LARS Information Note 091373

The LARSYS Software System: An Overview

by
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The Laboratory for Applications of Remote Sensing

Purdue University, West Lafayette, Indiana

1973

THE LARSYS SOFTWARE SYSTEM
AN OVERVIEW

Note to the student:

This set of Figures is designed to accompany an audio tape. The presentation runs about 45 minutes and is intended as an overview or introductory treatment of the LARSYS software system.

Listen to the audio tape and follow the instructions given on the tape. Pay particular attention to the instructional objectives when they are discussed.

Please do not turn the page until you are instructed to do so.

LARSYS

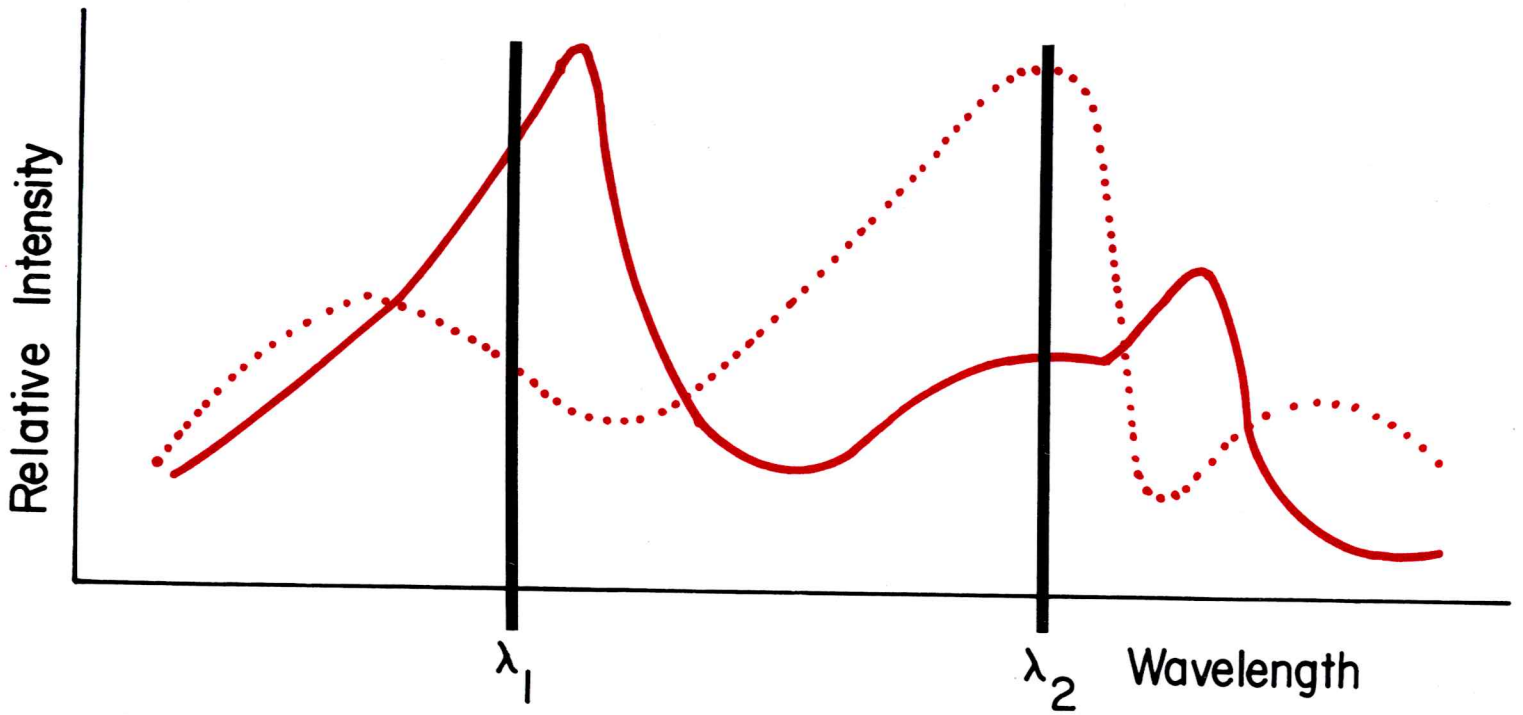
software system package

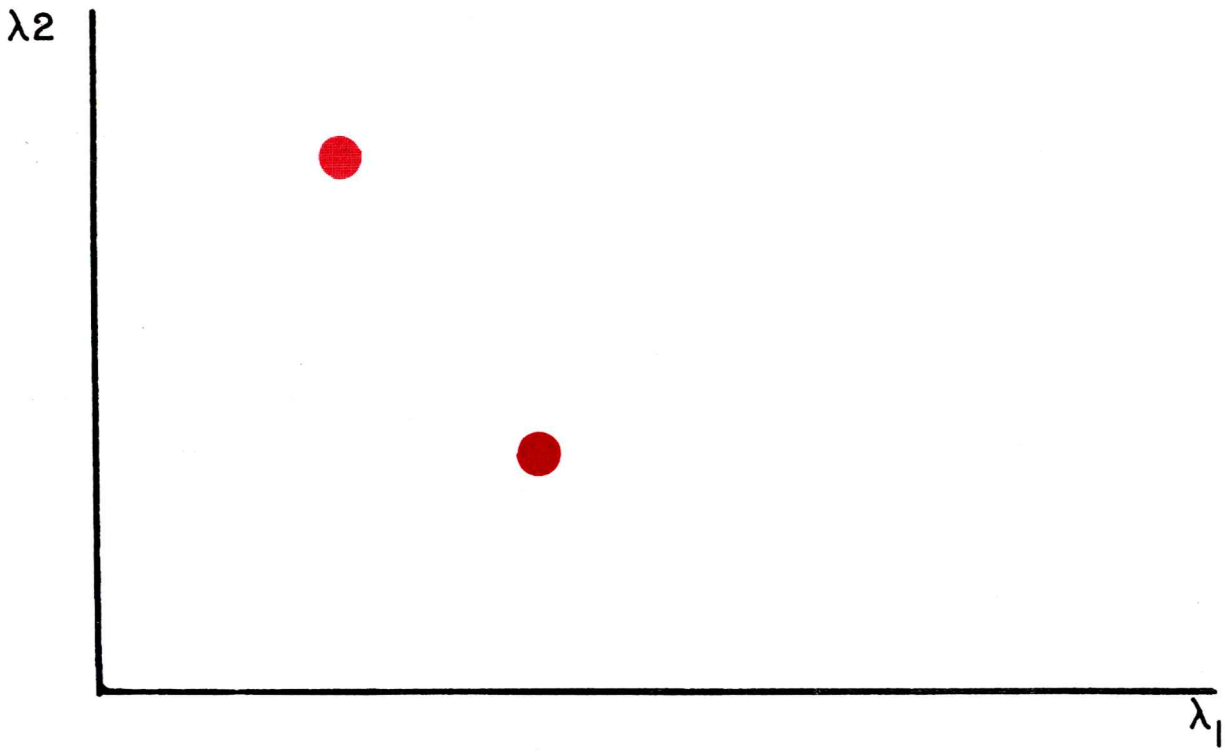

*LINEGRAPH
*SEPARABILITY
*PICTUREPRINT
*HISTOGRAM
LARSYS
*CLASSIFYPOINTS
*IDPRINT
*STATISTICS
*PRINTRESULTS

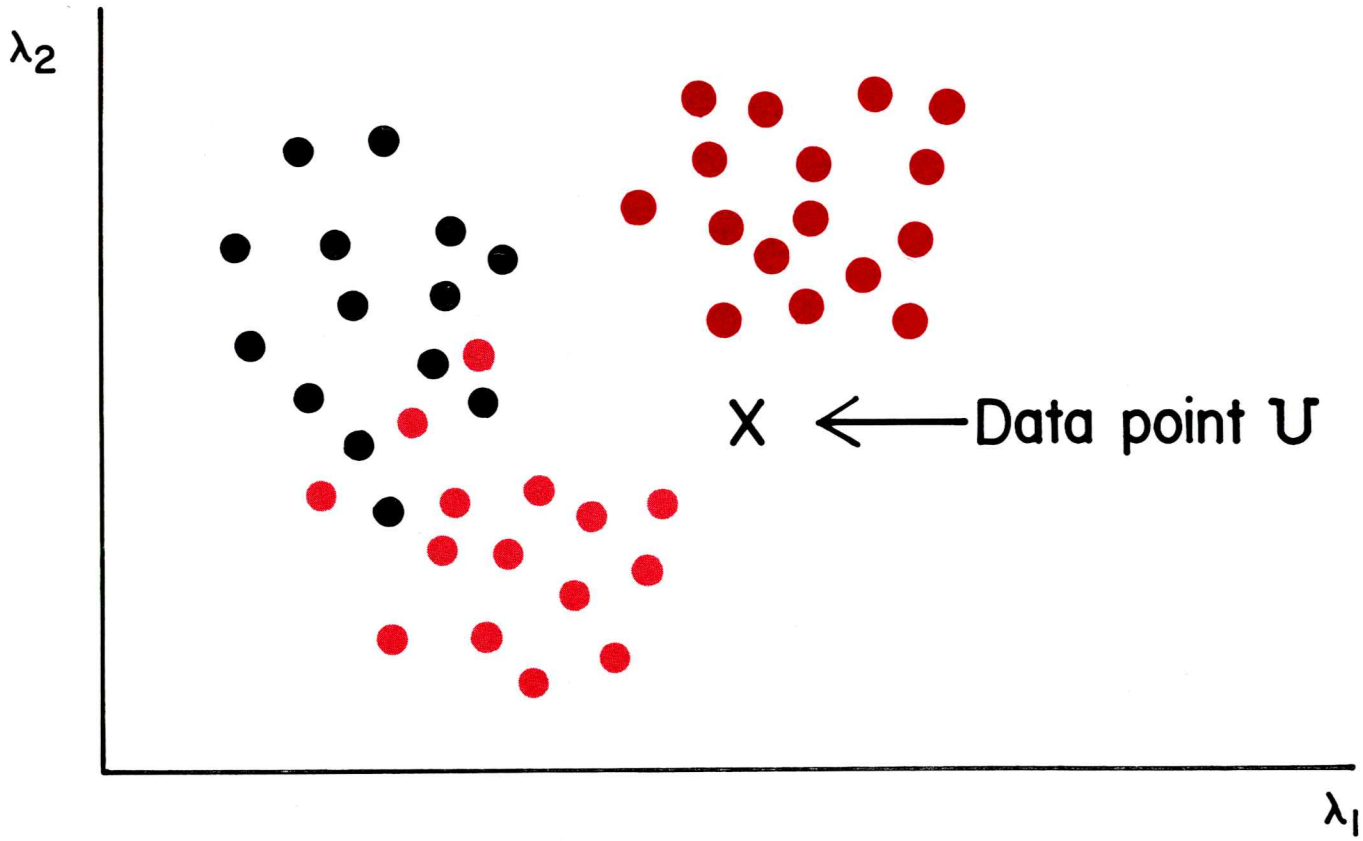
State a definition of remote sensing

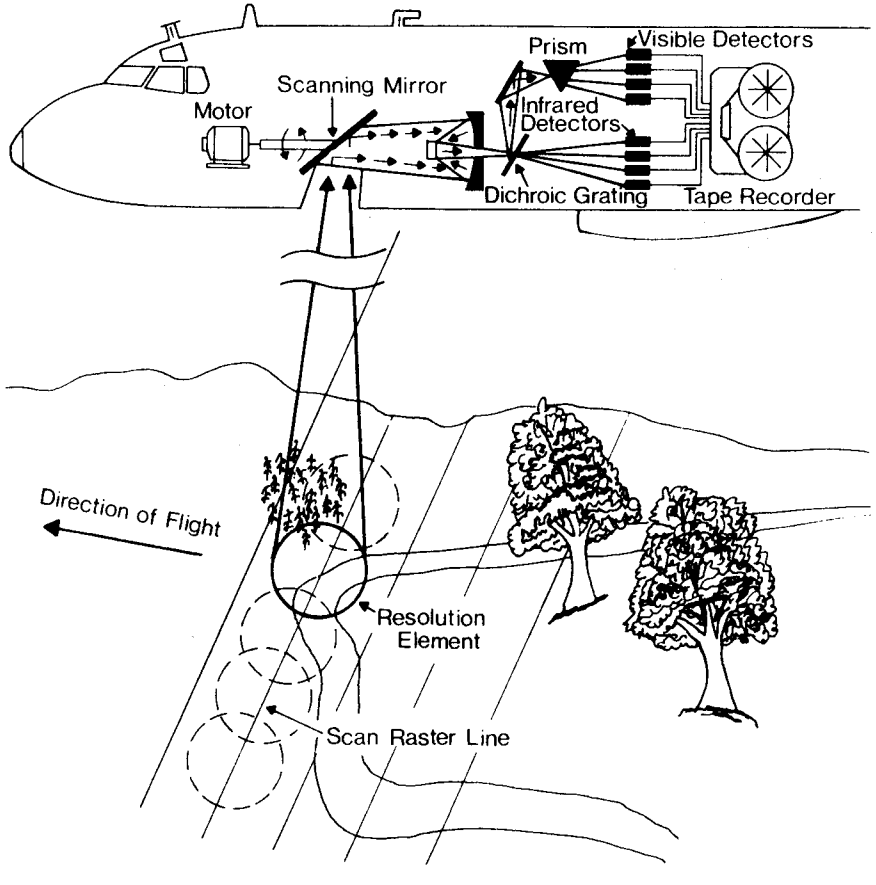
Cite an Example of Remote Sensing of Particular Interest to You

