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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

# DATA ACQUISITION PLAN

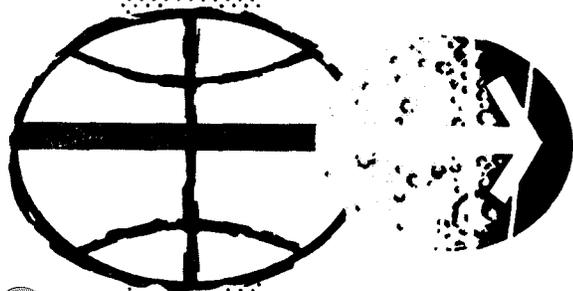
## APOLLO 15 (MISSION J-1)

(AS-510/112/LM-10/ALSEP Array A-2/P&FS)

Prepared by:

FLIGHT SUPPORT DIVISION

MANNED SPACECRAFT CENTER  
HOUSTON, TEXAS



DB 2473

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DATA ACQUISITION PLAN

Apollo 15

(Mission J-1)

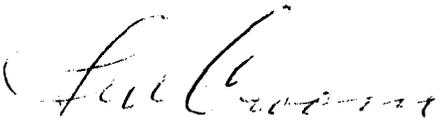
(AS-510/112/LM-10/ALSEP Array A-2/P&FS)

March 5, 1970

This is the original issue of the Apollo 15 DAP. Contents and format are similar to previous DAP's. Appropriate ALSEP (Apollo Lunar Surface Experiment Package) and Particles & Fields Subsatellite (P&FS) annex handbooks for this mission are listed in the reference matrix (Table I, page 6) and described in the annex descriptions.

Table I (page 6) designates the date of publication and revision status of the annex documents listed and described in this DAP.

Approved by:



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## 1.0 Introduction

This document is published by Manned Spacecraft Center, Flight Support Division, Operations Support Branch, Requirements Section, Code FS43, Telephone 483-2601. Requirements contained in this document and its annexes represent official MSC mission support requirements. The order of precedence defined in this document shall prevail for all mission support planning. Cases of conflict should be referred to this office for resolution. Requests for support outside of official channels shall be considered information only, and the requestor referred to official channels for submission of validated requirements.

This document and its annexes are published as a supplement to the AS-V PSRD for definition of MSC Flight Operations Mission requirements for configuration and utilizations of the instrumentation facilities and basic resources identified in the PSRD. The purpose of this document are:

1. To define for support agencies external to MSC those documents containing mission configuration and utilization requirements,
2. Give a description of the contents of each document and establish a precedence where similar or redundant information is contained in more than one document, and
3. Serve as a control document for ready reference in determining the status of each document.

Some of the information in the annexes to this document is contained in other documents; there is some redundancy even in the annexes as a result of the specialized nature of the individual documents and the utilization made of the documents; some information is contained which requires no support by agencies external to MSC.

## 2.0 Issue and Revision

This DAP is issued for and is applicable to Apollo 15 only. The DAP for each mission is issued approximately T-6 months, and revisions are issued as necessary.

### 3.0 Late Change Procedure

The only annex revisions that are required to be sent out as FSR's after T-45 days are those that have not been previously coordinated via PCR's or other such channels. Those changes that have been so coordinated will be handled normally. DAP revisions will be issued as described in paragraph 2.0.

### 4.0 Annex Revision Status

Table 1 is given as a ready reference for determining the revision status of applicable annexes and is updated in each DAP revision to include revisions of annexes which are issued concurrently with that revision of the DAP. Holders of annexes which are not updated in accordance with this table do not have current documents, and should request updates from their point of distribution.

