#267

APOLLO 14, 15, 16, 17
CSM ACCELERATION
71-008A-03A
71-063A-11A
72-031A-10A
72-096A-01A
SUBSATELLITE ACCELERATION
71-063D-03B
72-031D-03B

APOLLO 14, 15, 16 & 17

CMS ACCELERATION TAPES

71-008A-03A
71-063A-11A
72-031A-10A
72-096A-01A

This data set has been restored. There were originally four 7-track, 800 BPI tapes written in BCD & Binary. There is one restored tape. Files 1 - 5 and 8 are written in ASCII, and files 6 & 7 are written in Binary. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The tapes were created on an IBM 360 computer and the restored tapes were created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D numbers are as follows:

DR#	DS#	D#	FILES	
DR003961	DS003961	D011806	1 - 2	APOLLO 14 & 15
		D014015	3 - 5	APOLLO 16 & 17
		D016597	6 - 7	APOLLO 16 & 17
		D019681	8	APOLLO 15

REQ. AGENT	RAND NO.	ACQ. AGENT
WPP	RB3864	CDW
DLB	RC1828	

APOLLO 14, 15, 16 & 17

CSM ACCELERATION

71-008A-03A, 71-063A-11A, 72-031A-10A, 72-096A-01A

D#	C#	FILES	
D-11806	C-11111	2	APOLLO 14 and 15
D-14015	C-11112	3	APOLLO 16 and 17
D-16597	C-13535	2	APOLLO 16 and 17

The data are time ordered, although there is no parameter for time in the data.

APOLLO 14 AND 15 ACCELERATION TAPE

Tapes are recorded in ~~BCD~~ ASCII, at 800 BPI, 7-track, 2 files containing Apollo 14 and 15 data respectively. Each record has three words (3E20.9): latitude, longitude, and acceleration in mm/sec^2. See program documentation (A5.01.018) for an explanation to rearrange this format.

APOLLO 16 AND 17 ACCELERATION TAPE

Tapes are recorded at 800 BPI, 7-track. The first 2 files of D-14015 are Apollo 16 data and the third file is Apollo 17 data in BCD. Each record has four words (4E20.0): latitude, longitude, spline fit value doppler residual in hertz, and acceleration in mm/sec^2. See program documentation (A5.01.018) for an explanation to rearrange this format. D-16597 is written in BIN.

D 11806

```
$EXE TPLIST BS

INPUT PARAMETERS ARE:  ED SR=1=2 2 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   6
    -0.134152074E 02       0.111444205E 03     -0.447228119E 00

 TAPE NO.   1              FILE NO.   1
 RECORD   2                LENGTH   6
    -0.1[illegible]456883[illegible]E 02       0.111182884E 03     -0.422177829E 00

 TAPE NO.   1              FILE NO.   2
 RECORD   1                LENGTH   6[illegible]
     0.381189999E 01       0.969480000E 02      0.327769998E 00

 TAPE NO.   1              FILE NO.   2
 RECORD   2                LENGTH   6[illegible]
     0.404479998E 01       0.964650002E 02      0.277389999E 00
***** JOB DONE.
$WEO LPS
```

also see
71-0[illegible]3C-03B

D14015

```
$$
$EXE TFLIST ES

INPUT PARAMETERS ARE:  ED SR=1=2 2 1 1

 TAPE NO.    1              FILE NO.    1
 RECORD    1                LENGTH    84
    -0.638050002E 01        0.700290003E 02        0.260580001E 02        0.109480000E 00

 TAPE NO.    1              FILE NO.    1
 RECORD    2                LENGTH    84
    -0.647160000E 01        0.692049999E 02        0.257470000E 02        0.201380000E 00

 TAPE NO.    1              FILE NO.    2
 RECORD    1                LENGTH    84
    -0.197730000E 01        0.973160000E 02        0.427979999E 02        0.525639999E 01

 TAPE NO.    1              FILE NO.    2
 RECORD    2                LENGTH    84
    -0.210190001E 01        0.965170002E 02        0.422540002E 02        0.392590001E 01

***** JOB DONE.
$WEO LPS
```

Partial listing
Dupe of D-11806
APOLLO 14, 15 CSM ACCELERA
& folio

-0.104152074E 02	0.111444205E 03	-0.447228119E 00	REC 1, LENGTH 60
-0.104568830E 02	0.111182884E 03	-0.422177829E 00	REC 2, LENGTH 60
-0.105396322E 02	0.110659794E 03	-0.361272682E 00	REC 3, LENGTH 60
-0.105396322E 02	0.110659794E 03	-0.361272682E 00	REC 4, LENGTH 60
-0.106215580E 02	0.110136191E 03	-0.285970870E 00	REC 5, LENGTH 60
-0.106622126E 02	0.109874179E 03	-0.242918249E 00	REC 6, LENGTH 60
-0.107026557E 02	0.109612057E 03	-0.196269959E 00	REC 7, LENGTH 60
-0.107829208E 02	0.109087359E 03	-0.921648396E-01	REC 8, LENGTH 60
-0.107829208E 02	0.109087359E 03	-0.921648396E-01	REC 9, LENGTH 60
-0.108623372E 02	0.108562154E 03	0.189921400E-01	REC 10, LENGTH 60
-0.109017278E 02	0.108299338E 03	0.616162899E-01	REC 11, LENGTH 60
-0.109409003E 02	0.108036413E 03	0.931525500E-01	REC 12, LENGTH 60
-0.110186057E 02	0.107510111E 03	0.122975280E 00	REC 13, LENGTH 60
-0.110186057E 02	0.107510111E 03	0.122975280E 00	REC 14, LENGTH 60
-0.110954374E 02	0.106983300E 03	0.108457590E 00	REC 15, LENGTH 60
-0.111335263E 02	0.106719680E 03	0.845706305E-01	REC 16, LENGTH 60
-0.111713910E 02	0.106455953E 03	0.496018701E-01	REC 17, LENGTH 60
-0.112464616E 02	0.105928047E 03	-0.490974402E-01	REC 18, LENGTH 60
-0.112464616E 02	0.105928047E 03	-0.490974402E-01	REC 19, LENGTH 60
-0.113206346E 02	0.105399633E 03	-0.160632230E 00	REC 20, LENGTH 60
-0.113573846E 02	0.105135214E 03	-0.219529809E 00	REC 21, LENGTH 60
-0.113939047E 02	0.104870686E 03	-0.280506860E 00	REC 22, LENGTH 60
-0.114662673E 02	0.104341182E 03	-0.408727370E 00	REC 23, LENGTH 60
-0.114662673E 02	0.104341182E 03	-0.408727370E 00	REC 24, LENGTH 60
-0.115377079E 02	0.103811172E 03	-0.545282029E 00	REC 25, LENGTH 60
-0.115730832E 02	0.103545957E 03	-0.616690107E 00	REC 26, LENGTH 60
-0.116082221E 02	0.103280633E 03	-0.682585113E 00	REC 27, LENGTH 60
-0.116778046E 02	0.102749537E 03	-0.775095373E 00	REC 28, LENGTH 60
-0.116778046E 02	0.102749537E 03	-0.775095373E 00	REC 29, LENGTH 60
-0.117464416E 02	0.102217940E 03	-0.815214321E 00	REC 30, LENGTH 60
-0.117804055E 02	0.101951932E 03	-0.815628812E 00	REC 31, LENGTH 60
-0.118141279E 02	0.101685817E 03	-0.802947387E 00	REC 32, LENGTH 60

