#274

APOLLO 12 69-099C-04C

APOLLO 15 71-063C-03C

LUNAR SURFACE MAGNETOMETER

DECIMATED TAPE

APOLLO 15 LM/ASLEP

SAMPLE DECIMATED TAPE

71-063C-03C

This data set has been restored. There was originally one 7-track, 556 BPI tape written in BCD. There is one restored tape written in ASCII. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an IBM 7094 computer and the restored tape was created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR005905	DS005905	D016170	1	07/31/71 - 08/15/71

o D016170: Read errors occurred in records 1788, 1941, 3786, 3787, 3794, & 3795.

REQ. AGENT	RAND NO.	ACQ. AGENT
DLB	RC0823 RC1636	JHK

APOLLO 12 69-099C-04C

APOLLO 15 71-063C-03C

LUNAR SURFACE MAGNETOMETER

DECIMATED TAPE

This data set catalog consists of 1 Apollo 12 and 1 Apollo 15 Decimated tapes. The 7094 tapes are 556 BPI, 7 track, ~~BCD~~ ASCII, 1 file containing variable length records.

The time spans for the tapes are:

APOLLO 12

D#	C#	TIME SPAN
D-15122	C-11706	11/28/69 - 12/03/69

APOLLO 15

D-16170	C-12303	7/31/71 - 8/15/71

GSA FPMR

UNITED STATES GOVERNMENT

Memorandum

TO : 69-099C-04C
71-063-03C

DATE: July 26, 1974

FROM : Joseph King

SUBJECT: Filtering and Decimation

An arbitrary I(t) profile has contributions from all frequencies. With a sampling period of Δt, only those frequencies in I(t) less than $1/2\Delta t$ can be studies. In other words, only those parts of the processes contributing to I(t) may be examined. Even to do this, the high frequency components must first be removed from I(t) or they will appear as low frequency components (i.e., aliasing will occur).

A filter which removes frequencies above B without affecting frequencies below B is $aB \sin(2\pi B\tau)/2\pi B\tau \equiv h(\tau)$. That is, if $I'(t) = \int_{-\infty}^{\infty} h(\tau)\, I(t-\tau)\, d$, then I(t) will have all frequencies, and I'(t) will have only frequencies $<B$. This is best seen by realizing that $FI'(f) = Fh(f)\, FI(f)$ (fourier transforms of I', h, and I, respectively and that Fh(f) is 1 for $-B<$ frequency$<B$ and F(h) is 0 otherwise.

Palmer Dyal called today to clarify the filtering and decimation procedure. First they applied a 31-weight filter to every tenth point (and the 30 points on each side) of the original data set which has one vector every 0.3 sec. This produced a tape with one vector every 3 sec. They then applied a 16-weight filter to every other point (and the 15 points on either side) of the intermediate stage. This produced one vector every 6 seconds, and it is this tape of which we have a sample. The filtering parameters on our tape relate to the second filtering/decimation stage only.

All periods that were filtered and decimated had the same procedure applied to them (i.e., two steps, same weights, etc.).

All tapes resulting from the second stage of filtering/decimating typically have 5 days of data, as have our sample tapes.

5010-108

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
MOFFETT FIELD, CALIFORNIA 94035

May 6, 1974

REPLY TO ATTN OF: SSA:245-6

National Space Science Data Center
Attention: Dr. Joseph King
Code 601-6
Goddard Space Flight Center
Greenbelt, MD 20771

Dear Dr. King:

Enclosed is a sample "Apollo Decimated" tape for the time period Year 1969, Day 332, 1900 hrs to Day 337, 1556 hrs. A tape format description is also enclosed.

Sincerely,

Palmer Dyal (CWP)

Palmer Dyal
Research Scientist
Astrophysics Branch

APOLLO DECIMATED TAPE DESCRIPTION

69-099C-04C
71-063C-03C

The decimated tape is a deblocked 7 track BCD tape written at 556 bpi and containing variable length records. Each tape contains a header record followed by a group of three physical records for each logical data record containing the time in milliseconds plus 100 decimated vectors.

The header record contains 1602 characters arranged as follows:

1 - 3 (I3)	--	Degree of decimation of the data
4 - 6 (I3)	--	Number of filter weights in this record minus one
7 - 17 (F11.8)	--	First Filter Weight
18 - 28 (F11.8)	--	Second Filter Weight

•
•
•

(There are a total of 101 (F11.8) fields allowing for the maximum size filter.)