TABLE I

DOCUMENT	REVISION	REVISION	REVISION	REVISION	REVISION	REVISION	REVISION
Data Acquisition Plan (DAP) Apollo 15	Orig. 3/5/71				Orig. 3/5/71		
Annex B - TIM Data Format Control Book	Orig. 10/28/70	Rev 1 1/22/71			Rev 1 1/22/71		
Annex B-2 ALSEP/P&FS Telemetry Data Format Control Book	Orig. 5/15/70	Rev 1 11/3/70			Rev 1 11/3/70		
Annex C - CMD Data Format Control Book*	Rev 5 (Reissue) 1/28/70	Rev 5 Chg. 1 5/28/70	Rev 5 Chg. 2 7/23/70	Rev 5 Chg. 3 10/10/70	Rev 5 Chg. 4 2/22/71		
Annex C-2 - ALSEP/P&FS Data Format Control Book*	Original 9/14/70	Rev 1 2/22/71			Rev 1 2/22/71		
Annex D - TRK Data Format Control Book*	Rev 5 (Reissue) Jan 1970	Rev 6 August 1970			Rev 6 August 1970		
Annex E VOL 1 RSDPPR Manual *	Rev 1, Chg 1 App AS-510 7/15/70	Rev 1, Chg 2 App AS-510 8/3/70	Rev 1, Chg 3 App AS-510 9/1/70		Rev 1, Chg 3 App AS-510 9/1/70		
	Rev 1, Chg 1 App AS-510 7/1/70	Rev 1, Chg 1 App AS-511 9/1/70	Rev 1, Chg 2 App AS-510 9/28/70		Rev 1, Chg 2 App AS-510 9/28/70		
Annex E-2 - ALSEP/P&FS RSDPPR Manual*	Original 9/15/70	Change 1 12/18/70			Change 1 12/18/70		
Annex F - Validation Testing & Support Manual*	Change 2 12/11/69	Rev A 7/24/70	Rev A Chg 1 12/14/70		Rev A Chg 1 12/14/70		
Annex H - Apollo Ships Central Data Processing*	Rev 1 Chg 1 6/21/68				Rev 1 Chg 1 6/21/68		
FORB*	Rev 20 8/14/70	Rev 21 9/4/70	Rev 22 3/15/71		Rev 22 3/15/71		

\*Indicates Generic Document - All changes are posted regardless of Mission Effectivity.

5.0 Definition

5.1 Annex B

Telemetry Data Format Control Book

5.1.1 Description

This annex is issued on a mission basis and represents the MSC requirements for transmission of telemetry data from the vehicles to the Network, the Network to MCC, MCC to KSC, from MCC communications, command, and telemetry system to the RTCC and to directly driven display devices in the MCC.

Since this annex contains both internal MCC and Network requirements only those requirements specifically for the Network will be responded to by GSFC, KSC, or DOD as applicable.

5.1.2 Precedence

This annex takes precedence over all other annexes concerning MSFN and ALDS telemetry format requirements.

It is requested that Flight Support Division, MSC be advised on any known conflicts.

5.1.3 Contents

This annex contains the following major topics:

Section I : Air-to-ground Formats  
Section II : Data Flow Formats  
Section III : Data Formats  
Section IV : Lists

5.2 Annex B-2

ALSEP Array A-2 P&FS Telemetry Data Format Control Book

5.2.1 Description

This annex is issued for the Apollo 15 mission and represents the MSC requirements for transmission of telemetry data from the ALSEP/P&FS to the Network, the Network to MCC, and to directly driven display devices in the MCC.

Since this annex contains both internal MCC and Network requirements, only those requirements specifically for the Network will be responded to by GSFC, KSC, or DOD as applicable.

5.2.2 Precedence

This annex takes precedence over all other annexes concerning ALSEP and P&FS MSFN Telemetry format requirements.

It is requested that Flight Support Division be advised on any known conflicts.

5.2.3 Contents

This annex contains the following major topics:

- Section I : ALSEP PCM TLM Downlink Description
- Section II : ALSEP HSDF to NASCOM
- Section III: ALSEP GSFC Output Formats
- Section IV : P&FS PCM Telemetry Description
- Section V : P&FS HSD to NASCOM
- Section VI : P&FS GSFC Output Format

### 5.3 Annex C

#### Universal Command System CDFCB and Mission Appendices

##### 5.3.1 Description

This annex is issued as a generic document which, using the Universal Command System concept, provides information necessary for the preparation of command programs required for support of Apollo missions. Mission appendices are included which define what portions of the generic document are applicable for specified missions. For this mission, the AS-510 appendix is applicable.