-0.952509999E 01	-0.102290000E 03	0.156540001E 00	REC	161.	LENGTH	60
-0.973609996E 01	-0.102770000E 03	0.197030000E 00	REC	162.	LENGTH	60
-0.984140003E 01	-0.103000000E 03	0.210120000E 00	REC	163.	LENGTH	60
-0.994640005E 01	-0.103240000E 03	0.221519999E 00	REC	164.	LENGTH	60
-0.101560000E 02	-0.103720000E 03	0.248550000E 00	REC	165.	LENGTH	60
-0.101560000E 02	-0.103720000E 03	0.248550000E 00	REC	166.	LENGTH	60
-0.103650000E 02	-0.104190000E 03	0.281180002E 00	REC	167.	LENGTH	60
-0.104690000E 02	-0.104430000E 03	0.299600001E 00	REC	168.	LENGTH	60
-0.105730000E 02	-0.104670000E 03	0.317189999E 00	REC	169.	LENGTH	60
-0.107800000E 02	-0.105150000E 03	0.343260001E 00	REC	170.	LENGTH	60
-0.107800000E 02	-0.105150000E 03	0.343260001E 00	REC	171.	LENGTH	60
-0.109859999E 02	-0.105620000E 03	0.357159998E 00	REC	172.	LENGTH	60
-0.110890000E 02	-0.105860000E 03	0.359540001E 00	REC	173.	LENGTH	60
-0.111920000E 02	-0.106100000E 03	0.359340001E 00	REC	174.	LENGTH	60
-0.113960000E 02	-0.106580000E 03	0.352540001E 00	REC	175.	LENGTH	60
-0.113960000E 02	-0.106580000E 03	0.352540001E 00	REC	176.	LENGTH	60
-0.116000000E 02	-0.107060000E 03	0.337210000E 00	REC	177.	LENGTH	60
-0.117020000E 02	-0.107300000E 03	0.326359998E 00	REC	178.	LENGTH	60
-0.118030000E 02	-0.107540000E 03	0.311640002E 00	REC	179.	LENGTH	60
-0.120050000E 02	-0.108020000E 03	0.265439998E 00	REC	180.	LENGTH	60
-0.120050000E 02	-0.108020000E 03	0.265439998E 00	REC	181.	LENGTH	60
-0.122060000E 02	-0.108500000E 03	0.196890000E 00	REC	182.	LENGTH	60
-0.123060000E 02	-0.108740000E 03	0.154230000E 00	REC	183.	LENGTH	60
-0.124060000E 02	-0.108980000E 03	0.114400000E 00	REC	184.	LENGTH	60
-0.126059999E 02	-0.109460000E 03	0.683604982E-01	REC	185.	LENGTH	60
-0.126059999E 02	-0.109460000E 03	0.683604982E-01	REC	186.	LENGTH	60
-0.128040000E 02	-0.109940000E 03	0.671915989E-01	REC	187.	LENGTH	60
-0.129030000E 02	-0.110180000E 03	0.834317980E-01	REC	188.	LENGTH	60
-0.130010000E 02	-0.110430000E 03	0.110890000E 00	REC	189.	LENGTH	60