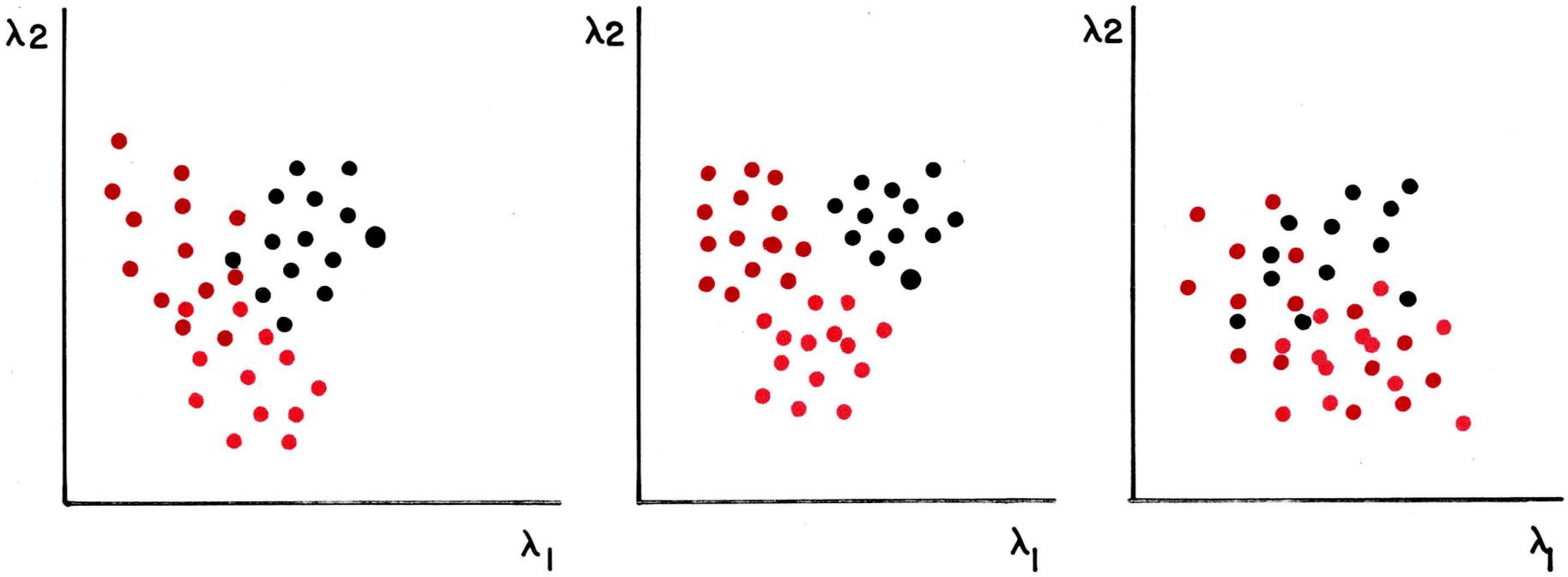
List the Types of Variations in Electromagnetic Fields that make Remote Sensing Possible


Relative Intensity
λ1
λ2
Wavelength

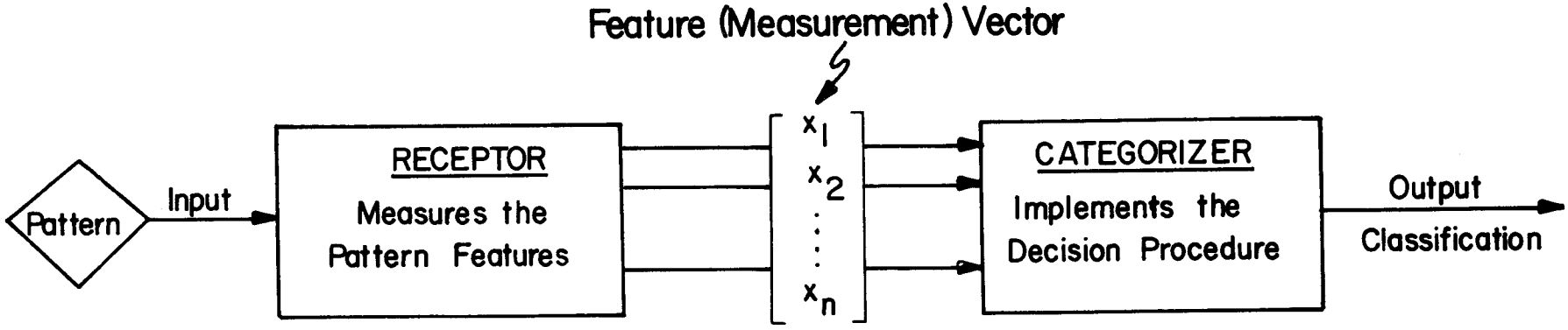

λ2
λ1


λ_2
X ← Data point U
λ_1


Prism
Visible Detectors
Scanning Mirror
Motor
Infrared
Detectors
Dichroic Grating
Tape Recorder
Direction of Flight
Resolution
Element
Scan Raster Line


λ2
λ1
λ2
λ1
λ2
λ1

State the two Conditions a Class must meet in order to be useful


Feature (Measurement) Vector
Pattern
Input
RECEPTOR
Measures the
Pattern Features
x_1
x_2
x_n
CATEGORIZER
Implements the
Decision Procedure
Output
Classification

LEFT BLANK INTENTIONALLY.

REST YOUR EYES--AND LISTEN.