•
•
•

1118 - 1129 (E12.5)	--	Vector delta (milliseconds)
1130 - 16[illegible]	--	Blanks

The first physical data record contains 810 characters arranged as follows:

1 - 12 (I12)	--	Time in milliseconds of the first vector in the subsequent <u>physical</u> record.
13 - 810	--	Blanks

The second physical data record contains 1602 characters arranged as follows:

1 - 8 (F8.3)	--	X_1 Component
9 - 16 (F8.3)	--	Y_1 Component
17 - 24 (F8.3)	--	Z_1 Component
25 - 32 (F8.3)	--	$/B/_1$ (Magnitude)
33 - 40 (F8.3)	--	X_2 Component
	•	
	•	
	•	
	•	
1571-1578 (F8.3)	--	X_{50} Component
1579-1586 (F8.3)	--	Y_{50} Component
1587-1594 (F8.3)	--	Z_{50} Component
1595-1602 (F8.3)	--	$/B/_{50}$ (Magnitude)

The third physical data record contains 1602 characters having vectors 50 - 100 arranged the same way as the second record.

NOTE: Negative magnitudes indicate that the vector was linearly interpolated due to a data gap.

DECIMATED TAPE LAYOUT

Header Record	1602 characters
i.r.g.	
Time Record	810 characters
i.r.g.	
Data Record Vectors 1-50	1602 characters
i.r.g.	
Data Record Vectors 51-100	1602 characters
i.r.g.	
Time Record	810 characters
i.r.g.	
Data Record Vectors 101-150	1602 characters
i.r.g.	
Data Record Vectors 151-200	1602 characters

Etc.

Filter and Decimation Processing

The low-pass filtering operation is performed using a symmetrical, non-recursive, time-domain filter. If there are n+1 distinct weights (W_i), numbered from 0 to n, then the value of a time series X at point X_j after filtering is:

$$X_j = X_j W_0 + \sum_{i=1}^{n} W_j (X_{j+i} + X_{j-i}) \qquad (2)$$

Thus, the filtered value of a point is a function of that point and the n unfiltered points on either side of it.

To filter and decimate, one might filter a complete series, then decimate by selecting every Kth point (where K is the degree of decimation) of the filtered series. Alternatively, a cheaper method computationally is to calculate a filtered value only for every Kth point. This is the approach used in LPFIL.

Based on equation (1), there are NRATIO output points within the span of whatever filter is used. This means that as a time series is processed a point at a time, each point contributes to NRATIO running sums of the sort shown in equation (2). And at every Kth point, an old sum is completed and a new sum is started (Figure 1).

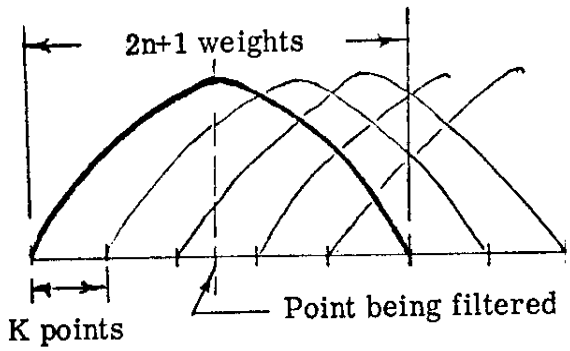

Figure 1 - Example of Filtering and Decimating, NRATIO = 5

Processing is further complicated by having to process up to four input series concurrently (X, Y, Z, /B/). This means four sets of running sums to be maintained. The major portion of the processing is shown in the diagram of program loops

APOLLO 12 LM/ALSEP

SAMPLE DECIMATED TAPE

69-099C-04C

This data set has been restored. There was originally one 7-track, 556 BPI tape written in BCD. There is one restored tape written in ASCII. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an IBM 7094 computer and the restored tape was created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR005496	DS005496	D015122	1	11/28/69 - 12/03/69

See 71-063C-03C

```
  2 15 0.43329704 0.30930120 0.06303245-0.08096665-0.05326017 0.02692589 0.03959081-0.00344334-0.025  REC     1. LENGTH  1602
47478-0.00621887 0.01339223 0.00788474-0.00523364-0.00588473 0.00088468 0.00282165 0.0        0.0
     0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
    0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
   0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
  0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
 0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0
0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.
       0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
      0.0        0.60377E 04
```