Partial listing

Dupe of D-14015

APOLLO 16, 1 CSM ACCELERATION

3 files

D-14015

-0.638050002E 01	0.700290003E 02	0.260580001E 02	0.109480000E 00	REC 1. LENGTH 84
-0.647160000E 01	0.692049999E 02	0.257470000E 02	0.201380000E 00	REC 2. LENGTH 84
-0.653160000E 01	0.686560001E 02	0.255439999E 02	0.237900000E 00	file 1 REC 3. LENGTH 84
-0.656140000E 01	0.683820000E 02	0.254440000E 02	0.248740001E 00	REC 4. LENGTH 84
-0.659100002E 01	0.681070004E 02	0.253450000E 02	0.254629999E 00	REC 5. LENGTH 84
-0.664990002E 01	0.675570002E 02	0.251480000E 02	0.251550000E 00	REC 6. LENGTH 84
-0.664990002E 01	0.675570002E 02	0.251480000E 02	0.251550000E 00	REC 7. LENGTH 84
-0.670810002E 01	0.670070000E 02	0.249560001E 02	0.228680000E 00	REC 8. LENGTH 84
-0.673699999E 01	0.667320004E 02	0.248610001E 02	0.209820000E 00	REC 9. LENGTH 84
-0.676580000E 01	0.664569998E 02	0.247670000E 02	0.186009999E 00	REC 10. LENGTH 84
-0.682279998E 01	0.659069996E 02	0.245810001E 02	0.123550000E 00	REC 11. LENGTH 84
-0.682279998E 01	0.659069996E 02	0.245810001E 02	0.123550000E 00	REC 12. LENGTH 84
-0.687930000E 01	0.653559999E 02	0.243989999E 02	0.519133997E-01	REC 13. LENGTH 84
-0.690719998E 01	0.650810003E 02	0.243090000E 02	0.352484994E-01	REC 14. LENGTH 84
-0.693510002E 01	0.648050003E 02	0.242200000E 02	0.348952995E-01	REC 15. LENGTH 84
-0.699030000E 01	0.642539997E 02	0.240439999E 02	0.831234986E-01	REC 16. LENGTH 84
-0.699030000E 01	0.642539997E 02	0.240439999E 02	0.831234986E-01	REC 17. LENGTH 84
-0.704490000E 01	0.637030001E 02	0.238729999E 02	0.175100001E 00	REC 18. LENGTH 84
-0.707190001E 01	0.634270000E 02	0.237880001E 02	0.191790000E 00	REC 19. LENGTH 84
-0.709880000E 01	0.631510000E 02	0.237040000E 02	0.181800000E 00	REC 20. LENGTH 84
-0.715210003E 01	0.625990000E 02	0.235400000E 02	0.817349982E-01	REC 21. LENGTH 84
-0.715210003E 01	0.625990000E 02	0.235400000E 02	0.817349982E-01	REC 22. LENGTH 84
-0.720480001E 01	0.620469999E 02	0.233789999E 02	-0.119810000E 00	REC 23. LENGTH 84
-0.723089999E 01	0.617709999E 02	0.232990000E 02	-0.247420000E 00	REC 24. LENGTH 84
-0.725680000E 01	0.614949999E 02	0.232210000E 02	-0.391139999E 00	REC 25. LENGTH 84
-0.730820000E 01	0.609419999E 02	0.230669999E 02	-0.726960003E 00	REC 26. LENGTH 84
-0.730820000E 01	0.609419999E 02	0.230669999E 02	-0.726960003E 00	REC 27. LENGTH 84
-0.735890001E 01	0.603899999E 02	0.229170001E 02	-0.109130000E 01	REC 28. LENGTH 84
-0.738400000E 01	0.601129999E 02	0.228429999E 02	-0.120780000E 01	REC 29. LENGTH 84
-0.740890002E 01	0.598369999E 02	0.227700000E 02	-0.126850000E 01	REC 30. LENGTH 84
-0.745829999E 01	0.592839999E 02	0.226270001E 02	-0.122250000E 01	REC 31. LENGTH 84
-0.745829999E 01	0.592839999E 02	0.226270001E 02	-0.122250000E 01	REC 32. LENGTH 84

-0.769120002E 01	-0.741710001E 01	0.328030000E 02	-0.456560001E 00	REC	225.	LENGTH 84
-0.769120002E 01	-0.741710001E 01	0.328030000E 02	-0.456560001E 00	REC	226.	LENGTH 84
-0.764579999E 01	-0.796450001E 01	0.330949998E 02	-0.457419999E 00	REC	227.	LENGTH 84
-0.762279999E 01	-0.823810005E 01	0.332430000E 02	-0.455150001E 00	REC	228.	LENGTH 84
-0.759969997E 01	-0.851160002E 01	0.333899999E 02	-0.457940001E 00	REC	229.	LENGTH 84
-0.755290002E 01	-0.905840003E 01	0.336880002E 02	-0.499270000E 00	REC	230.	LENGTH 84
-0.755290002E 01	-0.905840003E 01	0.336880002E 02	-0.499270000E 00	REC	231.	LENGTH 84
-0.750550002E 01	-0.960490000E 01	0.339879999E 02	-0.588289998E 00	REC	232.	LENGTH 84
-0.748159999E 01	-0.987800002E 01	0.341389999E 02	-0.650679998E 00	REC	233.	LENGTH 84
-0.745740002E 01	-0.101510000E 02	0.342909999E 02	-0.707699999E 00	REC	234.	LENGTH 84
-0.740869999E 01	-0.106970000E 02	0.345970001E 02	-0.753720000E 00	REC	235.	LENGTH 84
-0.740869999E 01	-0.106970000E 02	0.345970001E 02	-0.753720000E 00	REC	236.	LENGTH 84
-0.735939997E 01	-0.112420000E 02	0.349039998E 02	-0.709069997E 00	REC	237.	LENGTH 84
-0.733440000E 01	-0.115150000E 02	0.350590000E 02	-0.652730003E 00	REC	238.	LENGTH 84
-0.730940002E 01	-0.117880000E 02	0.352150002E 02	-0.573729999E 00	REC	239.	LENGTH 84
-0.507309997E 01	0.800539999E 02	0.306589999E 02	0.544409998E 00	REC	240.	LENGTH 84
-0.517940003E 01	0.792390003E 02	0.302539999E 02	0.313510001E 00	REC	241.	LENGTH 84
-0.524970001E 01	0.786949997E 02	0.299879999E 02	0.190509999E 00	REC	242.	LENGTH 84
-0.528460002E 01	0.784230003E 02	0.298559999E 02	0.138289999E 00	REC	243.	LENGTH 84
-0.531950003E 01	0.781510000E 02	0.297249999E 02	0.922584981E-01	REC	244.	LENGTH 84
-0.538889998E 01	0.776059999E 02	0.294649999E 02	0.187463998E-01	REC	245.	LENGTH 84
-0.538889998E 01	0.776059999E 02	0.294649999E 02	0.187463998E-01	REC	246.	LENGTH 84
-0.545779997E 01	0.770620003E 02	0.292079999E 02	-0.300203995E-01	REC	247.	LENGTH 84
-0.549210000E 01	0.767889996E 02	0.290799999E 02	-0.451246994E-01	REC	248.	LENGTH 84
-0.552630001E 01	0.765170002E 02	0.289540000E 02	-0.540426993E-01	REC	249.	LENGTH 84
-0.559420002E 01	0.759709997E 02	0.287030001E 02	-0.533205988E-01	REC	250.	LENGTH 84
-0.559420002E 01	0.759709997E 02	0.287030001E 02	-0.533205988E-01	REC	251.	LENGTH 84
-0.566170001E 01	0.754259996E 02	0.284549999E 02	-0.245177995E-01	REC	252.	LENGTH 84
-0.569529998E 01	0.751529999E 02	0.283320000E 02	0.750340987E-02	REC	253.	LENGTH 84

