltage STANDBY	Operational Mode
8 June	2019	2143	2297.6	2330.9	Auto

Present plans are to leave the experiment in STANDBY select until after sunset this lunar day, 24 June.

Apollo 12 ALSEP

Operational status from 8 June 1973, 1300 G.m.t., to 15 June 1973, 1300 G.m.t.

Central station

The 47th lunar noon of this experimental station will occur on 17 June. The thermoelectric power source has displayed some evidence of a reduction in total output power over this reporting period. This reduction or decrease in power could be attributable to metallurgical aging of the device. Transmitter "B" signal strength as reported by the 30-foot antenna tracking stations, was reported at -138.2 ± 3.2 dbm. The central station's DSS-1 heater was commanded OFF at 1656 G.m.t., 10 June, when the station's average thermal plate temperature increased to 39.8°F. Data processor "Y" was verified by command on 10 June.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). No seismic signals have been noted during the limited real-time support periods. The instrument's z-axis motor was commanded OFF, at 1651 G.m.t., 10 June, as the sensor assembly temperature increased to 126.3°F.

Lunar surface magnetometer experiment

Scientific and engineering data outputs remain invalid.

Solar wind spectrometer experiment

At 1010 G.m.t., 11 June, the experiment was commanded to the extended range mode to preclude possible loss of data while the effects of a solar magnetic storm was in progress throughout this reporting period. At 0856 G.m.t., 12 June, the experiment was commanded back to the normal range mode and remains in this configuration.

Suprathermal ion detector experiment

Scientific and engineering data became valid between the end of real-time operations 9 June and the start of real-time operations 10 June. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltage ON to experiment power OFF continues, initiated this lunar day 12 June. The experiment is commanded in this manner as planned to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1000 G.m.t., 14 June 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1303	860	684	419
Total Commands to Date	17343	9501	16449	6964
Sun Angle	49.1°	55.1°	76.2°	88.1°
Input Power	67.1w	69.0w	71.9w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	86.6°F	102.0°F	109.6°F	101.2°F
PSE Sensor Temp (DL-07)	127.3°F	127.9°F	139.3°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	64.2°C	59.4°C
SWS Module 300 Temp (DW-13)	59.2°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	86.9°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	364.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	64.2°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	325.7°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	184
Total Commands to Date	8087
Sun Angle	103.1°
Input Power	76.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	118.6°F
LMS Temp (AM-41)	71.4°F
LEAM Temp (AJ-11)	177.5°F
HFE Temp Ref 1 (DH-13)	324.3°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	120.4°F

ALSEP PERFORMANCE SUMMARY REPORT

22 June 1973
G.m.t.: 1300

The partial penumbral eclipse of the moon occurred on 15 June 1973. The Apollo 15 and 17 ALSEP lunar scientific stations were affected to a minor degree. The maximum temperature drop was 11.6°F at the Apollo 15 site and 8.5°F at the Apollo 17 site.

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	GMT LOS	GMT AOS	Data Loss
Apollo 12 ALSEP	11 June	1455	1547	52^m
Apollo 12 ALSEP	12 June	1115	1207	52^m
Apollo 14 ALSEP	14 June	2228	2250	22^m
Apollo 14 ALSEP	15 June	0720	0856	$1^h\ 36^m$
Apollo 12 ALSEP	19 June	0930	1054	$1^h\ 24^m$
Apollo 12 ALSEP	20 June	0712	1000	$2^h\ 48^m$

Apollo 17 ALSEP

Sunset of the 7th lunation occurred on 20 June at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of the sixth lunation. Downlink RF signal strength is reported at -140.0 ± 5.5 dbm from transmitter "A". Thermoelectric power source output is 77.4 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 120.0 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature has increased to 49.199°C (slave heater ON) and is now stabilized.

The Lunar Seismic Profiling Experiment is currently in STANDBY select. The next 30-minute passive listening period is planned for later today.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

22 June 1973
G.m.t.: 1300

The Lunar Atmospheric Composition Experiment was commanded ON at 1921 G.m.t., 21 June for lunar night operation. The LACE continues to collect data on the lunar atmospheric composition. The present configuration is automatic sweep; high voltage power supply, ON ; ion source filaments, ON ; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater ON. The LACE electronics temperature (AM-41) is currently -16.1°F.

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1238 G.m.t., 18 June, when the mirror temperature (AJ-11) decreased to 146.4°F at a sun angle of 153.5°. The instrument's mirror temperature (AJ-11) currently is tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 15 June 1973, 1300 G.m.t., to 22 June 1973, 1300 G.m.t.

Central station

The Descartes Site experienced sunset on 21 June. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 1903 G.m.t., 21 June for lunar night operations when the average thermal plate decreased to 38.4°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is reported at -139.5 ± 4.5 dbm by the 30-foot antenna tracking stations.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 7 May. The instrument's assembly temperature (DL-07) was on-scale on 21 June at the beginning of real-time support at a sun angle of 177.9°. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 20 June, 421 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The active seismic experiment is currently in standby OFF. The experiment was commanded to operate select at 1725 G.m.t., 20 June, and to high bit rate ON at 1730 G.m.t. for a passive listening mode operation. Data output of all geophones appeared normal. Two geophone calibration pulses were sent to the instrument during the listening mode operation. High bit rate operations were terminated at 1800 G.m.t. and the experiment commanded to standby OFF at 1803 G.m.t. No significant events were noted in real time. The next listening period is scheduled on 24 June.

Apollo 15 ALSEP

Operational status from 15 June 1973, 1300 G.m.t., to 22 June 1973, 1300 G.m.t.

Central station

Sunset of the site's 23rd lunation will occur later today. The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -137.0 ± 4.0 dbm by the tracking stations with 30-foot antenna. The lunar night operational procedure of eliminating the data subsystem timer outputs, by uplink of the timer reset command (octal 150) twice daily at 1400 G.m.t. and 2200 G.m.t., will be initiated on 25 June.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. The sensor temperature (DL-07) did not record an off-scale HIGH reading this lunar day. During the intermittent real-time support periods this past week no significant seismic events were noted.

Lunar surface magnetometer experiment

The experiment sensors will be commanded to the 50 gamma range on 23 June for lunar night operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW static since 20 September 1972. The instrument has executed 966 flip calibration sequences since activation.

Solar wind spectrometer experiment

The instrument remains in STANDBY.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).

Heat flow experiment

The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 284.6°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 15 June 1973, 1300 G.m.t., to 22 June 1973, 1300 G.m.t.

Central station	Sunset at the Apollo 14 site will occur on 24 June. RTG power output is steady. Transmitter "A" signal strength was reported at -140.5 ± 4.5 dbm. The DSS-1 heater (10 watts) will be commanded ON for lunar night operation on 23 June.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to AUTO ON at 1604 G.m.t., on 20 June to maximize heating during lunar night operations. The long-period y-axis has remained in the on-scale position since 22 March. The y-axis has responded to leveling commands since 25 April. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 18 June 1973, the experiment was commanded to ON at 1357 G.m.t. and to high bit rate ON at 1405 G.m.t. for a passive listening mode. No significant responses were noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 1435 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1522 G.m.t. The next listening period is scheduled for 10 July 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently OFF. The experiment remained in STANDBY select from 10 June until 15 June. The instrument was commanded to OPERATE select at 1726 G.m.t., 15 June following two previous unsuccessful attempts. In order; the SIDE -3.5 Kv supply, HECPA, LECPA, Ground Plane Stepper, and Velocity Filter were commanded OFF. At 1742 G.m.t., the instrument went to STANDBY without command. The instrument was again commanded to OPERATE select at 1801 G.m.t. but it returned to STANDBY within one minute without command. The SIDE/CCIG was commanded to OFF at 1948 G.m.t., 15 June, and has remained in this configuration.

Apollo 14 ALSEP (continued)

Operational status from 15 June 1973, 1300 G.m.t., to 22 June 1973, 1300 G.m.t.

Charge particle lunar environmental experiment	The instrument remains in STANDBY select. The instrument was in the OFF configuration during the operation of the SIDE/CCIG. The CPLEE did not ripple-off to STANDBY when the SIDE/CCIG went to STANDBY.

Apollo 12 ALSEP

Operational status from 15 June 1973, 1300 G.m.t., to 22 June 1973, 1300 G.m.t.

Central station

Sunset of the 44th lunar day will occur on 25 June. Power output from the RTG remains steady. A signal strength of -141.5 ± 3.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded ON for lunar night operations on 24 June.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded ON for lunar night operation on 24 June. At 1833 G.m.t., 19 June, during the real-time support period, the sensor temperature (DL-07) was noted to have been off-scale HIGH. It is predicted to return on-scale on 23 June. No significant seismic events were noted during the periodic real-time support periods.

Lunar surface magnetometer experiment

Scientific and engineering data outputs remain invalid. At 0450 G.m.t., 19 June, the instrument responded to a spurious command (Octal 123, LSM Range Select) placing the sensors in the 200 gamma range. The CVW was reported in the downlink by the Ascension ground station. After verification during real-time support, the command (Octal 123) was executed by mission control at 1845 G.m.t., 19 June, returning the sensors to the 100 gamma range. This was the 67th CVW for the Apollo 12 ALSEP.

Solar wind spectrometer experiment

The instrument was commanded to the extended range mode at 1358 G.m.t., 18 June to record the effects of the solar flare activity observed by the SKYLAB flight crew. The experiment was commanded to the normal range mode at 1727 G.m.t., 20 June.

Suprathermal ion detector experiment

The instrument is currently OFF. The instrument has been cycled by command to the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF to preclude instrument mode changes at internal temperatures above 55°C during this lunar day. The SIDE will be commanded to OPERATE select and automatic stepping sequence for the remainder of this lunation later today. During real-time support on 15 June the instrument experienced an unexpected mode register load of X10. The experiment was commanded to OFF at 2058 G.m.t., 15 June, and remained OFF until real-time support on 16 June to allow the instrument to cool below 55°C.

Status as of 2100 G.m.t., 21 June 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1310	867	691	426
Total Commands to Date	17401	9576	16556	7088
Sun Angle	140.1°	146.1°	167.2°	179.0°
Input Power	67.1w	68.6w	71.9w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE, CPLEE Stby,	SWS Stby	ASE OFF
Avg Thermal Plate Temp	80.4°F	80.2°F SIDE OFF	73.0°F	38.4°F
PSE Sensor Temp (DL-07)	Off Scale HIGH	130.5°F	125.6°F	134.4°F
LSM Internal Temp (DM-05)	Invalid	N/A	54.9°C	40.3°C
SWS Module 300 Temp (DW-13)	55.9°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	56.5°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	301.6°K	N/A
CPLEE Elect Temp (AC-06)	N/A	OFF	N/A	N/A
ASE GLA Temp (AS-03)	N/A	68.3°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	298.9°K	OFF

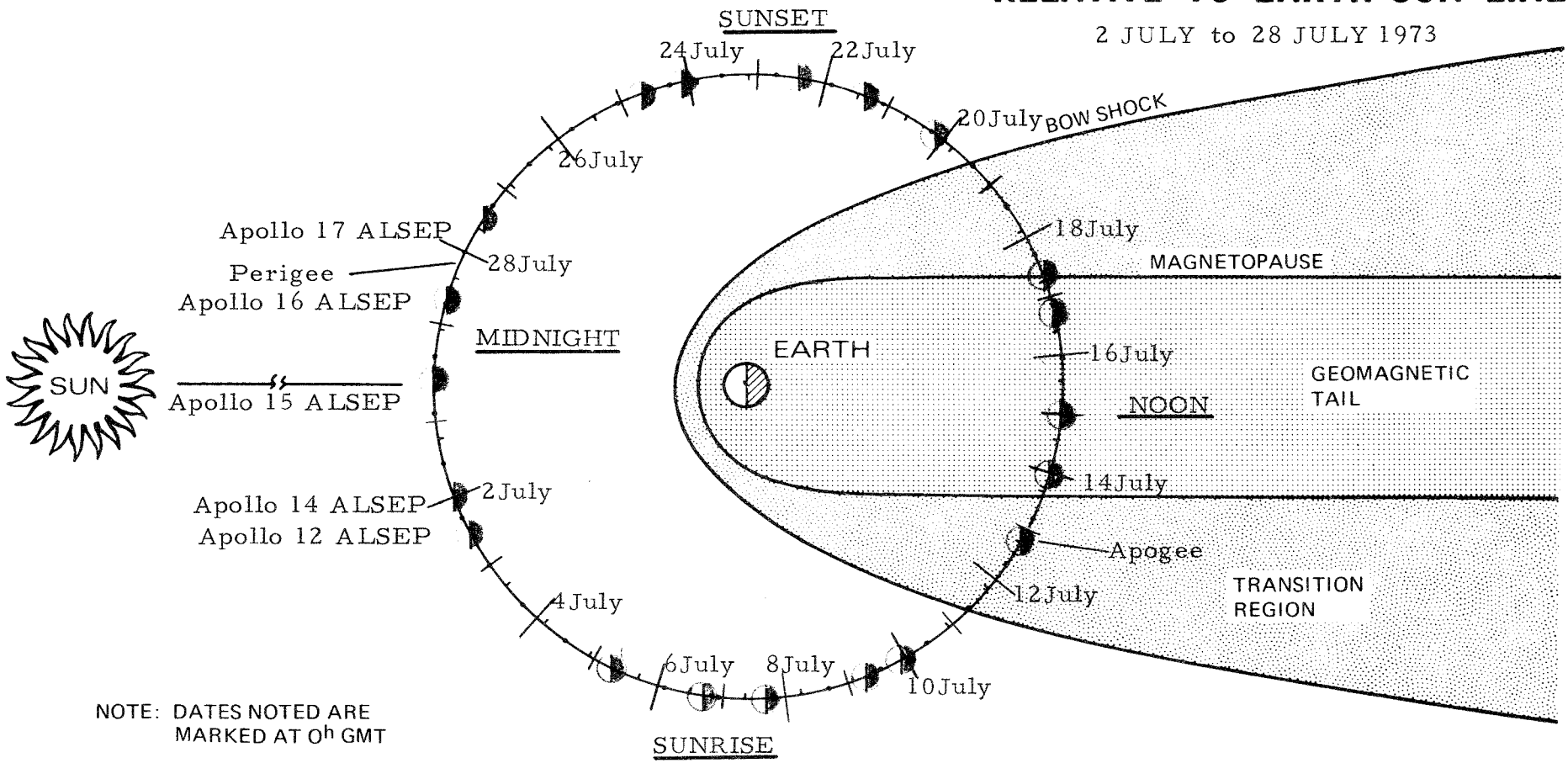
TM POINT	APOLLO 17 ALSEP
Total Days of Operation	191
Total Commands to Date	8167
Sun Angle	194.0°
Input Power	77.4w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	40.2°F
LMS Temp (AM-41)	-16.1°F
LEAM Temp (AJ-11)	-14.0°F
HFE Temp Ref 1 (DH-13)	287.2°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	42.0°F

Bendix Aerospace Systems Division

Prepared by: Warren Tosh

MOON POSITIONS RELATIVE TO EARTH-SUN LINE

2 JULY to 28 JULY 1973



NOTE: DATES NOTED ARE MARKED AT 0^h GMT

APOLLO (ALSEP)	DAY/HOUR(GMT)				
	Midnight	Sunrise	Noon	Sunset	Midnight
17		5 July/0953	(8th) 12 July/1842	20 July/0348	27 July/1228
16		6 July/1548	(16th) 14 July/0041	21 July/0935	28 July/1819
15		7 July/1504	(25th) 15 July/0002	22 July/0903	29 July/1733
14	2 July/0001	9 July/0833	(31st) 16 July/1736	24 July/0232	
12	2 July/1136	9 July/2024	(46th) 17 July/0515	24 July/1320	

ALSEP PERFORMANCE SUMMARY REPORT

29 June 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was available at all times since the last reporting period.

Apollo 17 ALSEP

Midnight at Taurus Littrow Lunar Laboratory occurred on 28 June. The central station is operating normally with the automatic power management circuit functioning as designed. The average thermal plate temperature is currently stabilized in the lunar night environment. Downlink RF signal strength is reported at -136.7 ± 2.2 dbm from transmitter "A". Thermoelectric power source output essentially remains unchanged. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples is 108 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment remains configured to collect data in the seismic and free mode channels. The mass-changing, beam clamp/unclamp, screw drive, thermal control, pressure, and electronics subsystems are operating nominally. The experiment's sensor temperature is presently stabilized at 49.199°C (slave heater ON).

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished on 22 and 27 June as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
22	2045	2100	2130	2133	2	None
27	1329	1341	1416	1419	2	Response

The next 30-minute passive listening period is planned for 5 July.

The Lunar Atmospheric Composition Experiment continues to collect data since turn-on, 21 June, for lunar night operations. The present configuration is automatic sweep; high voltage power supply, ON; ion source filament, ON; multipliers, HIGH; low voltage power supply, ON; discriminaotr level, HIGH; and back-up heater ON. The three mass range data channels continue to display electronic background noise of various characteristics. The LACE electronics temperature (AM-41) has currently stabilized at 15.0°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

29 June 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates since turn-on for lunar night operation on 18 June. The instrument's mirror temperature (AJ-11) is currently stabilized at -20.8°F, which is the minimum temperature attained during previous lunar nights.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 22 June 1973, 1300 G.m.t., to 29 June 1973, 1300 G.m.t.

Central station	Midnight of the 15th lunation occurred today, 29 June at the Descartes Site. The thermoelectric power source output is normal. The DSS-1 heater (10 watts) was commanded ON at 1903 G.m.t., 21 June, for lunar night operations when the average thermal plate temperature decreased to 38.4°F. Inhibiting of the 18-hour timer output pulses is continuing. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -138.0 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling mode commands since 22 June. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been static since 16 February 1973. The LSM's scientific data continues to respond to flip calibrations (no cal raster observed) or filter commands. As of 27 June, 427 flip calibration sequences have been executed and verified by the experiment's engineering data.
Active seismic experiment	The active seismic experiment is currently in standby OFF, with a 30 minute passive listening mode operation planned for 2 July. The experiment was commanded to operate select at 0223 G.m.t., 25 June, and to high bit rate ON at 0235 G.m.t. for a passive listening mode operation. Data output of all geophones appeared normal. Two geophone calibration pulses were sent to the instrument during the listening mode operation. High bit rate operations were terminated at 0305 G.m.t. and the experiment commanded to standby OFF at 0327 G.m.t. No significant signals were noted in real time.

Apollo 15 ALSEP

Operational status from 22 June 1973, 1300 G.m.t., to 29 June 1973, 1300 G.m.t.

Central station	Midnight of the station's 24th lunation will occur on 30 June. Power from the RTG continues steady. Transmitter "A" downlink signal strength is reported at -137.0 ± 4.0 dbm. The procedure of eliminating the 18-hour timer's output pulse during lunar night time operations was not initiated for this lunation. The data subsystem's average thermal plate temperature is presently stabilized at -0.8°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry this lunar night will be cycling per the normal 18-hour timer out pulse functions. The thermal characteristics of the PSE sensor assembly temperature (DL-07) have been evaluated by the P.I. and he has determined that no anticipated adverse effects are expected in the science data or instrument operation by allowing the cycling of the 18-hour timer output pulses. Previously (since 14 October 1971), the instrument's uncage/arm fire circuitry was maintained in the OT state to deliver maximum heating into the sensor assembly during lunar nights. No natural seismic signals have been observed during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment sensors were commanded to the 50 gamma range at 1332 G.m.t., 23 June, for lunar night-time operations. Currently the instrument has executed 978 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The experiments are operating continuously in the full automatic stepping sequence (0-127 frames) with no mode changes observed during the real-time support periods.

Operational status from 22 June 1973, 1300 G.m.t., to 29 June 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 90.5°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.9°K at its lower-most point. Ring bridge surveys are being conducted periodically.

Apollo 14 ALSEP

Operational status from 22 June 1973, 1300 G.m.t., to 29 June 1973, 1300 G.m.t.

Central station

Midnight at the Fra Mauro site will occur on 2 July. RTG power output is steady. Transmitter "A" signal strength was reported at -142.2 ± 3.7 dbm. The DSS-1 heater (10 watts) was commanded ON for lunar night operation 23 June, when the average thermal plate temperature had decreased to 56.1°F.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater is operating in the AUTO ON mode for lunar night operation. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 10 July 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is currently ON and operating in the full automatic stepping sequence (0-127 frames). At 1321 G.m.t., 23 June, thru 1258 G.m.t., 25 June, the experiment was commanded ON with only the CCIG operating. During this time frame the instrument operated without incident. At 1258 G.m.t., 25 June, the SIDE was commanded to its normal operational configuration and no mode or instrument changes have occurred since this was attained. Present plans are to maintain the experiment in this mode of operation throughout the lunar night.

Charge particle lunar environmental experiment

The CPLEE is currently in STANDBY select. The experiment has been commanded to OPERATE select only during real-time support periods, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage Turn ON	Analyzer A Voltage STANDBY	Operational Mode
25 June	0134	1510	2513.9	2280.9	-35 vdc range
26 June	1249	1341	2347.5	2364.1	AUTO
27 June	1233	1441	2330.9	2347.0	AUTO

Apollo 12 ALSEP

Operational status from 22 June 1973, 1300 G.m.t., to 29 June 1973, 1300 G.m.t.

Central station	Midnight of the 45th lunar day will occur 2 July 1973. RTG power output is constant. Transmitter "B" signal strength was reported at -139.7 ± 4.2 dbm. The central station's DSS-1 heater (10 watts) was commanded ON at 0127 G.m.t., 25 June, when the average thermal plate temperature decreased to 29.2°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded ON 25 June to maximize the heat input to the sensor assembly during lunar night operations when DL-07 indicated 126.4°F. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is operating in full automatic stepping sequence with the Channeltron high voltage ON. The experiment was commanded ON for continuous lunar night operations at 1939 G.m.t., 22 June, when the SIDE temperature (DI-05) was reading 20.7°C.

Status of 1500 G.m.t., 27 June 1973, was as follows.

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1316	873	697	432
Total Commands to Date	17485	9664	16700	7163
Sun Angle	210.4°	216.4°	237.5°	249.4°
Input Power	67.3w	69.9w	72.4w	70.4w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE & CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	13.4°F	33.5°F	-0.8°F	34.9°F
PSE Sensor Temp (DL-07)	126.3°F	124.2°F	124.5°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	12.1°C
SWS Module 300 Temp (DW-13)	-14.8°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	112.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	STANDBY	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-64.5°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.5°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	197
Total Commands to Date	8237
Sun Angle	264.4°
Input Power	77.2w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.9°F
LMS Temp (AM-41)	15.0°F
LEAM Temp (AJ-11)	-20.8°F
HFE Temp Ref 1 (DH-13)	286.4°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	29.1°F

ALSEP PERFORMANCE SUMMARY REPORT

6 July 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	GMT LOS	GMT AOS	Data Loss
Apollo 12	2 Jul	0435	0730	$2^h\ 55^m$

Apollo 17 ALSEP

Sunrise of the scientific station's 8th lunation occurred on 5 July. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 76.9 watts. The downlink received signal is reported between -135.0 dbm and -143.5 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE thermocouples is $140^{\circ} \pm 8^{\circ}$K. Subsurface temperatures at 230 cm depth are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.199°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select, with the next 30-minute passive listening period planned for 13 July. The experiment was commanded ON at 1711 G.m.t., 5 July, and to LSPE data format processing (high bit rate) at 1735 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. Data output of the geophones appeared normal (no significant events observed) on all geophones during the real-time operation. LSPE processing was terminated at 1805 G.m.t., and the instrument commanded to STANDBY select at 1810 G.m.t.

The Lunar Atmospheric Composition Experiment is currently ON with the discriminator level LOW; ion source filaments, OFF; and high voltage power supply, OFF (Apollo 17 SMEAR, ALSEP 51). The LACE gathered data on the composition of the lunar atmosphere throughout this lunar night. The electrical background noise ramp continued to be displayed on all three mass range data channel outputs. The LACE will be commanded OFF on 8 July for the remainder of this lunar day as the electronic temperature (AM-41) approaches 125.0°F.

6 July 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorite Experiment is presently ON. The instrument was left in the operate select ON mode through the 5 July terminator crossing per the agreed plan (Apollo 17 SMEAR, ALSEP 49). The LEAM will be commanded OFF on 9 July when the instrument mirror temperature (AJ-11) increases to 180.0°F. The LEAM will remain OFF until the mirror temperature decreases to 160°F at which time the instrument will be commanded ON for the remainder of this lunation.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 29 June 1973, 1300 G.m.t., to 6 July 1973, 1300 G.m.t.

Central station	Sunrise of the 16th lunation will occur later today. The DSS-1 heater (10 watts) will be commanded OFF later today. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30 foot antenna tracking stations report a signal strength between -133.0 dbm and -137.7 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling mode commands since 22 June 1973. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been static since 16 February 1973. The LSM's scientific data do not respond to flip calibrations (no cal raster observed) or filter commands. 433 flip calibration sequences have been executed and verified by the experiment's engineering data as of 5 July.
Active seismic experiment	The active seismic experiment is currently in standby OFF, with a 30 minute passive listening mode operation planned for 11 July. The experiment was commanded to operate select at 0004 G.m.t., 3 July, and to high bit rate ON at 0110 G.m.t. for a passive listening mode operation. Data output of all geophones appeared normal. Two geophone calibration pulses were sent to the instrument during the listening mode operation. High bit rate operations were terminated at 0140 G.m.t. and the experiment commanded to standby OFF at 0144 G.m.t. No significant responses were noted in real time.

Apollo 15 ALSEP

Operational status from 29 June 1973, 1300 G.m.t., to 6 July 1973, 1300 G.m.t.

Central station	Sunrise of the station's 25th lunation will occur on 8 July. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -132.0 dbm and -140.5 dbm. The lunar night operational procedure of permitting the 18-hour timer pulses to cycle normally for this lunation continues.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry was permitted to function normally with the 18-hour timer pulse functioning. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors will be commanded to 100 gamma range on 6 July for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 984 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 84.3°K on 5 July as indicated by the cable thermocouples. The sub-surface temperature was 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 29 June 1973, 1300 G.m.t., to 6 July 1973, 1300 G.m.t.