Apollo 15 Decimated tape

Day 212 - 227

D-16170
C-12303

```
18387033808
                                                                                                  REC     2. LENGTH   810
```

```
  -0.620   1.074  -0.634   1.363  -0.543   0.778  -0.516   1.165  -0.317   0.057   0.805   0.687  -0  REC     3. LENGTH  1602
.804   0.953  -0.290   1.646  -0.979   1.206  -3.137   3.395  -1.078   0.801  -2.975   3.341  -1.131
   0.905  -2.394   2.769  -1.078   0.868  -2.650   2.987  -1.162   0.901  -1.935   2.446  -0.909   0
.729  -1.130   1.610  -0.917   0.718  -1.197   1.679  -0.996   0.792  -1.270   1.796  -0.983   0.764
  -1.259   1.771  -1.013   0.815  -1.306   1.844  -0.774   0.591  -0.994   1.390  -0.799   0.660  -1
.025   1.457  -0.762   0.688  -1.039   1.470  -0.673   0.425  -0.802   1.111  -1.022   1.762  -1.808
   2.731  -0.893   2.375  -3.241   4.149  -0.627   0.857  -2.814   3.008  -0.636   0.813  -2.017   2
.332  -0.569   1.510  -2.195   2.717  -0.772   1.618  -1.760   2.533  -0.968   1.844  -1.900   2.818
  -0.786   1.055  -1.747   2.219  -0.905   0.613  -1.374   1.767  -1.161   0.953  -1.782   2.347  -0
.961   0.750  -1.269   1.759  -0.908   0.712  -1.539   1.939  -1.161   0.925  -2.783   3.149  -0.882
   0.721  -3.180   3.393  -0.709   0.563  -4.039   4.153  -0.335   0.429  -4.022   4.094  -0.167   0
.614  -3.234   3.332  -0.735   1.007  -4.251  -4.424  -0.433   1.399  -4.724  -4.960  -0.259   1.681
  -4.551  -4.883  -0.630   1.094  -4.541  -4.669  -0.067   1.263  -4.341  -4.592  -0.520   1.934  -3
.987  -4.383  -0.373   2.549  -4.375  -5.199  -1.233   3.349  -4.738  -5.828  -0.638   3.194  -5.582
  -6.480   5.925   4.027  -8.474 -11.429   2.651   2.781  -6.473  -8.092  -1.368   0.973  -4.951  -4
.655   0.413   0.084  -4.957  -5.247  -0.569  -0.563  -3.697  -3.614  -0.518  -0.023  -4.484  -4.561

  -0.307  -0.139  -4.454  -4.490  -0.153  -0.208  -4.205  -4.195  -0.410   0.049  -4.320  -4.356  -0  REC     4. LENGTH  1602
.319   0.405  -4.500   4.534  -0.137   0.866  -4.957   5.046  -0.399   1.110  -5.564   5.705  -0.331
   0.725  -5.124   5.194  -0.417   0.321  -4.522   4.560  -0.488  -0.008  -4.244   4.273  -0.531  -0
.264  -4.037   4.078  -0.779  -0.427  -4.052   4.161  -0.623  -0.194  -4.009   4.065  -0.414   0.299
  -4.288   4.312  -0.396  -0.079  -4.261   4.284  -0.609  -0.141  -3.170   3.234  -0.845   1.589  -4
.252   4.630  -0.673   2.108  -6.153   6.539  -0.385   1.442  -5.906   6.074  -0.076   0.391  -4.920
   4.995  -0.108  -0.669  -3.629   3.692   0.029  -0.711  -2.909   3.058  -0.017  -0.498  -2.967   3
.027  -0.325  -0.192  -3.313   3.318  -0.254  -0.247  -3.576   3.608  -0.122  -0.437  -3.503   3.520
  -0.222  -0.047  -3.336   3.375  -0.465   0.294  -3.804   3.850  -0.418   0.343  -4.211   4.248  -0
.335   0.188  -3.943   3.970  -0.425  -0.149  -3.591   3.615  -0.481  -0.089  -3.645   3.679  -0.331
   0.089  -3.852   3.872  -0.270   0.143  -3.811   3.825  -0.243   0.275  -3.814   3.836  -0.286   0
.311  -4.051   4.067  -0.028   0.262  -4.002   4.017   0.162   0.120  -3.807   3.827  -0.323  -0.033
  -3.752   3.766  -0.346  -0.141  -3.846   3.863  -0.244  -0.142  -3.894   3.909  -0.231  -0.072  -3
.908   3.912  -0.134  -0.144  -4.001   4.011  -0.206  -0.199  -3.812   3.822  -0.098   0.055  -3.631
   3.649  -0.048   0.584  -4.350   4.396   0.068   0.057  -4.434   4.456  -0.040  -0.517  -3.581   3
.610  -0.292  -0.290  -3.492   3.527  -0.232  -0.102  -3.846   3.849  -0.154  -0.225  -3.882   3.897
```