-6.3805	70.029	.10948	26.058
-6.4716	69.205	.20138	25.747
-6.5316	68.656	.23790	25.544
-6.5614	68.382	.24874	25.444
-6.5910	68.107	.25463	25.345
-6.6499	67.557	.25155	25.148
-6.6499	67.557	.25155	25.148
-6.7081	67.007	.22868	24.956
-6.7370	66.732	.20982	24.861
-6.7658	66.457	.18601	24.767
-6.8228	65.907	.12355	24.581
-6.8228	65.907	.12355	24.581
-6.8793	65.356	5.19134-02	24.399
-6.9072	65.081	3.52485-02	24.309
-6.9351	64.805	3.48953-02	24.220
-6.9903	64.254	8.31235-02	24.044
-6.9903	64.254	8.31235-02	24.044
-7.0449	63.703	.17510	23.873
-7.0719	63.427	.19179	23.788
-7.0988	63.151	.18180	23.704
-7.1521	62.599	8.17350-02	23.540
-7.1521	62.599	8.17350-02	23.540
-7.2048	62.047	-.11981	23.379
-7.2309	61.771	-.24742	23.299
-7.2568	61.495	-.39114	23.221
-7.3082	60.942	-.72696	23.067
-7.3082	60.942	-.72696	23.067
-7.3589	60.390	-1.0913	22.917
-7.3840	60.113	-1.2078	22.843
-7.4089	59.837	-1.2685	22.770
-7.4583	59.284	-1.2225	22.627
-7.4583	59.284	-1.2225	22.627

D-16597 Apollo 16 & 17
C-13535
CSM ACCELERATION

first record, file 1

REC	1. LENGTH	84
REC	2. LENGTH	84
REC	3. LENGTH	84
REC	4. LENGTH	84
REC	5. LENGTH	84
REC	6. LENGTH	84
REC	7. LENGTH	84
REC	8. LENGTH	84
REC	9. LENGTH	84
REC	10. LENGTH	84
REC	11. LENGTH	84
REC	12. LENGTH	84
REC	13. LENGTH	84
REC	14. LENGTH	84
REC	15. LENGTH	84
REC	16. LENGTH	84
REC	17. LENGTH	84
REC	18. LENGTH	84
REC	19. LENGTH	84
REC	20. LENGTH	84
REC	21. LENGTH	84
REC	22. LENGTH	84
REC	23. LENGTH	84
REC	24. LENGTH	84
REC	25. LENGTH	84
REC	26. LENGTH	84
REC	27. LENGTH	84
REC	28. LENGTH	84
REC	29. LENGTH	84
REC	30. LENGTH	84
REC	31. LENGTH	84
REC	32. LENGTH	84

-7.5069	58.730	-.98574	22.488
-7.5310	58.453	-.86484	22.420
-7.5550	58.177	-.75306	22.352
-7.6023	57.623	-.55690	22.220
-7.6023	57.623	-.55690	22.220
-7.6489	57.069	-.40156	22.092
-7.6720	56.792	-.34836	22.029
-7.6948	56.515	-.31291	21.968
-7.7401	55.960	-.29525	21.847
-7.7401	55.960	-.29525	21.847
-7.7846	55.406	-.33810	21.730
-7.8066	55.128	-.35993	21.673
-7.8284	54.851	-.37852	21.616
-7.8715	54.296	-.40601	21.507
-7.8715	54.296	-.40601	21.507
-7.9139	53.741	-.41413	21.401
-7.9348	53.463	-.39722	21.349
-7.9555	53.186	-.36418	21.299
-7.9965	52.630	-.24971	21.201
-7.9965	52.630	-.24971	21.201
-8.0366	52.074	-7.77184-02	21.106
-8.0565	51.796	1.49575-02	21.060
-8.0761	51.519	.10986	21.016
-8.1148	50.963	.30604	20.929

REC 33. LENGTH 84

REC 34. LENGTH 84

REC 35. LENGTH 84

REC 36. LENGTH 84

REC 37. LENGTH 84

REC 38. LENGTH 84

REC 39. LENGTH 84

REC 40. LENGTH 84

REC 41. LENGTH 84

REC 42. LENGTH 84

REC 43. LENGTH 84

REC 44. LENGTH 84

REC 45. LENGTH 84

REC 46. LENGTH 84

REC 47. LENGTH 84

REC 48. LENGTH 84

REC 49. LENGTH 84

REC 50. LENGTH 84

REC 51. LENGTH 84

REC 52. LENGTH 84

REC 53. LENGTH 84

REC 54. LENGTH 84

REC 55. LENGTH 84

REC 56. LENGTH 84

2.5093	-86.612	7.42593-03	87.078		REC	1. LENGTH	84
2.5093	-86.612	7.42593-03	87.078		REC	2. LENGTH	84
2.5872	-87.119	1.91001-02	87.428		REC	3. LENGTH	84
2.6261	-87.373	1.73422-02	87.603		REC	4. LENGTH	84
2.6649	-87.626	9.20261-03	87.777		REC	5. LENGTH	84
2.7423	-88.133	-2.62255-02	88.124	last records, file 1	REC	6. LENGTH	84
2.7423	-88.133	-2.62255-02	88.124		REC	7. LENGTH	84
2.8195	-88.640	-8.71811-02	88.469		REC	8. LENGTH	84
2.8580	-88.893	-.12723	88.640		REC	9. LENGTH	84
2.8965	-89.147	-.17367	88.811		REC	10. LENGTH	84

APOLLO 15

SUB-SATELLITE ACCELERATION TAPES

71-063D-03B

This data set has been restored. There were originally three 7-track, 800 BPI tapes written in Binary & BCD. There are two restored tapes. DR003960 tape is written in Binary and DR004423 is written in ASCII. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer and the restored tapes were restored on an IBM 9021 computer. The DR and DS numbers along with the corresponding D numbers are as follows:

DR#	DS#	D#	FILES
DR003960	DS003960	D016595	1
DR004423	DS004423	D019682	1
		D019683	2

REQ. AGENT	RAND NO.	ACQ. AGENT
DLB	RC1828	CDW

APOLLO 15 AND 16

SUBSATELLITE ACCELERATION

71-063D-03B, 72-031D-03B

D#	C#	FILES	
D-16595	C-13533	1	APOLLO 15
D-16596	C-13534	1	APOLLO 16

APOLLO 15 AND 16 ACCELERATION TAPE

Tapes are recorded in BIN, at 800 BPI, 7-track, 1 file. Records contain the same data as Apollo 16 and 17 Acceleration tapes.