Central station

Sunrise at the Apollo 14 site will occur on 9 July (31st lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -135.5 dbm and -140.0 dbm. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operation on 10 July. Data processor "Y" will be verified by command on 10 July.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater is operating in the AUTO ON mode to maximize heating during lunar night operations. The long-period y-axis has remained in the on-scale leveled position since 22 March. The long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 10 July 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is currently operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. The Channeltron high voltages will be commanded OFF prior to sunrise on 8 July and operation continued in this mode throughout the lunar day. (Apollo 14 SMEAR, ALSEP 83).

Charged particle lunar environmental experiment

The CPLEE is currently in OPERATE select, -35 vdc range, according to the present procedure. The experiment had been commanded to OPERATE select during real-time support periods, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage	Operational Mode
29 June	1352		2314	AUTO
		1511	2364	
2 July	2315		2297	AUTO
3 July		0225	2364	
5 July	1843		2297	-35 vdc

Apollo 12 ALSEP

Operational status from 29 June 1973, 1300 G.m.t., to 6 July 1973, 1300 G.m.t.

Central station	Midnight of the 45th lunar day occurred on 2 July. Power output from the RTG remains steady. A signal strength of -140.0 ± 5.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operations on 10 July. Data processor "Y" will be verified by command on 10 July.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded OFF for lunar day operation on 10 July. At 2324 G.m.t., 2 July, the PSE's sensor temperature (DL-07) was offscale LOW (sun angle = 281.9°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid. At 2115 G.m.t., 1 July, the instrument responded to a spurious command (octal 132 LSM Filter Out). The CVW was reported in the downlink by the Texas ground station. After verification during real-time support, the command (octal 132) was executed by mission control at 2327 G.m.t., 2 July, returning the filter to the IN mode. This was the 68th CVW for the Apollo 12 ALSEP.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is operating in full automatic stepping sequence with the Channeltron high voltages ON. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 11 July in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 2000 G.m.t., 5 July 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1324	881	705	440
Total Commands to Date	17494	9685	16791	7198
Sun Angle	310.9°	316.9°	338.0°	349.9°
Input Power	66.9w	69.5w	71.9w	70.4w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	11.6°F	32.6°F	-1.7°F	34.0°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.1°F	124.3°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	12.1°C
SWS Module 300 Temp (DW-13)	-15.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	106.5°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-33.9°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-70.3°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.1°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	205
Total Commands to Date	8319
Sun Angle	4.9°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.5°F
LMS Temp (AM-41)	15.0°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	289.1°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	27.8°F

ALSEP PERFORMANCE SUMMARY REPORT

13 July 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	LOS GMT	AOS GMT	Data Loss
Apollo 12	08 Jul	0336	0530	1^h54^m

Apollo 17 ALSEP

Noon of the scientific station's 8th lunation occurred on 12 July. All experiments and the central station are operating as expected. Downlink signal strength is reported at -144.2 ± 1.7 dbm from transmitter A. The redundant transmitter B, as well as all other redundant systems, continue to be passive. Except for small repetitive day/night variations, thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control allowing the system thermal performance to track that of the previous lunar cycle. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses), continues during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge survey's being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 372 ± 8°K. Subsurface temperature at 230 cm depth is 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.199°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY. No passive listening mode was scheduled during this reporting period. It is planned that continuous LSPE high bit rate operations will be implemented today during the real-time support period, 13 July through 17 July 1973 (Apollo 17 SMEAR, ALSEP 53).

The Lunar Atmospheric Composition Experiment remains OFF since being commanded to this mode at 1609 G.m.t., 8 July. It is planned the LACE will remain in the OFF mode until the electronics temperature (AM-41) decreases to 32°F (Apollo 17 SMEAR, ALSEP 51). The LACE will then be placed to STANDBY select prior to the ephemeris sunset. Currently the electronics temperature (AM-41) is tracking previous lunar day thermal profiles.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

13 July 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment has been cycled ON and OFF during this reporting period as follows:

Date	G.m.t.	Experiment Condition	Survival Temp (AJ-11)	Sun Angle
18 Jun	1238	ON	146.4°F	153.5°
8 Jul	1737	OFF	179.5°F	40.5°
9 Jul	1359	ON	166.3°F	50.7°
9 Jul	1927	OFF	180.5°F	53.5°

It is planned that the LEAM will be operated during this lunation per Apollo 17 SMEAR, ALSEP 49, Rev. 1.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 6 July 1973, 1300 G.m.t., to 13 July 1973, 1300 G.m.t.

Central station

Noon of the 16th lunar day will occur on 14 July at the Descartes Site. The DSS-1 heater (10 watts) has been OFF since 6 July. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -135.0 dbm and -139.3 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has responded to leveling mode commands since 7 July. The instrument's assembly temperature (DL-07) was off-scale HIGH on 12 July at the beginning of real-time support at a sun angle of 72.6°. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been static since 16 February 1973. The LSM's scientific data continues to respond to flip calibrations (no cal raster observed) or filter commands. As of 12 July, 437 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is in standby OFF. On 11 July, the experiment was commanded to operate select at 0455 G.m.t. and to high bit rate ON at 0515 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal and several responses were observed in real-time. High bit rate operations were terminated at 0545 G.m.t. and the experiment commanded to standby OFF at 0558 G.m.t. The next passive listening period is planned for 20 July.

Apollo 15 ALSEP

Operational status from 6 July 1973, 1300 G.m.t., to 13 July 1973, 1300 G.m.t.

Central station	Noon of the station's 25th lunation will occur on 15 July. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -134.5 dbm and -141.0 dbm. The data subsystems's 18 hour timer outputs have occurred as expected and were verified during real-time support at 1327 G.m.t., 7 July.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant events were noted.
Lunar surface magnetometer experiment	The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 998 flip calibration sequences since activation.
Solar wind spectrometer experiment	At 0527 G.m.t., 10 July, the experiment was commanded to operate select for 4 minutes in order to provide additional data on the instrument's anomalous operation. The instrument's telemetry data continuously indicated out of sync data. During the operate select period the experiment continued to demand excessive power (9.5 watts). Following the operate select period the instrument was commanded back to STANDBY select (Apollo 15 SMEAR, ALSEP 46).
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 356.2°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 6 July 1973, 1300 G.m.t., to 13 July 1973, 1300 G.m.t.

Central station

Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported at -137.7 ± 1.7 dbm. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 0519 G.m.t., 10 July, when the central station's average thermal plate temperature increased to 72.4°F. Data processor "Y" was verified by command on 10 July. At 1347 G.m.t. on 10 July, the Central Station responded to a spurious command (octal 031, DTREM OFF). The Carnarvon, Australia ground station reported receipt of a CVW in the downlink. After verification during real-time support, the DTREM was commanded ON by mission control at 0551 G.m.t., 11 July, without incident.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater will be commanded to FORCED OFF later today to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale position since 22 March. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. On 10 July 1973, the experiment was commanded to ON at 0557 G.m.t. and to high bit rate ON at 0605 G.m.t. for a passive listening mode. Several responses were observed during the listening mode. Geophone calibration pulses were not sent during the listening period. Data output of geophones 1 and 2 appeared normal; geophone 3 indicated off-scale HIGH at the start of the high bit rate operation and then became continuously intermittent throughout the remaining listening mode period. This is a continuing known anomaly. At 0638 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 0641 G.m.t., 10 July. The next listening period is scheduled for 16 July 1973.

Operational status from 6 July 1973, 1300 G.m.t., to 13 July 1973, 1300 G.m.t.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is in STANDBY, and present plans are to leave it in this configuration throughout this lunar day. Investigation of the anomalous functional mode change to the STANDBY mode continues to be evaluated. The following is a sequential list of the activities of the instrument during this reporting period:

Date	G.m.t.	Mode	CCIG HV	SIDE HV	Comments
25 Jun	1258	ON	ON	ON	Normal operation
8 Jul	1630	ON	OFF	OFF	HECPA, LECPA, Velocity Filter, and Ground Plane Stepper OFF.
9 Jul	1550	STDBY	--	--	Anomalous functional change to STANDBY during real-time support.

Charge particle lunar environmental experiment

The CPLEE is currently in STANDBY select. The experiment has been commanded to OPERATE select only during the real-time support period, as listed below:

Date	CPLEE ON (G.m.t.)	CPLEE STANDBY (G.m.t.)	Analyzer A Voltage Turn ON	Analyzer A Voltage STANDBY	Operational Mode
5 Jul	1843		2314		-35 vdc
9 Jul		2358		2231	Mode I Command through Texas Tracking Station

Present plans are to leave the experiment in STANDBY select until after sunset this lunar day.

Apollo 12 ALSEP

Operational status from 6 July 1973, 1300 G.m.t., to 13 July 1973, 1300 G.m.t.

Central station	Sunrise of the 46th lunar day occurred on 9 July at the ALSEP site in the Ocean of Storms. Power output from the RTG remains steady. A signal strength of -139.5 ± 2.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 0449 G.m.t., 10 July, when the average thermal plate temperature was 42.0°F. Data processor "Y" was verified by command on 10 July.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded OFF for lunar day operation at 0443 G.m.t., 10 July. At 0440 G.m.t., 10 July, the PSE's sensor temperature (DL-07) returned on-scale(sun angle = 4.3°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long term analysis.
Suprathermal ion detector experiment	Currently the SIDE is OFF. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 11 July in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1700 G.m.t., 12 July 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1331	888	712	447
Total Commands to Date	17557	9768	16977	7342
Sun Angle	34.9°	40.9°	62.0°	73.9°
Input Power	66.6w	68.6w	71.3w	69.9w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE,SIDE&CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	78.3°F	88.3°F	103.0°F	99.0°F
PSE Sensor Temp (DL-07)	126.5°F	125.4°F	133.1°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	59.4°C	56.4°C
SWS Module 300 Temp (DW-13)	OFF	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	81.7°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	364.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	40.7°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	319.9°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	212
Total Commands to Date	8383
Sun Angle	88.9°
Input Power	76.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	ISPE Stby, LEAM & LMS OFF
Avg Thermal Plate Temp	118.1°F
LMS Temp (AM-41)	71.4°F
LEAM Temp (AJ-11)	164.1°F
HFE Temp Ref 1 (DH-13)	324.8°K
LSG Temp (DG-04)	49.1°F
LSP Temp (AP-01)	119.0°F

ALSEP PERFORMANCE SUMMARY REPORT

20 July 1973
G.m.t.: 1200

Apollo 17 ALSEP

Sunset of the 8th lunation occurred on 19 July at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of previous lunations. Downlink RF signal strength is reported at -140.2 ± 4.2 dbm from transmitter "A". Thermoelectric power source output is 76.2 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 275.7 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.199°C (slave heater ON).

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished from 13 through 17 July per Apollo 17 SMEAR, ALSEP 53 as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
13 Jul	1637	1645			1	Response
14 Jul			1300			
14 Jul		1500			2	Response
15 Jul			1239			
15 Jul		1440			1	Response
16 Jul			1246			
16 Jul		1455			1	Response
17 Jul			1248	1257	1	Response

The next passive listening period is planned for 25 July.

20 July 1973
G.m.t.: 1200

The Lunar Atmospheric Composition Experiment was commanded from STANDBY to ON at 1453 G.m.t., 19 July for the lunar night. The experiment had been commanded from OFF to STANDBY during this report period at 1301 G.m.t., 16 July to maintain thermal stability of the instrument. At this time the electronics temperature had decreased to 52.7°F at a sun angle of 135.6°. The present configuration is automatis sweep; high voltage power supply, OFF; ion source filaments, OFF; multipliers, HIGH; low voltage power supply, ON; discriminator level, LOW; and back-up heater OFF. The LACE electronics temperature (AM-41) is currently 80.0°F.

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1304 G.m.t., 17 July, when the mirror temperature (AJ-11) decreased to 157.6°F at a sun angle of 147.8°. The instrument's mirror temperature (AJ-11) currently is reading 122.9°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 13 July 1973, 1300 G.m.t., to 20 July 1973, 1200 G.m.t.

Central station	The Descartes Site will experience sunset tomorrow 21 July. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -139.0 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis continues to respond to leveling mode commands. The instrument's assembly temperature (DL-07) has remained off-scale HIGH since 12 July and is expected to return on-scale 21 July. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	Scientific data have been intermittent since 15 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 18 July, 443 flip calibration sequences have been executed and verified by the experiment's engineering data.
Active seismic experiment	The experiment is in standby OFF. On 19 July, the experiment was commanded to operate select at 1558 G.m.t. and to high bit rate ON at 1625 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal and no responses were observed in real-time. High bit rate operations were terminated at 1655 G.m.t. and the experiment commanded to standby OFF at 1703 G.m.t. The next passive listening period is planned for 27 July.

Apollo 15 ALSEP

Operational status from 13 July 1973, 1300 G.m.t., to 20 July 1973, 1200 G.m.t.

Central station	The radioisotope power source continues to supply a steady output to the experiment's package. Transmitter "A" downlink signal strength is reported between -141.0 dbm and -135.0 dbm. The data subsystem's 18 hour timer outputs are occurring as expected.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant events were noted.
Lunar surface magnetometer experiment	The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1004 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY select since 10 July 1973.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 321.7 ^{o}K as indicated by the cable thermocouples. The sub-surface temperature is 253.3 ^{o}K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9 ^{o}K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 13 July 1973, 1300 G.m.t., to 20 July 1973, 1200 G.m.t.

Central station	Noon at the Apollo 14 site occurred on 16 July (31st lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -137.0 dbm and -142.5 dbm. The DSS-1 heater (10 watts) remains OFF for lunar day operation.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to AUTO ON 19 July to maximize heating during lunar night operations. At 0555 G.m.t., 19 July, the instrument responded to a spurious command (octal 073, PSE to the OT state). The Texas tracking station confirmed receipt of the command in the ALSEP downlink. The PSE was returned to the UNCAGED condition by command from mission control at 1543 G.m.t., 19 July, without incident. The long-period y-axis has remained in the on-scale position since 22 March. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 16 July 1973, the experiment was commanded to ON at 1332 G.m.t. and to high bit rate ON at 1345 G.m.t. for a passive listening mode. No significant events were noted during the listening mode. Geophone calibration pulses were not sent during the listening period. At 1415 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1419 G.m.t., 16 July. The next listening period is scheduled for 23 July 1973.
Suprathermal ion detector/cold cathode gauge experiment	The experiment remains in STANDBY select. On 23 July 1973 the experiment will be commanded to OPERATE select for lunar night operations.
Charge particle lunar environmental experiment	The CPLEE has remained in STANDBY select since 9 July 1973. It is planned to turn the experiment to OPERATE select on 24 July 1973.

Apollo 12 ALSEP

Operational status from 13 July 1973, 1300 G.m.t., to 20 July 1973, 1200 G.m.t.

Central station	Noon of the 46th lunar day occurred on 17 July. Power output from the RTG remains steady. A signal strength of -140.7 ± 2.2 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) remains OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor remains OFF for lunar day operation. The instrument's sensor assembly temperature (DL-07) was off-scale HIGH during real-time support 18 July (sun angle = 105°). It is projected to return on-scale 23 July 1973. No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data have been invalid since 4 June 1972.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long term analysis.
Suprathermal ion detector/cold cathode gauge experiment	Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF is in effect in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1800 G.m.t., 19 July 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1338	895	717	454
Total Commands to Date	17617	9830	17101	7448
Sun Angle	120.9°	126.8°	147.9°	159.8°
Input Power	66.6w	68.6w	71.9w	69.9w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE,SIDE&CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	91.12°F	97.1°F	95.7°F	68.36°F
PSE Sensor Temp (DL-07)	Offscale HIGH	129.8°F	126.0°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	59.4°C	53.5°C
SWS Module 300 Temp (DW-13)	60.9°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	75.6°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	331.5°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	77.2°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	311.3°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	219
Total Commands to Date	8445
Sun Angle	174.8°
Input Power	76.18w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	61.3°C
LMS Temp (AM-41)	80.0°F
LEAM Temp (AJ-11)	122.9°F
HFE Temp Ref 1 (DH-13)	290.7°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	63.1°F

ALSEP PERFORMANCE SUMMARY REPORT

27 July 1973
G.m.t.: 1300

This reporting period culminates an aggregate total of 10 years that the Apollo 12 through 17 ALSEP lunar laboratories have returned scientific data of the moon and its associated solar phenomena to the earth for interpretation and evaluation. During this operational time period the various experiment packages and central stations have responded to 61,001 functional changes as a result of ground commands which have resulted in the ultimate collection of the scientific data.

Apollo 17 ALSEP

Midnight occurs today, 27 July, at Taurus-Littrow. The central station is in normal operation with the automatic power manage circuit functioning as designed. The average thermal plate and structural components temperatures are currently stabilized in the lunar night environment. Downlink RF signal strength is reported at -136.0 ± 2.0 dbm from transmitter "A". Thermoelectric power source output essentially remains unchanged. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 109 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.199°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select, with the next 30-minute passive listening period planned for 3 August.

The Lunar Atmospheric Composition Experiment continues to collect data since total operational turn-on, 21 July, for lunar night operations. The present configuration is automatic sweep; high voltage power supply, ON; ion source filament, ON; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater ON. The three mass range data channels continue to display electronic background noise of various characteristics. The LACE electronics temperature (AM-41) has currently stabilized at 15.0°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

27 July 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates since turn-on for lunar night operation on 17 July. The instrument's mirror temperature (AJ-11) is currently stabilized at -17.4°F.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 20 July 1973, 1200 G.m.t., to 27 July 1973, 1300 G.m.t.

Central station

The Descartes Site experienced sunset on 21 July. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 0105 G.m.t., 21 July, for lunar night operations when the average thermal plate decreased to 44.5°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is -134.0 to -137.0 dbm as reported by the 30-foot antenna tracking stations.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. During real-time support on 25 July, an attempt to level the LP x-axis was made without success. The long-period y-axis has not responded to leveling mode commands since 23 July 1973. This is a re-occurring lunar night anomaly. The instrument's assembly temperature (DL-07) was on-scale 21 July at the beginning of real-time support at a sun angle of 181.8°. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been intermittent since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 25 July, 449 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is in standby OFF. The next 30-minute passive listening period is planned for later today, 27 July.

Apollo 15 ALSEP

Operational status from 20 July 1973, 1200 G.m.t., to 27 July 1973, 1300 G.m.t.

Central station	The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -136.5 ± 2.0 dbm by the tracking stations with 30-foot antenna. Sunset of the site's 25th lunation occurred on 22 July. At 1908 G.m.t., 21 July, the central station responded to a spurious command (octal 033, 18-hour timer disable). The Honeysuckle, Australia tracking station confirmed receipt of the command in the ALSEP downlink. The timer was returned to the enable condition by mode 1 command (octal 032) from the Honeysuckle station at 2000 G.m.t., 19 July, without incident. The data subsystem's 18-hour timer outputs are occurring as expected.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant events were noted.
Lunar surface magnetometer experiment	The experiment sensors were commanded to the 50 gamma range at 1303 G.m.t., 23 July, for lunar night-time operations. Currently the instrument has executed 1014 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The experiments are operating continuously in the full automatic stepping sequence (0-127 frames) with no mode changes observed during the real-time support periods.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 92.6°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 20 July 1973, 1200 G.m.t., to 27 July 1973, 1300 G.m.t.

Central station

Sunset at the Apollo 14 site occurred on 24 July. RTG power output is steady. Transmitter "A" signal strength was reported at -141.2 ± 1.7 dbm. The DSS-1 heater (10 watts) was commanded ON for lunar night operation at 1530 G.m.t., 23 July 1973. Average thermal plate temperature was 41.2°F.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). Attempts during real-time support to level the y-axis on 21 and 22 July were unsuccessful, however, on 23 July this axis did respond to leveling commands. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. No significant seismic events were noted during the limited real-time support periods.

Active seismic experiment

The experiment is currently in STANDBY. On 23 July 1973, the experiment was commanded to ON at 1416 G.m.t. and to high bit rate ON at 1430 G.m.t. for a passive listening mode. No significant responses were observed during the listening mode. Geophone calibration pulses were not sent during the listening period. At 1500 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1502 G.m.t., 23 July. The next listening period is scheduled for 8 August 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment was commanded to operate select at 1503 G.m.t., 23 July and is operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment. Present plans are to maintain the experiment in this mode of operation throughout this lunar night.

Apollo 14 ALSEP (continued)

Operational status from 20 July 1973, 1200 G.m.t., to 27 July 1973, 1300 G.m.t.

Charged particle lunar environmental experiment	At 1508 G.m.t., 23 July the experiment was commanded to the manual mode at the -35 vdc range and automatic thermal control mode. It had been planned to leave the experiment in this configuration pending possible degradation of (AC-03) Analyzer A voltage to -2200 vdc, at which time the instrument would have been commanded to STANDBY select. Between 1800 G.m.t. and 1900 G.m.t., 26 July, the experiment went to STANDBY select as reported by the Texas Tracking Station. It is planned to command the CPLEE back to operate select during real time support today for the remainder of this lunar night. Cursory anaylsis indicates that the central station responded functionally to a spurious 14-watt Power Dump Resistor command (octal 022) causing ripple-off of the CPLEE experiment to STANDBY select.

Apollo 12 ALSEP

Operational status from 20 July 1973, 1200G.m.t., to 27 July 1973, 1300 G.m.t.

Central station	Sunset of the 46th lunar day occurred on 24 July. Power output from the RTG remains steady. A signal strength of -140.7 ± 2.2 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded ON for lunar night operations at 1152 G.m.t., 24 July, when the average thermal plate temperature was 32.9°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded ON for lunar night operation at 1154 G.m.t., 24 July, when the sensor temperature (DL-07) decreased to 126.5°F. At 1242 G.m.t., 22 July, at the start of real-time support (sun angle 155°) the sensor temperature (DL-07) was noted to have returned on-scale. No significant seismic events have been observed during the limited real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is operating in full automatic stepping sequence with the Channeltron high voltage ON. The experiment was commanded ON for continuous lunar night operations at 1244 G.m.t., 22 July, when the SIDE temperature (DI-05) was reading 17.5°C.

Status as of 1600 G.m.t., 25 July 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1344	901	725	460
Total Commands to Date	17713	9880	17262	7600
Sun Angle	193.2°	199.1°	220.2°	232.1°
Input Power	66.9w	69.8w	71.9w	70.4w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	15.0°F	32.3°F	-0.8°F	35.1°F
PSE Sensor Temp (DL-07)	126.5°F	124.3°F	124.5°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.78°C	12.0°C
SWS Module 300 Temp (DW-13)	-10.5°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.25°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	114.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-21.9°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-42.6°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.3°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	225
Total Commands to Date	8546
Sun Angle	247.1°
Input Power	77.2w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	27.5°C
LMS Temp (AM-41)	15.0°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.7°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	29.1°F

ALSEP PERFORMANCE SUMMARY REPORT

3 August 1973
G.m.t.: 1300

On July 30 the Apollo 15 ALSEP completed two years of uninterrupted lunar operation.

Apollo 17 ALSEP

Midnight of the 8th lunation at Taurus Littrow Lunar Laboratory occurred on July 27. The central station is operating normally with the automatic power management circuit functioning as designed. The average thermal plate temperature is currently stabilized in the lunar night environment. Downlink RF signal strength was reported between -135.2 dbm and -143.5 dbm from transmitter "A". Thermoelectric power source output essentially remains unchanged. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples is 105 $\pm$ 8°K. At a depth of 230 cm, the subsurface temperatures are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment remains configured to collect data in the seismic and free mode channels. The mass-changing, beam clamp/unclamp, screw drive, thermal control, pressure, and electronics subsystems are operating nominally. The experiment's sensor temperature is presently stabilized at 49.199°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select, with the next 30-minute passive listening period planned for later today. The experiment was commanded ON at 1410 G.m.t., 27 July and to LSPE data format processing (high bit rate) at 1426 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. Data output of all geophones appeared normal (no significant events observed) during the real-time operation. LSPE processing was terminated at 1456 G.m.t., and the instrument commanded to STANDBY select at 1500 G.m.t.

The Lunar Atmospheric Composition Experiment continues to collect data since turn-on, 21 July, for lunar night operations. The present configuration is automatic sweep; high voltage power supply, ON; ion source filament, ON; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater ON. The three mass range data channels continue to display electronic background noise of various characteristics. The LACE electronics temperature (AM-41) is currently stabilized at 15.0°F in the lunar night environment.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

3 August 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates since turn-on for lunar night operation on 17 July. The instrument's mirror temperature (AJ-11) is currently stabilized at -20.8°F, which is the minimum temperature attained during previous lunar nights.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 27 July 1973, 1300 G.m.t., to 3 August 1973, 1300 G.m.t.

Central station

Midnight of the 16th lunation occurred on 28 July at the Descartes Site. The thermoelectric power source output is normal. The DSS-1 heater (10 watts) is ON for lunar night operations. Inhibiting of the 18-hour timer output pulses is continuing. The 30-foot antenna tracking stations report a signal strength of -134.0 $\pm$ 3.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling mode commands since 23 July. No significant seismic events were noted during the limited real-time support of this instrument. At the beginning of real-time support, 30 July, the long period x-axis was noted to have returned on-scale.

Lunar surface magnetometer experiment

Scientific data have been intermittent since 16 February 1973. The LSM's scientific data continues not to respond to flip calibrations (no cal raster observed) or filter commands. As of 1 August, 455 flip calibration sequences have been executed and verified by the experiment's engineering data. At 0116 G.m.t., 2 August the instrument went to STANDBY (octal 046) without an executed ground command nor a CVW being noted in the downlink data. The instrument was commanded to ON (octal 045) by the Hawaii ground station at the direction of mission control at 0330 G.m.t., 2 August. The instrument returned to STANDBY at 0453 G.m.t. again without being commanded or a CVW being noted in the downlink data. At 0555 G.m.t. the instrument was again commanded to ON by the Hawaii ground station at the direction of mission control without further incident. Analysis is presently being conducted to determine the cause of this anomaly.

Active seismic experiment

The experiment is currently STANDBY OFF. ASE passive listening mode operations were accomplished on 27 July and 1 August as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
27 Jul	1458	1505	1535	1538	2	None
1 Aug	1404	1415	1445	1448	2	None

The next 30-minute passive listening period is planned for 10 August.

Apollo 15 ALSEP

Operational status from 27 July 1973, 1300 G.m.t., to 3 August 1973, 1300 G.m.t.