18387637850

REC 5, LENGTH 810

-0.244 -0.422 -3.698 3.734 -0.290 -0.413 -3.781 3.815 -0.286 -0.390 -3.601 3.633 -0
.506 -0.267 -3.828 3.871 -0.227 -0.377 -3.956 3.998 0.067 -0.467 -3.603 3.628 -0.077
-0.469 -3.541 3.575 -0.126 -0.489 -3.775 3.815 -0.216 -0.524 -3.906 3.943 -0.251 -0
.433 -3.891 3.942 -0.198 -0.444 -4.043 4.054 -0.181 -0.062 -4.139 4.165 0.051 0.751
-4.674 4.746 0.307 -0.145 -3.969 3.972 -0.254 -0.388 -3.084 3.174 -0.264 0.381 -3
.698 3.785 0.128 -0.052 -3.267 3.253 -0.098 -0.995 -2.900 3.131 -0.081 -1.168 -3.166
3.395 -0.240 -0.461 -3.398 3.423 -0.410 -0.480 -3.725 3.789 -0.366 -0.754 -3.833 3
.927 -0.272 -0.616 -3.777 3.845 -0.296 -0.534 -3.748 3.800 -0.146 -0.620 -3.811 3.867
-0.305 -0.821 -3.722 3.821 -0.340 -0.494 -3.701 3.774 0.144 -0.287 -3.631 3.644 0
.173 -0.698 -3.485 3.562 0.245 -0.620 -3.590 3.665 0.022 -0.570 -3.737 3.786 -0.125
-0.638 -3.724 3.776 -0.094 -0.551 -3.692 3.741 -0.220 -0.757 -3.495 3.583 -0.301 -0
.886 -3.415 3.540 -0.217 -0.951 -3.522 3.657 -0.335 -0.987 -3.567 3.716 -0.548 -0.831
-3.678 3.822 -0.182 -0.602 -3.627 3.689 0.047 -0.445 -3.611 3.629 0.134 -0.342 -3
.575 3.610 -0.218 -0.237 -3.723 3.750 -0.394 -0.245 -3.781 3.811 -0.327 -0.086 -3.971
3.979 -0.332 -0.496 -3.743 3.787 -0.580 -0.694 -2.821 3.046 -0.658 0.298 -3.729 3
.853 -0.335 -0.127 -4.216 4.218 -0.622 -0.975 -3.599 3.766 -0.381 -0.483 -3.883 3.958

REC 6, LENGTH 1602

-0.086 -0.230 -3.955 3.962 0.086 -0.210 -4.052 4.055 0.218 -0.420 -3.783 3.829 -0
.483 -1.051 -2.777 3.109 -0.845 -0.206 -3.503 3.658 -0.716 0.384 -4.271 4.301 -0.728
-0.453 -3.920 4.044 -0.842 -0.365 -3.265 3.391 -1.057 0.670 -3.557 3.754 -1.211 -0
.063 -4.082 4.306 -1.066 -1.456 -3.702 4.089 -0.953 -1.687 -3.131 3.737 -1.043 -1.470
-3.183 3.682 -0.978 -1.201 -3.630 3.954 -1.202 -0.971 -3.464 3.812 -1.213 -0.175 -3
.957 4.153 -0.927 -0.388 -4.353 4.470 -0.958 -0.849 -3.752 3.970 -0.855 0.094 -4.169
4.253 -0.523 -0.323 -4.645 4.717 -0.425 -0.948 -3.901 4.031 -0.228 -0.678 -4.026 4
.124 -0.037 -0.862 -4.467 4.546 -0.046 -1.363 -4.168 4.380 -0.401 -1.459 -2.818 3.346
-0.408 -0.159 -3.502 3.639 -0.070 -0.472 -4.692 4.676 -0.127 -0.882 -4.576 4.717 -0
.024 -0.507 -4.820 4.850 -0.006 -0.455 -4.818 4.847 -0.000 -0.348 -5.414 5.429 -0.205
-0.924 -4.618 4.718 -0.146 -0.702 -3.729 3.812 -0.139 -0.806 -3.636 3.746 -0.302 -0
.718 -3.524 3.608 -0.394 -0.505 -4.203 4.260 -0.634 -1.106 -4.157 4.360 -0.472 -1.114
-3.568 3.764 -0.448 -0.803 -3.683 3.803 -0.435 -0.697 -3.992 4.075 -0.439 -0.573 -3
.840 3.914 -0.506 -0.445 -3.960 4.030 -0.392 -0.521 -4.447 4.504 -0.213 -0.597 -4.580
4.625 -0.393 -0.911 -4.297 4.414 -0.354 -0.902 -4.131 4.254 -0.096 -0.852 -4.246 4
.331 -0.013 -1.035 -4.094 4.228 0.046 -0.896 -4.136 4.251 -0.323 -0.996 -4.213 4.345