PART C: S-BAND TRANSPONDER

The purpose of the S-band transponder experiment was to measure the lunar gravitational field, which in turn provided information on the distribution of lunar mass and its correlation with surface features such as craters, mountains, and maria. Lack of correlation would imply subsurface structures. The lunar gravitational field is measured by observing the dynamical motion of spacecraft in free-fall orbits. Effective detection of mass variations is greatly enhanced by low-altitude trajectories, such as the eccentric orbits during revolutions 3 to 16 of the Apollo 16 spacecraft and the 11-km periapsis of the Apollo 16 subsatellite during May 1972. The observational data are the precise Earth-based radio tracking measurements initially used for real-time navigation. However, these line-of-sight velocity measurements can be obtained only while the spacecraft is in view of the Earth. As a result, no direct far-side measurements are available. The only information about the far-side gravity field is indirectly inferred from the spacecraft conditions immediately after occultation over many revolutions.

A very stable frequency of 2115 MHz obtained from a cesium reference was transmitted to the orbiting spacecraft. The transponder in the spacecraft multiplied the received frequency by the constant 240/221 (to avoid self-lockup) and transmitted the signal to Earth. (The transmitted and received frequencies were within the S-band region.) At the Earth-based receiver, the initial transmitted frequency (multiplied by the same constant) was subtracted, and the resulting cycle-count differences were accumulated in a counter along with the precise time at which differencing occurred. These cycle-count differences were the Doppler shift in frequency f_d caused by the line-of-sight (radial) component V_r of the spacecraft velocity, or $2V_r/c$ X 2300 MHz, where c is the speed of light. At times of high resolution, the counter was read every second; at low resolution, it was read once a minute. Not only was the cycle-count difference recorded, the fractional part of the cycle was measured. This capability allowed a resolution of approximately 0.01 Hz or 0.65 mm/sec in the measurements.

The approach for reducing these data is the same as that applied to the Lunar Orbiter data for the mascon analysis (i.e., not spherical harmonics or brute-force dynamic estimation). The raw data contain many components

of motion that must be removed before gravity analysis can proceed. Factors to be accounted for include the tracking station rotation about the Earth spin axis; the spacecraft motion perturbed by point-mass accelerations from the Sun, the Earth, the Moon, and the planets; and atmospheric effects and signal transit times. All these quantities are known a priori and are determined to accuracies well beyond those required to evaluate local gravitational effects.

DATA HISTORY AND OPERATIONS

The following is a summary of S-band transponder data collected.

1. Apollo 12 - one arc of descent November 19, 1969

2. Apollo 14 - 10 CSM orbits at low altitude February 4, 1971

3. Apollo 15 - 10 CSM orbits at low altitude July 30, 1971

4. Apollo 16 - 10 CSM orbits at low altitude April 20, 1972

5. Apollo 17 - 10 CSM orbits at low altitude December 11, 1972

The Apollo 15 subsatellite (PFS-1) was active from August 9, 1971, to September 1973, when the battery failed. The spacecraft was tracked usually 2 to 3 times per week except during mission operations. There are four regions of dense tracking in which the spacecraft was tracked every second or third orbit for 2 to 3 weeks. These times are (1) September 27 to October 3, 1971, (2) November 30 to December 19, 1971, (3) October 31 to November 18, 1972, and (4) January 23 to February 23, 1973. The Apollo 16 subsatellite (PFS-2) was active from April 24 to May 29, 1972, when it crashed. Tracking was similar to that for the Apollo 15 subsatellite; a dense tracking period was started May 7 and was ended May 19, 1972.

High quality data (noise less than 1 mm/sec) were obtained during all missions with no failures at any time of the S-band transponder. Data were corrupted over small time intervals during spacecraft maneuvers. Also, periodic equipment failures at Earth-based receiving stations when tracking the subsatellite caused minor data loss.

FAST ANALYSIS OF TAPE AND RECOVERY -- FATAR VER 4.3.5 -- INNOVATION DATA PROCESSING AUTHORIZED 11/02/93 PAGE 1

FATS070 CONTROL CARD TABLE SIZE IS 4096 BYTES

D019682

FATAR CONTROL CARDS

```
   1--   ANALYZE BLP
   2--   PRINT LF=1,B=1-100,CHAR
```

FATS071 TAPE BUFFER SIZE IS 65535 BYTES

FATS040 TAPEIN IS NOT LABELED - LABELS=NO ASSUMED

CHARACTERISTICS OF THE TAPE TO BE ANALYZED

UNIT	SERIAL	DEN	TRTCH
498	CN1131	6250	

FATAR DETAIL REPORT

BLOCK NUMBER	LNGTH/ DISPL	MESSAGE/ BLOCK TYPE	1...5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80 (COLUMN GRID IS VALID ONLY FOR CHARACTER FORMATTED DATA)			
* * * * * * *		START FILE 1				
		FATS038 DATA FILE IN ISCII/ASCII - TRANSLATED TO EBCDIC				
1	84	PRINT REQUESTED	-28.0095	107.2524	.05130661884	65.6144
2	84	PRINT REQUESTED	-27.8907	105.4497	.01417388103	66.6095
3	84	PRINT REQUESTED	-27.8597	105.0300	.02320842468	66.8472
4	84	PRINT REQUESTED	-27.7889	104.1317	.04059190024	67.3636
5	84	PRINT REQUESTED	-27.7488	103.6534	.04237947613	67.6429
6	84	PRINT REQUESTED	-27.7124	103.2352	.03967303596	67.8894
7	84	PRINT REQUESTED	-27.6302	102.3405	.02045183210	68.4245
8	84	PRINT REQUESTED	-27.5841	101.8642	.00271721010	68.7137
9	84	PRINT REQUESTED	-27.5424	101.4478	-.01707171183	68.9689
10	84	PRINT REQUESTED	-27.4489	100.5570	-.05900122924	69.5223
11	84	PRINT REQUESTED	-27.3968	100.0828	-.07748285960	69.8211
12	84	PRINT REQUESTED	-27.3499	99.6683	-.09144035168	70.0847
13	84	PRINT REQUESTED	-27.2454	98.7819	-.11438908055	70.6560
14	84	PRINT REQUESTED	-27.1874	98.3100	-.12274777889	70.9643
15	84	PRINT REQUESTED	-27.1354	97.8976	-.12784741446	71.2360
16	84	PRINT REQUESTED	-27.0200	97.0158	-.12905226834	71.8247

