FIFTH BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA

ERTS PROJECT 110 - 14
May 31, 1973

A. TITLE OF INVESTIGATION: Feasibility Study for Locating Village Sites by Satellite Remote Sensing Techniques

B. PRINCIPAL INVESTIGATOR/GSFC ID: Dr. John P. Cook/UN 597

C. PROBLEMS IMPEDING INVESTIGATION: None

D. PROGRESS REPORT:

1. Accomplishments during reporting period. This project is attempting to locate archaeological village sites by means of digital print-out of signatures generated by multispectral analysis. We believe this may be possible because of the characteristic vegetation found on such sites. Our semi-annual report detailed the results of the digital print out our first generation signatures. (Signatures were developed for known archaeological village sites, lakes, rivers, willows, trees, grass, bare ground, etc.). Since that time we have developed the investigation along three separate but related avenues:

   a. Village location determination. Reference to portions of the digital print-out illustrated in our semi-annual report will show that several known village sites were identified. In addition to these, several possible sites were identified located at positions which appeared likely in terms of proximity to water, etc. A search of old maps and records has been made to determine whether there is any validity to these identifications. We have found evidence supporting several of these identifications. The most striking agreement was found in the vicinity of the

present village of Kaltag. The digital print-out indicated a large former village site at the downstream end of an island in the Yukon River which is located just upstream from Kaltag. We have found from U.S. Army exploration records that circa 1890, that location was the site of "Khaltag". Several other known former village sites have been also tentatively identified in this manner. This work is continuing.

b. Signature Improvement. By means of a borrowed zoom transfer scope, we are comparing the digital print-out with the NASA-provided aerial photography of the test area. We are seeking to improve vegetation signatures as well as archaeological site signatures. Not all archaeological site signatures appeared at reasonable locations on the print-out. In this work, we are attempting to change the signature definitions to eliminate these identifications and retain known sites. In order to do this, a 1290 picel area is being analyzed by direct methods.

c. Semi-automatic methods of signature identification. In conjunction with U of A ERTS project no. 1, we have worked with the development of a computer program which lists the number of picels with each reflectance level for each band within a defined portion of an ERTS scene. We expect this information to aid us in definition of signatures and other analytical approaches. Shown here is a histogram print-out of this information for bands 4 through 7 for first, the small area being analyzed above, and second, for a large 512 by 512 picel area containing that area. The histograms are semi-logarithmic.

Although this work has just been completed and the results not completely analyzed, inspection of the histograms for band 4 (CDU file number 4 on the print-out) shows that for the small area (1290 picels) there are only seven significant intensity levels while for the larger 512 by 512 (26, 2144 picel) area, there are from three to four times as many intensity levels represented. More significantly, for the small area no signature domains appear obvious while for the larger area, there are two groupings of intensity levels which appear to represent dominant features. Further, note that the small area histogram agrees with the upper portion of the large area histogram--even to the point that intensity level 16 appears most frequently. However, there is no correlation between the lower portion of these histograms. There is a large range of intensity levels represented on the large area histogram not indicated on the small area histogram. This indicates that the area was not homogeneous and that band 4 is more useful for signatures than one may have thought on the basis of the small area histogram. Examination of the large area histogram shows an unusual number of picels with intensity level 60. It remains to be seen whether this is significant or the result of statistics. Similarly, the histograms for bands 5, 6 and 7 can be compared.

2. Plans for next reporting period: Generally, we intend to persue these three avenues of approach to produce better signatures for surface features including archaeological sites. Method (a) will be used to find as many known sites within the test area as possible. Method (b) will be used to improve signatures on a picel-by-picel

examination basis and method (c) will be used to improve signatures from the standpoint of information analysis. One specific example will be given as part of method (b), a series of two-dimensional "cross-plots" will be made showing the relationship in reflected intensities between two bands. (These are then two-dimensional projections of the four-space intensity function). By this means it is hoped to better define signature domains. If the results appear worthwhile, a computer program may be written to perform this type of plot.