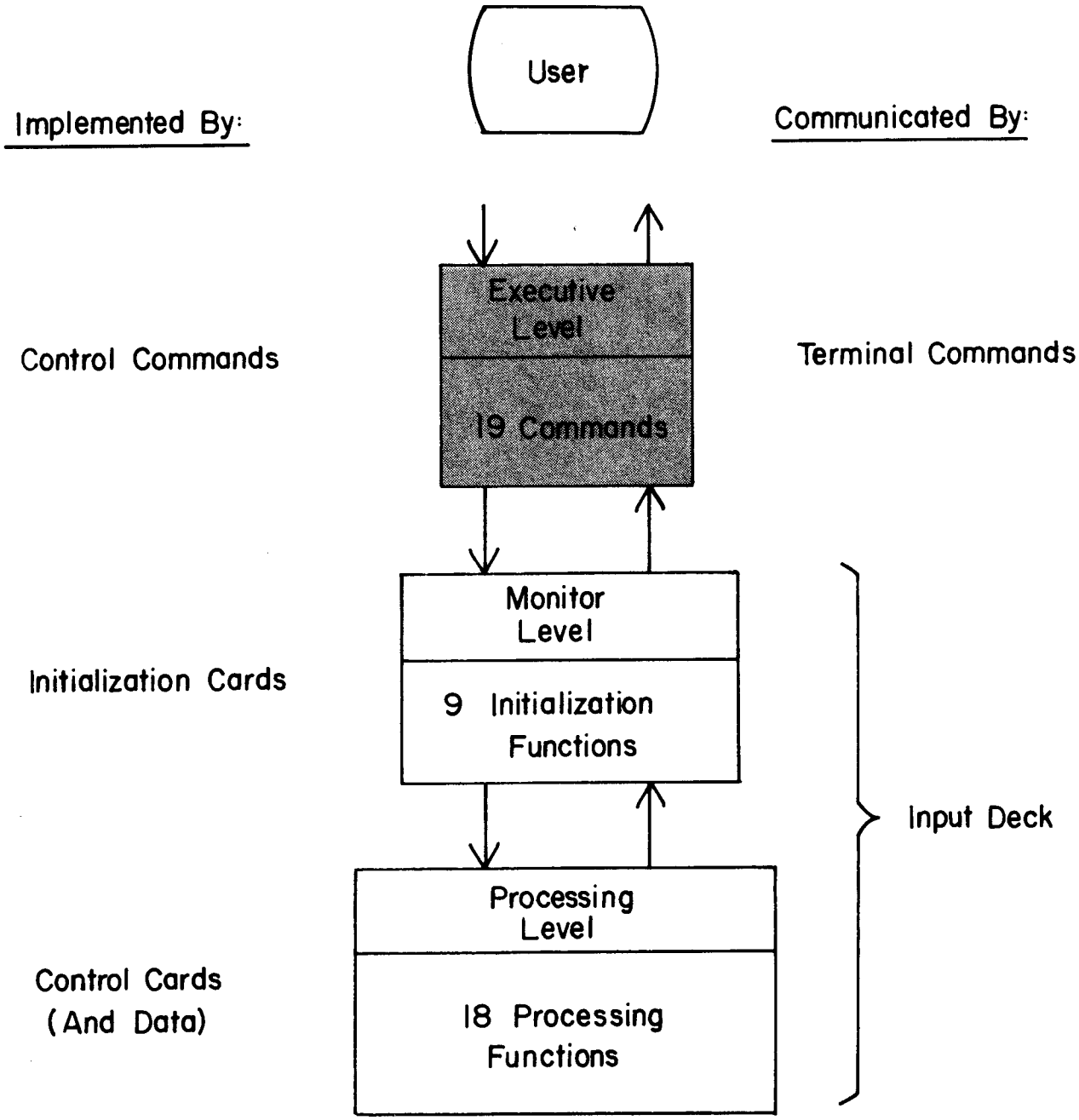
List the Information
(Without regard to format)
Contained on a
Multispectral Image Storage Tape

State at least three types of cards used in running LARSYS Programs

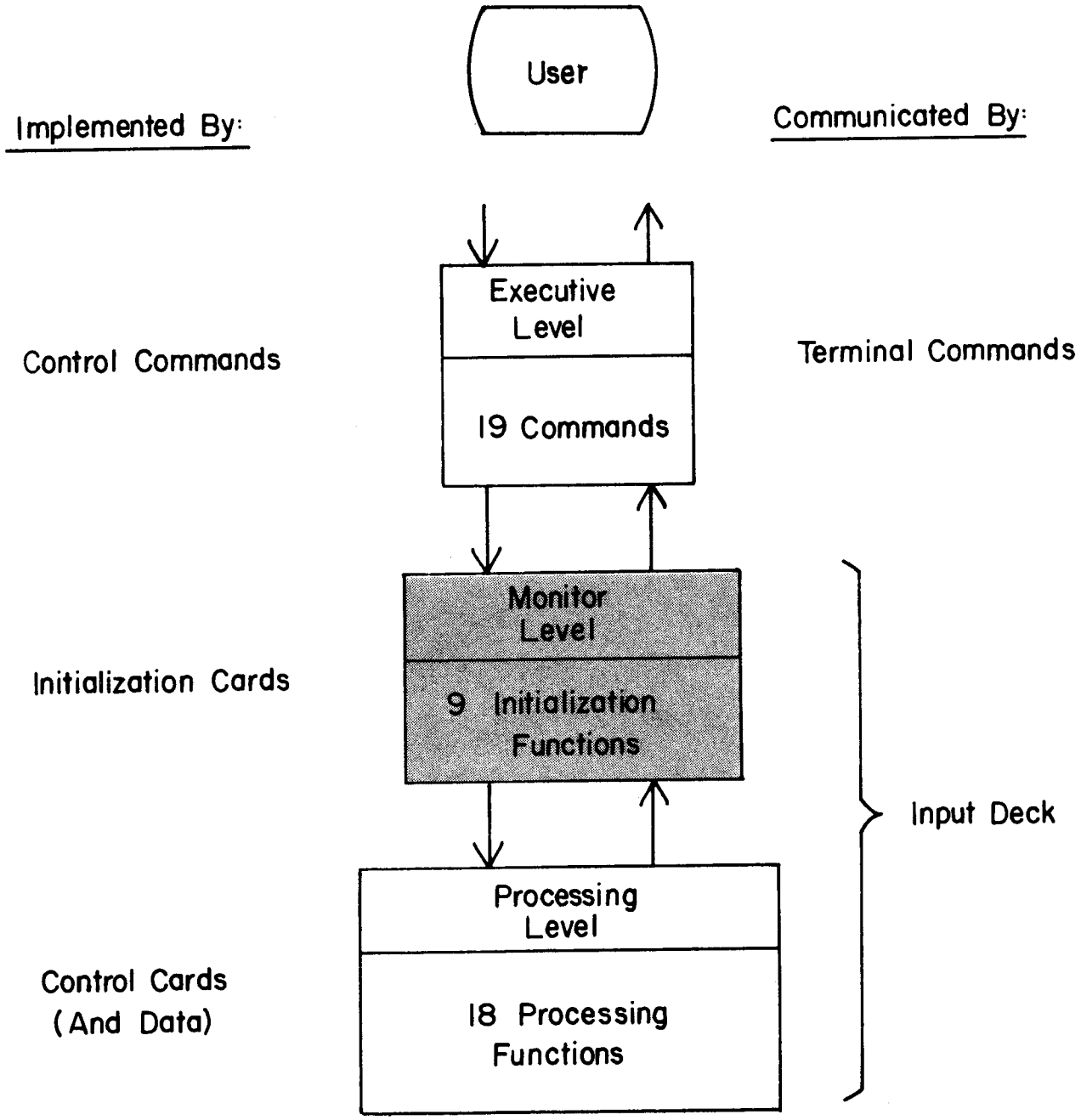
List and briefly describe
at least 40% of the
LARSYS Output Features
described in this briefing

LEFT BLANK INTENTIONALLY.