FATAR DETAIL REPORT

BLOCK NUMBER	LNGTH/ DISPL	MESSAGE/ BLOCK TYPE	1...5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80 (COLUMN GRID IS VALID ONLY FOR CHARACTER FORMATTED DATA)			
17	84	PRINT REQUESTED	-26.9562	96.5464	-.12355486490	72.1422
18	84	PRINT REQUESTED	-26.8992	96.1363	-.11524055246	72.4219
19	84	PRINT REQUESTED	-26.7731	95.2594	-.08641226776	73.0276
20	84	PRINT REQUESTED	-26.7037	94.7927	-.06489743572	73.3539
21	84	PRINT REQUESTED	-26.6417	94.3850	-.04256741423	73.6414
22	84	PRINT REQUESTED	-26.5051	93.5132	.00244226138	74.2635
23	84	PRINT REQUESTED	-26.4301	93.0494	.02125962032	74.5986
24	84	PRINT REQUESTED	-26.3634	92.6442	.03476501396	74.8936
25	84	PRINT REQUESTED	-26.2165	91.7779	.05440084310	75.5316
26	84	PRINT REQUESTED	-26.1361	91.3170	.05968568986	75.8751
27	84	PRINT REQUESTED	-26.0646	90.9144	.06134974863	76.1774
28	84	PRINT REQUESTED	-25.9077	90.0539	.06793133821	76.8309
29	84	PRINT REQUESTED	-25.8221	89.5961	.07632852346	77.1824
30	84	PRINT REQUESTED	-25.7459	89.1962	.08646521904	77.4918
31	84	PRINT REQUESTED	-25.5793	88.3416	.11695139017	78.1602
32	84	PRINT REQUESTED	-25.4884	87.8870	.13809749112	78.5196
33	84	PRINT REQUESTED	-25.4078	87.4900	.15938985161	78.8358
34	84	PRINT REQUESTED	-25.2316	86.6414	.19832929224	79.5186
35	84	PRINT REQUESTED	-25.1358	86.1902	.21134825237	79.8856
36	84	PRINT REQUESTED	-25.0508	85.7960	.21831839159	80.2083
37	84	PRINT REQUESTED	-24.8653	84.9537	.21935715154	80.9050
38	84	PRINT REQUESTED	-24.7646	84.5058	.21216272376	81.2793
39	84	PRINT REQUESTED	-24.6754	84.1147	.20144557208	81.6083
40	84	PRINT REQUESTED	-24.4809	83.2788	.16780993342	82.3183
41	84	PRINT REQUESTED	-24.3754	82.8344	.14476110227	82.6996

FATS070 CONTROL CARD TABLE SIZE IS 4096 BYTES

D019683

FATAR CONTROL CARDS

```
   1--   ANALYZE BLP
   2--   PRINT LF=1,B=1-100,CHAR
```

FATS071 TAPE BUFFER SIZE IS 65535 BYTES

FATS040 TAPEIN IS NOT LABELED - LABELS=NO ASSUMED

CHARACTERISTICS OF THE TAPE TO BE ANALYZED

UNIT	SERIAL	DEN	TRTCH
49B	CN1133	6250	

FATAR DETAIL REPORT

BLOCK NUMBER	LNGTH/ DISPL	MESSAGE/ BLOCK TYPE	1...5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80 (COLUMN GRID IS VALID ONLY FOR CHARACTER FORMATTED DATA)
* * * * * * *		START FILE 1	
		FATS038 DATA FILE IN ISCII/ASCII - TRANSLATED TO EBCDIC	
1	84	PRINT REQUESTED	55555JBH(&&IE55555A&G(BEBD5555555(&EAC&FFAHHD555555FE(FADD55555555555555555555
2	84	PRINT REQUESTED	55555JBG(HI&G55555A&E(DDIG5555555(&ADAGCHHA&C555555FF(F&IE55555555555555555555
3	84	PRINT REQUESTED	55555JBG(HEIG55555A&E(&C&&5555555(&BCB&HDBDFH555555FF(HDGB55555555555555555555
4	84	PRINT REQUESTED	55555JBG(GHHI55555A&D(ACAG5555555(&D&EIAI&&BD555555FG(CFCF55555555555555555555
5	84	PRINT REQUESTED	55555JBG(GDHH55555A&C(FECD5555555(&DBCGIDGFAC555555FG(FDBI55555555555555555555
6	84	PRINT REQUESTED	55555JBG(GABD55555A&C(BCEB5555555(&CIFGC&CEIF555555FG(HHID55555555555555555555
7	84	PRINT REQUESTED	55555JBG(FC&B55555A&B(CD&E5555555(&B&DEAHCBA&555555FH(DBDE55555555555555555555
8	84	PRINT REQUESTED	55555JBG(EHDA55555A&A(HFDB5555555(&&BGAGBA&A&555555FH(GACG55555555555555555555
9	84	PRINT REQUESTED	55555JBG(EDBD55555A&A(DDGH555555J(&AG&GAGAAHC555555FH(IFHI55555555555555555555
10	84	PRINT REQUESTED	55555JBG(DDHI55555A&&(EEG&555555J(&EI&&ABBIBD555555FI(EBBC55555555555555555555
11	84	PRINT REQUESTED	55555JBG(CIFH55555A&&(&HBH555555J(&GGDHBHEIF&555555FI(HBAA55555555555555555555
12	84	PRINT REQUESTED	55555JBG(CDII555555II(FFHC555555J(&IADD&CEAFH555555G&(&HDG55555555555555555555
13	84	PRINT REQUESTED	55555JBG(BDED555555IH(GHAI555555J(AADCHI&H&EE555555G&(FEF&55555555555555555555
14	84	PRINT REQUESTED	55555JBG(AHGD555555IH(CA&&555555J(ABBGDGGGHHI555555G&(IFDC55555555555555555555
15	84	PRINT REQUESTED	55555JBG(ACED555555IG(HIGF555555J(ABGHDGDADDF555555GA(BCF&55555555555555555555
16	84	PRINT REQUESTED	55555JBG(&B&&555555IG(&AEH555555J(ABI&EBBFHCD555555GA(HBDG55555555555555555555