Central station	Midnight of the station's 25th lunation occurred on 29 July. Power from the RTG continues steady. Transmitter "A" downlink signal strength was reported between -130.0 dbm and -140.5 dbm. The procedure of eliminating the 18-hour timer's output pulse during lunar night time operations was not initiated for this lunation. The data subsystem's average thermal plate temperature is presently stabilized at -2.2°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. The thermal characteristics of the PSE sensor assembly temperature (DL-07) have been stable and no adverse effects have been noted in the science data or instrument operation by allowing the cycling of the 18-hour timer output pulses during lunar night operation. No natural seismic events have been observed during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment sensors are in the 50 gamma range for lunar night operations. Currently the instrument has executed 1020 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The experiments are operating continuously in the full automatic stepping sequence (0-127 frames) with no mode changes observed during the real-time support periods.

Apollo 15 ALSEP (continued)

Operational status from 27 July 1973, 1300 G.m.t., to 3 August 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 85.6°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 250.9°K at its lower-most point. Ring bridge surveys are being conducted periodically.

Apollo 14 ALSEP

Operational status from 27 July 1973, 1300 G.m.t., to 3 August 1973, 1300 G.m.t.

Central station	Midnight at the Fra Mauro site occurred on 31 July. RTG power output is steady. Transmitter "A" signal strength was reported between -133.0 dbm and -139.3 dbm. The DSS-1 heater (10 watts) is ON for lunar night operation. At 1837 G.m.t., 26 July 1973, the central station responded to a spurious command (octal 022, 14-watt Power Dump Resistor ON). The command was verified by simultaneous ripple-off of the CPLEE experiment to STANDBY select as a result of the drain in reserve power. At 2348 G.m.t., 26 July, the PDR was commanded OFF (octal 023) by Mode I command through the Carnarvon tracking station.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater is operating in the AUTO ON mode for lunar night operation. Between real-time support periods of 25 July and 27 July the instrument experienced a spurious command (octal 075) placing the experiment's leveling speed mode to HIGH. The experiment was commanded back to the LOW mode at 1656 G.m.t., 27 July 1973 with no adverse effects. No significant seismic events were noted during the periodic real-time support periods of this instrument.
Active seismic experiment	The experiment is currently in STANDBY. The next listening period is scheduled for 8 August 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is currently ON and operating in the full automatic stepping sequence (0-127 frames). Present plans are to maintain the experiment in this mode of operation for the remainder of the lunar night.
Charge particle lunar environmental experiment	At 1837 G.m.t., 26 July the experiment went to STANDBY select as reported by the Texas Tracking Station (ref central station). The instrument was commanded ON (manual mode, -35 vdc range, automatic thermal control mode) at 1343 G.m.t., 27 July, for the remainder of the lunar night by mission control without incident.

Apollo 12 ALSEP

Operational status from 27 July 1973, 1300 G.m.t., to 3 August 1973, 1300 G.m.t.

Central station	Midnight of the 46th lunation occurred 31 July 1973. RTG power output is constant. Transmitter "B" signal strength was reported at -136.5 ± 3.5 dbm. The central station's DSS-1 heater (10 watts) is ON for lunar night operation.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is ON to maximize the heat input to the sensor assembly during lunar night operations. At 1616 G.m.t., 1 August, the PSE sensor temperature (DL-07) was off-scale LOW (sun angle = 279.0°F). No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is operating in full automatic stepping sequence with the Channeltron high voltage ON for this lunar night.

Status as of 1500 G.m.t., 1 August 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1351	908	732	467
Total Commands to Date	17736	9897	17345	7647
Sun Angle	278.6°	284.5°	305.6°	317.5°
Input Power	66.9w	69.8w	71.9w	70.3w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	11.6°F	30.5°F	-2.2°F	34.0°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.2°F	124.3°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.7°C	12.0°C
SWS Module 300 Temp (DW-13)	-15.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.2°C	Invalid	6.5°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	108.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.6°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-71.1°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.1°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	232
Total Commands to Date	8620
Sun Angle	332.5°
Input Power	77.2w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.5°F
LMS Temp (AM-41)	15.0°F
LEAM Temp (AJ-11)	-20.8°F
HFE Temp Ref 1 (DH-13)	286.9°K
LSG Temp (DG-04)	49.1°C
LSP Temp (AP-01)	27.8°F

ALSEP PERFORMANCE SUMMARY REPORT

10 August 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunrise of the scientific station's 9th lunation occurred on 4 August. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 75.8w watts. The downlink received signal is reported between -139.5 dbm and -145.0 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE thermocouples is 360.1° ± 8 °K. Subsurface temperatures at 230 cm depth are 256.5 °K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature has increased to 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 1547 G.m.t., 8 August, and to LSPE data format processing (high bit rate) at 1600 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. Significant events were observed on all geophones during the real-time operation. LSPE processing was terminated at 1632 G.m.t., and the instrument commanded to STANDBY select at 1633 G.m.t.

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE gathered data on the composition of the lunar atmosphere throughout the lunar night. The electrical background noise ramp continued to be displayed on all three mass range data channel outputs. The LACE was commanded OFF on 7 August for the remainder of this lunar day when the electronic temperature (AM-41) reached 125.0°F.

The Lunar Ejecta and Meteorite Experiment is presently OFF. The instrument was left in the operate select ON mode through the 4 August terminator crossing per the agreed plan (Apollo 17 SMEAR, ALSEP 49). The LEAM was commanded OFF on 7 August when the instrument mirror temperature (AJ-11) indicated 185.0°F. The LEAM will remain OFF until the mirror temperature decreases to 170°F at which time the instrument will be commanded ON for the remainder of this lunation.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 3 August 1973, 1300 G.m.t., to 10 August 1973, 1300 G.m.t.

Central station	Sunrise of the 17th lunation occurred on 5 August 1973. The DSS-1 heater (10 watts) was commanded OFF on 5 August. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -138.0 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis again responded to leveling commands on 7 August 1973. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	*On 7 August, magnetometer science data were valid for approximately a ten minute period, with calibration rasters and filter commands observed. The LSM's science data had been intermittent since 16 February 1972. 468 flip calibration sequences have been executed and verified by the experiment's engineering data as of 8 August.*
Active seismic experiment	The active seismic experiment is currently in standby OFF, with a 30 minute passive listening mode operation planned for later today.

Apollo 15 ALSEP

Operational status from 3 August 1973, 1300 G.m.t., to 10 August 1973, 1300 G.m.t.

Central station	Sunrise of the station's 26th lunation occurred on 6 August. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -133.0 dbm and -138.0 dbm.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). During the intermittent real-time support periods this past week, no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors were commanded to 100 gamma range on 5 August for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1033 flip calibration sequences since activation.
Solar wind spectrometer experiment	*The instrument is currently in STANDBY. At 0141 G.m.t. on 8 August, the instrument responded to a spurious command (Octal 045, SWS ON). The Hawaii tracking station confirmed receipt of the command in the ALSEP downlink. The SWS was returned to the STANDBY condition by mode 1 command at 0235 G.m.t., 8 August 1973 through the Hawaii station without incident at the direction of mission control.*
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 341.8°K on 9 August as indicated by the cable thermocouples. The sub-surface temperature was 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 3 August 1973, 1300 G.m.t., to 10 August 1973, 1300 G.m.t.

Central station	Sunrise at the Apollo 14 site occurred on 7 August (32nd lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -135.5 dbm and -140.0 dbm. The DSS-1 heater (10 watts) was commanded OFF for lunar day operation on 8 August. Data processor "Y" was verified by command on 8 August.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater will be commanded to FORCED OFF on 12 August to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale leveled position since 22 March. The long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 8 August 1973, the experiment was commanded to ON at 1729 G.m.t. and to high bit rate ON at 1730 G.m.t. for a passive listening mode. A significant response was observed on all geophones. Geophone calibration pulses were not sent during the listening period. At 1800 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1804 G.m.t.
Suprathermal ion detector/cold cathode gauge experiment	*At 0151 G.m.t., 8 August the experiment experienced a functional change to STANDBY without ground command, as observed by the Hawaii remote site. During real-time support on 8 August, AB-05 changed to octal 104 without a command, indicating the instrument was OFF. Several attempts were made to command the experiment to STANDBY without success, and investigation continues.*
Charged particle lunar environmental experiment	The CPLEE was commanded to STANDBY on 7 August per present plans. The experiment had been in OPERATE select since 27 July, 1973.

Apollo 12 ALSEP

Operational status from 3 August 1973, 1300 G.m.t., to 10 August 1973, 1300 G.m.t.

Central station	Sunrise of the 47th lunar day occurred on 8 August at the ALSEP site in the Ocean of Storms. Power output from the RTG remains constant during this report period. A signal strength of -138.5 $\pm$ 2.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations at 1649 G.m.t., 8 August, when the average thermal plate temperature was 43.6°F. Data processor "Y" was verified by command on 8 August.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded OFF for lunar day operation at 1447 G.m.t., on-scale (sun angle = 3.8°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Currently the SIDE is in STANDBY. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 9 August in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1300 G.m.t., 9 August 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1359	916	740	475
Total Commands to Date	17800	9949	17485	7814
Sun Angle	16.9°	22.9°	44.6°	56.5°
Input Power	66.6w	68.6w	71.3w	69.1w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	All ON	ASE & CPLEE Stby/	SWS Stby	ASE OFF
Avg Thermal Plate Temp	59.9°F	65.5°C SIDE OFF	93.6°F	93.4°F
PSE Sensor Temp (DL-07)	125.9°F	124.8°F	126.9°F	132.1°F
LSM Internal Temp (DM-05)	Invalid	N/A	53.5°C	43.5°C
SWS Module 300 Temp (DW-13)	33.7°C	N/A	Standby	N/A
SIDE Temp (DI-05)	38.3°C	Invalid	74.4°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	355.6°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	8.3°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	310.7°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	240
Total Commands to Date	8721
Sun Angle	72.1°
Input Power	75.8w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LEAM & LACE OFF
Avg Thermal Plate Temp	114.9°F
LMS Temp (AM-41)	65.7°F
LEAM Temp (AJ-11)	167.4°F
HFE Temp Ref 1 (DH-13)	323.2°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	115.6°F

ALSEP PERFORMANCE SUMMARY REPORT

17 August 1973
G.m.t.: 1300

Apollo 17 ALSEP

Noon of the scientific station's 9th lunation occurred on 11 August. All experiments and the central station are operating as expected. Downlink signal strength is reported at -140.0 ± 6.0 dbm from transmitter A. Thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain by the internally generated 61-hour pulses, continues during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 249 ± 8°K. Subsurface temperature at 230 cm depth is 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 1359 G.m.t., 13 August, and to LSPE data format processing (high bit rate) at 1415 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. Significant events were observed on all geophones during the real-time operation. LSPE processing was terminated at 1445 G.m.t., and the instrument commanded to STANDBY select at 1446 G.m.t.

The Lunar Atmospheric Composition Experiment is in STANDBY. The experiment had been commanded from OFF to STANDBY during this report period at 2136 G.m.t., 14 August to maintain thermal stability of the instrument. At this time the electronics temperature had decreased to 55.7°F at a sun angle of 134.8°. The instrument will be commanded ON for the remainder of this lunation later today, 17 August. The LACE electronics temperature (AM-41) is currently 104.5°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

17 August 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1454 G.m.t., 15 August, when the mirror temperature (AJ-11) decreased to 165.2°F (Apollo 17 SMEAR, ALSEP 49 R-1) at a sun angle of 143.5°. The instrument's mirror temperature (AJ-11) currently is reading 168.4°F and tracking the previous lunation temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 10 August 1973, 1300 G.m.t., to 17 August 1973, 1300 G.m.t.

Central station

Noon of the 17th lunar day occurred on 12 August at the Descartes Site. The DSS-1 heater (10 watts) has been OFF since 5 August. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -141.5 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. *The long period x and y-axes have responded to leveling mode commands since 6 August. Previously the long period x-axis had not responded to leveling commands since 25 July 1973 and the long period y-axis had not responded since 23 July 1973.* The instrument's assembly temperature (DL-07) was off-scale HIGH on 11 August at the beginning of real-support at a sun angle of 80.8°. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

Scientific data have been intermittent since 16 February 1973. The LSM's scientific data continues to respond to flip calibrations (no cal raster observed) or filter commands. As of 15 August, 474 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is currently STANDBY OFF. ASE passive listening mode operations were accomplished on 10 August and 15 August as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
10 Aug	1851	1905	1935	1938	2	None
15 Aug	1555	1600	1630	1634	2	None

The next 30-minute passive listening period is planned for 24 August.

Apollo 15 ALSEP

Operational status from 10 August 1973, 1300 G.m.t., to 17 August 1973, 1300 G.m.t.

Central station	Noon of the station's 26th lunation occurred on 13 August. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -133.0 dbm and -139.5 dbm. The data subsystem's 18 hour timer outputs have occurred as expected and were verified during real-time support at 1823 G.m.t., 10 August.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. *During the real-time support period of 10 August a significant event of 20 minutes duration was noted on the long and short period axes.*
Lunar surface magnetometer experiment	The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1039 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument has remained in STANDBY since 10 July 1973.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 348.1°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 10 August 1973, 1300 G.m.t., to 17 August 1973, 1300 G.m.t.

Central station	Noon of the 32nd lunation at the Apollo 14 site occurred on 15 August. Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported at -139.5 ± 4.5 dbm. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF at 1638 G.m.t., 12 August, to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 16 August 1973, the experiment was commanded to ON at 1420 G.m.t. and to high bit rate ON at 1430 G.m.t. for a passive listening mode. No significant responses were observed. Geophone calibration pulses were not sent during the listening period. At 1500 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1535 G.m.t. The next listening period is scheduled for 20 August 1973.
Suprathermal ion detector/cold cathode gauge experiment	*The experiment is OFF and present plans are to leave it in this configuration the remainder of this lunar day. On 10 August the instrument was commanded ON successfully two times, however, it returned to OFF both times without the OFF command being executed. Investigation of the anomalous functional change to the OFF mode continues.*
Charge particle lunar environmental experiment	The CPLEE is currently in STANDBY select. Present plans are to leave the experiment in STANDBY select until after sunset of this lunation, 22 August.

Apollo 12 ALSEP

Operational status from 10 August 1973, 1300 G.m.t., to 17 August 1973, 1300 G.m.t.

Central station	Noon of the 47th lunar day occurred on 15 August at the site in the Ocean of Storms. Power output from the RTG has been a steady 66.6 watts during the past month. The signal strength is -140.5 ± 3.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is OFF for lunar day operation. The PSE's sensor temperature (DL-07) was off-scale HIGH at the beginning of real-time support on 16 August (sun angle 101.2°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Currently the SIDE is OFF. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 9 August. The instrument has been cycled by command to the power OFF to preclude instrument mode changes at internal temperatures above 55°C during this lunar day. *During real-time support on 14 August, the instrument experienced an unexpected mode register load of X10 at an internal temperature of 50°C and a sun angle of 80.0°. The experiment was commanded to OFF at 2114 G.m.t., 14 August, and remained OFF until real-time support on 15 August to allow the instrument to cool below 50°C.*

Status as of 1600 G.m.t., 16 August 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1366	923	747	482
Total Commands to Date	17875	9993	17597	7928
Sun Angle	101.9°	107.9°	129.0°	140.9°
Input Power	66.6w	68.6w	71.3w	69.1w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE&CPLEE Stby/ SIDE OFF	SWS Stby	ASE OFF
Avg Thermal Plate Temp	92.7°F	104.3°F	107.5°F	86.3°F
PSE Sensor Temp (DL-07)	Offscale HIGH	130.6°F	135.2°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	57.8°C	47.0°C
SWS Module 300 Temp (DW-13)	63.5°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	85.8°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	347.4°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	80.4°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	321.6°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	247
Total Commands to Date	8790
Sun Angle	155.9°
Input Power	75.7w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE & LACE Stdby
Avg Thermal Plate Temp	68.7°F
LACE Temp (AM-41)	104.5°F
LEAM Temp (AJ-11)	168.4PF
HFE Temp Ref 1 (DH-13)	300.0°K
LSG Temp (DG-04)	49.2°F
LSP Temp (AP-01)	70.0°F

ALSEP PERFORMANCE SUMMARY REPORT

24 August 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunset of the 9th lunation occurred on 18 August at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of previous lunations. Downlink RF signal strength is reported at -138.0 ± 3.2 dbm from transmitter "A". Thermoelectric power source output is 76.9 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 111.0 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 2351 G.m.t., 22 August and to LSPE data format processing (high bit rate) at 2355 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. Significant events were observed on all geophones. LSPE processing was terminated at 0025 G.m.t., and the instrument commanded to STANDBY select at 0028 G.m.t. The next listening mode is scheduled for 27 August, 1973.

The Lunar Atmospheric Composition Experiment was commanded from STANDBY to ON at 1317 G.m.t., 17 August for the lunar night. At this time the electronics temperature had decreased to 91.2°F at a sun angle of 167.0°. The present configuration is automatic sweep; high voltage power supply, ON; ion source filaments, ON; multipliers, HIGH, low voltage power supply, ON; discriminator level, HIGH; and backup heater ON. The LACE electronics temperature (AM-41) is currently 15.0°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

24 August 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 17 August 1973, 1200 G.m.t., to 24 August 1973, 1300 G.m.t.

Central station

The Descartes Site experienced sunset on 19 August. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 1309 G.m.t., 19 August, for lunar night operations when the average thermal plate decreased to 42.7°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is -133.5 to -138.0 dbm as reported by the 30-foot antenna tracking stations.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 dbm; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. *During real-time support on 21 August, a seismic event of approximately 1 hour and 15 minutes duration was observed on all channels of the instrument. The event was also recorded on the Apollo 14 and 15 seismometers.* The instrument's assembly temperature (DL-07) was on-scale 19 August at the beginning of real-time support at a sun angle of 176.8°.

Lunar surface magnetometer experiment

The LSM's science data, observed during this real-time support period, has been valid. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. As of 23 August, 480 flip calibraton sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is in standby OFF. The next 30-minute passive listening period is planned for later today, 24 August.

Apollo 15 ALSEP

Operational status from 17 August 1973, 1200 G.m.t., to 24 August 1973, 1300 G.m.t.

Central station	The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -136.5 ± 3.5 dbm by the tracking stations with 30-foot antenna. Sunset of the site's 26th lunation occurred on 20 August. The data subsystem's 18-hour timer outputs are occurring as expected.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During *real-time support on 21 August, a seismic event of approximately 1 hour and 15 minutes duration was noted on all four of the instruments sensors. At 1809 G.m.t., 20 August, the PSE responded to a spurious command (Octal 074, leveling direction, plus to minus). The Carnarvon, Australia tracking station confirmed receipt of the command in the ALSEP downlink. As this change does not affect the status of the instrument, no corrective commands were initiated per direction of mission control.*
Lunar surface magnetometer experiment	The experiment sensors were commanded to the 50 gamma range at 1225 G.m.t., 21 August, for lunar night-time operations. Currently the instrument has executed 1054 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The experiments are operating continuously in the full automatic stepping sequence (0-127 frames) with no mode changes observed during the real-time support periods.

Apollo 15 ALSEP (continued)

Operational status from 17 August 1973, 1200 G.m.t., to 24 August 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 94.2°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.3°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 17 August 1973, 1200 G.m.t., to 24 August 1973, 1300 G.m.t.

Central station

Sunset at the Apollo 14 site occurred on 22 August. RTG power output is steady. Transmitter "A" signal strength was reported at -141.0 ± 4.0 dbm. *At the start of real-time support on 19 August, it was noted that central station had switched from PCU #1 to PCU #2 without ground command. This spurious switch occurred between real-time support periods at 0300 G.m.t. and 1230 G.m.t., 19 August. The system was re-configured to PCU #1 at 1437 G.m.t. 19 August by command from mission control without further incident.* The DSS-1 heater (10 watts) was commanded ON for lunar night operation at 1352 G.m.t., 21 August 1973. Average thermal plate temperature was 59.4°F.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). Since 23 July 1973, the instruments y-axis sensor has responded to leveling commands. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. *A significant seismic event (Apollo 16 ALSEP) was noted during the limited real-time support period.*

Active seismic experiment

The experiment is currently in STANDBY. On 20 August 1973, the experiment was commanded to ON at 1914 G.m.t. and to high bit rate ON at 1926 G.m.t. for a passive listening mode. No significant responses were observed during the listening mode. Geophone calibration pulses were not sent during the listening mode. At 1956 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 2142 G.m.t., 20 August. The next listening period is scheduled for 7 September 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.

Suprathermal ion detector/cold cathode gauge experiment

The experiment was commanded to operate select at 1244 G.m.t., 21 August and is operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment. Present plans are to maintain the experiment in this mode of operation throughout this lunar night.

Apollo 14 ALSEP (continued)

Operational status from 17 August 1973, 1200 G.m.t., to 23 August 1973, 1300 G.m.t.

Charged particle lunar environmental experiment	At 1249 G.m.t., 23 August the experiment was commanded to the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of (AC-03). Analyzer A voltage to 2200 vdc, at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 17 August 1973, 1200 G.m.t., to 24 August 1973, 1300 G.m.t.

Central station	Sunset of the 47th lunar day occurred on 23 August. Power output from the RTG is 66.9 watts. A signal strength of -140.5 ± 2.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded ON for lunar night operations at 0102 G.m.t., 23 August, when the average thermal plate temperature was 34.3°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor was commanded ON for lunar night operation at 2336 G.m.t., 22 August, when the sensor temperature (DL-07) decreased to 126.5°F. At 1840 G.m.t., 20 August (sun angle 152.2°), the sensor temperature (DL-07) was noted to have returned on-scale. The Apollo 12 PSE was not observed in real time during the seismic event of 21 August.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind.
Suprathermal ion	The instrument is operating in full automatic stepping sequence with the Channeltron high voltage ON. The experiment was commanded ON for continuous lunar night operations at 1840 G.m.t., 20 August when the SIDE temperature (DI-05) was reading 20.72°C. *During real-time support on 17 August, the instrument experienced an unexpected mode register load of X10 at an internal temperature of 52.8°C and a sun angle of 113°. The experiment was commanded to OFF at 1447 G.m.t., 17 August, and remained OFF until real-time support on 18 August to allow the instrument to cool.*

Status as of 1500 G.m.t., 23 August 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1373	930	759	489
Total Commands to Date	17950	10068	17746	8047
Sun Angle	185.7°	191.6°	213.2°	224.9°
Input Power	66.9w	69.4w	71.9w	70.0w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	19.1°F	35.4°F	-0.8°F	36.4°F
PSE Sensor Temp (DL-07)	126.9°F	124.4°F	124.6°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	4.7°C	-7.7°C
SWS Module 300 Temp (DW-13)	-2.0°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.8°C	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	114.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-33.9°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-26.5°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.4°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	254
Total Commands to Date	8875
Sun Angle	240.2°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.9°C
LACE Temp (AM-41)	15.0°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.9°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	29.1°F

ALSEP PERFORMANCE SUMMARY REPORT

31 August 1973
G.m.t.: 1300

Apollo 17 ALSEP

Midnight of the 9th lunation at Taurus Littrow Lunar Laboratory occurred on 25 August. The central station is operating normally. Downlink signal strength is reported at -140.7 ± 4.2 dbm from transmitter A. The redundant transmitter B, as well as all other redundant systems, continue to be passive. Except for small repetitive day/night variations, thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control allowing the system thermal performance to track that of the previous lunar cycle. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses), continues during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples is 107 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode-bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select, with the next 30-minute passive listening period planned for 5 September. The experiment was commanded ON at 1312 G.m.t., 27 August and to LSPE data format processing (high bit rate) at 1315 G.m.t., for a thirty-minute passive listening period. Data output of all geophones appeared normal (no significant events observed) during the real-time operation. LSPE processing was terminated at 1345 G.m.t., and the instrument commanded to STANDBY select at 1346 G.m.t.

The Lunar Atmospheric Composition Experiment continues to collect data since turn-on, 17 August, for lunar night operations. The present configuration is automatic sweep; high voltage power supply, ON; ion source filament, ON; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater ON. The three mass range data channels continue to display electronic background noise of various characteristics. The LACE electronics temperature (AM-41) is currently stabilized at 13.4°F in the lunar night environment.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

31 August 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates during this lunar night operation. The instrument's mirror temperature (AJ-11) is currently stabilized at -20.8°F, which is the minimum temperature attained during previous lunar nights.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 24 August 1973, 1300 G.m.t., to 31 August 1973, 1300 G.m.t.

Central station

This ALSEP experienced midnight of its 17th lunation on 27 August. The thermoelectric power source output is normal. The DSS-1 heater (10 watts) is ON for lunar night operations. Inhibiting of the 18-hour timer output pulses is continuing. The 30-foot antenna tracking stations report a signal strength of -136.5 ± 3.5 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling mode commands since 21 August. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM's science data, observed during this real-time support period, has been valid. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. As of 29 August, 486 flip calibration sequences have been executed and verified by the experiment's engineering data.

Active seismic experiment

The experiment is in standby OFF. On 24 August, the experiment was commanded to operate select at 2235 G.m.t. and to high bit rate ON at 2245 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal and no responses were observed in real-time. High bit rate operations were terminated at 2315 G.m.t. and the experiment commanded to standby OFF at 2317 G.m.t. The next passive listening period is planned for later today-

Apollo 15 ALSEP

Operational status from 24 August 1973, 1300 G.m.t., to 31 August 1973, 1300 G.m.t.

Central station	Midnight of the station's 26th lunation occurred on 28 August. Power from the RTG continues steady. Transmitter "A" downlink signal strength was reported between -133.0 dbm and -137.0 dbm. The data subsystem's average thermal plate temperature is presently stabilized at -2.8°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. The thermal characteristics of the PSE sensor assembly temperature (DL-07) have been stable and no adverse effects have been noted in the science data or instrument operation by allowing the cycling of the 18-hour timer output pulses during lunar night operation. No lunar seismic events have been observed during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment sensors are in the 50 gamma range for lunar night operations. Currently the instrument has executed 1060 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	*The experiments are operating continuously in the full automatic stepping sequence (0-127 frames). The SIDE experienced an initial unexplainable operational change between the real-time support periods of 13 August 1973 (1459 G.m.t.) and 14 August 1973 (2129 G.m.t.), when the instrument's Low Energy Curved Plate Analyzer (LECPA) voltage was terminated. With zero voltage, low energy scientific data is not transmitted. The SIDE's LECPA voltage was re-established without incident by ground command on 29 August 1973, 1414 G.m.t.*

Operational status from 24 August 1973, 1300 G.m.t., to 31 August 1973, 1300 G.m.t. (continued)

Suprathermal ion detector/cold cathode gauge experiment

In the June-July 1973 Cold Cathode Gauge Experiment progress report the principal investigator noted that this instrument's nighttime data became erratic in February 1973. During the problem periods the CCGE data are very noisy and the automatic zero and calibration functions do not appear to be operating. This problem has persisted during nighttime operations from February 1973 through April 1973 (data tapes have not been received and processed past April 1973), with only occasional periods of proper operations. During the real-time support period of 29 August 1973 a series of commands were transmitted and verified in an effort to correct the anomalous automatic zero and calibration functions and remove the noise from the science data without success. Currently no plans exist for continued investigation of this anomaly, as the scientific data are useable. It appears that nighttime data from the CCGE are now sporatic, but that daytime data are complete.