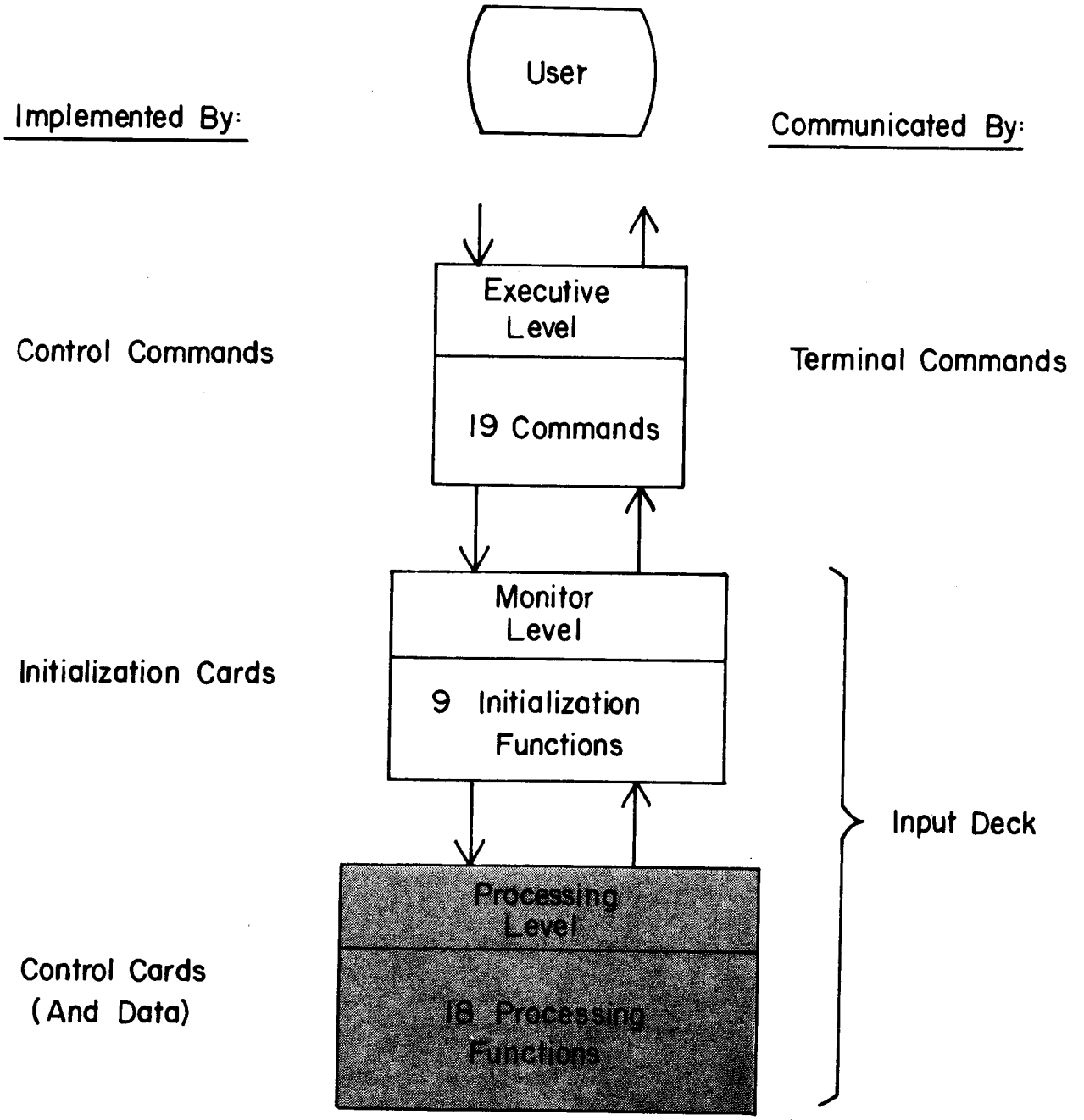
REST YOUR EYES--AND LISTEN.



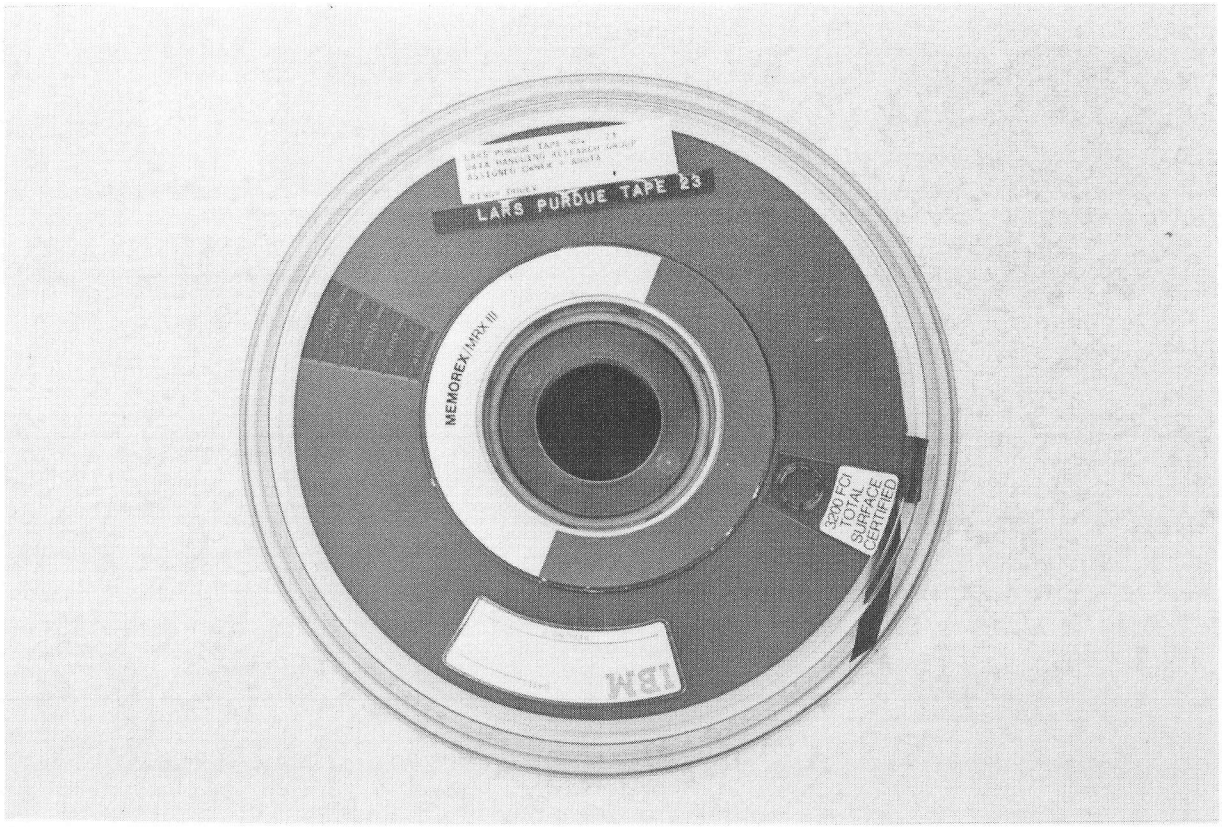
The LARSYS Organization



The LARSYS Organization



The LARSYS Organization


LARS PURDUE TAPE 23
MEMOREX MRX III
3200 FCI
TOTAL
SURFACE
CERTIFIED
IBM

- Data Values
- Data Addresses
- Identification Information
- Calibration Information