##### 5.3.2 Precedence

This annex takes precedence over all other documents concerning command data formats and bit structures.

##### 5.3.3 Contents

Section 1.0: Introduction  
Section 2.0: Purpose  
Section 3.0: Universal Command System Description  
Section 4.0: Command System Formats  
Section 5.0: General Information  
Section 6.0: Console Configurations  
Section 7.0: Acronyms and Abbreviations

Appendix AS-510

5.4 Annex C-2

ALSEP P&FS Command Data format Control Book.

5.4.1 Description

This annex is issued to provide definitive data transfer and control formats to ensure effective and compatible transmission of command data throughout the Manned Space Flight Network for supporting the ALSEP/P&FS.

5.4.2 Precedence

This annex takes precedence over all other documents concerning command data formats and bit structures for the ALSEP/P&FS program.

5.4.3 Content

This annex contains the following major topics:

Section 1.0: Introduction  
Section 2.0: Purpose of the Command System  
Section 3.0: ALSEP/P&FS Command System Description  
Section 4.0: Command System Formats  
Section 5.0: Command Data  
Section 6.0: General Information  
Section 7.0: Acronyms and Abbreviations

5.5 Annex D

Apollo Tracking Data Format Control Book (ATDFCB)

5.5.1 Description

This annex is issued as a generic document which contains information and detailed data formats needed to provide for the transmission of tracking data between the MSFN and the RTCC at the MCC. Mission appendices are included for mission specific information. The 510/112/LM-10 appendix is applicable for this mission.

5.5.2 Precedence

This annex takes precedence over all other documents concerning tracking data formats.

5.5.3 Contents

This annex contains the following major topics:

Section 1.0: Introduction  
Section 2.0: ALTDS & MSFN Tracking Data Formats  
Section 3.0: GSFC CP to MCC CCATS Formats  
Section 4.0: CCATS/RTCC Tracking Data Formats  
Section 5.0: Special Formats  
Appendices

5.6 Annex E

Remote Site Data Processing (RSDP) Program Requirements

5.6.1 Description

This handbook specifies the requirements to be programmed for and implemented by remoted (unmanned) sites.

Functional areas for which program design and coding guidance is provided include those listed as follows:

Telemetry (TLM)  
Special Parameter Assignments  
Command

The material presented is for general use as reference data.

5.6.2 Precedence

This annex shall take precedence over all other annexes concerning remoted site programming.

5.6.3 Contents

This annex contains the following major topics:

VOLUME I

1. Introduction
2. Remoted Sites
3. Apollo Launch Data System
4. Erasable Memory Octal Dump
5. Special Parameter Assignments

VOLUME II

1. Introduction
  2. Universal Command System
  3. Command
- Appendix

5.7 Annex E-2

ALSEP P&FS Remote Sites Data Processing Program Requirements

5.7.1 Description

This handbook specifies computer program requirements for remote site data processing operations of Apollo Lunar Surface Experiments Package (ALSEP) and the Particles and Fields Subsatellite (P&FS).

Functional areas, for which program design and coding guidance are provided, include the following:

Telemetry  
Command

The material presented is for general use or reference data.

5.7.2 Precedence

This document shall take precedence over all other annexes concerning ALSEP and P&FS remoted site programming.

5.7.3 Contents

This annex contains the following major topics:

1. Introduction
2. Telemetry
3. Command

5.8 Annex F

MCC/MSFN Validation Testing and Support Manual

5.8.1 Description

The MCC/MSFN Validation Testing and Support Manual is issued as a generic document and delineates the test procedures which are to be used to validate the network to the MCC. The tests listed will be scheduled by the NCG (Network Control Group) in accordance with established procedures. Tests will be assigned and NCG test number and a Validation Manual test number for ease in indication.