The projected result of the next reporting period is a computer signature print-out of the Kaltag test area using what we judge to be the best signatures obtainable.

E. SIGNIFICANT RESULTS: (see attached sheet)

F. PUBLICATIONS:

a) IN PREPARATION: A paper will be offered for presentation at the 24th Alaskan Science Conference August 17, 1973

b) IN PRESS: None

c) PUBLISHED: None

G. RECOMMENDATIONS: None

H. CHANGES IN STANDING ORDER FORMS: None

I. ERTS IMAGE DESCRIPTION FORMS: No ERTS data received this reporting period.

J. DATA REQUEST FORMS: None

FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR COU FILE NUMBER 4 AND CHANNEL NUMBER 1. DATE=06/05/73 TIME=22.28.50
AREA OF SCENE COUNTED IS FROM LINE 130 TO 159 AND PICEL 258 TO 300, CONTAINING A TOTAL OF 1290 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=FROM 1038-21301 LINE 1011, PICEL 1 REEL 2
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL (1 - 3 1 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0)
13	2	0.15504	****
14	10	0.77519	**********
15	169	13.10077	**********
16	332	25.73642	**********
17	225	17.44185	**********
18	262	20.31007	**********
19	251	19.45735	**********
20	38	2.94574	**********
43	1	0.07752	**
TOTAL	1290	100.00000	**********

FREQUENCY DISTRIBUTION COMPLETED FOR COU FILE NUMBER 4 AT 22.28.51.

FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER 5 AND CHANNEL NUMBER 2. DATE=06/05/73 TIME=22.29.06
AREA OF SCENE COUNTED IS FROM LINE 130 TO 159 AND PICEL 258 TO 300, CONTAINING A TOTAL OF 1290 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=FROM 1038-21301 LINE 1011, PICEL 1 REEL 2
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

---------- HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL ---------- 1 - 3 --

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	.1.....5.....1 0.....5 0.....1 0 5 0 0 0.....1 0 5 0 0 0.....1 0 5 0 0 0.....1 0 5 0 0 0.....1 0 5 0 0 0.....1 0 5 0 0 0.....1 0 5 0 0 0...1 0.....
7	11	0.85271	********** . I . . . . .
8	101	7.82945	********** . . . . .
9	122	9.45736	********** . . . . .
10	222	17.20929	********** . . . . .
11	331	25.65891	********** . . . . .
12	320	24.80620	********** . . . . .
13	121	9.37984	********** . . . . .
14	56	4.34108	********** I . . . . .
15	6	0.46512	********** I . . . . .
TOTAL	1290	100.00000	********** . . . . .

FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER 5 AT 22.29.08.

FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER 6 AND CHANNEL NUMBER 3. DATE=06/05/73 TIME=22.29.23
AREA OF SCENE COUNTED IS FROM LINE 130 TO 159 AND PICEL 258 TO 300, CONTAINING A TOTAL OF 1290 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=FROM 1038-21301 LINE 1011, PICEL 1 REEL 2
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL (1 - 3 1 5 0 0)
6	1	0.07752	**
7	10	0.77519	**********
8	29	2.24806	**********
9	20	1.55039	**********
10	13	1.00775	**********
11	13	1.00775	**********
12	12	0.93023	**********
13	11	0.85271	**********
14	34	2.63566	**********
15	13	1.00775	**********
16	20	1.55039	**********
17	60	4.65116	**********
18	56	4.34108	**********
19	32	2.48062	**********
20	65	5.03876	**********
21	71	5.50388	**********
22	58	4.49612	**********
23	107	8.29457	**********
24	93	7.20930	**********
25	67	5.19380	**********
26	83	6.43411	**********
27	33	2.55814	**********
28	39	3.02326	**********
29	31	2.40310	**********
30	32	2.48062	**********
31	18	1.39535	**********
32	21	1.62791	**********
33	9	0.69767	**********
34	18	1.39535	**********
35	11	0.85271	**********
36	11	0.85271	**********
37	12	0.93023	**********
38	19	1.47287	**********
39	22	1.70543	**********
40	18	1.39535	**********
41	18	1.39535	**********
42	6	0.46512	**********
43	19	1.47287	**********
44	16	1.24031	**********
45	21	1.62791	**********
46	14	1.08527	**********
47	12	0.93023	**********
48	7	0.54264	**********
49	1	0.07752	**
50	9	0.69767	**********
51	2	0.15504	****
52	2	0.15504	****
53	1	0.07752	**
TOTAL	1290	100.00000	**********

FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER 6 AT 22.29.27.

FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER 7 AND CHANNEL NUMBER 1. DATE=06/05/73 TIME=22.29.43
AREA OF SCENE COUNTED IS FROM LINE 130 TO 159 AND PICEL 258 TO 300, CONTAINING A TOTAL OF 1290 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=FROM 1038-21301 LINE 1011, PICEL 1 REEL 2
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL
0	1	0.07752	**
1	31	2.40310	**********
2	32	2.48062	**********
3	10	0.77519	**********
4	16	1.24031	**********
5	15	1.16279	**********
6	17	1.31783	**********
7	21	1.62791	**********
8	48	3.72093	**********
9	71	5.50388	**********
10	54	4.18605	**********
11	99	7.67441	**********
12	128	9.92248	**********
13	147	11.39535	**********
14	119	9.22480	**********
15	85	6.58914	**********
16	56	4.34108	**********
17	39	3.02326	**********
18	33	2.55814	**********
19	28	2.17054	**********
20	20	1.55039	**********
21	23	1.78294	**********
22	27	2.09302	**********
23	25	1.93798	**********
24	25	1.93798	**********
25	33	2.55814	**********
26	20	1.55039	**********
27	19	1.47287	**********
28	15	1.16279	**********
29	12	0.93023	**********
30	15	1.16279	**********
31	4	0.31008	********
32	2	0.15504	****
TOTAL	1290	100.00000	**********

FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER 7 AT 22.29.46.

EOF READ FROM INPUT TAPE IN PLACE OF ID RECORD. WILL REWIND AND CHECK FOR MORE CONTROL CARDS. PRESENT TIME=22.29.46.

CONTROL CARD AS READ= 1 490 257 300FROM 1038-21301 REEL 2, LINE 1011, PICEL 1

FREQUENCY DISTRIBUTION WILL BE DONE FOR LINES 1 TO 490 FOR A TOTAL OF 490 LINES AND FROM PICEL 257 TO 300
FOR A TOTAL OF 44 PICELS.
A TOTAL OF 21560 PICELS WILL BE USED IN THE COUNT-UP FOR THE FREQUENCY DISTRIBUTIONS.

FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER 4 AND CHANNEL NUMBER 1. DATE=06/05/73 TIME=22.37.43
AREA OF SCENE COUNTED IS FROM LINE 1 TO 512 AND PICEL 1 TO 512, CONTAINING A TOTAL OF 262144 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=WHOLE SCENE FROM 1038-21301 REEL 2, LINE 1011, PICEL 1
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

---------- HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL ---------- 1 - 3 --

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	HISTOGRAM
6	9	0.00343	**********
11	1	0.00038	**
12	93	0.03548	**********
13	534	0.20370	**********
14	4785	1.82533	**********
15	46534	17.75131	**********
16	85548	32.63397	**********
17	41906	15.98587	**********
18	38855	14.82201	**********
19	19734	7.52792	**********
20	3527	1.34544	**********
21	322	0.12283	**********
22	427	0.16289	**********
23	280	0.10681	**********
24	836	0.31891	**********
25	1678	0.64011	**********
26	8624	3.28979	**********
27	7032	2.68250	**********
28	649	0.24757	**********
29	416	0.15869	**********
30	168	0.06409	**********
31	74	0.02823	**********
32	33	0.01259	**********
33	41	0.01564	**********
34	2	0.00076	****
35	13	0.00496	**********
36	1	0.00038	**
37	2	0.00076	****
43	1	0.00038	**
45	1	0.00038	**
47	1	0.00038	**
48	2	0.00076	****
59	1	0.00038	**
60	9	0.00343	**********
70	1	0.00038	**
73	1	0.00038	**
74	1	0.00038	**
102	1	0.00038	**
104	1	0.00038	**
TOTAL	262144	100.00000	**********

FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER 4 AT 22.37.47.

FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER 5 AND CHANNEL NUMBER 2. DATE=06/05/73 TIME=22.39.47
AREA OF SCENE COUNTED IS FROM LINE 1 TO 512 AND PICEL 1 TO 512, CONTAINING A TOTAL OF 262144 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=WHOLE SCENE FROM 1038-21301 REEL 2, LINE 1011, PICEL 1
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL
2	2	0.00076	****
3	1	0.00038	**
5	44	0.01678	**********
6	556	0.21210	**********
7	5331	2.03362	**********
8	29016	11.06873	**********
9	38572	14.71405	**********
10	50476	19.25537	**********
11	43204	16.48102	**********
12	41667	15.89470	**********
13	21064	8.03528	**********
14	8690	3.31497	**********
15	2316	0.88348	**********
16	752	0.28687	**********
17	406	0.15488	**********
18	340	0.12970	**********
19	460	0.17548	**********
20	266	0.10147	**********
21	494	0.18845	**********
22	3256	1.24207	**********
23	2859	1.09062	**********
24	9339	3.56255	**********
25	2228	0.84991	**********
26	516	0.19684	**********
27	91	0.03471	**********
28	41	0.01564	**********
29	35	0.01335	**********
30	48	0.01831	**********
31	25	0.00954	**********
32	12	0.00458	**********
33	5	0.00191	**********
34	4	0.00153	**********
35	5	0.00191	**********
36	1	0.00038	**
37	1	0.00038	**
39	2	0.00076	****
50	1	0.00038	**
51	1	0.00038	**
52	1	0.00038	**
56	3	0.00114	******
57	1	0.00038	**
59	2	0.00076	****
60	2	0.00076	****
61	1	0.00038	**
62	1	0.00038	**
66	1	0.00038	**
101	3	0.00114	******
105	1	0.00038	**
122	1	0.00038	**
TOTAL	262144	100.00000	**********

FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER 5 AT 22.39.51.

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FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER      6 AND CHANNEL NUMBER   3.  DATE=06/05/73  TIME=22.41.45
AREA OF SCENE COUNTED IS FROM LINE    1 TO 512 AND PICEL    1 TO 512, CONTAINING A TOTAL OF 262144 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=WHOLE SCENE FROM 1038-21301 REEL 2, LINE 1011, PICEL 1
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