FATAR DETAIL REPORT

BLOCK NUMBER	LNGTH/ DISPL	MESSAGE/ BLOCK TYPE	1...5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80 (COLUMN GRID IS VALID ONLY FOR CHARACTER FORMATTED DATA)
17	84	PRINT REQUESTED	55555JBF(IEFB555555IF(EDFD555555J(ABCEEDHFDI&555555GB(ADBB5555555555555555555555
18	84	PRINT REQUESTED	55555JBF(HIIB555555IF(ACFC555555J(AAEBD&EEBDF555555GB(DBAI5555555555555555555555
19	84	PRINT REQUESTED	55555JBF(GGCA555555IE(BEID555555J(&HFDABBFGGF555555GC(&BGF5555555555555555555555
20	84	PRINT REQUESTED	55555JBF(G&CG555555ID(GIBG555555J(&FDHIGDCEGB555555GC(CECI5555555555555555555555
21	84	PRINT REQUESTED	55555JBF(FDAG555555ID(CHE&555555J(&DBEFGDADBC555555GC(FDAD5555555555555555555555
22	84	PRINT REQUESTED	55555JBF(E&EA555555IC(EACB5555555(&&BDDBBFACH555555GD(BFCE5555555555555555555555
23	84	PRINT REQUESTED	55555JBF(DC&A555555IC(&DID5555555(&BABEIFB&CB555555GD(EIHF5555555555555555555555
24	84	PRINT REQUESTED	55555JBF(CFCD555555IB(FDDB5555555(&CDGFE&ACIF555555GD(HICF5555555555555555555555
25	84	PRINT REQUESTED	55555JBF(BAFE555555IA(GGGI5555555(&EDD&&HDCA&555555GE(ECAF5555555555555555555555
26	84	PRINT REQUESTED	55555JBF(ACFA555555IA(CAG&5555555(&EIFHEFHIHF555555GE(HGEA5555555555555555555555
27	84	PRINT REQUESTED	55555JBF(&FDF555555I&(IADD5555555(&FACDIGDHFC555555GF(AGGD5555555555555555555555
28	84	PRINT REQUESTED	55555JBE(I&GG555555I&(&ECI5555555(&FGICACCHBA555555GF(HC&I5555555555555555555555
29	84	PRINT REQUESTED	55555JBE(HBBA555555HI(EIFA5555555(&GFCBHEBCDF555555GG(AHBD5555555555555555555555
30	84	PRINT REQUESTED	55555JBE(GDEI555555HI(AIFB5555555(&HFDFEBAI&D555555GG(DIAH5555555555555555555555
31	84	PRINT REQUESTED	55555JBE(EGIC555555HH(CDAF5555555(AAFIEACI&AG555555GH(AF&B5555555555555555555555
32	84	PRINT REQUESTED	55555JBE(DHHD555555HG(HHG&5555555(ACH&IGDIAAB555555GH(EAIF5555555555555555555555
33	84	PRINT REQUESTED	55555JBE(D&GH555555HG(DI&&5555555(AEICHIHEAFA555555GH(HCEH5555555555555555555555
34	84	PRINT REQUESTED	55555JBE(BCAF555555HF(FDAD5555555(AIHCBIBIBBD555555GI(EAHF5555555555555555555555
35	84	PRINT REQUESTED	55555JBE(ACEH555555HF(AI&B5555555(BAACDHBEBCG555555GI(HHEF5555555555555555555555
36	84	PRINT REQUESTED	55555JBE(&E&H555555HE(GIF&5555555(BAHCAHCIAEI555555H&(B&HC5555555[illegible]5555555555555
37	84	PRINT REQUESTED	55555JBD(HFEC555555HD(IECG5555555(BAICEGAEAED555555H&(I&E&5555555[illegible]5555555555555
38	84	PRINT REQUESTED	55555JBD(GFDF555555HD(E&EH5555555(BABAFBGBCGF555555HA(BGIC[illegible]5555555555555
39	84	PRINT REQUESTED	55555JBD(FGED555555HD(AADG5555555(B&ADDEEGB&H555555HA(F&HC5555555555555555555555
40	84	PRINT REQUESTED	55555JBD(DH&I555555HC(BGHH5555555(AFGH&IICCDB555555HB(CAHC5555555555555555555555
41	84	PRINT REQUESTED	55555JBD(CGED555555HB(HCDD5555555(ADDGFAA&BBG555555HB(FIIF5555555555555555555555

-26.598	112.15	.79275	55.320
-26.697	111.26	.41616	55.246
-26.791	110.36	.12752	55.183
-26.797	110.30	.11141	55.179
-26.878	109.47	-7.31475-02	55.132
-26.912	109.11	-.12879	55.115
-26.960	108.57	-.18586	55.093
-27.017	107.91	-.21261	55.072
-27.036	107.67	-.21061	55.066
-27.107	106.77	-.16396	55.051
-27.112	106.71	-.16050	55.051
-27.172	105.87	-.11397	55.048
-27.196	105.51	-9.51052-02	55.050
-27.231	104.97	-6.80070-02	55.056
-27.270	104.31	-4.22403-02	55.070
-27.284	104.07	-3.66181-02	55.077
-27.331	103.16	-3.34354-02	55.109
-27.334	103.10	-3.42278-02	55.112
-27.373	102.26	-5.75543-02	55.154
-27.388	101.90	-7.04669-02	55.175
-27.408	101.35	-9.02294-02	55.210
-27.431	100.69	-.11502	55.258
-27.438	100.45	-.12421	55.278
-27.462	99.542	-.16109	55.358
-27.463	99.482	-.16386	55.363
-27.480	98.637	-.20738	55.449
-27.486	98.274	-.22872	55.489
-27.492	97.731	-.26376	55.553
-27.497	97.066	-.29352	55.636
-27.498	96.825	-.29494	55.668
-27.499	95.919	-.25530	55.795
-27.499	95.858	-.25013	55.804

D-16595 Apollo 15
C-13533
SUBSATELLITE ACCELERATION

32,632 records

REC	1,	LENGTH	84
REC	2,	LENGTH	84
REC	3,	LENGTH	84
REC	4,	LENGTH	84
REC	5,	LENGTH	84
REC	6,	LENGTH	84
REC	7,	LENGTH	84
REC	8,	LENGTH	84
REC	9,	LENGTH	84
REC	10,	LENGTH	84
REC	11,	LENGTH	84
REC	12,	LENGTH	84
REC	13,	LENGTH	84
REC	14,	LENGTH	84
REC	15,	LENGTH	84
REC	16,	LENGTH	84
REC	17,	LENGTH	84
REC	18,	LENGTH	84
REC	19,	LENGTH	84
REC	20,	LENGTH	84
REC	21,	LENGTH	84
REC	22,	LENGTH	84
REC	23,	LENGTH	84
REC	24,	LENGTH	84
REC	25,	LENGTH	84
REC	26,	LENGTH	84
REC	27,	LENGTH	84
REC	28,	LENGTH	84
REC	29,	LENGTH	84
REC	30,	LENGTH	84
REC	31,	LENGTH	84
REC	32,	LENGTH	84