5.8.2 Precedence

The procedures as set forth in this document shall take precedence over all other procedures for MCC validation tests. The AS-V PSRD (Prelaunch Section) takes precedence for MSFN equipment required in support of these tests.

5.8.3 Contents

The manual is comprized of the following sections:

- 1000 series - Telemetry
- 2000 series - Command
- 3000 series - Tracking
- 4000 series - Communications
- 5000 series - Central Processor
- Appendices

5.9 Annex H

Apollo Tracking Ships Central Data Processor Requirements

5.9.1 Description

This annex is issued as a generic document which specifies trajectory requirements to be implemented through the central data processor aboard Apollo ships for processing the powered flight and free flight radar data.

5.9.2 Precedence

These requirements shall take precedence over all other sources of information pertaining to the Apollo ship program.

5.9.3 Contents

This annex contains the following major topics:

- Section 1: Introduction
- Section 2: Insertion Tracking Ship
- Section 3: Injection Ships
- Section 4: Reentry Ships
- Section 5: RTCC IRV Vector and Acquisition Data

NAME AND ADDRESS	DAP AND ANNEXES					
	DAP	B	C	D	E	F
<u>NASA MSC</u>						
Astronaut Office, CB	1	1	1	1	0	0
Link Sim Com, CF8	2	2	2	2	0	0
J. Sargent, CF8	1	1	0	0	0	0
T. Ohnesorge, EE7	1	1	1	1	1	0
J. Currie, ED53	1	3	0	0	1	0
D. Incerto, FM13	0	0	0	3	0	0
W. York, FM4	0	0	0	3	0	0
C. Austin, FM4	0	0	0	1	0	0
C. Harlan, FC2	4	0	4	4	4	4
E. Fendell, FC2	1	1	1	1	1	1
A. Aldrich, FC3	1	1	1	0	1	1
J. Saultz, FC9	1	1	1	1	1	3
J. Bostic, FC5	1	1	1	1	1	1
P. Klapach, FC7	0	1	1	1	1	0
D. Swift, FC6	1	1	0	0	0	0
R. Hoover, FC7	2	5	4	4	4	0
R. Miley, FC9	0	0	5	0	0	0
J. Watkins, FS	1	0	0	0	0	0
J. Little, FS1	1	0	0	0	0	0
R. Cole, FS26	0	5	3	1	Xtr	1
W. Dotson, FS2	1	0	5	0	0	0
G. Hector, FS2	1	0	0	20	0	0
G. LeBlanc, FS2	0	0	0	0	0	2
M. R. Loree, FS2	1	10	0	0	0	0
D. LaCombe, FS2	1	5	5	5	1	2
J. Satterfiled, FS2	6	0	0	0	4	0
Operations Documentation, FS4	Xtr	3	5	3	4	25
R. Bond, FS531	1	0	0	1	0	0
J. Stokes, FS5	5	2	3	4	1	3
J. Miller, FS6	3	11	8	8	7	4
P. Moreno, FS6	0	1	0	0	1	0
E. Eason, TM5	1	1	0	0	1	0