REC 7, LENGTH 1602

18388241591

REC 8, LENGTH 810

-0.330 -0.989 -4.238 4.364 -0.277 -0.961 -4.348 4.464 -0.328 -0.879 -4.267 4.369 -0
.215 -0.807 -4.492 4.568 -0.177 -1.084 -4.650 4.784 -0.069 -1.285 -4.693 4.864 0.081
-1.351 -4.517 4.724 0.221 -1.115 -4.592 4.735 0.192 -0.726 -4.817 4.864 -0.016 0
.034 -5.124 5.146 -0.178 0.243 -5.576 5.577 -0.070 -0.224 -5.543 5.546 0.133 -0.577
-5.127 5.168 0.129 -0.584 -5.039 5.076 0.272 -0.649 -5.266 5.316 0.395 -0.902 -5
.020 5.114 0.388 -0.858 -5.118 5.206 0.554 -0.896 -5.167 5.271 0.264 -0.861 -5.451

REC 9, LENGTH 1602

```
EOF-PARITY-ERROR TAPE CHECK RUN BEGINS.

AN END-OF-FILE HAS BEEN ENCOUNTERED ON PHYSICAL RECORD NO.  2096  OF FILE NO.     1
INPUT TAPE HAS   551.36 FEET OF DATA
EOF-PARITY-ERROR TAPE CHECK RUN HAS ENDED.
```

D-15122

```
  2 15 0.43329704 0.30930120 0.06303245-0.08096665-0.05326017 0.02692589 0.03959081-0.00344334-0.025  REC     1, LENGTH  1602
47478-0.00621887 0.01339223 0.00788474-0.00523364-0.00588473 0.00088468 0.00282165*****************
****-0.00000000******************************************* 0.00000000*****************************
************** 0.00000000 0.00000000 0.00000000 0.00000000 0.06427777***********10.00014687*********
**-0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000*********** 0.0000000
0 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
****************************************** 0.00000000******************************************* 8.00000191
9.0000009510.0000000011.00000286***********-0.00000000******************************* 0.00000000 0
.00000000-0.00000000********************** 0.00000000***********-0.09484100**********************-0.
11046600********************** 0.00000000-0.18777668*****************************************
*************************************************************** 0.00000000*****************
***************** 0.60377E 04
```