                             ---------- HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL -------------------------- 1 - 3 --
                                                                                                      1       5         0   0
                                                                                    1       5         0       0         0   0
 LEVEL    NUMBER    PERCENT                                       1       5         0       0         0       0         0   0
  OR        OF        OF                        1       5         0       0         0       0         0       0         0   0
 CLASS    PICELS    TOTAL     .1......5.........0.......0.........0.......0.........0.......0.........0.......0.........0...0.....
     2          1     0.00038 **      .         I       .         I       .         I       .         I       .         I   .
     3          6     0.00229 ************      I       .         I       .         I       .         I       .         I   .
     4         32     0.01221 ***********************   .         I       .         I       .         I       .         I   .
     5        112     0.04272 *************************************       .         I       .         I       .         I   .
     6        305     0.11635 *****************************************   .         I       .         I       .         I   .
     7        578     0.22049 **********************************************        I       .         I       .         I   .
     8        591     0.22545 **********************************************        I       .         I       .         I   .
     9        595     0.22697 **********************************************        I       .         I       .         I   .
    10        630     0.24033 ***********************************************       I       .         I       .         I   .
    11        741     0.28267 *************************************************     I       .         I       .         I   .
    12        920     0.35095 ***************************************************** I       .         I       .         I   .
    13       1306     0.49820 *******************************************************       .         I       .         I   .
    14       2154     0.82169 *********************************************************     .         I       .         I   .
    15       4065     1.55067 ************************************************************* .         I       .         I   .
    16       5313     2.02675 ***************************************************************         I       .         I   .
    17      16802     6.40945 **************************************************************************      .         I   .
    18      15995     6.10161 **************************************************************************      .         I   .
    19      11087     4.22935 *************************************************************************       .         I   .
    20      15215     5.80406 **************************************************************************      .         I   .
    21      13276     5.06439 *************************************************************************       .         I   .
    22      10906     4.16031 *************************************************************************       .         I   .
    23      19319     7.36961 **************************************************************************      .         I   .
    24      16075     6.13213 **************************************************************************      .         I   .
    25      13568     5.17578 *************************************************************************       .         I   .
    26      25038     9.55124 ****************************************************************************    .         I   .
    27       9651     3.68156 ************************************************************************I       .         I   .
    28      22855     8.71849 ***************************************************************************     .         I   .
    29      12443     4.74663 *************************************************************************       .         I   .
    30      10473     3.99513 *************************************************************************       .         I   .
    31       9086     3.46603 *********************************************************************** I       .         I   .
    32       4344     1.65710 ************************************************************* .         I       .         I   .
    33       3461     1.32027 ***********************************************************   .         I       .         I   .
    34       2533     0.96626 **********************************************************    .         I       .         I   .
    35       2655     1.01280 **********************************************************    .         I       .         I   .
    36       1795     0.68474 ********************************************************      .         I       .         I   .
    37       1613     0.61531 ********************************************************      .         I       .         I   .
    38       1369     0.52223 *******************************************************       .         I       .         I   .
    39       1263     0.48180 *******************************************************       .         I       .         I   .
    40        896     0.34180 ****************************************************  I       .         I       .         I   .
    41        928     0.35400 ***************************************************** I       .         I       .         I   .
    42        248     0.09460 ***************************************     .         I       .         I       .         I   .
    43        559     0.21324 **********************************************        I       .         I       .         I   .
    44        355     0.13542 ******************************************  .         I       .         I       .         I   .
    45        264     0.10071 ****************************************    .         I       .         I       .         I   .
    46        205     0.07820 ***************************************     .         I       .         I       .         I   .
    47        101     0.03853 *************************************       .         I       .         I       .         I   .
    48        130     0.04959 *************************************       .         I       .         I       .         I   .
    49         66     0.02518 ******************************      I       .         I       .         I       .         I   .
    50         83     0.03166 *********************************   I       .         I       .         I       .         I   .
    51         49     0.01869 **************************.         I       .         I       .         I       .         I   .
    52         35     0.01335 ************************  .         I       .         I       .         I       .         I   .
    53         33     0.01259 ***********************   .         I       .         I       .         I       .         I   .
    54         10     0.00381 *******************       .         I       .         I       .         I       .         I   .
    55          6     0.00229 ************      I       .         I       .         I       .         I       .         I   .
    57          1     0.00038 **      .         I       .         I       .         I       .         I       .         I   .
    59          1     0.00038 **      .         I       .         I       .         I       .         I       .         I   .
    82          1     0.00038 **      .         I       .         I       .         I       .         I       .         I   .
   100          1     0.00038 **      .         I       .         I       .         I       .         I       .         I   .
   105          1     0.00038 **      .         I       .         I       .         I       .         I       .         I   .
  TOTAL    262144   100.00000 ********************************************************************************************.

 FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER      6 AT 22.41.50.
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FREQUENCY DISTRIBUTION OF PICELS BY CLASS OR LEVEL FOR CDU FILE NUMBER 7 AND CHANNEL NUMBER 1. DATE=06/05/73 TIME=22.43.48
AREA OF SCENE COUNTED IS FROM LINE 1 TO 512 AND PICEL 1 TO 512, CONTAINING A TOTAL OF 262144 PICELS.
COMMENT FROM AREA SPECIFICATION CONTROL CARD=WHOLE SCENE FROM 1038-21301 REEL 2, LINE 1011, PICEL 1
NOTE----LEVELS OR CLASSES WHICH HAVE A PICEL COUNT OF ZERO ARE NOT LISTED BELOW.

1 - 3

LEVEL OR CLASS	NUMBER OF PICELS	PERCENT OF TOTAL	HISTOGRAM OF NUMBER OF PICELS IN EACH CLASS OR LEVEL
0	120	0.04578	**********
1	512	0.19531	**********
2	1200	0.45776	**********
3	9294	3.54538	**********
4	9239	3.52440	**********
5	1951	0.74425	**********
6	1653	0.63057	**********
7	2117	0.80757	**********
8	4961	1.89247	**********
9	8847	3.37486	**********
10	15557	5.93452	**********
11	19845	7.57027	**********
12	21425	8.17299	**********
13	22642	8.63724	**********
14	24670	9.41086	**********
15	23215	8.85582	**********
16	30107	11.48491	**********
17	20866	7.95975	**********
18	13520	5.15747	**********
19	8915	3.40080	**********
20	6104	2.32849	**********
21	4438	1.69296	**********
22	3258	1.24283	**********
23	2069	0.78926	**********
24	2042	0.77896	**********
25	1205	0.45967	**********
26	821	0.31319	**********
27	503	0.19188	**********
28	352	0.13428	**********
29	283	0.10796	**********
30	169	0.06447	**********
31	87	0.03319	**********
32	73	0.02785	**********
33	45	0.01717	**********
34	15	0.00572	**********
35	14	0.00534	**********
36	2	0.00076	**********
37	1	0.00038	**********
38	1	0.00038	**********
39	1	0.00038	**********
42	2	0.00076	**********
46	1	0.00038	**********
50	1	0.00038	**********
56	1	0.00038	**********
TOTAL	262144	100.00000	**********

FREQUENCY DISTRIBUTION COMPLETED FOR CDU FILE NUMBER 7 AT 22.43.52.

EOF READ FROM INPUT TAPE IN PLACE OF ID RECORD. WILL REWIND AND CHECK FOR MORE CONTROL CARDS. PRESENT TIME=22.43.52.

EOF (/*) READ BY CARD READER. ERTSCOUN IS NOW DONE. PRESENT TIME=22.44.27.

EOJ STRING26 22.44.31,DURATION 00.16.48 CHARGE TO GL8783

FIRST POSTED 05/28/73 SER=00031 THE 2780 IS NOW AVAILABLE FOR 80-80 LISTING OFF LINE, TRY IT.

FIRST POSTED 05/22/73 SER=00030 ANNOUNCING A DPMA SPONSORED IBM FILM ON VIRTUAL STORAGE JUNE 12 FROM NOON TO ONE AT THE ANB. BRING YOUR LUNCH OR BUY IT ($1.58 CATERED).
CALL DICK JABLONOWSKI X7714 FOR FOOD RESERVATIONS.

FIFTH BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA

ERTS PROJECT 110 - 14
May 31, 1973

PRINCIPAL INVESTIGATOR: John P. Cook

TITLE OF INVESTIGATION: Feasibility Study for Locating Archaeological Village Sites by Satellite Remote Sensing Techniques

DISCRIPLINES: Archaeology

SUBDISCIPLINES: Demography, Interpretation Techniques Development.

SUMMARY OF SIGNIFICANT RESULTS: None this reporting period.