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NAME AND ADDRESS	DAP AND ANNEXES					
	DAP	B	C	D	E	F
D. Goeddel, FS6	0	0	0	2	0	0
D. Kirbie, FS6	0	0	8	0	1	0
C. Stroud, FS6	0	2	0	2	0	0
N. Kass, FS6	0	0	0	0	0	1
W. Brady, I-MO-F	0	0	0	0	0	2
C. Amos, PM-MO-F	1	1	1	1	1	2
D. Goldenbaum, PT3	2	3	2	2	2	0
E. Zietler, TF2	1	0	0	0	0	0
L. Lonerio, EE7	1	1	0	0	0	0
E. Gammon, PT3	0	1	0	0	0	0
<u>NASA GSFC</u>						
C. Knox, 821.1	55	64	62	35	35	32
R. Plaumann, 842, Wash., D.C.	0	0	0	0	0	2
<u>NASA Headquarters</u>						
E. Buckley/MOR	1	0	0	0	0	0
C. Draper (TC)	0	0	0	0	0	2
<u>DDMS</u>						
DOD Manager	1	0	0	0	0	1
DDMS/TAG	3	3	3	3	3	1
<u>AFEIR</u>						
ETOOP-2	6	7	0	7	0	6
<u>NASA KSC</u>						
E. Bishop, TS-NTS	1	1	1	1	1	1
J. Coonce, IN-TEC-1	1	1	1	1	1	1
W. Jelen, IN-DAT-1	0	1	0	0	0	1
R. Lennon, IN-TEC-11-1	0	2	0	0	0	1
R. Hughes, IN-DAT-4	1	1	0	0	1	0
C. Rudd, CFK	2	2	2	0	0	0
H. Kiesling, IN-TEL-12-1	1	2	1	1	4	1
R. Pagh, TS-TSM-3	1	0	0	0	0	1
D. Clark, IN-DAT-3	1	0	0	0	0	0
F. Dudley, IN-TEL-21	0	3	0	0	0	0
D. Collins, IN-OAL-1	1	0	0	0	0	0
B. Miller, IN-DAT-5	0	2	0	0	0	0
B. Burnett, FEC 450	0	1	0	0	0	0

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NAME AND ADDRESS	DAP AND ANNEXES					
	DAP	B	C	D	E	F
<u>CONTRACTORS</u>						
Bellcom	1	1	1	1	1	0
Bendix	0	1	0	0	0	0
IBM/MC 22	7	8	9	10	1	0
Lockheed/C28	0	0	0	0	0	1
NAR	1	0	0	0	0	0
Univac	7	7	7	7	0	0
TRW	0	0	0	2	0	0
General Electric						
C. Kelly	0	1	0	0	0	0
C. Clark	0	1	0	0	0	0
Grumman						
R. Pratt	0	1	0	0	0	0
J. Hilker, Bethpage	0	1	0	0	0	0
J. Caputi, KSC, MS 300-42	1	1	1	0	0	0
Philco-MS C						
P. Fields, 30-227	0	1	0	0	0	0
R. Bussey, 30-227	0	0	1	0	0	0
R. Peebles, 30-227	0	0	0	0	0	2
R    C. Drobkiewicz, 30-1058	10	0	0	0	0	20
R    D. Price, 30-1058	0	0	0	0	0	1
R    A. Tucker, 30-1058	1	1	0	0	0	1
R    J. Moore, 30-1058	1	0	0	0	0	0
R    W. Landers, 30-1058	0	0	0	1	0	2
R    A. Harrison, 30-211	2	3	2	2	2	2
R    W. Little, 30-1058	0	0	0	0	0	1
R    J. Mitrano, 30-1058	2	1	1	1	1	2
Philco						
R    P. Stafford	1	2	1	1	0	2
W. Thompson, D223	1	1	1	1	0	1
V. Morris, D-224	1	Xtr	Xtr	6	2	1
R    W. Wilson, E208	0	1	1	0	1	0
R    T. Carswell, E208	1	1	1	1	1	1
R    W. Shoots, E208	1	2	0	0	1	2

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NAME AND ADDRESS	DAP AND ANNEXES					
	DAP	B	C	D	E	F
Philco (Cont'd)						
R H. Johnson, E208	1	2	2	0	2	1
R L. Halpin, E208	3	1	3	3	3	3
IOS Documentation	1	4	6	9	8	Xtr
R C. Schultz, E203	1	1	1	1	1	1
R J. Cornwell, F102	0	0	0	0	0	1
<u>NASA MSFC</u>						
J. Ladner, PM-MO-PL	1	2	1	1	1	1
J. Haussler, AERO-MM	1	0	0	1	0	0
R. Cochran, S and E/Comp-R	0	0	0	0	0	1
<u>JPL</u>						
R R. Miller	0	0	0	1	0	0