Heat flow experiment

The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 86.6 °K as indicated by the cable thermocouples. The sub-surface temperature is 253.2°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 251.0°K at its lower-most point. Ring bridge surveys are being conducted periodically.

Apollo 14 ALSEP

Operational status from 24 August 1973, 1300 G.m.t., to 31 August 1973, 1300 G.m.t.

Central station

Midnight at the Apollo 14 site occurred on 29 August. RTG power output is steady. Transmitter "A" signal strength was reported at -137.5 ± 2.5 dbm. The DSS-1 heater (10 watts) is ON for lunar night operation.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). Since 23 July 1973 the y-axis sensor has responded to leveling commands. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The instrument's long-period z-axis has not dispalyed valid data nor responded to commands since 17 November 1972. No significant seismic events were noted during the limited real-time support periods.

Active seismic experiment

The experiment is currently in STANDBY. The next listening period is scheduled for 7 September 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.

Suprathermal ion detecotr/cold cathode gauge experiment

The experiments are operating continuously in the full automatic stepping sequence with Channeltron high voltages commanded ON. The June-July 1973 Cold Cathode Gauge Experiment progress report noted a number of problems which prohibit obtaining full data from the CCGE. The original problem occurred in April 1971 when the positive analog-to-digital converter became erratic. This anomaly is not serious since it affects only the temperature and housekeeping data.

The second problem, other than occasionally noisy data was encountered with the CCGE during the nighttime operation in February 1972. This gauge anomaly occurred intermittently until the nighttime operation in late November 1972 at which time all nighttime data were lost. This total loss of nighttime data lasted until late March 1973, followed by no nighttime data for two more months.

The start of the lunar day on 15 April 1973 produced the third and most serious problem to date. At this time the SIDE/CCGE went to the STANDBY condition and no data were available from either the SIDE or CCGE. If the situation continues unchanged, it appears that no daytime SIDE or CCGE data will be obtainable in the future and the nighttime CCGE data will probably be intermittent. Currently no plans are anticipated for continued investigation of the above anomalies, as t scientific data are useable when obtainable.

Operational status from 24 August 1973, 1300 G.m.t., to 31 August 1973, 1300 G.m.t.

Charged particle lunar environmental experiment	The experiment is presently operating in the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of (AC-03) Analyzer A voltage to -2200 vdc, at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 24 August 1973, 1300 G.m.t., to 31 August 1973, 1300 G.m.t.

Central station

Midnight of the 47th lunar night occurred on 30 August. Power output from the RTG during this reporting period has varied from 67.1 to 66.5 watts. A signal strength of -139.0 ± 3.0 dbm from transmitter "B" was reported by the tracking stations. The central station DSS-1 heater (10 watts) is ON for lunar night operations.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is ON for lunar night operations. During the periodic real-time support operations no significant seismic events were noted.

Lunar surface magnetometer experiment

Scientific and engineering data outputs remain invalid.

Solar wind spectrometer experiment

The instrument is currently in the normal gain mode and is recording solar wind plasma data.

Suprathermal ion detector experiment

The instrument is operating in full automatic stepping sequence with the Channeltron high voltages ON. Throughout this reporting period the SIDE digital data in the downlink has intermittently displayed all zeros. This anomaly initially occurred 9 September 1972. However, the instrument's two analog parameters, AI-01 (low energy counts) and AI-02 (high energy counts), continue to be processed and downlinked wihtout problem. Below is an update to the ALSEP Performance Summary Report, dated 8 June 1973, listing the experiment's anomalous operation to date:

Digital Data All 0's (Day)	*Valid Digital Data (Day)*
30 May 73	*01 Jun 73*
24 Aug 73	*27 Aug 73*
29 Aug 73	

Status as of 1600 G.m.t., 29 August 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1379	936	760	495
Total Commands to Date	17974	10085	17865	8085
Sun Angle	260.9°	266.8°	287.9°	299.8°
Input Power	66.9w	69.0w	71.9w	69.9w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	10.9°F	30.5°F	-2.8°F	35.8°F
PSE Sensor Temp (DL-07)	126.1°F	124.3°F	124.3°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	-8.9°C
SWS Module 300 Temp (DW-13)	-15.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	Invalid	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	Invalid	Invalid	110.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.7°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-70.7°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.2°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	260
Total Commands to Date	8942
Sun Angle	314.8°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.2°F
LACE Temp (AM-41)	13.4°F
LEAM Temp (AJ-11)	-20.8°F
HFE Temp Ref 1 (DH-13)	287.1°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	27.1°F

ALSEP PERFORMANCE SUMMARY REPORT

7 September 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunrise of the scientific station's 10th lunation occurred 2 September. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 75.3 watts. The downlink received signal is reported between -136.0 dbm and -147.0 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature, as measured by the HFE thermocouples is 333 $\pm$ 8°K. Subsurface temperatures at 230 cm depth are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 2007 G.m.t., 5 September and to LSPE data format processing (high bit rate) at 2015 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. A significant event was observed on all geophones during the real-time operation. LSPE processing was terminated at 2045 G.m.t., and the instrument commanded to STANDBY select at 2046 G.m.t.

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE gathered data on the composition of the lunar atmosphere throughout the lunar night. The electrical background noise ramp continued to be displayed on all three mass range data channel outputs. The LACE was commanded OFF on 5 September for the remainder of this lunar day when the electronic temperature (AM-41) reached 123.3°F.

The Lunar Ejecta and Meteorites Experiment is presently OFF. The instrument was left in the operate select ON mode through the terminator crossing per the agreed plan (Apollo 17 SMEAR, ALSEP 49 R-2). The LEAM was commanded OFF at 1608 G.m.t., 6 September, when the instrument mirror temperature (AJ-11) read 191.0°F. The LEAM will remain OFF until the mirror temperature decreases to 175.0°F at which time the instrument will be commanded ON for the remainder of this lunation.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 31 August 1973, 1300 G.m.t., to 7 September 1973, 1300 G.m.t.

Central station

Sunrise of the 18th lunation occurred 3 September 1973. The DSS-1 heater (10 watts) was commanded OFF on 3 September. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength between -134.5 dbm and -142.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis again responded to leveling commands on 4 September 1973. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM science data,observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 492 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.

Active seismic experiment

The experiment is currently STANDBY OFF. ASE passive listening mode operations were accomplished on 31 August and 3 September as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
31 Aug	1415	1430	1500	1502	2	None
3 Sep	1246	1300	1330	1332	2	None

The next 30-minute passive listening period is planned for 12 September.

Apollo 15 ALSEP

Operational status from 31 August 1973, 1300 G.m.t., to 7 September 1973, 1300 G.m.t.

Central station	Sunrise of the station's 27th lunation occurred 4 September. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -131.0 dbm and -141.0 dbm.
Passive seismic experiment	The instrument is configured for seismic network congurity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. The thermal characteristics of the PSE sensor assembly temperature (DL-07) have been stable and no adverse effects have been noted in the science data or instrument operation by allowing the cycling of the 18-hour timer output pulses during lunar night operation. No lunar seismic events have been observed during the limited real-time support of this instrument. *At 1347 G.m.t., 31 August, the instrument responded to a spurious command (octal 070, X leveling motor ON). The Bermuda tracking station confirmed receipt of the command in the ALSEP downlink. The leveling motor was turned OFF by command through mission control at 1359 G.m.t., 31 August, without incident.*
Lunar surface magnetometer experiment	The experiment sensors were commanded to 100 gamma range on 3 September for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1072 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). *The CCGE data continues to be noisy and the automatic zero and calibration functions are still not functioning properly.*

Operational status from 31 August 1973, 1300 G.m.t., to 7 September 1973, 1300 G.m.t.

Heat flow experiment

The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 315.1°K on 6 September as indicated by the cable thermocouples. The sub-surface temperature was 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 31 August 1973, 1300 G.m.t., to 7 September 1973, 1300 G.m.t.

Central station	Sunrise at the Apollo 14 site occurred 6 September (33rd lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -135.0 dbm and -143.0 dbm. The DSS-1 heater (10 watts) was commanded OFF for lunar day operation on 6 September. Data processor "Y" was verified by command on 7 September.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater will be commanded to FORCED OFF on 10 September to minimize heating during lunar day operations. The long-period y-axis has remained in the on-scale leveled position since 23 July 1973. The long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. The next 30-minute passive listening period is planned for later today, 7 September, when the instrument temperature (AS-03) should be above the -60°C restriction.
Suprathermal ion detector/cold cathode gauge experiment	*On 6 September, the experiment experienced a functional change, without ground command, as observed by the Ascension remote site. AB-05 changed to octal 104 indicating the instrument was OFF. The experiments had been operating continuously in the full automatic stepping sequence with Channeltron high voltages commanded ON during the lunar night. Present plans are to maintain the experiment in STANDBY until prior to lunar night.*
Charged particle lunar environmental experiment	The CPLEE was commanded to STANDBY on 5 September per present plans. The experiment had been in OPERATE select since 23 August 1973.

Apollo 12 ALSEP

Operational status from 31 August 1973, 1300 G.m.t., to 7 September 1973, 1300 G.m.t.

Central station	Sunrise of the 48th lunar day occurred on 7 September at the ALSEP site in the Ocean of Storms. Power output from the RTG during this report period has been from 66.5 to 65.6 watts. A signal strength between -134.5 dbm and -143.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operations on 7 September. Data processor "Y" will be verified by command on 7 September.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded OFF for lunar day operation on 7 September. At 1413 G.m.t., 31 August, the PSE sensor temperature (DL-07) was off-scale LOW (sun angle = 284.4°F). No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 8 September in an effort to preclude instrument mode changes at internal temperatures above 55°C. *The instrument is operating in full automatic stepping sequence with the Channeltron high voltages ON. During real-time support of this reporting period the SIDE digital data in the downlink continues to display all zeros. However, the instrument's two analog parameters, AI-01 (low energy counts) and AI-02 (high energy counts), continue to be processed and downlinked without problem.*

Status as of 2100 G.m.t., 6 September 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1387	944	768	503
Total Commands to Date	17989	10109	18016	8177
Sun Angle	0.2°	6.3°	27.3°	39.3°
Input Power	65.6w	68.6w	71.3w	69.1w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	All ON	ASE & CPLEE Stby/	SWS Stby	ASE OFF
Avg Thermal Plate Temp	10.4°F	49.2°F SIDE OFF	75.9°F	81.0°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.3°F	126.0°F	127.1°F
LSM Internal Temp (DM-05)	Invalid	N/A	47.0°C	34.5°C
SWS Module 300 Temp (DW-13)	-16.0°C	N/A	Standby	N/A
SIDE Temp (DI-05)	Invalid	Invalid	57.4°C	N/A
CCGE Temp (DI-04)	Invalid	Invalid	339.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	114.3°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	299.9°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	268
Total Commands to Date	9050
Sun Angle	54.5°
Input Power	75.8w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LEAM & LACE OFF
Avg Thermal Plate Temp	104.9°F
LACE Temp (AM-41)	53.7°F
LEAM Temp (AJ-11)	183.5°F
HFE Temp Ref 1 (DH-13)	317.3°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	105.2°F

ALSEP PERFORMANCE SUMMARY REPORT

14 September 1973
G.m.t.: 1300

Apollo 17 ALSEP

Noon of the scientific station's 10th lunation occurred on 9 September. All experiments and the central station are operating as expected. Downlink signal strength is reported at -139.5 ± 3.5 dbm from transmitter A. Thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain by the internally generated 61-hour pulses, continues during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 337 ± 8°K. Subsurface temperature at 230 cm depth is 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is presently stabilized at 49.203°C (slave heater ON). *A planned reconfiguration of the flight LSG is tentatively set for 26 September 1973, when 10 hours of real-time computer support have been scheduled. This third special test will be made to determine the absolute sensitivity of the LSG at its natural frequency of 1.5 Hz. During the test the instrument's closed loop (feedback) mode of operation will be employed in an effort to detect lunar tidal variation and improve the quality of the free modes data. It is understood that this third special test will complete the implementation of the flight LSG design modes of operation. No reconfiguration of the LSG has been attempted since 19 April 1973.*

The Lunar Seismic Profiling Experiment is in STANDBY select. The next 30-minute passive listening period is planned for later today.

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE was commanded OFF on 5 September for the remainder of this lunar day when the electronic temperature (AM-41) reached 123.3°F.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

14 September 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment is presently OFF. The instrument was operated per Apollo 17 SMEAR, ALSEP 49 R-2 as follows:

Date	LEAM ON G.m.t.	LEAM OFF G.m.t.	AJ-11 Temp °F	Sun Angle
6 Sep	----	1608	191.0	52.5°
7 Sep	0842	----	172.8	60.1°
8 Sep	----	1758	191.0	77.9°

The instrument's mirror temperature (AJ-11) currently is reading 177.5°F. The LEAM will remain OFF until the mirror temperature decreases to 175.0°F at which time the instrument will be commanded ON for the remainder of this lunation.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 7 September 1973, 1300 G.m.t., to 14 September 1973, 1300 G.m.t.

Central station

Noon of the 18th lunar day occurred on 10 September at the Descartes Site. The DSS-1 heater (10 watts) has been OFF since 5 September. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -135.0 dbm and -140.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period x and y-axes have responded to leveling mode commands since 4 September. The instrument's assembly temperature (DL-07) has remained offscale HIGH since 9 September. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 498 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.

Active seismic experiment

The experiment is in standby OFF. On 12 September, the experiment was commanded to operate select at 1321 G.m.t. and to high bit rate ON at 1330 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal and no responses were observed in real-time. High bit rate operations were terminated at 1400 G.m.t. and the experiment commanded to standby OFF at 1401 G.m.t.

Apollo 15 ALSEP

Operational status from 7 September 1973, 1300 G.m.t., to 14 September 1973, 1300 G.m.t.

Central station	Noon of the station's 27th lunation occurred on 11 September. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -133.5 dbm and -140.0 dbm. The data subsystem's 18-hour timer outputs are occurring as expected.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). During the intermittent real-time support periods this past week no significant events were noted.
Lunar surface magnetometer experiment	The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1076 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument has remained in STANDBY since 10 July 1973.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in the full automatic stepping sequence (0-127 frames). *At the start of real-time support on 13 September, it was noted that the instrument's high voltage had changed from -3.475KV (value noted during real-time support on 12 September) to -2.535KV. The high and low energy counts were also indicating zero values at this time. The instrument was commanded to STANDBY at 1001 G.m.t. and to ON at 1005 G.m.t. at which time the SIDE returned to normal operation with the high voltage supply indicating a nominal -3.5KV level.* The Cold Cathode Ion Gauge Experiment's scientific data has been intermittent during real-time support operations this past week.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 364.2 °K as indicated by the cable thermocouples. The sub-surface temperature is 253.3 °K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 7 September 1973, 1300 G.m.t., to 14 September 1973, 1300 G.m.t.

Central station	Noon of the 33rd lunation at the Apollo 14 site occurred on 13 September. Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported at -140.5 ± 3.5 dbm. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF at 1247 G.m.t., 10 September, to minimize heating duirng lunar day operations. The long-period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 10 September 1973, the experiment was commanded to ON at 1449 G.m.t. and to high bit rate ON at 1455 G.m.t. for a passive listening mode. No significant responses were observed. Geophone calibration pulses were not sent during the listening period. At 1525 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1527 G.m.t. The next listening period is scheduled for 17 September 1973.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is in STANDBY and present plans are to leave it in this configuration the remainder of this lunar day.
Charge particle lunar environmental experiment	The CPLEE is currently in STANDBY select. Present plans are to leave the experiment in STANDBY select until after sunset of this lunation, 21 September.

Apollo 12 ALSEP

Operational status from 7 September 1973, 1300 G.m.t., to 14 September 1973, 1300 G.m.t.

Central station	Noon of the 47th lunar day occurs today, 14 September at the site in the Ocean of Storms. Power output from the RTG has been a steady 66.2 watts during the past week. The signal strength is -141.3 ± 3.7 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is OFF for lunar day operation. At the start of real-time support on 7 September the sensor temperature (DL-07) returned onscale, indicating a value of 126.40°F. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Currently the SIDE is OFF. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 9 September. *During real-time support on 9 September and again on 12 September the instrument experienced an unexpected mode register load of X10. In both instances the experiment was commanded OFF and remained OFF until it cooled below 50°C. At the start of real-time support on 7 September the instrument's digital data was again valid and has remained so during periods of real-time support this week.*

Status as of 1040 G.m.t., 13 September 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1394	951	775	510
Total Commands to Date	18086	10173	18118	8280
Sun Angle	80.1°	86.3°	107.2°	119.2°
Input Power	66.2w	68.6w	71.3w	69.1w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE/CPLEE/SIDE/Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	91.3°F	107.7°F	113.5°F	97.4°F
PSE Sensor Temp (DL-07)	136.5°F	128.16°F	142.46°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	67.7°C	42.4°C
SWS Module 300 Temp (DW-13)	64.3°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	89.5°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	364.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	77.2°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	328.4°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	275
Total Commands to Date	9110
Sun Angle	135.2°
Input Power	75.8w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE & LACE Stby/LEAM OFF
Avg Thermal Plate Temp	107.3°F
LACE Temp (AM-41)	57.6°F
LEAM Temp (AJ-11)	177.5°F
HFE Temp Ref 1 (DH-13)	313.8°K
LSG Temp (DG-04)	49.2°F
LSP Temp (AP-01)	108.7°F

ALSEP PERFORMANCE SUMMARY REPORT

21 September 1973
G.m.t.: 0900

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	*GMT LOS*	*GMT AOS*	*Data Loss*
Apollo 12	*17 Sep*	*2133*	*2227*	$1^h 14^m$

Apollo 17 ALSEP

Sunset of the 10th lunation occurred on 17 September at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of previous lunations. Downlink RF signal strength is reported at -138.7 ± 3.7 dbm from transmitter "A". Thermoelectric power source output is 76.9 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods as required.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 112 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect data with the instrument configured to seismic high gain, integrator shorted mode, bias OUT, and post amplifier gain at increment 11. The experiment's sensor temperature is presently stabilized at 49.203°C (slave heater ON). *A planned reconfiguration of the flight LSG is set for 26 September 1973, when 10 hours of real-time computer support have been scheduled. During the test the instrument's closed loop (feedback) mode of operation will be employed in an effort to detect lunar tidal variation and improve the quality of the free modes data. It is understood that this third special test will complete the implementation of the flight LSG design modes of operation. No reconfiguration of the LSG has been attempted since 19 April 1973.*

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished during this reporting period as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
14 Sep	1524	1528	1558	1601	2	None
19 Sep	1348	1445	1515	1517	2	None

The next passive listening period is planned for 28 September.

21 September 1973
G.m.t.: 0900

The Lunar Atmospheric Composition Experiment was commanded from STANDBY to ON at 1405 G.m.t., 17 September for lunar night. The experiment had been commanded from OFF to STANDBY during this report period at 1307 G.m.t., 14 September to maintain thermal stability of the instrument. At this time the electronics temperature had decreased to 39.1°F at a sun angle of 148.5°. *On 18 September after the LACE's high voltage was commanded ON, it was noted that the intermediate mass range output (DM-04) was indicating all zeros. In an attempt to correct, and/or isolate this anomaly during real-time support, 19 September, the experiment's high voltage power supply was cycled, without any conclusive results being obtained. Later today further analysis of this problem is planned with commanding of the LACE's redundant filament. If the anomaly persists, 12% of the LACE's scientific data will be unrecoverable. Investigation of this anomaly will continue.* The present configuration is automatic sweep; high voltage power supply, ON; ion source filaments, ON; multipliers, HIGH; low voltage power supply, ON; discriminator level, HIGH; and back-up heater OFF. The LACE electronics temperature (AM-41) is currently 13.4°F.

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1308 G.m.t., 14 September, when the mirror temperature (AJ-11) decreased to 159.8°F at a sun angle of 148.5°. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 14 September 1973, 1300 G.m.t., to 21 September 1973, 0900 G.m.t.

Central station	The Descartes Site experienced sunset on 18 September. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 1326 G.m.t., 18 September for lunar night operations when the average thermal plate decreased to 23.1°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is reported at -137.2 ± 2.7 dbm by the 30-foot antenna tracking stations.
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period x and y axes have responded to leveling mode commands since 4 September. The instrument's assembly temperature was on-scale (DL-07 = 126.9°F) 18 September at the beginning of real-time support at a sun angle of 182.2°. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed). 504 flip calibration sequences have been executed and verified by the experiment's engineering data since activation. *It was initially noted during sunrise terminator crossing (3 Sep 1973) that the LSM's Z axis sensor head thermal profile had deviated from that of previous lunations. Following sunrise the Z axis sensor head reached the expected stabilization temperature. Again, during the sunset terminator period, the instrument's Z axis sensor head thermal profile deviated from the anticipated. In both instances the thermal deviation experienced was in a negative direction. Currently the Z axis sensor head temperature has stabilized at 36.9 °C, which is the same as previous lunations. This temperature deviation at the terminator has no apparent adverse effects on the overall capability of the LSM's operation. Tracking of the Z axis sensor head thermal profile will continue during ensuing terminator crossings.*
Active seismic experiment	The Active Seismic Experiment is currently in standby OFF. The next 30-minute passive listening period is planned for 26 September.

Apollo 15 ALSEP

Operational status from 14 September 1973, 1300 G.m.t., to 21 September 1973, 0900 G.m.t.

Central station

The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -136.0 ± 2.0 dbm by the tracking stations with 30-foot antenna. Sunset of the site's 27th lunation occurred on 19 September. The data subsystem's 18-hour timer outputs are occurring as expected.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant seismic events were noted.

Lunar surface magnetometer experiment

The experiment sensors were commanded to the 50 gamma range at 1439 G.m.t., 20 September, for lunar night-time operations. Currently the instrument has executed 1086 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree positon, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.

Solar wind spectrometer experiment

The instrument remains in STANDBY.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-217 frames). *On 13 September 1973 at the start of real-time support, a spurious functional mode change had occurred, the SIDE (-3.5 kv) high voltage was OFF. Investigation of the experiment's engineering and science data disclosed that the mode and command registers were clear, CCIG data and calibrations appeared normal and no command verification word (CVW) in the downlink signal was observed by the remote tracking stations to identify this anomaly. The following is a sequential list of the anomalous activities of the instrument during this reporting period:*

Operational status from 14 September 1973, 1300 G.m.t., to 21 September 1973, 0900 G.m.t.

Suprathermal ion detector/cold cathode gauge experiment (continued)

Date	*GMT*	*SIDE STATUS*	*SIDE HV(-3.5KV)*	*CCIG DATA/CALS*	*SIDE Temp (DI-05)*	*Sun Angle*	*Comments*
13 Sep	*0829*	*ON*	*OFF*	*Normal*	*89.5°C*	*107.0°*	*Spurious change*
	1001	*STBY*	*OFF*	*OFF*	*89.5°C*	*107.4°*	*Ground command*
	1005	*ON*	*ON*	*Invalid*	*89.5°C*	*107.4°*	*Ground command*
14 Sep	*1259*	*ON*	*OFF*	*Invalid*	*88.2°C*	*121.6°*	*Spurious change*
	1301	*STBY*	*OFF*	*OFF*	*88.2°C*	*121.6°*	*Ground command*
15 Sep	*1313*	*ON*	*ON*	*Invalid*	*54.6°C*	*133.8°*	*Ground command*

Since 15 September the SIDE channeltron voltage and data has been valid, however, the CCIG data has been invalid since 13 September 1973. To preclude possible mode changes at instrument internal temperatures above 85°C (DI-05) the experiment will be cyclic commanded from ON to STANDBY.

Heat flow experiment

The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 97.5°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 14 September 1973, 1300 G.m.t., to 21 September 1973, 0900 G.m.t.

Central station	Sunset at the Apollo 14 site occurred today. RTG power output is steady. Transmitter "A" signal strength was reported at -141.5 ± 3.5 dbm. The DSS-1 heater (10 watts) was commanded ON for lunar night operation at 1352 G.m.t., 20 September, when the average thermal plate temperature was 51.8°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to AUTO ON at 1448 G.m.t., on 17 September to maximize heating during lunar night operations. The long period y-axis has remained in the on-scale position since 22 March. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 17 September 1973, the experiment was commanded to ON at 1449 G.m.t. and to high bit rate ON at 1455 G.m.t. for a passive listening mode. No significant responses were noted duirng the listening mode. Geophone calibration pulses were not sent during the listening period. At 1525 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1526 G.m.t. The next listening period is scheduled for 8 October 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment was commanded to OPERATE select at 1353 G.m.t., 20 September and is operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment. Present plans are to maintain the experiment in this mode of operation throughout the lunar night.
Charged particle lunar environmental experiment	At 1359 G.m.t., 20 September the experiment was commanded to the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of (AC-03). Analyzer A voltage to 2200 vdc, at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 14 September 1973, 1300 G.m.t., to 21 September 1973, 0900 G.m.t.

Central station	Sunset of the 48th lunar day will occur today, 21 September. Power output from the RTG remains steady. A signal strength of -136.0 to -145.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded ON for lunar night operations today.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded ON for lunar night operation later today. At 1232 G.m.t., 15 September, during the real-time support period, the sensor temperature (DL-07) was noted to have been off-scale HIGH and returned on-scale (DL-07 = 142.5°F) at 1239 G.m.t., 19 September, at a sun angle of 155.3°. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer exeperiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	At 1257 G.m.t., 19 September, the SIDE was commanded to OPERATE select and automatic stepping sequence for the remainder of this lunation. The instrument had previously been cycled by command to the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF to preclude instrument mode changes at internal temperatures above 55° during the lunar day.