-27.493	95.013	-.14874	55.934
-27.489	94.651	-.10595	55.993
-27.482	94.107	-5.47705-02	56.084
-27.469	93.444	-1.34001-02	56.202
-27.464	93.202	-4.13207-03	56.247
-27.441	92.298	1.21646-02	56.420
-27.439	92.237	1.32190-02	56.432
-27.412	91.394	3.10641-02	56.606
-27.399	91.032	4.04708-02	56.683
-27.377	90.490	5.65600-02	56.803
-27.348	89.828	8.01250-02	56.955
-27.336	89.588	8.99784-02	57.011
-27.290	88.686	.13303	57.231
-27.286	88.626	.13624	57.246
-27.237	87.786	.18544	57.463
-27.215	87.426	.20773	57.559
-27.179	86.887	.24165	57.706
-27.133	86.228	.28392	57.891
-27.115	85.988	.29951	57.960
-27.046	85.092	.34767	58.225
-27.041	85.032	.34903	58.244
-26.970	84.196	.33542	58.502
-26.939	83.839	.31891	58.616
-26.890	83.302	.26971	58.790
-26.827	82.648	.19421	59.008
-26.803	82.410	.16730	59.089
-26.711	81.520	6.92957-02	59.399
-26.705	81.460	6.29251-02	59.420
-26.613	80.631	-2.37153-02	59.720
-26.573	80.276	-5.74645-02	59.852
-26.510	79.744	-.10293	60.052
-26.431	79.095	-.15009	60.303

REC	33,	LENGTH	84
REC	34,	LENGTH	84
REC	35,	LENGTH	84
REC	36,	LENGTH	84
REC	37,	LENGTH	84
REC	38,	LENGTH	84
REC	39,	LENGTH	84
REC	40,	LENGTH	84
REC	41,	LENGTH	84
REC	42,	LENGTH	84
REC	43,	LENGTH	84
REC	44,	LENGTH	84
REC	45,	LENGTH	84
REC	46,	LENGTH	84
REC	47,	LENGTH	84
REC	48,	LENGTH	84
REC	49,	LENGTH	84
REC	50,	LENGTH	84
REC	51,	LENGTH	84
REC	52,	LENGTH	84
REC	53,	LENGTH	84
REC	54,	LENGTH	84
REC	55,	LENGTH	84
REC	56,	LENGTH	84
REC	57,	LENGTH	84
REC	58,	LENGTH	84
REC	59,	LENGTH	84
REC	60,	LENGTH	84
REC	61,	LENGTH	84
REC	62,	LENGTH	84
REC	63,	LENGTH	84
REC	64,	LENGTH	84

-19.827	-19.072	-.10988	102.53
-19.934	-19.376	-9.98539-02	102.24
-20.093	-19.833	-8.49052-02	101.81
-20.287	-20.394	-6.67888-02	101.28
-20.357	-20.598	-6.02426-02	101.09
-20.617	-21.366	-3.81198-02	100.37
-20.634	-21.417	-3.70298-02	100.32
-20.874	-22.137	-2.76859-02	99.652

REC	1.	LENGTH	84
REC	2.	LENGTH	84
REC	3.	LENGTH	84
REC	4.	LENGTH	84
REC	5.	LENGTH	84
REC	6.	LENGTH	84
REC	7.	LENGTH	84
REC	8.	LENGTH	84

APOLLO 16

SUB-SATELLITE ACCELERATION

72-031D-03B

This data set has been restored. There was originally one 7-track, 800 BPI tape written in Binary. There is one restored tape. The DR tape is 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an IBM 360 computer and the restored tape was restored on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES
DR004498	DS004498	D016596	1

See 71-063D-03B

Apollo 16 Subsatellite Accel.

D-16596

DUMP OF TAPE X-392

INPUT TAPE X-392 ON MS5
DATA INPUT 07 NF 1 FL 1 5 5

9795 9 7.961 .25607 52.750

FILE 1 RECORD 8. 1 LENGTH 84BYTES

(0)	202020201173	110711052020	202020202011	077311060120	202020202020	730205061207	202020202020	200502730705
(48)	122020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 2 LENGTH 84BYTES

(0)	202020201173	120205012020	202020202011	077304021220	202020202020	730203020602	202020202020	200502730602
(48)	032020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 3 LENGTH 84BYTES

(0)	202020201173	120611112020	202020202011	067310071120	202020202020	730212030307	202020202020	200502730512
(48)	012020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 4 LENGTH 84BYTES

(0)	202020201173	121102122020	202020202011	067306121120	202020202020	730110060507	202020202020	200502730404
(48)	012020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 5 LENGTH 84BYTES

(0)	202020201173	010507022020	202020202011	057307110620	202020202020	730102070406	202020202020	200502730207
(48)	012020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 30375 LENGTH 84BYTES

(0)	202020401173	020606102020	202020202004	117303111220	202020202040	730101120401	202020202020	200104027307
(48)	032020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 30376 LENGTH 84BYTES

(0)	202020401173	020404102020	202020202004	107306050120	202020202040	730101040601	202020202020	200104017307
(48)	032020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 30377 LENGTH 84BYTES

(0)	202020401173	020201022020	202020202004	077311010220	202020202040	730101100105	202020202020	200104127307
(48)	022020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE 1 RECORD 30378 LENGTH 84BYTES

(0)	202020401173	011106022020	202020202004	077301070320	202020202040	730102011204	202020202020	200103117307
(48)	012020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

9.1696 4 6.432 .12327 138.69

FILE 1 RECORD 30379 LENGTH 84BYTES

(0)	202020401173	010611062020	202020202004	067304030220	202020202040	730102030207	202020202020	200103107306
(48)	112020202020	202020202020	202020202020	202020202020	202020202020	202020202020		

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	30379	30384	84	0	1	0	0	1	1

FOJ DUMP STOPPED AFTER FILE 1 # OF PERMANENT READ ERRORS 0

START TIME 08/23/78 16:11:22 STOP TIME 08/23/78 16:18:28

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$REW LO