- Data Values
- Data Addresses
- Identification Information
- Calibration Information

- Data Values
- Data Addresses
- Identification Information
- Calibration Information

- Data Values
- Data Addresses
- Identification Information
- Calibration Information

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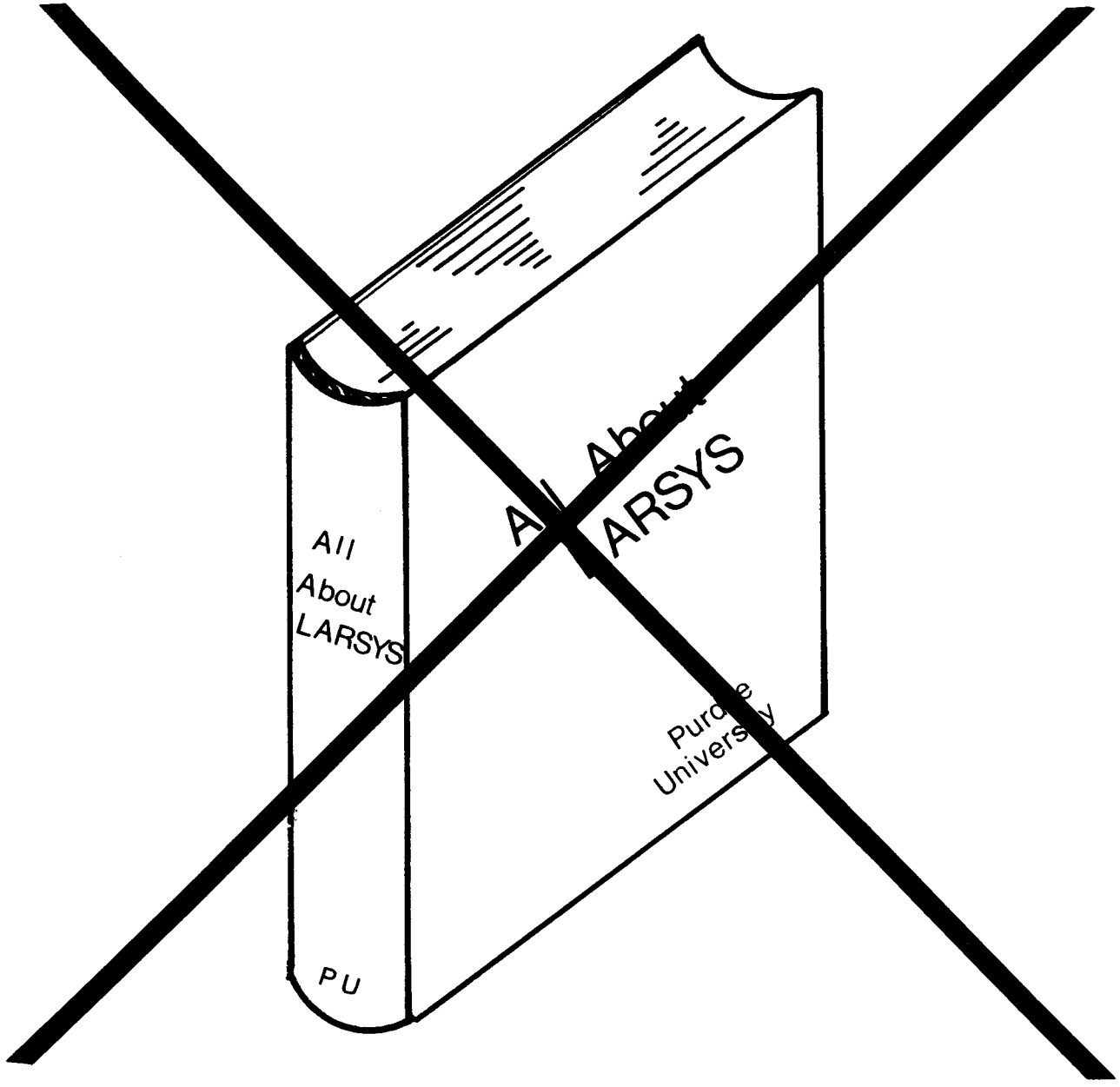
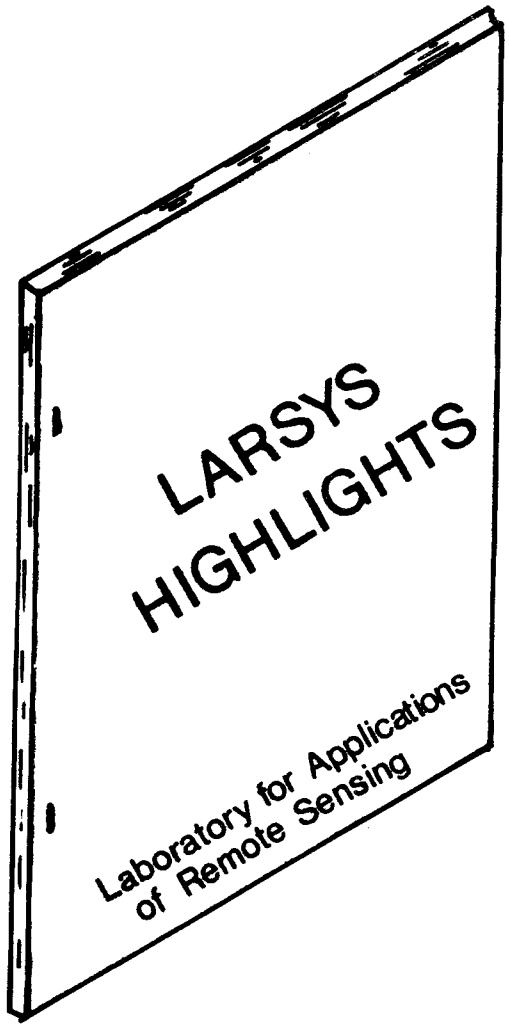
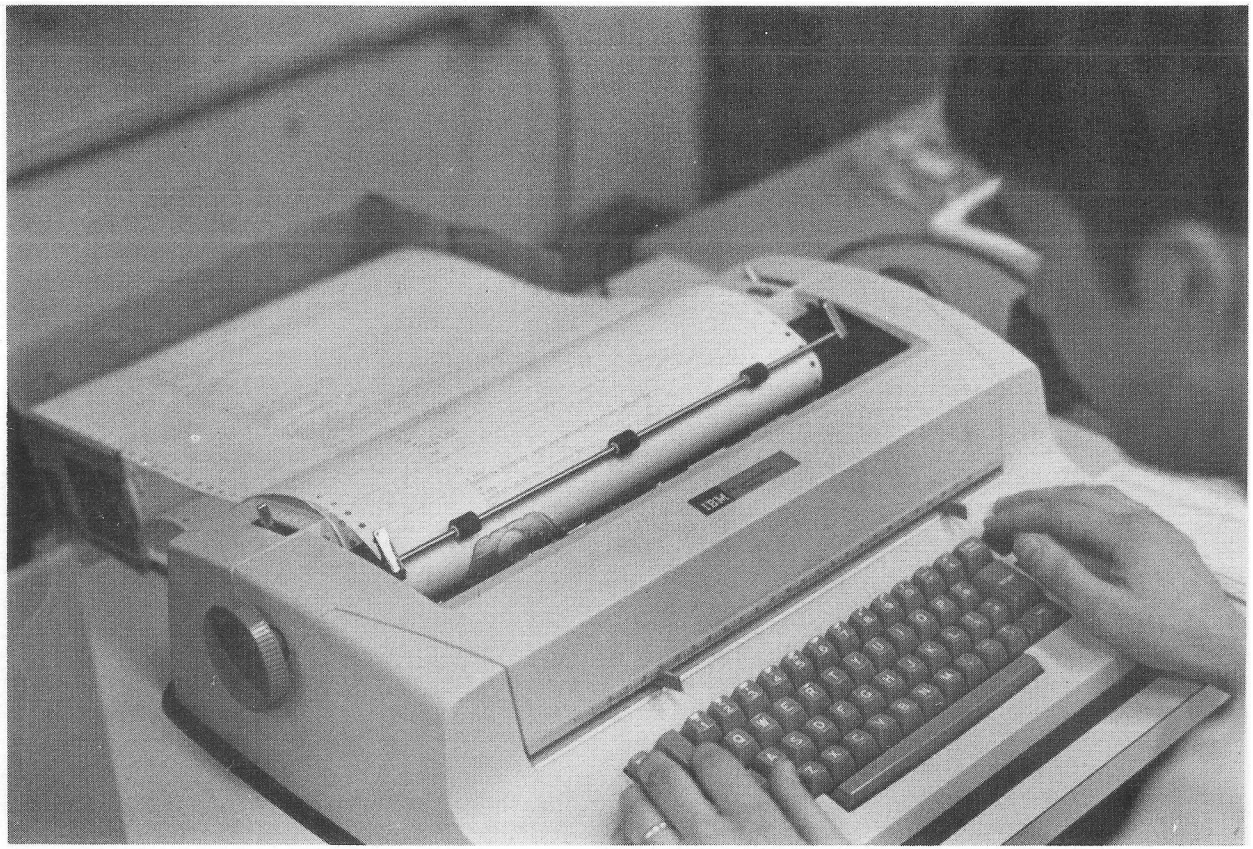
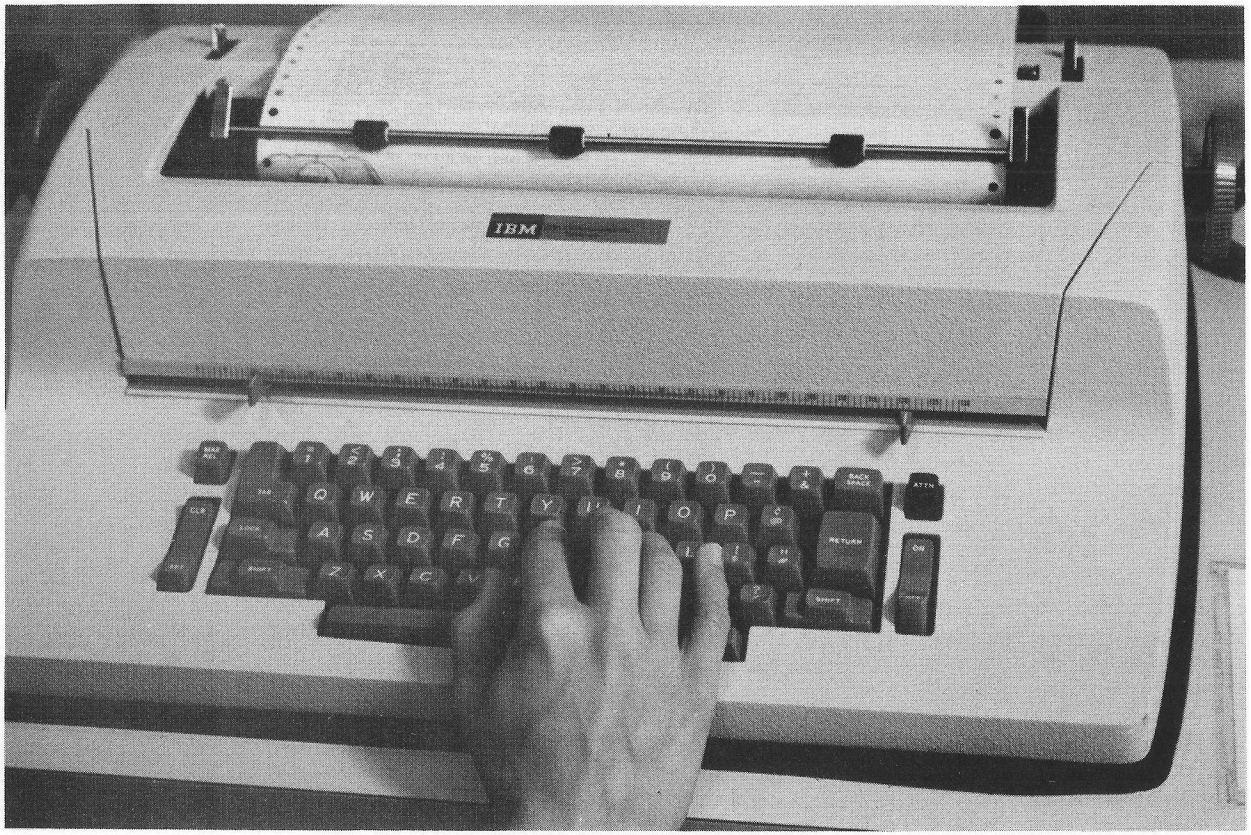
- Data Addresses
- Identification Information
- Calibration Information