Status as of 1600 G.m.t., 20 September 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1401	958	782	517
Total Commands to Date	18134	10233	18258	8389
Sun Angle	174.9°	180.8°	201.9°	213.8°
Input Power	66.2w	69.1w	71.9w	69.9w
Heater and Power Dumps	All OFF	DSS-1 ON (10w)	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	59.3°F	51.8°F	1.5°F	36.4°F
PSE Sensor Temp (DL-07)	136.1°F	124.8°F	124.8°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	7.3°C	-7.7°C
SWS Module 300 Temp (DW-13)	36.5°C	N/A	Standby	N/A
SIDE Temp (DI-05)	44.0°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	Offscale HIGH	Invalid	121.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	3.4°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	66.9°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.7°K	OFF

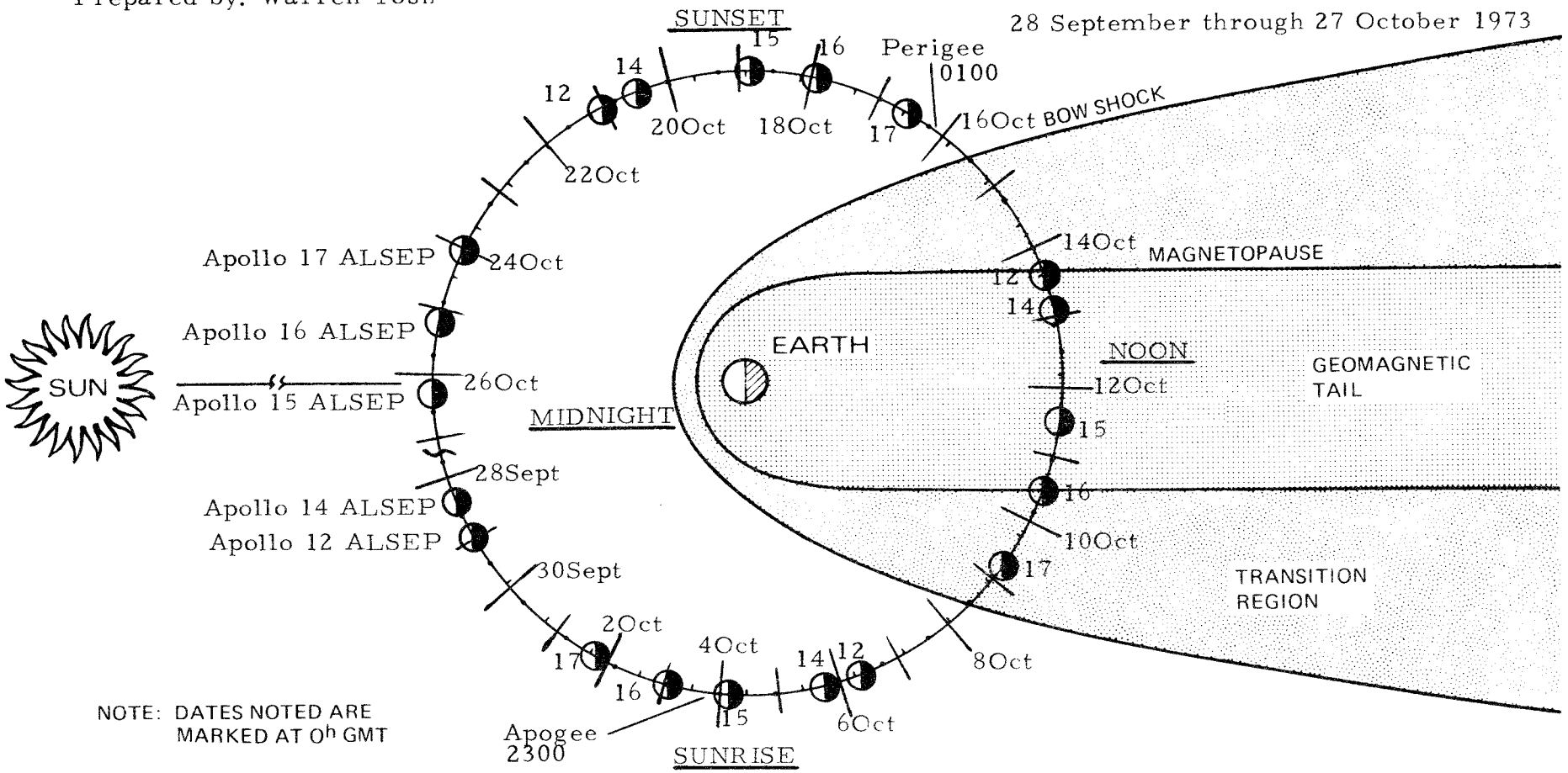
TM POINT	APOLLO 17 ALSEP
Total Days of Operation	282
Total Commands to Date	9219
Sun Angle	228.8°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	28.2°F
LACE Temp (AM-41)	13.4°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.4°K
LSG Temp (DG-04)	49.2°F
LSP Temp (AP-01)	29.1°F

Bendix Aerospace Systems Division

Prepared by: Warren Tosh

MOON POSITIONS RELATIVE TO EARTH-SUN LINE

28 September through 27 October 1973



NOTE: DATES NOTED ARE MARKED AT 0^h GMT

APOLLO (ALSEP)	DAY/HOUR (GMT)				
	Midnight	Sunrise	Noon	Sunset	Midnight
17		1 Oct/2024	(11th)9 Oct/0540	16 Oct/1520	24 Oct/0033
16		3 Oct/0222	(19th)10 Oct/1145	17 Oct/2124	25 Oct/0630
15		4 Oct/0143	(28th)11 Oct/1110	18 Oct/2046	26 Oct/0549
14	28 Sept/1019	5 Oct/1918	(34th)13 Oct/0453	20 Oct/1421	27 Oct/2320
12	28 Sept/2156	6 Oct/0703	(49th)13 Oct/1639	21 Oct/0116	28 Oct/1058

ALSEP PERFORMANCE SUMMARY REPORT

28 September 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	*GMT LOS*	*GMT AOS*	*Data Loss*
Apollo 12	*23 Sep*	*2156*	*2302*	$1^h\ 6^m$

Apollo 17 ALSEP

Midnight of the 10th lunation at Taurus Littrow Lunar Laboratory occurred on 24 September. The central station is operating normally. Downlink signal strength is reported at -142.0 ± 4.0 dbm from transmitter A. Except for small repetitive day/night variations, thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses) continues during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples is 106 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment (Reference attached Apollo 17 LSG Test Results). The experiment's sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The next 30-minute passive listening period is planned for later today.

The Lunar Atmospheric Composition Experiment is currently ON. Tape playback from the Honeysuckle ground station indicated that ion source Filament #1 failed at 2152 G.m.t., 23 September 1973. Failure of this component results in the analog and digital scientific data of HIGH, INTERMEDIATE and LOW mass range channels to read zero. On 25 September, during investigation of this anomaly, it was verified that Filament #1 had failed completely. At 2353 G.m.t., 25 September, Filament #2 was commanded ON and the analog and digital scientific data indicated that the LACE was operating normally for HIGH and LOW. The INTERMEDIATE mass range output has indicated all zeros since 18 September. This anomaly is additional and separate from the filament anomaly. The LACE was then configured to discriminator level; LOW, Filament #2 voltage,

28 September 1973
G.m.t.: 1300

OFF; high voltage power supply, OFF; and back-up heater, ON. Later today the instrument will be configured to automatic sweep; high voltage power supply, ON; ion source filament, ON; multipliers, HIGH, low voltage power supply, ON; discriminator level, HIGH; and back-up heater ON. The instrument will remain in this configuration until just prior to optical sunrise when normal daytime operation will be resumed. A new operational plan is being prepared to obtain the maximum utilization of the instrument considering the present condition of only one useable ion source filament. The LACE electronics temperature (AM-41) is currently -2.3°F.

The Lunar Ejecta and Meteorites Experiment is ON and configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 21 September 1973, 0900 G.m.t., to 28 September, 1300 G.m.t.

Central station

This ALSEP experienced midnight of its 18th lunation on 25 September. The thermoelectric power source output is normal. The DSS-1 heater (10 watts) is ON for lunar night operations. Inhibiting of the 18-hour timer output pulses is continuing. The 30-foot antenna tracking stations report a signal strength of -137.0 ± 3.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis failed to respond to leveling mode commands on 21 September, but did respond again on 24 September. The long period x-axis has responded to leveling mode commands since 4 September. *A significant seismic event (Apollo 15 ALSEP) was noted during the limited real-time support of this instrument.*

Lunar surface magnetometer experiment

The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed). 510 flip calibration sequences have been executed and verified by the experiment's engineering data since activation. Currently the Z axis sensor head temperature has stabilized at 36.9°C, which is the same as previous lunations. This temperature deviation at the terminator has no apparent adverse effects on the overall capability of the LSM's operation. Tracking of the Z axis sensor head thermal profile will continue during ensuing terminator crossings.

Active seismic experiment

The experiment is currently in STANDBY OFF. ASE passive listening mode operations were accomplished on 21 September and 26 September as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
21 Sep	1022	1045	1115	1118	2	None
26 Sep	1250	1300	1330	1332	2	None

The next 30-minute passive listening period is planned for 5 October.

Apollo 15 ALSEP

Operational status from 21 September 1973, 0900 G.m.t., to 28 September 1973, 1300 G.m.t.

Central station

Midnight of the station's 27th lunation occurred on 26 September. Power from the RTG continues steady. Transmitter "A" downlink signal strength was reported at -135.0 ± 4.0 dbm. The data subsystem's average thermal plate temperature is presently stabilized at -2.8°F.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. The thermal characteristics of the PSE sensor assembly temperature (DL-07) have been stable and no adverse effects have been noted in the science data or instrument operation by allowing the cycling of the 18-hour timer output pulses during lunar night operation. *At 2051 G.m.t., 26 September, a significant seismic event of approximately 1 hour 17 minutes duration was observed during the limited real-time support of this instrument. The event was also observed on Apollo 12, 14, and 16 ALSEPs.*

Lunar surface magnetometer experiment

The experiment sensors are in the 50 gamma range for lunar night operations. Currently the instrument has executed 1096 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.

Solar wind spectrometer experiment

The instrument remains in STANDBY.

Suprathermal ion detector/cold cathode gauge experiment

The experiments are operating continuously in the full automatic stepping sequence (0-127 frames). Since 15 September the SIDE channeltron voltage and data has been valid, however, the CCIG data has been invalid since 13 September 1973. To preclude possible mode changes at instrument internal temperatures above 85°C (DI-05) the experiment will be cyclic commanded from ON to STANDBY.

Operational status from 21 September 1973, 0900 G.m.t., to 28 September 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 87.5°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 251.0°K at its lower-most point. Ring bridge surveys are being conducted periodically.

Apollo 14 ALSEP

Operational status from 21 September 1973, 0900 G.m.t., to 28 September 1973, 1300 G.m.t.

Central station	Midnight at the Apollo 14 site occurred today. RTG power output is steady. Transmitter "A" signal strength was reported between -134.5 dbm and -140.0 dbm. The DSS-1 heater (10 watts) is ON for lunar night operation.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). Since 23 July 1973 the y-axis sensor has responded to leveling commands. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The long period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. *A significant seismic event (Apollo 15 ALSEP) was noted during the limited real-time support periods on 26 September.*
Active seismic experiment	The experiment is currently in STANDBY. The next listening period is scheduled for 8 October 1973 when the instrument temperature (AS-03) should be above the -60°C restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment was commanded to OPERATE select at 1353 G.m.t., 20 September and is operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment. Present plans are to maintain the experiment in this mode of operation throughout the lunar night.
Charged particle lunar environmental experiment	The experiment is currently ON in the manual mode at the -35 vdc range and automatic thermcl control mode. It is planned to leave the experiment in this configuration pending possible degradation of (AC-03), analyzer A voltage, to 2200 vdc at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 21 September 1973, 0900 G.m.t., to 28 September 1973, 1300 G.m.t.

Central station	Midnight of the 48th lunar night will occur later today. Power output from the RTG during this reporting period has varied from 66.5 to 66.1 watts. A signal strength of -135.5 dbm to -140.0 dbm from transmitter "B" was reported by the tracking stations. The central station DSS-1 heater (10 watts) is ON for lunar night operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is ON for lunar night operations. *During the periodic real-time support operations on 26 September a significant seismic event (Apollo 15 ALSEP) was noted. At 2335 G.m.t., 25 September, the PSE sensor temperature (DL-07) was offscale LOW (sun angle = 234.1°).*
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector experiment	The SIDE is in OPERATE select and automatic stepping sequence for the remainder of this lunation. The instrument had previously been cycled by command to the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF to preclude instrument mode changes at internal temperatures above 55°C during the lunar day.

Status as of 2300 G.m.t., 26 September 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1407	964	788	523
Total Commands to Date	18206	10261	18367	8445
Sun Angle	246.0°	252.0°	273.1°	285.0°
Input Power	66.5w	68.5w	71.9w	69.9w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	10.9°F	30.5°F	-2.8°F	35.8°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.3°F	124.3°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	-8.9°C
SWS Module 300 Temp (DW-13)	-15.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.2°C	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	108.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.6°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-69.9°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.1°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	288
Total Commands to Date	9796
Sun Angle	300.0°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	33.2°F
LACE Temp (AM-41)	-2.3°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.8°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	35.0°F

ALSEP PERFORMANCE SUMMARY REPORT

5 October 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunrise of the scientific station's 11th lunation occurred 1 October. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 75.3w watts. The downlink received signal is reported between -137.0 dbm and -145.0 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature, as measured by the HFE thermocouples is 247.0 ± 8°K. Subsurface temperatures at 230 cm depth are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment is configured to collect tidal and free mode data (siesmic gain, HIGH; integrator mode, NORMAL; bias circuit, IN; and post amplifier gain at increment 15). The experiment's sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished during this reporting period as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
28 Sep	1354	1445	1515	1519	2	None
3 Oct	1606	1615	1645	1648	2	None

The next passive listening period is planned for 12 October.

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE was commanded OFF for lunar day operation when the electronics temperature, AM-41, reached 112.9°F (sun angle, 33°). The instrument has functioned nominally since the switch to Filament #2 on 28 September 1973 with the exception of the INTERMEDIATE mass range output, which has indicated all zeros since 18 September 1973.

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates on the lunar surface. The instrument will remain ON until the mirror temperature (AJ-11) reaches 196.0°F, at which time it will be cycled per Apollo 17 SMEAR, ALSEP 49 R-2.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 28 September 1973, 1300 G.m.t., to 5 October 1973, 1300 G.m.t.

Central station	Sunrise of the 19th lunation occurred 3 October 1973. The DSS-1 heater (10 watts) was commanded OFF on 2 October. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength between -133.0 dbm and -138.4 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 516 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	The experiment is currently STANDBY OFF. The next 30-minute passive listening period is planned for later today.

Apollo 15 ALSEP

Operational status from 28 September 1973, 1300 G.m.t., to 5 October 1973, 1300 G.m.t.

Central station	Sunrise of the station's 28th lunation occurred 4 October. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -133.0 dbm and -139.0 dbm.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. The thermal characteristics of the PSE sensor assembly temperature (DL-07) have been stable and no adverse effects have been noted in the science data or instrument operation by allowing the cycling of the 18-hour timer output pulses during lunar night operation. No lunar seismic events have been observed during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment sensors were commanded to 100 gamma range on 1 October for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1104 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). The CCGE data continues to be noisy and the automatic zero and calibration functions are still not functioning properly. At the request of the principal investigator, the instrument will be operated for a three hour period during real time support on 10 October (sun angle, 75°). To insure the instrument does not exceed the 85°C operational limit, the SIDE will be commanded to OFF during real time support on 9 October and returned to power ON for three hours of operation on 10 October. The instrument will then be cycled from ON to STANDBY for the remainder of lunar day.

Apollo 15 ALSEP (continued)

Operational status from 28 September 1973, 1300 G.m.t., to 5 October 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 85.6 °K on 4 October as indicated by the cable thermocouples. The sub-surface temperature was 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 28 September 1973, 1300 G.m.t., to 5 October 1973, 1300 G.m.t.

Central station	Sunrise at the Apollo 14 site occurs later today (34th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -134.5 dbm and -139.9 dbm. Data processor "Y" will be verified by command on 5 October.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). *During phase three support on 30 September the Guam Tracking Station reported that all the instrument's digital data was indicating a zero output. This occurrence lasted from 0558 G.m.t. to 0710 G.m.t. on 30 September at which time the instrument's digital data returned to a valid condition. Subsequent to this time the data has been intermittent, varying from an all zero indication to dynamic, valid data. During real-time support on 1 October, the instrument was exercised and central station was commanded from data processor Y to X. This configuration produced no change in the instrument's intermittent output. The station was returned to data processor Y by ground command from Mission Control. Investigation of this anomaly continues.*
Active seismic experiment	The experiment is currently in STANDBY. The next 30-minute passive listening period is planned for 8 October, when the instrument temperature (AS-03) should be above the -60°C restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is currently operating in the full automatic stepping sequence with Channeltron high voltages commanded ON.
Charged particle lunar environmental experiment	The experiment is currently ON in the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to command the instrument to STANDBY select later today for the remainder of lunar day.

Apollo 12 ALSEP

Operational status from 28 September 1973, 1300 G.m.t., to 5 October 1973, 1300 G.m.t.

Central station	Sunrise of the 49th lunar day occurrs tomorrow, 6 October, at the ALSEP site in the Ocean of Storms. Power output from the RTG during this report period has been from 66.1 to 66.5 watts. A signal strength between -136.5 dbm and -139.9 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded OFF for lunar day operations on 6 October. Data processor "Y" will be verified by command on 6 October.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor will be commanded OFF for lunar day operation on 6 October. The PSE sensor temperature (DL-07) has remained offscale LOW during real-time support operations this week. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 7 October in an effort to preclude instrument mode changes at internal temperatures above 55°C. The instrument is operating in full automatic stepping sequence with the Channeltron high voltages ON.

Status as of 1500 G.m.t., 4 October 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1415	972	796	531
Total Commands to Date	18220	10289	18447	8476
Sun Angle	338.5°	344.5°	5.7°	17.7°
Input Power	66.1w	68.9w	71.9w	69.1w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	9.8°F	29.3°F	-3.1°F	57.3°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.3°F	124.4°F	126.4°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	32.8°C
SWS Module 300 Temp (DW-13)	-16.0°C	N/A	Standby	N/A
SIDE Temp (DI-05)	Invalid	Invalid	6.0°C	N/A
CCGE Temp (DI-04)	Invalid	Invalid	108.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.7°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-71.1°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.2°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	296
Total Commands to Date	9925
Sun Angle	33.0°
Input Power	75.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE OFF
Avg Thermal Plate Temp	67.0°F
LACE Temp (AM-41)	112.9°F
LEAM Temp (AJ-11)	173.8°F
HFE Temp Ref 1 (DH-13)	304.1°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	67.4°F

ALSEP PERFORMANCE SUMMARY REPORT

12 October 1973
G.m.t.: 1300

Apollo 17 ALSEP

Noon of the scientific station's 11th lunation occurred on 9 October. All experiments and the central station are operating as expected. Downlink signal strength is reported at -138.0 ± 2.0 dbm from transmitter A. Thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain by the internally generated 61-hour pulses, continues during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 364 ± 8°K. Subsurface temperature at 230 cm depth is 256.4°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect tidal and free mode data with the instrument configured to seismic high gain, integrator normal, bias IN, and post amplifier gain at increment 15. The experiment's sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The next 30-minute passive listening period is planned for later today.

The Lunar Atmospheric Composition Experiment is currently OFF for lunar day operation. It is planned to command the instrument to STANDBY select on 13 October to maintain thermal stability. The LACE electronic temperature is presently reading 72.1°F and tracking the previous lunation temperature profile.

The Lunar Ejecta and Meteorites Experiment is presently OFF. *The instrument was commanded OFF by Mode 1 command through the Bermuda Tracking Station at 0354 G.m.t., 6 October when the mirror temperature (AJ-11) increased to 196°F.* The LEAM will remain OFF until the mirror temperature decreases to 180.0°F at which time the instrument will be commanded ON for the remainder of this lunation. The mirror temperature profile (AJ-11) is tracking approximately 5°F higher than the previous lunation. The instrument's mirror temperature (AJ-11) currently is reading 189.5°F.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 5 October 1973, 1300 G.m.t., to 12 October 1973, 1300 G.m.t.

Central station

Noon of the 19th lunar day occurred on 10 October at the Descartes Site. The DSS-1 heater (10 watts) is OFF for lunar day operations. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -135.0 dbm and -141.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The instrument's assembly temperature (DL-07) has remained offscale HIGH since 9 October. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 522 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.

Active seismic experiment

The experiment is currently STANDBY OFF. ASE passive listening mode operations were accomplished on 5 and 11 October as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE OFF G.m.t.	Geophone Cals	Events
5 Oct	1638	1640	1710	1713	2	None
11 Oct	1410	1420	1450	1452	2	None

The next 30-minute passive listening period is planned for 19 October.

Apollo 15 ALSEP

Operational status from 5 October 1973, 1300 G.m.t., to 12 October 1973, 1300 G.m.t.

Central station	Noon of the station's 28th lunation occurred on 11 October. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -132.5 dbm and -139.0 dbm. The data subsystem's 18 hour timer outputs have functioned normally during this period.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. At the start of real-time support on 11 October the instrument's assembly temperature (DL-07) was offscale HIGH (sun angle = 92°). During the real-time support periods this past week no significant events were observed.
Lunar surface magnetometer experiment	The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1110 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY. *At 1353 G.m.t., 9 October, the experiment was commanded to operate select for 4 minutes in order to provide additional data on the instrument's anomalous operation. The instrument's telemetry data continuously indicated out of sync data. During the operate select period the experiment continued to demand excessive power (9 watts). Following the operate select period the instrument was commanded back to STANDBY select (Apollo 15, SMEAR 46).*
Suprathermal ion detector/cold cathode gauge experiment	Currently the SIDE is in STANDBY. At the request of the principal investigator, the instrument was operated for a three hour period during real-time support on 10 October (sun angle = 75°). Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment STANDBY was initiated on 9 October to insure the instrument does not exceed the 85°C operational limit duirng the remainder of the lunar day (Apollo 15 ALSEP, SMEAR 47).

Apollo 15 ALSEP (continued)

Operational status from 5 October 1973, 1300 G.m.t., to 12 October 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 366.2°K as indicated by the cable thermocouples. The sub-surface temperature is 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.1°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 5 October 1973, 1300 G.m.t., to 12 October 1973, 1300 G.m.t.

Central station

Noon of the 34th lunation at the Apollo 14 site will occur tomorrow, 13 October. Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported at -141.2 ± 1.8 dbm. The DSS-1 heater (10 watts) is OFF for lunar day operations.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF at 0511 G.m.t., 10 October, to minimize heating during lunar day operations. *Since 1 October 1973, the experiment has not displayed the intermittent zero digital data output that had previously been observed. Investigation of this anomaly continues.* The long-period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. On 8 October 1973, the experiment was commanded to ON at 1538 G.m.t. and to high bit rate ON at 1545 G.m.t. for a 30 minute passive listening mode. No significant events were observed. Geophone calibration pulses were not sent during the listening period. At 1615 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1618 G.m.t. The next listening period is scheduled for 15 October 1973.

Suprathermal ion detector/cold cathode gauge experiment

The experiment is in STANDBY and present plans are to leave it in this configuration for the remainder of this lunar day. At 0140 G.m.t., 6 October the experiment experienced a functional change to STANDBY without ground command, as observed by the Bermuda remote site.

Charged particle lunar environmental experiment

The CPLEE was commanded to STANDBY on 5 October per present plans. The experiment had been in OPERATE select since 20 September 1973.

Apollo 12 ALSEP

Operational status from 5 October 1973, 1300 G.m.t., to 12 October 1973, 1300 G.m.t.

Central station	Noon of the 49th lunar day will occur tomorrow, 13 October, at the Apollo 12 ALSEP site. Power output from the RTG during this report period has been from 65.7 to 66.2 watts. The signal strength is -140.5 $\pm$ 3.5 dbm from transmitter "B" was reported by the 30 foot antenna tracking stations. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is OFF for lunar day operation. The PSE's sensor temperature (DL-07) returned on-scale at the beginning of real-time support on 6 October (sun angle 352.6°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector experiment	Currently the SIDE is in STANDBY. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 7 October in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1600 G.m.t., 11 October 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1422	979	803	538
Total Commands to Date	18309	10338	18608	8582
Sun Angle	65.4°	71.3°	92.4°	104.3°
Input Power	65.7w	68.2w	70.8w	69.6w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE/CPLEE/SIDE/Stby	SWS & SIDE Stby	ASE OFF
Avg Thermal Plate Temp	91.3°F	107.1°F	114.5°F	102.1°F
PSE Sensor Temp (DL-07)	131.1°F	127.3°F	Offscale HIGH	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	71.4°C	45.8°C
SWS Module 300 Temp (DW-13)	64.3°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Standby	60.4°C	N/A
CCGE Temp (DI-04)	OFF	Standby	Standby	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	72.7°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	329.9°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	303
Total Commands to Date	10030
Sun Angle	119.3°
Input Power	75.4w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE & LEAM OFF
Avg Thermal Plate Temp	115.9°F
LACE Temp (AM-41)	72.1°F
LEAM Temp (AJ-11)	189.5°F
HFE Temp Ref 1 (DH-13)	322.3°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	117.6°F

ALSEP PERFORMANCE SUMMARY REPORT

19 October 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunset of the 11th lunation occurred on 16 October at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of previous lunations. Downlink RF signal strength is reported at -138.0 ± 2.0 dbm from transmitter "A". Thermoelectric power source output is 76.9 watts. *At 0249 G.m.t., 2 October, the station's command sequencer provided an automatic switchover (61-hour pulse) to the redundant receiver/decoder (B) and power routing circuit (X). The station was reconfigured to its primary operational status receiver/decoder "A" and "W" power routing during real-time support (0425 G.m.t., 2 October) without problem. The procedure of inhibiting the internally generated pulse remains in effect with command octal 174 being sent during real-time support periods.*

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 116 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect free mode and tidal data with the instrument configured to seismic high gain, integrator shorted mode, bias IN, and post amplifier gain at increment 15. The experiment sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished during this reporting period as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
12 Oct	1421	1430	1500	1501	2	None
17 Oct	1303	1305	1335	1348	2	Response

The next passive listening period is planned for 26 October.