Apollo 12 Decimated tape

Day 332-337

D-15122

C-11706

```
 28753254164                                                                                  REC     2, LENGTH   810
```

```
 -23.051  10.785 -31.856 -40.763 -23.267  17.318 -33.398 -44.257 -22.942  15.447 -32.823  42.894 -23  REC     3, LENGTH  1602
.023  17.001 -29.194  40.934 -23.664  18.373 -28.472  41.386 -22.779  12.025 -27.463  37.663 -22.975
  14.577 -26.050  37.699 -23.356  18.550 -28.639  41.326 -23.154  19.915 -33.700  45.484 -23.435  17
.243 -35.515  46.009 -23.272  14.382 -32.530  42.453 -23.592  19.356 -30.383  43.066 -24.057  19.708
 -32.864  45.358 -23.676  17.569 -37.676  47.809 -23.486  15.985 -33.687  44.154 -23.897  14.841 -28
.043  39.723 -24.315  15.787 -26.667  39.411 -23.756  13.957 -30.519  41.095 -23.425  16.819 -30.443
 -42.125 -24.546  17.426 -20.493 -36.253 -24.653  15.118 -25.479 -38.751 -24.367  17.207 -35.453 -46
.266 -24.367  12.488 -29.761 -40.486 -23.929  15.005 -28.159 -40.116 -23.981  20.437 -30.779 -44.090
 -24.303  17.999 -29.051 -41.835 -25.319  13.271 -26.208 -39.003 -25.190  11.880 -27.188 -39.261 -24
.507  19.830 -32.030 -44.892 -25.082  19.060 -33.071 -45.711 -24.618  15.933 -33.752 -44.722 -24.746
  16.597 -30.348 -42.561 -25.214  15.872 -32.755 -44.373 -24.112  14.557 -36.026 -45.660 -24.175  16
.923 -28.829 -41.284 -24.596  16.661 -30.770 -42.872 -24.175  13.196 -34.566 -44.178 -24.073  15.104
 -33.860  44.187 -23.788  17.423 -32.292  43.773 -24.613  18.260 -26.574  40.586 -25.112  14.405 -27
.896  40.283 -24.298  10.763 -31.144  40.893 -23.731  15.998 -36.786  46.718 -23.551  13.869 -34.093
  43.823 -23.728  13.050 -27.854  38.881 -23.980  17.311 -30.950  42.787 -24.100  16.496 -31.553  43
.010 -24.630  15.452 -32.767  43.856 -24.745  12.995 -34.793  44.673 -24.134  13.950 -35.052  44.772
```

```
 -24.332  17.395 -33.155  44.725 -24.960  16.389 -33.255  44.796 -24.963  14.141 -34.843  45.108 -25  REC     4, LENGTH  1602
.024  14.773 -33.087  44.096 -24.779  13.829 -33.731  44.107 -24.667  15.314 -32.413  43.489 -25.430
  13.258 -30.521  41.970 -24.669   9.194 -32.003  41.237 -24.360  16.966 -27.519  40.698 -25.104  17
.758 -23.356  38.590 -24.572  13.826 -27.784  39.602 -24.402  16.062 -32.343  43.563 -24.203  14.962
 -30.769  41.931 -24.054  16.167 -33.633  44.425 -23.785  19.120 -39.320  49.768 -24.057  18.703 -36
.480  47.580 -24.646  14.715 -33.524  44.247 -24.335  14.477 -32.616  43.236 -23.714  15.105 -34.734
  44.686 -23.638  15.971 -31.905  42.959 -24.142  17.408 -30.763  42.833 -23.704  16.771 -34.207  44
.847 -23.702  17.152 -31.183  42.759 -24.229  15.172 -32.206  43.143 -24.320  15.087 -33.682  44.207
 -24.305  15.317 -32.920  43.732 -24.094  17.296 -34.969  45.907 -23.651  15.723 -35.277  45.421 -22
.994  11.880 -32.971  41.967 -23.026  16.366 -34.651  44.721 -23.296  17.746 -34.198  45.032 -23.542
  16.545 -32.256  43.242 -23.708  16.478 -33.658  44.356 -23.906  17.400 -33.422  44.633 -23.931  18
.707 -33.243 -45.035 -24.275  19.136 -33.376 -45.512 -24.283  16.507 -32.814 -44.067 -24.021  16.779
 -29.167 -41.475 -24.059  17.120 -29.396 -41.746 -24.229  18.289 -30.435 -42.948 -24.570  15.468 -30
.750 -42.444 -24.221  11.764 -30.349 -40.587 -24.308  13.279 -30.281 -41.045 -23.986  13.928 -29.062
 -40.264 -23.581  17.530 -32.336 -43.749 -22.914  14.578 -34.255 -43.691 -23.149  19.268 -28.119 -41
.488 -23.911  19.492 -28.689 -42.241 -23.342  12.880 -31.895 -41.426 -23.042  18.234 -34.316 -45.220
```

28753858771 REC 5, LENGTH 810

-23.269 19.636 -34.470 -46.020 -23.245 16.634 -33.159 -43.816 -23.358 18.156 -32.921 -44.253 -23 REC 6, LENGTH 1602
.539 16.632 -31.857 -42.970 -23.763 13.688 -26.507 -38.169 -24.475 14.359 -27.588 -39.622 -24.206
15.087 -35.026 -45.121 -24.020 17.337 -33.280 -44.689 -24.275 13.310 -28.671 -39.858 -24.763 14
.413 -24.948 -38.113 -25.226 18.759 -23.026 -38.966 -24.313 16.920 -26.993 -40.056 -23.415 16.389