- Data Values
- Data Addresses
- Identification Information
- Calibration Information


All
About
LARSYS
PU


LARSYS
HIGHLIGHTS
Laboratory for Applications
of Remote Sensing


IBM


IBM

```
login quest1
ENTER PASSWORD:
********
ENTER NAME: lindenlaub
OPERATORS: MIKE & PERRY
NEXT SCHEDULED SHUTDOWN: 1700 EST SATURDAY
THE TELEPHONE LINE TO TERMINAL 85 IN FLEX1 IS DOWN
READY AT 15.53.11 ON 06/26/73
CP
i larsys
LARSYS (Ver 3) READY;

T=0.46/0.94 15.54.03
run larsys
```

```
login quest1
ENTER PASSWORD:
********
ENTER NAME: lindenlaub
OPERATORS: MIKE & PERRY
NEXT SCHEDULED SHUTDOWN: 1700 EST SATURDAY
THE TELEPHONE LINE TO TERMINAL 85 IN FLEX1 IS DOWN
READY AT 15.53.11 ON 06/26/73
CP
l larsys
LARSYS (Ver 3) READY;

T=0.46/0.94 15.54.03
run larsys
```

```
login questl
ENTER PASSWORD:
********
ENTER NAME: lindenlaub
OPERATORS: MIKE & PERRY
NEXT SCHEDULED SHUTDOWN: 1700 EST SATURDAY
THE TELEPHONE LINE TO TERMINAL 85 IN FLEX1 IS DOWN
READY AT 15.53.11 ON 06/26/73
CP
i larsys
LARSYS (Ver 3) READY;

T=0.46/0.94 15.54.03
run larsys
```