The Lunar Atmospheric Composition Experiment was commanded from STANDBY to ON at 1600 G.m.t., 15 October for lunar night. The experiment had been commanded from OFF to STANDBY during this report period at 1402 G.m.t. 13 October to maintain thermal stability of the instrument when the electronics temperature had decreased to 50.6°F at a sun angle of 142.9° *During real-time support on 12 October the LACE was commanded ON at 1524 G.m.t. for lunar day data. Following the execution of commands for multipliers, HIGH; automatic sweep; ion source filament #2, ON; discriminator level, HIGH; and high voltage power supply, ON; it was determined on the analog and digital data that the engineering data (high voltage OFF; ion*

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G.m.t.: 1300

Apollo 17 ALSEP (continued)

source filament, OFF; and discriminator level, LOW) was incorrect. The instrument was commanded OFF at 1533 G.m.t., 12 October, pending analysis of this anomaly. On 17 October, the LACE was configured to automatic sweep ion source filament #2, ON; high voltage power supply, ON; multipliers, HIGH; and discriminator level, HIGH. The analog and digital data indicated that engineering and science information were correct and the instrument was operating properly. The anomaly of 12 October is considered to have been caused by elevated temperatures (AM-41 = 63.1°F) at the time of turn-on. At the beginning of real-time support on 18 October the high voltage power supply was OFF and all mass range outputs were off-scale HIGH. The experiment was commanded to STANDBY, back to ON, and reconfigured to sweep lock; high voltage power supply, OFF; ion source filament #2, OFF; multipliers, HIGH; low voltage power supply, ON; discriminator level, LOW; and back-up heater, ON. The instrument will remain in this configuration pending further analysis of this anomaly. The LACE electronics temperature (AM-41) is currently reading 31.3°F (sun angle = 204.5°) which is 17.9° higher than the normal 13.4°F lunar night reading.

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1401 G.m.t., 13 October, when the mirror temperature (AJ-11) decreased to 171.7°F at a sun angle of 142.9°. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 12 October 1973, 1300 G.m.t., to 19 October 1973, 1300 G.m.t.

Central station	The Descartes Site experienced sunset on 17 October. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 1243 G.m.t., 17 October, for lunar night operations when the average thermal plate decreased to 47.4°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is reported at -136.0 ± 4.0 dbm by the 30-foot antenna tracking stations.
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period x-axis has responded to leveling mode commands since 4 September and long period y-axis since 21 September. The instrument's assembly temperature was on-scale (DL-07 = 126.1°F), 18 October, at the beginning of real-time support at a sun angle of 188.8°. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed). 528 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	The Active Seismic Experiment is currently in STANDBY OFF. A 30-minute passive listening period is planned for later today, 19 October.

Apollo 15 ALSEP

Operational status from 12 October 1973, 1300 G.m.t., to 19 October 1973, 1300 G.m.t.

Central station	The RTG output power remains steady. Transmitter "A" downlink signal strength is reported between -133.5 and -141.0 dbm by the tracking stations with 30-foot antenna. Sunset of the site's 28th lunation occurred on 18 October. The data subsystem's 18-hour timer outputs are occurring as expected.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors will be commanded to the 50 gamma range later today, 19 October, for lunar night-time operations. Currently the instrument has executed 1120 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument has been operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames) since 13 October, for the remainder of this lunation.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 145.4°K as indicated by the cable thermocouples. The sub-surface temperature is 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 12 October 1973, 1300 G.m.t., to 19 October 1973, 1300 G.m.t.

Central station

Sunset at the Apollo 14 site will occur on 20 October. RTG power output is steady. Transmitter "A" signal strength was reported between -137.0 and -146.5 dbm. The DSS-1 heater (10 watts) will be commanded ON for lunar night operation later today, 19 October.

Passive seismic experiment

The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument heater was commanded to AUTO ON at 1442 G.m.t., 17 October, to maximize heating during lunar night operations. The long period y-axis has remained in the on-scale position since 22 March. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. ASE passive listening mode operations were accomplished on 5 and 18 October as follows:

Date	ASE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	ASE STANDBY G.m.t.	Geophone Cals	Events
15 Oct	1605	1515	1545	1547	None	None
18 Oct	1345	1400	1430	1431	None	Response

The next 30-minute passive listening period is planned for 5 November.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is currently in STANDBY. The experiment will be commanded to OPERATE select later today, 19 October, and will be operating in the full automatic stepping sequence with Channeltron high voltages commanded ON for the remainder of this lunation.

Charged particle lunar environmental experiment

The experiment is currently in STANDBY. Later today, 19 October, the experiment will be commanded to the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of AC-03, analyzer A voltage to 2200 vdc, at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 12 October 1973, 1300 G.m.t., to 19 October 1973, 1300 G.m.t.

Central station	Sunset of the 49th lunar day will occur on 21 October. Power output from the RTG during this report period has been from 65.7 to 66.2 watts. A signal strength of -138.0 to -143.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) will be commanded ON for lunar night operations on 20 October. *At 2020 G.m.t., 14 October, the central station responded to a spurious command (octal 022, 14-watt PDR ON). The Carnarvon tracking station confirmed receipt of the command in the Apollo 12 ALSEP downlink. The 14-watt PDR was returned to the OFF condition by mode 1 command (octal 023) by the Carnarvon ground station at 2128 G.m.t., 14 October, without incident.*
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). At 1238 G.m.t., 14 October, during the real-time support period, the sensor temperature (DL-07) was noted to have been off-scale HIGH at a sun angle of 100.1°. No significant seismic events were noted during the periodic real time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector/cold cathode gauge experiment	At 1350 G.m.t., 18 October, the SIDE was commanded to OPERATE select and automatic stepping sequence for the remainder of this lunation. The instrument had previously been cycled by command to the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF to preclude instrument mode changes at internal temperatures above 55°C during the lunar day.

Status as of 1600 G.m.t., 18 October 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1429	986	810	545
Total Commands to Date	18361	10377	18760	8691
Sun Angle	150.5°	156.4°	177.6°	189.4°
Input Power	66.2w	68.2w	72.4w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE/SIDE/CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	76.2°F	75.8°F	46.6°F	39.8°F
PSE Sensor Temp (DL-07)	Offscale HIGH	127.3°F	125.0°F	126.1°F
LSM Internal Temp (DM-05)	Invalid	N/A	45.8°C	-0.1°C
SWS Module 300 Temp (DW-13)	55.0°C	N/A	Standby	N/A
SIDE Temp (DI-05)	26.7°C	Invalid	42.3°C	N/A
CCGE Temp (DI-04)	Offscale HIGH	Invalid	267.7°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	72.7°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	291.3°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	310
Total Commands to Date	10229
Sun Angle	204.4°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	26.2°F
LACE Temp (AM-41)	31.3°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.1°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	27.8°F

ALSEP PERFORMANCE SUMMARY REPORT

26 October 1973
G.m.t.: 1300

Apollo 17 ALSEP

Midnight of the 11th lunation at Taurus Littrow Lunar Laboratory occurred on 24 October. The central station is operating normally. Downlink signal strength is reported at -139.0 ± 3.0 dbm from transmitter A. Except for small repetitive day/night variations, thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses) continues during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples is 108 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect free mode and tidal data with the instrument configured to seismic high gain, integrator shorted mode, bias IN, and post amplifier gain at increment 15. The experiment sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The next 30-minute passive listening period is planned for later today.

The Lunar Atmospheric Composition Experiment is currently ON and configured to discriminator level, LOW; filament, OFF; high voltage power supply, OFF; and back-up heater, ON. *The LACE data of 17 October was played back during real-time support on 19 October by the Canarvon tracking station. The playback indicated that at 1732 G.m.t., 17 October, the sweep high voltage (AM-44) dropped to zero. The electronics noise data ramp also disappeared from all three data channel outputs and the anomaly locked all three data channels into the continuous calibration mode (data offscale HIGH). This failure was preceeded by a series of noise spikes on the low and mid mass range data channels which appeared at 1723 G.m.t., 17 October.*

A series of high voltage and filament commands were executed during the real-time support period in an attempt to correct the anomaly. Cursory real-time analysis concluded that the multiplier hgih voltage supply had apparently failed. This common high voltage power supply also affected the sweep high voltage (AM-44), and cross coupled into the data channel outputs (DM-03, DM-04, and DM-05).

The LACE was allowed to cool down (i.e., back-up heater OFF) by a temperature Δ of 15°F. Attempts to correct the anomaly by ground command were made again on 22 October without success.

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It is further planned to allow the LACE to cool down (i.e., STANDBY or OFF) for five hours later today. Attempts will again be made by ground commanding to correct this anomaly. Analysis of the anomaly is continuing.

The Lunar Ejecta and Meteorites Experiment is ON and configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperature profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 19 October 1973, 1300 G.m.t., to 26 October 1973, 1300 G.m.t.

Central station

This ALSEP experienced midnight of its 19th lunation on 25 October. The thermoelectric power source output is normal. The DSS-1 heater (10 watts) is ON for lunar night operations. Inhibiting of the 18-hour timer output pulses is continuing. The 30-foot antenna tracking stations report a signal strength of -136.0 ± 3.0 dbm from transmitter "B".

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. *The long period y-axis failed to respond to leveling mode commands on 19 October.* No significant seismic events were noted during the real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed). 534 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.

Active seismic experiment

The experiment is currently in STANDBY OFF. On 20 September, the experiment was commanded to operate select at 2249 G.m.t. and to high bit rate ON at 2310 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal. *Several responses were observed during the real-time support.* High bit rate operations were terminated at 2340 G.m.t. and the experiment commanded to STANDBY OFF at 2343 G.m.t.

Apollo 15 ALSEP

Operational status from 19 October 1973, 1300 G.m.t., to 26 October 1973, 1300 G.m.t.

Central station	Midnight of the station's 28th lunation occurs later today. Power from the RTG continues steady. Transmitter "A" downlink signal strenght was reported at -135.5 ± 3.5 dbm. The data subsystem's average thermal plate temperature is presently -2.7°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. During the real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors are in the 50 gamma range for lunar night operations. Currently the instrument has executed 1130 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument has been operating with channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames) since 13 October, for the remainder of this lunation.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 89.2°K as indicated by the cable thermocouples. The sub-surface temperature is 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicates a temperature of 251.0°K at its lower-most point. Ring bridge surveys are being conducted periodically.

Apollo 14 ALSEP

Operational status from 19 October 1973, 1300 G.m.t., to 26 October 1973, 1300 G.m.t.

Central station	Midnight at the Apollo 14 site will occur on 27 October. RTG power output is steady. Transmitter "A" signal strength was reported between -135.0 dbm and -142.0 dbm. The DSS-1 heater (10 watts) is ON for lunar night operation.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). *On 24 October 1973 the y-axis sensor did not respond to leveling commands.* The instrument's heater is operating in the AUTO ON mode for lunar night operation. The long period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods of this week no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. The next 30-minute passive listening period is planned for 5 November.
Suprthermal ion detector/cold cathode gauge experiment	The experiment is in operate select. *On 19 October the experiment was commanded to ON but did not respond. Three additional attempts were required before the instrument responded to ground commands.* Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment. Present plans are to maintain the experiment in this mode of operation throughout the lunar night.
Charged particle lunar environmental experiment	The experiment is currently ON in the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of (AC-03), analyzer A voltage, to 2200 vdc at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 19 October 1973, 1300 G.m.t., to 26 October 1973, 1300 G.m.t.

Central station	Midnight of the 49th lunar night will occur 28 October. Power output from the RTG during this reporting period has been 66.1 watts. A signal strength of -136.0 dbm to -142.0 dbm from transmitter "B" was reported by the tracking stations. The central station DSS-1 heater (10 watts) is ON for lunar night operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The z-axis drive motor is ON for lunar night operations. On 19 October, the sensor temperature (DL-07) returned on-scale (sun angle = 163.1°) and remained on-scale until 24 October, when DL-07 indicated off-scale LOW (sun angle = 222.0°). No significant seismic events were noted during real-time support of the instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector experiment	The SIDE is in OPERATE select and automatic stepping sequence for the remainder of this lunation. The instrument had previously been cycled by command to the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF to preclude instrument mode changes at internal temperatures above 55°C during the lunar day.

Status as of 1300 G.m.t., 25 October 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1436	993	817	552
Total Commands to Date	18416	10426	18856	8756
Sun Angle	222.0°	228.5°	249.6°	261.3°
Input Power	66.1w	69.4w	71.4w	69.9w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	10.7°F	30.5°F	-2.7°F	35.8°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.3°F	124.6°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	2.9°C	-8.9°C
SWS Module 300 Temp (DW-13)	-15.2°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.2°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	112.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.6°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-68.7°C	N/A	Offscale LOW
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.3°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	317
Total Commands to Date	10335
Sun Angle	276.2°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	36.5°F
LACE Temp (AM-41)	-16.1°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.9°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	38.0°F

ALSEP PERFORMANCE SUMMARY REPORT

2 November 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	*GMT LOS*	*GMT AOS*	*Data Loss*
Apollo 12	*25 Oct*	*2355*		
	26 Oct		*0536*	$5^h\ 41^m$
Apollo 12	*28 Oct*	*0421*	*0657*	$2^h\ 36^m$

Apollo 17 ALSEP

Sunrise of the scientific station's 12th lunation occurred 31 October. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 75.8 watts. The downlink received signal is reported between -135.0 dbm and -143.0 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature, as measured by the HFE thermocouples is 187.0 $\pm$ 8°K. Subsurface temperatures at 230 cm depth are 256.4°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect free mode and tidal data with the instrument configured to seismic high gain, integrator shorted mode, bias IN, and post amplifier gain at increment 15. The experiment sensor temperature is presently stabilized at 49.203°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 1423 G.m.t., 26 October and to LSPE data format processing (high bit rate) at 1425 G.m.t., for a passive listening period. One geophone calibration pulse was sent during the listening period. Signal quality from the supporting ground station was very intermittent and no events were observed during the real-time operation. LSPE processing was terminated at 1448 G.m.t., and the instrument commanded to STANDBY select at 1451 G.m.t.

The Lunar Atmospheric Composition Experiment is currently ON and configured to discriminator level, LOW; filament, OFF; high voltage power supply, OFF; and back-up heater, ON. The attempts to correct the high voltage anomaly by ground command and cold soaking on 26 October were without success. The LACE will remain in the present configuration until (AM-41) the electronics temperature reaches 125°F, when the experiment will be commanded OFF for this lunar day. Analysis of the anomaly is continuing.

2 November 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates on the lunar surface. The instrument will remain ON until the mirror temperature (AJ-11) reaches 196.0°F, at which time it will be cycled per Apollo 17 SMEAR, ALSEP 49 R-2.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 26 October 1973, 1300 G.m.t., to 2 November 1973, 1300 G.m.t.

Central station	Sunrise of the 20th lunation occurred 1 November 1973. The DSS-1 heater (10 watts) was commanded OFF on 1 November. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -141.0 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling commands since 19 October 1973. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 540 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	The experiment is currently STANDBY OFF. The next 30-minute passive listening period is planned for 2 November.

Apollo 15 ALSEP

Operational status from 26 October 1973, 1300 G.m.t., to 2 November 1973, 1300 G.m.t.

Central station	Sunrise of the station's 29th lunation will occur later today. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -130.0 dbm and -138.0 dbm.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. No lunar seismic events have been observed during the limited real-time support of this instrument. *At 1855 G.m.t., 28 October, the instrument responded to a spurious command (octal 070, X leveling motor ON). The Ascension Island tracking station confirmed receipt of the command in the ALSEP downlink. The leveling motor was turned OFF by mode 1 command at 1940 G.m.t., 28 October, without incident.*
Lunar surface magnetometer experiment	The experiment sensors were commanded to the 100 gamma range on 1 November for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1136 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). The CCGE data continues to be noisy and the automatic zero and calibration functions are still not functioning properly.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 83.8°K on 1 November as indicated by the cable thermocouples. The sub-surface temperature was 253.3°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.1°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 26 October 1973, 1300 G.m.t., to 2 November 1973, 1300 G.m.t.

Central station	Sunrise at the Apollo 14 site occurs on 4 November (35th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -132.5 dbm and -142.0 dbm. Data processor "Y" will be verified by command on 4 November.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). On 24 October 1973 the y-axis sensor did not respond to leveling commands. The instrument's heater is operating in the AUTO ON mode for lunar night operation. The long period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods of this week no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. The next 30-minute passive listening period is planned for 5 November, when the instrument temperature (AS-03) should be above the -60°C restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is currently operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. The CCGE data continues to be normal.
Charged particle lunar environmental experiment	The experiment is currently ON in the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to command the instrument to STANDBY select on 4 November for the remainder of the lunar day.

Apollo 12 ALSEP

Operational status from 26 October 1973, 1300 G.m.t., to 2 November 1973, 1300 G.m.t.

Central station	Sunrise of the 50th lunar day occurs on 4 November, at the ALSEP site in the Ocean of Storms. Power output from the RTG during this report period has been a constant 66.1 watts. A signal strength between -135.0 dbm and -143.0 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) remains ON, but will be commanded OFF for lunar day operations on 5 November.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The z-axis drive motor will be commanded OFF for lunar day operation on 5 November. The PSE sensor temperature (DL-07) has remained offscale LOW during real-time support operations this week. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	The instrument is presently operating in full automatic stepping sequence with Channeltron high voltages ON. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF will be initiated on 7 November in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1500 G.m.t., 1 November 1973, was as follows.

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1443	1000	824	559
Total Commands to Date	18428	10442	18919	8789
Sun Angle	320.8°	326.7°	347.8°	359.7°
Input Power	66.1w	68.9w	71.4w	69.5w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	All OFF
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	9.1°F	30.3°F	-4.1°F	35.3°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.7°F	124.2°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	2.9°C	-8.9°C
SWS Module 300 Temp (DW-13)	-16.1°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	106.5°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.6°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-71.1°C	N/A	Offscale LOW
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.2°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	324
Total Commands to Date	10398
Sun Angle	14.7°
Input Power	75.8w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	68.1°F
LACE Temp (AM-41)	82.6°F
LEAM Temp (AJ-11)	130.7°F
HFE Temp Ref 1 (DH-13)	291.3°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	69.1°F

ALSEP PERFORMANCE SUMMARY REPORT

9 November 1973
G.m.t.: 1300

Apollo 17 ALSEP

Noon of the scientific station's 12th lunation occurred on 7 November. All experiments and the central station are operating as expected. Downlink signal strength is reported at -138.0 ± 2.0 dbm from transmitter A. Thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain by the internally generated 61-hour pulses, continues during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The instrument is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature as measured by the HFE's thermocouples is 381° ± 8°K. Subsurface temperature at 230 cm depth is 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect tidal and free mode data with the instrument configured to seismic high gain, integrator normal, bias IN, and post amplifier gain at increment 15. *The experiment's sensor temperature has increased to and is presently stabilized at 49.207°C (slave heater ON).*

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished during this reporting period as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
2 Nov	1559	1605	1635	1637	2	None
8 Nov	1523	1530	1600	1603	2	Responses

The next passive listening period is planned for 14 November.

The Lunar Atmospheric Composition Experiment is currently OFF for lunar day operation. *The LACE electonic temperature is presently reading 80.6°F and is tracking approximately 3°F higher than the previous lunation temperature profile.*

The Lunar Ejecta and Meteorites Experiment is presently OFF. *The instrument was commanded OFF by command through the mission control center at 1612 G.m.t., 4 November, when the mirror temperature (AJ-11) increased to 198.0°F.* The LEAM will remain OFF until the mirror temperature decreases to 180.0°F at which time the instrument will be commanded ON for the remainder of this lunation. *The mirror temperature profile (AJ-11) is tracking approximatley 3°F higher than the previous lunation.* The instrument's mirror temperature (AJ-11) currently is reading 186.5°F.

9 November 1973
G.m.t.: 1300

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 2 November 1973, 1300 G.m.t., to 9 November 1973, 1300 G.m.t.

Central station	Noon of the 20th lunar day occurred today, 9 November, at the Descartes Site. The DSS-1 heater (10 watts) is OFF for lunar day operations. The thermoelectric power source output is normal. The 18-hour output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -136.0 dbm and -145.0 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The instrument's assembly temperature (DL-07) was off-scale HIGH at 1435 G.m.t., 7 November 1973 (sun angle = 72.5°), at the beginning of real-time support. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 546 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	The experiment is currently in STANDBY OFF. On 5 November, the experiment was commanded to operate select at 0807 G.m.t. and to high bit rate ON at 0830 G.m.t. for a 30-minute passive listening period. Two geophone calibration pulses were sent to the instrument during the listening mode. Data output of all geophones appeared normal. Several responses were observed during the real-time support. High bit rate operations were terminated at 0900 G.m.t. and the experiment commanded to STANDBY OFF at 0903 G.m.t.

Apollo 15 ALSEP

Operational status from 2 November 1973, 1300 G.m.t., to 9 November 1973, 1300 G.m.t.

Central station

Noon of the station's 29th lunation will occur on 10 November. Power from the RTG continues steady and transmitter "A" downlink signal strength is reported between -134.5 dbm and -140.4 dbm. The data subsystem's 18-hour timer outputs have functioned normally during this period.

Passive seismic experiment

The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the real-time support periods this past week no significant events were observed.

Lunar surface magnetometer experiment

The experiment sensors are operating in the 100 gamma range for lunar day operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1148 flip calibration sequences since activation.

Solar wind spectrometer experiment

The instrument remains in STANDBY.

Suprathermal ion detector/cold cathode gauge experiment

Currently the SIDE is in STANDBY. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment STANDBY was initiated on 6 November to insure the instrument does not exceed the 85°C operational limit during the remainder of the lunar day (Apollo 15 ALSEP, SMEAR 47). *An engineering test to investigate the automatic calibration and zero function anomaly is planned for 14 November 1973. The experiment will be commanded to the RESET SIDE FRAME COUNTER at 79 and VELOCITY FILTER at 9 for a period of about 15 hours. This will eliminate the automatic calibration and zero functions of the CCIG for this operation. At the termination of the test the experiment will be commanded back to the full automatic stepping sequence (0-127 frames).*

Apollo 15 ALSEP (continued)

Operational status from 2 November 1973, 1300 G.m.t., to 9 November 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 367.6°K as indicated by the cable thermocouples. The sub-surface temperature is 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at the lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 2 November 1973, 1300 G.m.t., to 9 November 1973, 1300 G.m.t.

Central station	Noon of the 35th lunation at the Apollo 14 site will occur on 11 November. Power output of the radioisotope source is unvarying; and, transmitter "A" signal strength was reported between -134.5 dbm and -140.4 dbm. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF at 1503 G.m.t., 8 November, to minimize heating during lunar day operations. *Between support periods of 4 and 5 November, the instrument experienced a spurious functional change (Octal 072, Z motor ON). No CVW was noted in the Apollo 14 ALSEP downlink. The Z-motor was commanded OFF at 0618 G.m.t., 5 November, by mission control without incident.*
Active seismic experiment	The experiment is currently in STANDBY. On 8 October 1973, the experiment was commanded to ON at 0818 G.m.t. and to high bit rate ON at 0905 G.m.t. for a 30-minute passive listening mode. No significant events were observed. Geophone calibration pulses were not sent during the listening period. At 0935 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 0937 G.m.t.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is in STANDBY and present plans are to leave it in this configuration for the remainder of this lunar day. *The instrument experienced a functional change to STANDBY without ground command, as observed during the real-time support period beginning 4 November 1973.*
Charged particle lunar environmental experiment	The CPLEE was commanded to STANDBY at 1117 G.m.t., 6 November, per present plans by mode I command through the Carnarvon Tracking Station (sun angle= 23.0°). The experiment had been in OPERATE select since 19 October 1973.

Status as of 1600 G.m.t,, 8 November 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1450	1007	831	566
Total Commands to Date	18505	10554	19082	8923
Sun Angle	45.7°	51.9°	72.7°	84.9°
Input Power	65.7w	67.7w	70.8w	69.9w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE/CPLEE/SIDE/Stby	SWS & SIDE Stby	ASE OFF
Avg Thermal Plate Temp	87.9°F	100.2°F	112.0°F	104.4°F
PSE Sensor Temp (DL-07)	127.3°F	129.2°F	142.2°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	69.5°C	47.0°C
SWS Module 300 Temp (DW-13)	61.7°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Standby	Standby	N/A
CCGE Temp (DI-04)	OFF	Standby	Standby	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	61.6°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	327.9°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	331
Total Commands to Date	10472
Sun Angle	100.2°
Input Power	75.4w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby/LACE & LEAM OFF
Avg Thermal Plate Temp	120.3°F
LACE Temp (AM-41)	80.6°F
LEAM Temp (AJ-11)	186.5°F
HFE Temp Ref 1 (DH-13)	327.7°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	121.7°F

Apollo 12 ALSEP

Operational status from 2 November 1973, 1300 G.m.t., to 9 November 1973, 1300 G.m.t.

Central station	Noon of the 50th lunar day will occur on 12 November at the Apollo 12 ALSEP site. Power output from the RTG during this report period has been from 66.1 to 65.7 watts. The signal strength is between -132.5 dbm and -142.0 dbm from transmitter "B" as reported by the 30-foot antenna tracking stations. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The z-axis drive motor is OFF for lunar day operation. The PSE's sensor temperature (DL-07) returned on-scale at the beginning of real-time support on 5 November (sun angle = 4.9°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector experiment	Currently the SIDE is in STANDBY. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 6 November in an effort to preclude instrument mode changes at internal temperatures above 55°C.

ALSEP PERFORMANCE SUMMARY REPORT

16 November 1973
G.m.t.: 1300

Apollo 17 ALSEP

Sunset of the 12th lunation occurred on 15 November at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of previous lunations. Downlink RF signal strength is reported at -138.3 ± 3.3 dbm from transmitter "A". Thermoelectric power source output is 75.4 watts. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 125.0 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect free mode and tidal data with the instrument configured to seismic high gain, integrator shorted mode, bias IN, and post amplifier gain at increment 15. The experiment sensor temperature is presently stabilized at 49.207°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 1435 G.m.t., 14 November and to LSPE data format processing (high bit rate) at 1440 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. A significant event was observed on all geophones during the real-time operation. LSPE processing was terminated at 1510 G.m.t., and the instrument commanded to STANDBY select at 1513 G.m.t.

The Lunar Atmospheric Composition Experiment was commanded from STANDBY to ON at 1537 G.m.t., 15 November for lunar night. The experiment had been commanded from OFF to STANDBY during this report period at 1420 G.m.t. 11 November to maintain thermal stability of the instrument when the electronics temperature had decreased to 72.9°F at a sun angle of 122.5°. *It is planned that the LACE be commanded to the OPERATE SELECT mode, 17 November, with the high voltage ON, in an effort to determine if any change in the multiplier high voltage power supply sweep (AM-14) has occurred.*

16 November 1973
G.m.t.: 1300

Apollo 17 ALSEP (continued)

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1615 G.m.t., 12 November, when the mirror temperature (AJ-11) decreased to 165.2°F at a sun angle of 149.3°. The instrument's mirror temperature (AJ-11) currently is reading -7.7°F.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 9 November 1973, 1300 G.m.t., to 16 November 1973, 1300 G.m.t.

Central station

Sunset at the Descartes Site occurs today, 16 November. Output of the RTG is normal. The DSS-1 heater (10 watts) was commanded ON at 1509 G.m.t., 15 November, for lunar night operations when the average thermal plate decreased to 57.6°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is reported at -136.5 ± 2.5 dbm by the 30-foot antenna tracking stations.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period x-axis has responded to leveling mode commands since 4 September and long period y-axis since 19 October. The instrument's assembly temperature (DL-07) has remained off-scale HIGH throughout this reporting period. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed). 552 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.

Active seismic experiment

The Active Seismic Experiment is currently in STANDBY OFF. A 30-minute passive listening period is planned for 21 November.

Apollo 15 ALSEP

Operational status from 9 November 1973, 1300 G.m.t., to 16 November 1973, 1300 G.m.t.

Central station

Sunset of the site's 29th lunation will occur on 17 November. The RTG output power remains steady. Transmitter "A" downlink signal strength is reported between -131.0 and -137.5 dbm by the tracking stations with 30-foot antenna.

Passive seismic experiment

The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. *On 9 November, the Bermuda tracking site reported a spurious CVW (octal command 071, Y motor ON) at 0614 G.m.t. The Y motor was commanded OFF by mission control at 0736 G.m.t., 9 November, without incident. Again on 14 November the MILA tracking site reported a functional change at 0825 G.m.t. (octal command 064, gain change LPZ) from 0 db to -10 db. The instrument was re-configured to 0 db gain at 1247 G.m.t., 14 November, by mission control without further incident. The PSE's sensor temperature (DL-07) was off-scale HIGH (sun angle = 85°) at the beginning of real-time support on 9 November and returned on-scale on 13 November (DL-07 = 138.1°F, sun angle = 133.7°).* During the intermittent real-time support periods this past week no significant seismic events were noted.

Solar wind spectrometer experiment

The instrument remains in STANDBY.

Suprathermal ion detector/cold cathode gauge experiment

The instrument has been operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). *The instrument was commanded to the RESET SIDE FRAME COUNTER at 79 mode at 1242 G.m.t., 14 November in an attempt to improve the scientific data output of the CCGE. At 0416 G.m.t., 15 November, the instrument was commanded back to full automatic stepping sequence (0-127 frames). Results of the test will be analyzed to determine any change in the performance of the instrument.*

Operational status from 9 November 1973, 1300 G.m.t., to 16 November 1973, 1300 G.m.t.

Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature is 303.4°K as indicated by the cable thermocouples. The sub-surface temperature is 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 9 November 1973, 1300 G.m.t., to 16 November 1973, 1300 G.m.t.

Central station	Sunset at the Apollo 14 site will occur on 18 November. RTG power output is steady. Transmitter "A" signal strength was reported between -137.0 and -142.5 dbm. The DSS-1 heater (10 watts) will be commanded ON for lunar night operation on 18 November.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The long period y-axis has remained in the on-scale position since 22 March. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. On 12 November, the experiment was commanded to ON at 1526 G.m.t. and to high bit rate ON at 1535 G.m.t. for a passive listening mode. No significant responses were observed during the listening mode. Geophone calibration pulses were not sent during the listening mode. At 1605 G.m.t. high bit rate operation was terminated. The instrument was commanded to STANDBY at 1723 G.m.t.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently in STANDBY. The experiment will be commanded to OPERATE select on 18 November, and will be operating in the full automatic stepping sequence with Channeltron high voltages commanded ON for the remainder of this lunation.
Charged particle lunar environmental experiment	The experiment is currently in STANDBY. On 18 November the experiment will be commanded to the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of AC-03, analyzer A voltage to 2200 vdc, at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 9 November 1973, 1300 G.m.t., to 16 November 1973, 1300 G.m.t.

Central station	Sunset of the 50th lunar day will occur on 19 November. Power output from the RTG during this report period has been 65.7 watts. A signal strength of -138.0 to -141.5 dbm from transmitter "B" was reported by the tracking stations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The sensor temperature has remained off-scale HIGH since the start of real-time support on 12 November. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector experiment	Currently the SIDE is in STANDBY. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 6 November in an effort to preclude instrument mode changes at internal temperatures above 55°C. The instrument will be commanded to ON tomorrow, 17 November, for lunar night operations.

Status as of 1700 G.m.t., 15 November 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1457	1014	838	573
Total Commands to Date	18557	10586	19252	9028
Sun Angle	131.9°	137.9°	160.0°	170.9°
Input Power	65.7w	67.7w	70.8w	70.4w
Heater and Power Dumps	All OFF	All OFF	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE/SIDE/CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	94.6°F	92.1°F	86.5°F	57.6°F
PSE Sensor Temp (DL-07)	Offscale HIGH	131.6°F	125.9°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	59.4°C	37.3°C
SWS Module 300 Temp (DW-13)	62.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	Standby	N/A
CCGE Temp (DI-04)	OFF	Invalid	Standby	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	77.2°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	304.0°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	338
Total Commands to Date	10541
Sun Angle	185.9°
Input Power	75.4w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	45.5°F
LACE Temp (AM-41)	-0.5°F
LEAM Temp (AJ-11)	-7.7°F
HFE Temp Ref 1 (DH-13)	286.9°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	47.0°F

ALSEP PERFORMANCE SUMMARY REPORT

21 November 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not availabel at the following times:

	Date	GMT LOS	GMT AOS	Data Loss
Apollo 14	*15 Nov*	*2142*	*2223*	*41m*
Apollo 14	*16 Nov*	*2005*	*2127*	*1h 22m*
Apollo 14	*17 Nov*	*1915*	*2350*	*4h 35m*
Apollo 15	*18 Nov*	*1834*	*1940*	*1h 06m*
Apollo 16	*18 Nov*	*1940*	*2040*	*1h 00m*
Apollo 14	*18 Nov*	*2040*	*2140*	*1h 00m*
Apollo 17	*18 Nov*	*2140*	*2240*	*1h 00m*
Apollo 12	*18 Nov*	*2240*	*2350*	*1h 10m*

Apollo 12 ALSEP

November 19th marked the completion of four full years of continuous operation on the lunar surface by the Apollo 12 ALSEP science station. The lunar scientific station, which was deployed on 19 November 1969, has thus exceeded by three years its original design life specification. The central station continues its successful operation. The Radioisotopic Thermoelectric Generator is experiencing a progressive but gradual degradation as expected. The signal strength from the package's transmitter is essentially unchanged since its initial activation four years ago. To date more than 18617 commands have been received and executed by the central station and experiments. Currently the Apollo 12 ALSEP is in its 50th lunation.

The passive seismometer is operating as in past lunar nights, with the thermal control mode in auto ON, and the feedback loop filter OUT. No significant seismic events have been detected during the intermittent periods of phase II support this past week. The magnetometer experiment science and engineering data have been invalid since 4 June 1972. The solar wind spectrometer continues to record plasma data in the normal range mode. The suprathermal ion detector is operating with the high voltage commanded ON and is in the full automatic stepping sequence. *At 0458 G.m.t., 17 November, the Ascension Island Tracking Station observed a spurious functional change in the downlink signal (octal command 134, LSM XYO thermostat control select). The experiment was reconfigured, by command, from "Y" to "X" thermostat control select by mission control on 17 November without incident.*

21 November 1973
G.m.t.: 1300

Apollo 17 ALSEP

Midnight of the 12th lunation at Taurus Littrow lunar laboratory will occur on 22 November. The central station is operating normally. Downlink signal strength is reported at -141.5 ± 2.5 dbm from transmitter A. Except for small repetitive day/night variations, thermoelectric power source output remains essentially constant since initial operation. Automatic power management continues to distribute power for optimum thermal control. Transmission of command octal 174, to inhibit automatic selection of the redundant command signal processing chain (by internally generated 61-hour pulses) continues during real-time support periods.

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples is 110 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect free mode and tidal data with the instrument configured to seismic high gain, integrator shorted mode, bias IN, and post amplifier gain at increment 15. The experiment sensor temperature is presently stabilized at 49.207°C (slave heater ON). *On 29 November a reconfiguration of the LSG is planned in an attempt to lower the resonant frequency of the beam in an effect to improve the tidal data and achieve greater sensitivity of the free mode band. The reconfiguration and investigation will be conducted in two 5-hour time increments.*

The Lunar Seismic Profiling Experiment is in STANDBY select. The next 30-minute passive listeing period is planned for 23 November.

The Lunar Atmospheric Composition Experiment is currently ON and configured to discriminator level, LOW; filament, OFF; high voltage power supply, OFF; and back-up heater, ON. The high voltages were commanded ON during real-time support on 17 November for 4 minutes. Cursory analysis of the real-time data concluded that the multiplier high voltage power supply was still affecting the sweep high voltage (AM-44), and cross coupling into the mass data channel outputs (DM-03, DM-04, and DM-05). The high voltage was commanded OFF at 1539 G.m.t., 17 November. The LACE will remain in this present configuration until (AM-41) the electronics temperature reaches 125°F, when the experiment will be commanded OFF for this lunar day. Analysis of the anomaly is continuing.

ALSEP PERFORMANCE SUMMARY REPORT (continued)

21 November 1973
G.m.t.: 1300

Apollo 17 ALSEP

The Lunar Ejecta and Meteorites Experiment is ON and configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F and tracking the previous lunar night temperatue profile.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 16 November 1973, 1300 G.m.t., to 21 November 1973, 1300 G.m.t.

Central station

The Descartes Site is presently experiencing its 20th lunar night. Output of the RTG is normal. The DSS-1 heater (10 watts) is ON for the lunar night operations. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is reported at -134.8 ± 2.8 dbm by the 30-foot antenna tracking stations.

Passive seismic experiment

The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling mode commands since 17 November 1973. The instrument's assembly temperature was on-scale (DL-07 = 126.2°F), 17 November, at the beginning of real-time support at a sun angle of 187.1°. No significant seismic events were noted during the limited real-time support of this instrument.

Lunar surface magnetometer experiment

The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed). 556 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.

Active seismic experiment

The Active Seismic Experiment is currently in STANDBY OFF. A 30-minute passive listening period is planned for later today.

Apollo 15 ALSEP

Operational status from 16 November 1973, 1300 G.m.t., to 21 November 1973, 1300 G.m.t.

Central station	The RTG output power remains steady. Transmitter "A" downlink signal strength is reported at -134.5 ± 2.5 dbm by the tracking stations with 30-foot antenna. Sunset of the site's 29th lunation occurred on 17 November. The data subsystem's 18-hour timer outputs are occurring as expected.
Passive seismic experiment	The instrument is configured for seismic network congruity (Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. During the intermittent real-time support periods this past week no significant seismic events were noted.
Lunar surface magnetometer experiment	The experiment sensors were commanded to the 50 gamma range at 1416 G.m.t., 18 November, for lunar night-time operations. Currently the instrument has executed 1160 flip calibration sequences since activation. The experiment's y-axis sensor head remains fixed at a 180 degree position, not responding to flip cal commands, and has indicated off-scale LOW static since 20 September 1972. The x-axis and z-axis sensors are returned to the 180 degree position following each flip cal sequence to maintain sensor head synchronization.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). The CCGE data continues to be noisy and the automatic zero and calibration functions are not operating properly.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 92.9°K on 20 November as indicated by the cable thermocouples. The sub-surface temperature was 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 16 November 1973, 1300 G.m.t., to 21 November 1973, 1300 G.m.t.

Central station	Sunset at the Apollo 14 site occurred on 18 November. RTG power output is steady. Transmitter "A" signal strength was reported at -137.5 ± 1.5 dbm. The DSS-1 heater (10 watts) was commanded ON for lunar night operation at 1358 G.m.t., 18 November when the average thermal plate temperature was 53.3°F.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's heater was commanded to AUTO ON at 0535 G.m.t., on 16 November 1973 to maximize heating during lunar night operations. During real-time support on 17 November 1973 initial attempts to level the y-axis were unsuccessful, however, after subsequent attempts this axis did respond to leveling commands. The instrument's long period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. The next listening period is scheduled for 4 December 1973 when the GLA temperature (AS-03) should be above the -60°C temperature restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment was commanded to OPERATE select at 1349 G.m.t., 18 November is operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. Since 9 May 1971 intermittent positive engineering data interruptions in one section of the analog-to-digital filter are not adversely affecting the scientific outputs of the experiment. Present plans are to maintain the experiment in this mode of operation throughout the lunar night.
Charged particle lunar environmental experiment	At 1355 G.m.t., 18 November, the experiment was commanded to the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of (AC-03), analyzer A voltage, to 2200 vdc at which time the instrument will be commanded to STANDBY select.

Status as of 1500 G.m.t., 20 November 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1462	1019	843	582
Total Commands to Date	18635	10636	19355	10636
Sun Angle	186.6°	192.5°	213.6°	225.5°
Input Power	66.1w	68.5w	71.9w	69.9w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	14.1°F	31.7°F	-1.2°F	36.4°F
PSE Sensor Temp (DL-07)	126.8°F	124.4°F	124.6°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	-8.9°C
SWS Module 300 Temp (DW-13)	-9.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	Offscale HIGH	Invalid	114.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-21.9°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-40.2°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.5°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	343
Total Commands to Date	10578
Sun Angle	240.5°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	35.8°F
LACE Temp (AM-41)	-12.0°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	285.3°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	38.0°F

ALSEP PERFORMANCE SUMMARY REPORT

30 November 1973
G.m.t.: 0400

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	GMT LOS	GMT AOS	Data Loss
Apollo 12	*26 Nov*	*0948*	*1100*	$1^h\ 12^m$
Apollo 16	*26 Nov*	*1100*	*1200*	$1^h\ 00^m$
Apollo 14	*26 Nov*	*1200*	*1300*	$1^h\ 00^m$
Apollo 15	*26 Nov*	*1300*	*1352*	$0^h\ 52^m$
Apollo 14	*28 Nov*	*1347*	*1442*	$0^h\ 55^m$
Apollo 12	*28 Nov*	*1442*	*1520*	$0^h\ 38^m$
Apollo 12	*29 Nov*	*0023*	*0040*	$0^h\ 17^m$
Apollo 15	*29 Nov*	*0023*	*0040*	$0^h\ 17^m$

Apollo 17 ALSEP

Sunrise of the scientific station's 13th lunation occurred 29 November. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 76.9 watts. The downlink received signal is reported between -136.0 dbm and -144.5 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature, as measured by the HFE thermocouples, is 105.0 $\pm$ 8°K. Subsurface temperatures at 230 cm depth are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment continues to collect free mode and tidal data with the instrument configured to seismic high gain integrator shorted mode, bias IN, and post amplifier gain at increment 15. The experiment sensor temperature is presently fluctuating between 49.203°C and 49.207°C (slave heater ON). *Later today, a reconfiguration of the LSG is planned in an attempt to lower the resonant frequency of the beam to improve the tidal data and achieve greater sensitivity of the free mode band. The reconfiguration and investigation will be conducted in two 5-hour time increments.*

30 November 1973
G.m.t.: 0400

The Lunar Seismic Profiling Experiment is currently in STANDBY select. LSPE passive listening mode operations were accomplished during this reporting period as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
24 Nov	0144	0155	0225	0226	2	None
28 Nov	2216	2225	2255	2257	2	None

The next passive listening period is planned for 7 December.

The Lunar Atmospheric Composition Experiment is currently ON and configured to discriminator level, LOW; filament, OFF; high voltage power supply, OFF; and back-up heater, ON. The LACE will remain in the present configuration until (AM-41) the electronics temperature reaches 125°F, when the experiment will be commanded OFF for this lunar day.

The Lunar Ejecta and Meteorites Experiment continues to collect data of impact flux rates on the lunar surface. The instrument will remain ON until the mirror temperature (AJ-11) reaches 196.0°F, at which time it will be cycled per Apollo 17 SMEAR, ALSEP 49 R-2.

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 21 November 1973, 1300 G.m.t., to 30 November 1973, 0400 G.m.t.

Central station	Midnight of the 20th lunation occurred 23 November 1973. The DSS-1 heater (10 watts) is ON for lunar night operation. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength of -135.5 $\pm$ 1.5 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The long period y-axis has not responded to leveling commands since 17 November 1973. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 564 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	The experiment is currently STANDBY OFF. The next 30-minute passive listening period is planned for 4 December.

Apollo 15 ALSEP

Operational status from 21 November 1973, 1300 G.m.t., to 30 November 1973, 0400 G.m.t.

Central station	Midnight of the station's 29th lunation occurred 24 November. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported at -135.5 $\pm$ 2.5 dbm.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. No lunar seismic events have been observed during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The experiment sensors are in the 50 gamma range for lunar night operation. The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1168 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames). The CCGE data continues to be noisy and the automatic zero and calibration functions are still not functioning properly.
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 85.1°K on 28 November as indicated by the cable thermocouples. The sub-surface temperature was 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 21 November 1973, 1300 G.m.t., to 30 November 1973, 0400 G.m.t.

Central station	Midnight at the Apollo 14 site occurred on 26 November (35th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -136.0 dbm and -138.5 dbm. The DSS-1 heater (10 watts) remains ON for lunar night operation. *At 1040 G.m.t., on 24 November the Central Station responded to a spurious command (octal 056, DSS-1, 10-watt heater OFF). The Ascension ground station reported receipt of a CVW in the downlink. The heater was commanded ON by mode I transmission of octal 055 at 1216 G.m.t., 24 November, without incident.*
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument heater is operating in the AUTO ON mode for lunar night operation. The long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. During the limited real-time support periods of this week no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY. The next 30-minute passive listening period is planned for 4 December when the instrument temperature (AS-03) should be above the -60°C temperature restriction.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is currently operating in the full automatic stepping sequence with Channeltron high voltages commanded ON. The CCGE data continues to be normal.
Charged particle lunar environmental experiment	The experiment is currently ON in the manual mode at the -35 vdc range and automatic thermal control mode.

Apollo 12 ALSEP

Operational status from 21 November 1973, 1300 G.m.t., to 30 November 1973, 0400 G.m.t.

Central station	Midnight of the 50th lunation occurred on 27 November at the ALSEP site in the Ocean of Storms. Power output from the RTG during this report period has been between 66.0 and 65.5 watts. A signal strength of -137.5 $\pm$ 1.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) remains ON for lunar night operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The z-axis drive motor is ON for lunar night operation. The PSE sensor temperature (DL-07) has been offscale LOW during real-time support operations this reporting period. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer exepriment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	The instrument is presently operating in full automatic stepping sequence with Channeltron high voltages ON.

Status as of 1800 G.m.t., 28 November 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1470	1027	851	586
Total Commands to Date	18657	10654	19504	9169
Sun Angle	290.6°	297.2°	317.8°	330.0°
Input Power	65.5w	68.4w	71.0w	69.5w
Heater and Power Dumps	DSS-1 ON (10w)	DSS-1 ON (10w)	All OFF	DSS-1 ON (10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	9.1°F	29.3°F	-4.7°F	35.3°F
PSE Sensor Temp (DL-07)	Offscale LOW	124.2°F	124.4°F	125.8°F
LSM Internal Temp (DM-05)	Invalid	N/A	3.8°C	-8.9°C
SWS Module 300 Temp (DW-13)	-15.6°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.3°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	106.5°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.6°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-71.1°C	N/A	Offscale LOW
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.2°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	351
Total Commands to Date	10671
Sun Angle	345.0°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	34.5°F
LACE Temp (AM-41)	-12.0°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.5°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	36.0°F

APOLLO 17 LSG EXPERIMENT RESULTS

FOURTH LSG EXPERIMENT, 0400-0930 G.m.t., 30 November 1973

OBJECTIVE: To obtain a lower resonant frequency by positioning the coarse and fine screws to their extreme lower position, and also by re-positioning the mass change mechanism and/or E/W-N/S tilt servo position.

OPERATIONS: The coarse and fine screws were driven to the extreme lower position. The LSG was then configured to the open loop operation by shorting the integrator and removing the bias, and setting the post amplifier gain to the third step in seismic low gain.

The masses were then re-adjusted to all masses ON, with the beam moving to the upper stop as previously noted. Re-adjustment of the mass change mechanism followed to re-center the beam. With the beam centered at this point the LSG frequency response was approximately 1.5 Hz. The beam was re-centered several times using this technique with consistent results.

The E/W-N/S tilt servo motors were then exercised in an attempt to further reduce the instrument's resonant frequency. During these exercises frequencies as low as 1.2 Hz were noted. Real-time analysis indicated the lower frequencies were due to a beat frequency between the beam and gimbal periods.

The beam was then re-centered to its final position by using the mass change mechanism. A frequency check was performed (1630 G.m.t., 30 November) and observed to be 1.5 Hz by using the bias command with the integrator normal.

CONCLUSION: The resonant frequency appeared to decrease from a determined 2.2 Hz to an estimated 1.5 Hz. If the estimated 1.5 Hz resonant frequency is correct, then the LSG sensitivity will have been improved by a factor of 2.

The reading of vertical tides at the conclusion of the experiment was 65 μgals which is close to the value for theoretical tides of "this point in time" for Taurus-Littrow. Lunar tide readings resulting from the present reconfiguration will be tracked to evaluate improvements in instrument operation.

The subsequent support periods should provide evidence of thermal seismic events and a data point to evaluate the increase in lunar tides.

APOLLO 17 LSG EXPERIMENT RESULTS (concluded)

Final LSG configuration is seismic high gain, integrator normal mode, bias IN, post amplifier gain at increment 15, and the tilt servo motors in an intermediate position.

Magnetic tapes subsequent to this reconfiguration will be expedited to the Principal Investigator to insure quantitative analysis of resulting scientific data. The report of the operations and results will be prepared by the PI and submitted to JSC for review.

W. F. Eichelman
Experiments Manager

ALSEP PERFORMANCE SUMMARY REPORT

7 December 1973
G.m.t.: 1300

Remote site coverage for recording of ALSEP downlink data was not available at the following times:

	Date	GMT LOS	GMT AOS	Data Loss
Apollo 12	*29 Nov*	*1306*	*1450*	1^h44^m
Apollo 12	*30 Nov*	*1225*	*1342*	1^h17^m
Apollo 14	*30 Nov*	*1342*	*1500*	1^h18^m
Apollo 14	*01 Dec*	*1249*	*1308*	0^h19^m
Apollo 15	*01 Dec*	*1249*	*1308*	0^h19^m
Apollo 16	*01 Dec*	*1249*	*1308*	0^h19^m
Apollo 17	*01 Dec*	*1249*	*1308*	0^h19^m
Apollo 12	*01 Dec*	*1249*	*1515*	2^h26^m
Apollo 14	*01 Dec*	*1515*	*1607*	0^h52^m

Apollo 17 ALSEP

Sunrise of the scientific station's 13th lunation occurred 29 November. The central station's data subsystem electronics and thermal plate temperatures, as well as the station's external structural temperatures continue to rise within anticipated limits. Power from the RTG is 75.0 watts. The downlink received signal is reported between -135.0 dbm and -139.5 dbm. The procedure of inhibiting the package's internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods.

The Heat Flow Experiment continues to operate normally, with periodic ring bridge surveys being accomplished. The HFE is currently operating in the gradient mode, with all sensors being sampled in full sequence. Lunar surface temperature, as measured by the HFE thermocouples is 388.0 $\pm$ 8°K. Subsurface temperatures at 230 cm depth are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment (Reference attached Apollo 17 LSG Test Results). The experiment's sensor temperature is presently stabilized at 49.207°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The next 30-minute passive listening period is planned for later today.

The Lunar Atmospheric Composition Experiment is currently OFF. The LACE was commanded OFF for lunar day operation on 2 December when the electronics temperature, AM-41, reached 109.3°F (sun angle = 32.6°).

7 December 1973
G.m.t.: 1300

The Lunar Ejecta and Meteorites Experiment is presently OFF. Further operation of the LEAM will be per Apollo 17 ALSEP SMEAR 49 R-3 (instrument turn-on when mirror temperature, AJ-11, is 180.0°F, turn-off when AJ-11 reaches 196.0°F).

It is requested that any organization having comments, questions, or suggestions concerning this report, contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 30 November 1973, 0400 G.m.t., to 7 December 1973, 1300 G.m.t.

Central station	Sunrise of the 21st lunation occurred 1 December 1973. The DSS-1 heater (10 watts) was commanded OFF on 1 December. The thermoelectric power source output is normal. The 18-hour timer output pulses continue to be inhibited. The 30-foot antenna tracking stations report a signal strength between -134.0 dbm and -141.0 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). At the start of real-time support on 6 December it was noted that the instrument's sensor temperature, DL-07, was indicating offscale high (sun angle = 66.3°). The uncage/arm fire circuit is configured to the OT state. The long period y-axis again responded to leveling commands on 1 December 1973. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM science data, observed during real-time support periods, have been valid since 17 August 1973. The instrument continues to execute flip calibrations (with cal rasters observed) and responds to filter commands. 572 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	*The experiment is currently STANDBY OFF. The 30-minute passive listening periods have been terminated per Apollo 16 ALSEP SMEAR 27. The experiment will remain in STANDBY OFF with periodic checks (ASE ON, HBR ON, HBR OFF, ASE STANDBY OFF) to verify instrument operation.*

Apollo 15 ALSEP

Operational status from 30 November 1973, 0400 G.m.t., to 7 December 1973, 1300 G.m.t.

Central station	Sunrise of the station's 30th lunation occurred 2 December 1973. Power from the RTG continues steady. The transmitter "A" downlink signal strength is reported between -134.0 dbm and -138.9 dbm.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's uncage/arm fire circuitry has been cycling per the normal 18-hour timer output pulse functions. No lunar seismic events have been observed during the limited real-time support of this instrument. *At 0751 G.m.t., 4 December, the Hawaii tracking site reported that the PSE had responded to a spurious functional change (octal 065, short period calibration status ON). As this is a status change only and the 18-hour timer pulses are functioning properly, at the decision of mission control, no ground commands were executed to change the status. Again at 2330 G.m.t., 5 December, the instrument responded to a spurious command (octal 102, coarse level sensor IN). The Canary Island tracking station confirmed receipt of the command in the ALSEP downlink. The instrument was re-configured to coarse level sensor OUT at 1508 G.m.t., 5 December by command through mission control.*
Lunar surface magnetometer experiment	*At the start of real-time support on 24 November 1973 it was noted that the instrument had experienced a functional change to the 100 gamma range without a CVW reported in the downlink. Since it was planned to command the instrument to the 100 gamma range for lunar day operation later in that week, no reconfiguration was attempted.* The y-axis sensor head is fixed at the 180 degree position; does not respond to flip cal commands; and has indicated off-scale LOW (static) since 20 September 1972. The instrument has executed 1180 flip calibration sequences since activation.
Solar wind spectrometer experiment	The instrument remains in STANDBY.

Apollo 15 ALSEP (continued)

Operational status from 30 November 1973, 0400 G.m.t., to 7 December 1973, 1300 G.m.t.

Suprathermal ion detector/cold cathode gauge experiment	Currently the SIDE is in STANDBY. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment STANDBY was initiated on 5 December to insure the instrument does not exceed the 85°C operational limit during the remainder of the lunar day (Apollo 15 ALSEP, SMEAR 47).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally (TREF 2 has been invalid since 29 May 1972). The lunar surface temperature was 356.7°K on 6 December as indicated by the cable thermocouples. The sub-surface temperature was 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 30 November 1973, 0400 G.m.t., to 7 December 1973, 1300 G.m.t.

Central station

Sunrise at the Apollo 14 site occurred on 3 December (36th lunation). RTG power output is steady. Transmitter "A" signal strength was reported between -139.0 dbm and -144.0 dbm. Data processor "Y" was verified by command and DSS-1 heater was commanded OFF for lunar day operation on 3 December 1973. *At 1110 G.m.t., on 30 November the Central Station responded to a spurious command (octal 24, Contingency Heater ON). The Guam tracking station reported receipt of a CVW in the downlink. The heater was commanded OFF by mission control at 1521 G.m.t., 2 December, without incident.*

Passive seismic experiment

The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's heater is operating in the AUTO ON mode. The long period y-axis has remained in the on-scale position since 22 March 1973. The instrument's long-period z-axis has not displayed valid data nor responded to commands since 17 November 1972. *At the start of real-time support on 4 December 1973 it was noted that the instrument short period calibration status had changed from OFF to ON and the uncage status had changed from UNCAGED to OT. This functional change occurred without a CVW in the downlink. The short period calibration status was returned to OFF and the uncage to UNCAGED status by mission control at 1613 G.m.t. on 5 December, without incident.* During the limited real-time support periods of this week no significant seismic events have been noted.

Active seismic experiment

The experiment is currently in STANDBY. The 30-minute passive listening periods have been terminated (Apollo 14 ALSEP SMEAR 86). The experiment will remain in STANDBY with periodic checks (ASE ON, HBR ON, HBR OFF, ASE STANDBY) to verify instrument operation.

Suprathermal ion detector/cold cathode gauge experiment

The instrument is in STANDBY and current plans are to leave it in this configuration for the remainder of this lunar day. *The instrument experienced a functional change to STANDBY at 0505 G.m.t., 4 December without ground command, as observed by the Hawaii tracking site. The instrument has experienced this functional change during previous lunations at approximately the same sun angle.*

Apollo 14 ALSEP (concluded)

Operational status from 30 November 1973, 0400 G.m.t., to 7 December 1973, 1300 G.m.t.

Charged particle lunar environmental experiment	The CPLEE was commanded to STANDBY at 1936 G.m.t., 3 December per present plans (sun angle = 10.6°). The experiment had been in OPERATE SELECT since 18 November 1973.

Apollo 12 ALSEP

Operational status from 30 November 1973, 0400 G.m.t., to 7 December 1973, 1300 G.m.t.

Central station	Sunrise of the 51st lunar day occurred on 4 December at the ALSEP site in the Ocean of Storms. Power output from the RTG during this report period has been a constant 65.7 watts. A signal strength between -135.5 dbm and -141.5 dbm from transmitter "B" was reported by the tracking stations. The DSS-1 heater (10 watts) was commanded OFF for lunar day operations on 4 December.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The z-axis drive motor was commanded OFF for lunar day operation on 4 December. The PSE sensor temperature (DL-07) was on-scale at the start of real-time support operations on 4 December (sun angle = 2.5°). No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Currently the SIDE is STANDBY OFF. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF was initiated on 5 December in an effort to preclude instrument mode changes at internal temperatures above 55°C.

Status as of 1800 G.m.t., 6 December 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1478	1035	859	594
Total Commands to Date	18719	10712	19637	9267
Sun Angle	27.0°	33.4°	54.1°	66.3°
Input Power	65.7w	67.7w	70.3w	69.0w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE/SIDE/CPLEE Stby	SWS/SIDE Stby	ASE OFF
Avg Thermal Plate Temp	77.9°F	84.6°F	103.1°F	100.6°F
PSE Sensor Temp (DL-07)	126.4°F	125.3°F	136.0°F	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	61.0°C	42.4°C
SWS Module 300 Temp (DW-13)	48.8°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	84.3°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	364.0°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	35.4°C	N/A	114.3°C
HFE Temp Ref 1 (DH-13)	N/A	N/A	320.4°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	359
Total Commands to Date	11526
Sun Angle	81.0°
Input Power	75.0w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby, LEAM/LACE OFF
Avg Thermal Plate Temp	119.5°F
LACE Temp (AM-41)	80.0°F
LEAM Temp (AJ-11)	172.8°F
HFE Temp Ref 1 (DH-13)	328.7°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	120.4°F

ALSEP PERFORMANCE SUMMARY REPORT

14 December 1973
G.m.t.: 1300

The Apollo 17 ALSEP started into its second year of lunar operation on December 12th. The scientific package which was designed to operate on the moon for a minimum of two years, complimenting the four other operational ALSEPs, continues to transmit an uninterrupted flow of data to earth.

Apollo 17 ALSEP

The Heat Flow Experiment (HFE) continues operating in the gradient mode with all sensors being sampled in full sequence, and periodic ring bridge surveys being accomplished. Lunar surface temperature, as measured by the HFE thermocouples is 204 ± 8°K. Subsurface temperatures at 230 cm depth are 256.5°K at probe #1 and 256.8°K at probe #2.

The Lunar Surface Gravimeter Experiment (LSG) was exercised 7 and 8 December to test whether or not the instrument's high gain amplifier system was going into oscillation. The tests appeared to have little, if any effect, on the output of the LSG's tidal and free modes data. Each test was accomplished without incident, and the experiment functioned properly to those commands requested.

The initial test, 7 December, was to verify the post amplifier gain effects on the instrument's feedback loop. The LSG post amplifier gain was commanded to increment 8. The LSG's tidal and free modes data oscillations appeared unchanged. The experiment's centering point voltage also continued to oscillate. The LSG was subsequently operated at post amplifier gain of increment 15 on 8 December.

The instrument was then commanded to its integrator short mode twice during a 90 minute period. The integrator appeared to be functioning properly, removing the long time constant that effects the integrator circuit. The test of the integrator circuit also indicated no change to the output of the LSG's tidal and free modes data.

The conclusion was that the LSG be re-configured to its open loop mode of operation (seismic high gain operation). This re-configuration was accomplished at 1525 G.m.t., 11 December, per Apollo 17 ALSEP, SMEAR 59. The LSG is to be operated in the open loop mode for an indefinite period of time. Interpretation of real-time data samples (i.e., analog and Helicorder strip chart recordings) by the PI will be the determining factor in this mode of operation.

The LSG is operating and configured for seismic data collection as follows: Seismic high gain, integrator shorted mode, bias OUT, post amplifier gain at increment 15, the coarse and fine screws driven to the extreme lower position, and the tilt servo motors in an intermediate position.

14 December 1973
G.m.t.: 1300

The Lunar Seismic Profiling Experiment (LSPE) is currently in STANDBY select. LSPE passive listening mode operations were accomplished during this reporting period as follows:

Date	LSPE ON G.m.t.	HBR ON G.m.t.	HBR OFF G.m.t.	LSPE STBY G.m.t.	Geophone Cals	Events
07 Dec	1724	1730	1800	1806	2	Responses
12 Dec	1601	1615	1645	1648	2	None

The next passive listening period is planned for 18 December 1973.

The Lunar Atmospheric Composition Experiment (LACE) is in STANDBY. The experiment had been commanded from OFF to STANDBY during this report period at 1534 G.m.t., 11 December, to maintain thermal stability of the instrument. At this time the electronics temperature had decreased to 56.7°F at a sun angle of 141.7°. The instrument will be commanded ON for the remainder of this lunation on 15 December. The LACE electronics temperature (AM-41) is currently 97.0°F.

The Lunar Ejecta and Meteorites Experiment (LEAM) is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The LEAM was commanded ON for the remainder of this lunation at 1536 G.m.t., 11 December, when the mirror temperature (AJ-11) decreased to 179.0°F (Apollo 17 ALSEP, SMEAR 49 R-3) at a sun angle of 141.7°. The instrument's mirror temperature (AJ-11) currently is reading 156.6°F.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 7 December 1973, 1300 G.m.t., to 14 December 1973, 1300 G.m.t.

Central station	Noon of the 21st lunar day occurred on 8 December at the Descartes Site. The DSS-1 heater (10 watts) is OFF for lunar day operations. The 18-hour output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The 30-foot antenna tracking stations report a signal strength between -134.5 dbm and -139.5 dbm from transmitter "B".
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The instrument's sensor temperature (DL-07) has indicated off-scale HIGH since 6 December 1973. No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	*The LSM continues in full operational mode. All data analyzed by the PI since 17 August 1973 substantiates the experiment's satisfactory operation in the accumulation of scientific data.* The instrument has accomplished 578 flip calibration sequences since activation.
Active seismic experiment	The experiment is currently in STANDBY OFF and present operations are per Apollo 16 ALSEP, SMEAR 27.

Apollo 15 ALSEP

Operational status from 7 December 1973, 1300 G.m.t., to 14 December 1973, 1300 G.m.t.

Central station

Noon of the station's 30th lunation occurred on 9 December. Transmitter "A" downlink signal strength is reported between -133.5 dbm and -138.0 dbm.

Passive seismic experiment

The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. At the start of real-time support on 11 December the instrument's sensor temperature (DL-07) was off-scale HIGH (sun angle 87.5°).

Lunar surface magnetometer experiment

The LSM's scientific and engineering data became incoherent following real-time operations 9 December, 1600 G.m.t., and the subsequent real-time support operations 10 December, 1500 G.m.t. Listed below is the command activity associated with the LSM anomaly to date.

DATE/TIME (G.m.t.)	*ACTIVITY*
10 Dec/1511	*LSM commanded OFF.*
11 Dec/1618-1639	*LSM exercised (i.e., filter OUT, flip cal INHIBIT OFF/ON, flip cal INITIATE, etc.) without successful results. Commanded to STANDBY.*
12 Dec/1439-1506	*Experiment commanded ON and again exercised without positive results. Experiment remains ON.*
13 Dec/1445-1604	*LSM exercised without success.*

Subsequent conversation with the PI points out the fact that as long as the instrument's reference voltage telemetry point remains incorrect there is no method of interpreting the experiment's present data output. It is planned to leave the LSM ON throughout the lunar night, and to continue the investigation of this anomaly.

Operational status from 7 December 1973, 1300 G.m.t., to 14 December 1973, 1300 G.m.t.

Solar wind spectrometer experiment	The instrument remains in STANDBY (Apollo 15 ALSEP, SMEAR 46).
Suprathermal ion detector/cold cathode gauge experiment	The instrument is currently collecting data in its full operational configuration. Cyclic commanding of the experiment was discontinued for the remainder of this lunar day on 12 December (Apollo 15 ALSEP, SMEAR 47). *A special scientific data gathering period was conducted on 8 December 1973 to observe those low energy data counts which appear some 33 hours prior to lunar noon. Cursory results of the test appear to have verified the PI's preliminary assumptions of these energy phenomena.*
Heat flow experiment	The HFE is operating in the full gradient mode. The lunar surface temperature was 341.5°K on 13 December as indicated by the cable thermocouples. The sub-surface temperature was 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 250.9°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 7 December 1973, 1300 G.m.t., to 14 December 1973, 1300 G.m.t.

Central station	Noon of the 36th lunation at the Apollo 14 site occurred on 11 December. Transmitter "A" signal strength was reported at -138.4 ± 2.9 dbm. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's heater was commanded to FORCED OFF at 1605 G.m.t., 7 December, to minimize heating during lunar day operations. During this limited real-time support period no significant seismic events have been noted.
Active seismic experiment	The experiment is currently in STANDBY and present operations are per Apollo 14 ALSEP, SMEAR 86.
Suprathermal ion detector/cold cathode gauge experiment	The experiment is OFF and present plans are to leave it in this configuration the remainder of the lunar day to preclude instrument mode changes at elevated temperatures.
Charge particle lunar environmental experiment	The CPLEE is currently in STANDBY select. *At 0146 G.m.t., 10 December 1973, the instrument responded to a spurious command (octal 052, operational power ON). The Ascension Island tracking station confirmed receipt of the CVW in the ALSEP downlink signal. The CPLEE was returned to STANDBY by Mode I command at 0227 G.m.t., 10 December 1973, without incident.* Present plans are to leave the experiment in STANDBY select until after sunset of this lunation (18 December 1973).

Apollo 12 ALSEP

Operational status from 7 December 1973, 1300 G.m.t., to 14 December 1973, 1300 G.m.t.

Central station	Noon of the 51st lunar day occurred on 11 December at the site in the Ocean of Storms. The signal strength is -139.5 ± 2.5 dbm from transmitter "B" as reported by the tracking stations. The DSS-1 heater (10 watts) is OFF for lunar day operations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The PSE's sensor temperature (DL-07) was off-scale HIGH at the beginning of real-time support on 11 December (sun angle 87.7°). No significant seismic events were noted during the periodic real-time support periods of this instrument.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument is currently in the normal gain mode and is recording solar wind plasma data for subsequent long-term analysis.
Suprathermal ion detector experiment	Currently the SIDE is OFF. Cyclic commanding of the instrument in the full automatic stepping sequence with Channeltron high voltages ON to experiment power OFF is in effect to preclude instrument mode changes at internal temperatures above 55°C. *During real-time support on 8 December, the instrument experienced an unexpected mode register load of X10 at an internal temperature of 54.6°C and a sun angle of 48°. The experiment was commanded to OFF at 0928 G.m.t., 8 December, and remained OFF until real-time support on 9 December to allow the instrument to cool down.*

Status as of 1700 G.m.t., 13 December 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1485	1042	866	601
Total Commands to Date	18789	10743	19821	9344
Sun Angle	111.4°	117.5°	138.5°	150.5°
Input Power	65.3w	67.7w	70.3w	68.6w
Heater and Power Dumps	All OFF	All OFF	All OFF	All OFF
Experiment Status	SIDE OFF	ASE/SIDE/CPLEE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	96.1°F	106.8°F	105.8°F	80.8°F
PSE Sensor Temp (DL-07)	Offscale HIGH	136.1°F	Offscale HIGH	Offscale HIGH
LSM Internal Temp (DM-05)	Invalid	N/A	Invalid	43.5°C
SWS Module 300 Temp (DW-13)	66.1°C	N/A	Standby	N/A
SIDE Temp (DI-05)	OFF	Invalid	84.3°C	N/A
CCGE Temp (DI-04)	OFF	Invalid	347.4°K	N/A
CPLEE Elect Temp (AC-06)	N/A	Standby	N/A	N/A
ASE GLA Temp (AS-03)	N/A	82.0°C	N/A	114.3°C
HFE Temp Ref 1 (DH-13)	N/A	N/A	320.6°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	366
Total Commands to Date	11714
Sun Angle	165.9°
Input Power	75.3w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE/LACE Stby
Avg Thermal Plate Temp	54.3°F
LMS Temp (AM-41)	97.0°F
LACE Temp (AM-41)	156.6°F
HFE Temp Ref 1 (DH-13)	299.2°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	55.2°F

ALSEP PERFORMANCE SUMMARY REPORT

21 December 1973
G.m.t.: 1300

An ALSEP status report will not be published on 28 December in observance of the holidays. The report to be published on 4 January 1974 will include the previous two weeks of ALSEP operations.

Apollo 17 ALSEP

Sunset of the 13th lunation occurred on 14 December at Taurus Littrow. The central station is operating normally with the automatic power management circuit functioning as designed. The structural components temperatures are tracking the temperature profile of previous lunations. The procedure of inhibiting the internally generated 61-hour pulse continues with the command (octal 174) being sent to the command decoder switch during real-time support periods. Downlink RF signal strength is reported at -141.5 ± 3.5 dbm from transmitter "A".

The Heat Flow Experiment is presently operating in the gradient mode and all sensors are being sampled in full sequence. Ring bridge surveys are being achieved on a periodic basis. Lunar surface temperature, as measured by the HFE thermocouples, is 110.0 ± 8°K. At a depth of 230 cm, the subsurface temperatures are 256.5°K at probe #1 and 256.9°K at probe #2.

The Lunar Surface Gravimeter Experiment is operating in the open loop mode. The instrument is configured to seismic high gain, integrator shorted mode, bias OUT, post amplifier gain at increment 15, the coarse and fine screws driven to the extreme lower position, and the tilt servo motors in an intermediate position. The experiment sensor temperature is presently stabilized at 49.207°C (slave heater ON).

The Lunar Seismic Profiling Experiment is in STANDBY select. The experiment was commanded ON at 0623 G.m.t., 19 December, and to LSPE data format processing (high bit rate) at 0630 G.m.t., for a thirty-minute passive listening period. Two geophone calibration pulses were sent during the listening period. A significant event was observed on all geophones during the real-time operation. LSPE processing was terminated at 0700 G.m.t., and the instrument was commanded to STANDBY select at 0701 G.m.t.

The Lunar Atmospheric Composition Experiment was commanded from STANDBY to ON at 1440 G.m.t., 14 December, for lunar night. The instrument is configured to discriminator level, LOW; filament, OFF; high voltage power supply, OFF; and back-up heater, ON. The electronics temperature (AM-41) is currently 3.2°F.

21 December 1973
G.m.t.: 1300

Apollo 17 ALSEP (continued)

The Lunar Ejecta and Meteorites Experiment is configured to measure impact flux rates on the lunar surface. The experiment's periodic calibrate pulses are occurring as anticipated. The instrument's mirror temperature (AJ-11) currently is reading -17.4°F.

It is requested that any organization having comments, questions, or suggestions concerning this report contact R. Miley, Science Requirements Branch, TN3, telephone 483-5067.

Apollo 16 ALSEP

Operational status from 14 December 1973, 1300 G.m.t., to 21 December 1973, 1300 G.m.t.

Central station	Sunset at the Descartes Site occurred on 16 December for the 21st lunar day. The DSS-1 heater (10 watts) was commanded ON at 1525 G.m.t., 15 December, for lunar night operations when the average thermal plate decreased to 47.9°F. The 18-hour timer output pulses continue to be inhibited per the agreed operational plan initiated 6 May 1972. The signal strength from transmitter "B" is reported between -133.5 and -141.5 dbm by the 30-foot antenna tracking stations.
Passive seismic experiment	The instrument is configured for seismic network congruity (thermal control, AUTO ON; component gains, 0 db; and feedback loop filter OUT). The uncage/arm fire circuit is configured to the OT state. The instrument's assembly temperature (DL-07) returned to on-scale on 16 December (Temp = 126.2°F, Sun Angle = 186.7°). No significant seismic events were noted during the limited real-time support of this instrument.
Lunar surface magnetometer experiment	The LSM data have been valid since 17 August 1973. 584 flip calibration sequences have been executed and verified by the experiment's engineering data since activation.
Active seismic experiment	The Active Seismic Experiment is currently in STANDBY OFF. Present operations are per Apollo 16 ALSEP, SMEAR 27.

Apollo 15 ALSEP

Operational status from 14 December 1973, 1300 G.m.t., to 21 December 1973, 1300 G.m.t.

Central station	Sunset of the site's 30th lunation occurred on 17 December. Transmitter "A" downlink signal strength is reported as -135.0 ± 2 dbm by the tracking stations with 30-foot antenna.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The uncage/arm fire circuitry is cycling normally as a result of the central station's data subsystem timer outputs. The PSE's sensor temperature (DL-07) returned on-scale on 14 December. *During the real-time support period of 17 December a significant short period seismic event was noted beginning at 1432 G.m.t. (Ref. Apollo 14 ALSEP).*
Lunar Surface magnetometer experiment	The instrument is currently ON. All engineering and science data continue to be incoherent. Investigation of the anomaly, which occurred on 10 December 1973, continues.
Solar wind spectrometer experiment	The instrument remains in STANDBY.
Suprathermal ion detector/cold cathode gauge experiment	The instrument has been operating with the Channeltron high voltages commanded ON and in full automatic stepping sequence (0-127 frames).
Heat flow experiment	The instrument measurement, TREF 1, is operating normally. The lunar surface temperature is 92.2°K as indicated by the cable thermocouples. The sub-surface temperature is 253.4°K at the bottom of the lowest section of probe #1. Probe #2 indicated a temperature of 251.0°K at its lower-most point. Ring bridge surveys are obtained periodically.

Apollo 14 ALSEP

Operational status from 14 December 1973, 1300 G.m.t., to 21 December 1973, 1300 G.m.t.

Central station	Sunset at the Apollo 14 site occurred on 18 December. Transmitter "A" signal strength was reported as -135.0 to -141.5 dbm from the 30-foot tracking stations. The DSS-1 heater (10 watts) was commanded ON for lunar night operation on 17 December.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The instrument's heater was commanded to ON at 1515 G.m.t., 15 December, for lunar night operations. *During the real-time support period of 17 December a significant short period seismic event was noted beginning at 1414 G.m.t. (Ref. Apollo 15 ALSEP).*
Active seismic experiment	The experiment is currently in STANDBY. Present operations are per Apollo 14 ALSEP, SMEAR 86.
Suprathermal ion detector/cold cathode gauge experiment	The instrument was commanded ON at 1413 G.m.t., 17 December, and is operating in the full automatic stepping sequence with Channeltron high voltages commanded ON for the remainder of this lunation.
Charged particle lunar environmental experiment	The experiment was commanded ON at 1418 G.m.t., 17 December, and is operating in the manual mode at the -35 vdc range and automatic thermal control mode. It is planned to leave the experiment in this configuration pending possible degradation of AC-03, analyzer A voltage to 2280 vdc, at which time the instrument will be commanded to STANDBY select.

Apollo 12 ALSEP

Operational status from 14 December 1973, 1300 G.m.t., to 21 December 1973, 1300 G.m.t.

Central station	Sunset of the 51st lunar day occurred on 19 December. The DSS-1 heater (10 watts) was commanded ON for lunar night operation on 19 December. A signal strength of -138.0 to -142.5 dbm from transmitter "B" was reported by the 30-foot tracking stations.
Passive seismic experiment	The instrument is configured for seismic network congruity (Ref. Apollo 16 ALSEP). The sensor temperature (DL-07) returned on-scale at the start of real-time support on 19 December. The z-axis drive motor was commanded ON for lunar night operation on 19 December. No significant seismic events were noted during the periodic real-time support periods.
Lunar surface magnetometer experiment	Scientific and engineering data outputs remain invalid.
Solar wind spectrometer experiment	The instrument remains in the normal gain mode and is recording solar wind plasma data.
Suprathermal ion detector experiment	Currently the SIDE is in the full automatic stepping sequence with Channeltron high voltages ON. The instrument was commanded to ON at 1351 G.m.t., 17 December, for lunar night operations.

Status as of 1700 G.m.t., 20 December 1973, was as follows:

TM POINT	APOLLO 12 ALSEP	APOLLO 14 ALSEP	APOLLO 15 ALSEP	APOLLO 16 ALSEP
Total Days of Operation	1492	1049	873	608
Total Commands to Date	18870	10798	19972	9457
Sun Angle	197.8°	204.3°	224.9°	236.7°
Input Power	65.6w	68.5w	71.4w	69.5w
Heater and Power Dumps	DSS-1 ON(10w)	DSS-1 ON(10w)	All OFF	DSS-1 ON(10w)
Experiment Status	All ON	ASE Stby	SWS Stby	ASE OFF
Avg Thermal Plate Temp	11.3°F	30.5°F	-3.1°F	35.8°F
PSE Sensor Temp (DL-07)	126.5°F	124.4°F	124.7°F	125.9°F
LSM Internal Temp (DM-05)	Invalid	N/A	Invalid	-8.9°C
SWS Module 300 Temp (DW-13)	-13.1°C	N/A	Standby	N/A
SIDE Temp (DI-05)	4.83°C	Invalid	6.6°C	N/A
CCGE Temp (DI-04)	HIGH	Invalid	114.3°K	N/A
CPLEE Elect Temp (AC-06)	N/A	-22.7°C	N/A	N/A
ASE GLA Temp (AS-03)	N/A	-53.2°C	N/A	OFF
HFE Temp Ref 1 (DH-13)	N/A	N/A	283.4°K	OFF

TM POINT	APOLLO 17 ALSEP
Total Days of Operation	373
Total Commands to Date	11842
Sun Angle	252.0°
Input Power	76.9w
APM Status (AB-13)	ON
Power Dump Status (AB-14)	All OFF
Experiment Status	LSPE Stby
Avg Thermal Plate Temp	32.4°F
	3.2°F
LEAM Temp (AJ-11)	-17.4°F
HFE Temp Ref 1 (DH-13)	286.1°K
LSG Temp (DG-04)	49.2°C
LSP Temp (AP-01)	34.0°F

MERRY CHRISTMAS

HAPPY NEW YEAR