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

DEC 23,1971
10 41 37 AM

TAPE NUMBER..... 210
CONTINUATION CODE..... 0
FLIGHT LINE.. PURDUE FLT LN C1
AIRCRAFT ALTITUDE. 2600 FEET

FILE NUMBER..... 1
NUMBER OF DATA CHANNELS.... 12
DATE DATA TAKEN..... 6/28/66
GROUND HEADING.... 180 DEGREES

RUN NUMBER..... 66000600
NUMBER OF DATA SAMPLES... 228
TIME DATA TAKEN.... 1229 HOURS
REFORMATTING DATE.JAN 27,1971

CHANNEL	SPECTRAL BAND LOWER	SPECTRAL BAND UPPER	CALIBRATION PULSE VALUES C0	C1	C2
1	0.40	0.44	31.00	41.05	63.05
2	0.44	0.46	31.00	42.45	67.30
3	0.46	0.48	31.00	41.85	63.05
4	0.48	0.50	31.00	44.90	72.05
5	0.50	0.52	31.00	59.10	128.4
6	0.52	0.55	31.00	66.25	139.4
7	0.55	0.58	31.00	59.45	119.7
8	0.58	0.62	31.00	94.80	229.4
9	0.62	0.66	31.00	96.90	232.3
10	0.66	0.72	31.00	126.4	248.7
11	0.72	0.80	31.00	100.5	221.4
12	0.80	1.00	31.00	85.30	214.5

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

DEC 23,1971
10 41 41 AM

TAPE NUMBER..... 210
CONTINUATION CODE..... 0
FLIGHT LINE.. PURDUE FLT LN C1
AIRCRAFT ALTITUDE. 2600 FEET

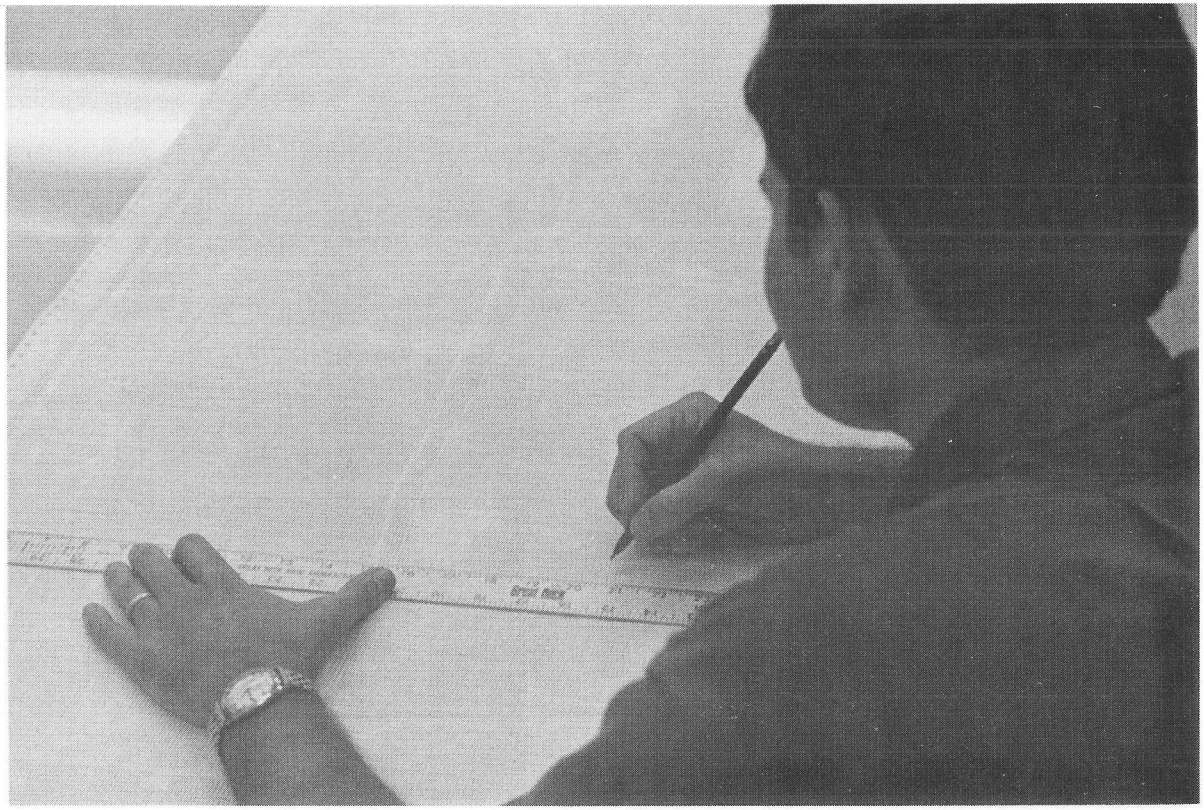
FILE NUMBER..... 1
NUMBER OF DATA CHANNELS.... 12
DATE DATA TAKEN..... 6/28/66
GROUND HEADING.... 180 DEGREES

RUN NUMBER..... 66000600
NUMBER OF DATA SAMPLES... 228
TIME DATA TAKEN.... 1229 HOURS
REFORMATTING DATE.JAN 27,1971

CHANNEL	SPECTRAL BAND LOWER	SPECTRAL BAND UPPER	CALIBRATION PULSE VALUES C0	C1	C2
1	0.40	0.44	31.00	41.05	63.05
2	0.44	0.46	31.00	42.45	67.30
3	0.46	0.48	31.00	41.85	63.05
4	0.48	0.50	31.00	44.90	72.05
5	0.50	0.52	31.00	59.10	128.4
6	0.52	0.55	31.00	66.25	139.4
7	0.55	0.58	31.00	59.45	119.7
8	0.58	0.62	31.00	94.80	229.4
9	0.62	0.66	31.00	96.90	232.3
10	0.66	0.72	31.00	126.4	248.7
11	0.72	0.80	31.00	100.5	221.4
12	0.80	1.00	31.00	85.30	214.5

LARSYS can be used to obtain ID Information from a Multispectral Image Storage Tape

LARSYS Summary



LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

DEC 23,1971
10 42 41 AM

RUN NUMBER..... 66000600
FLIGHT LINE.. PURDUE FLT LN C1
DATA TAPE..... 210
REFORMATTING DATE.JAN 27,1971

DATE..... 6/28/66
TIME..... 1229
ALTITUDE..... 2600
GROUND HEADING.... 180 DEGREES

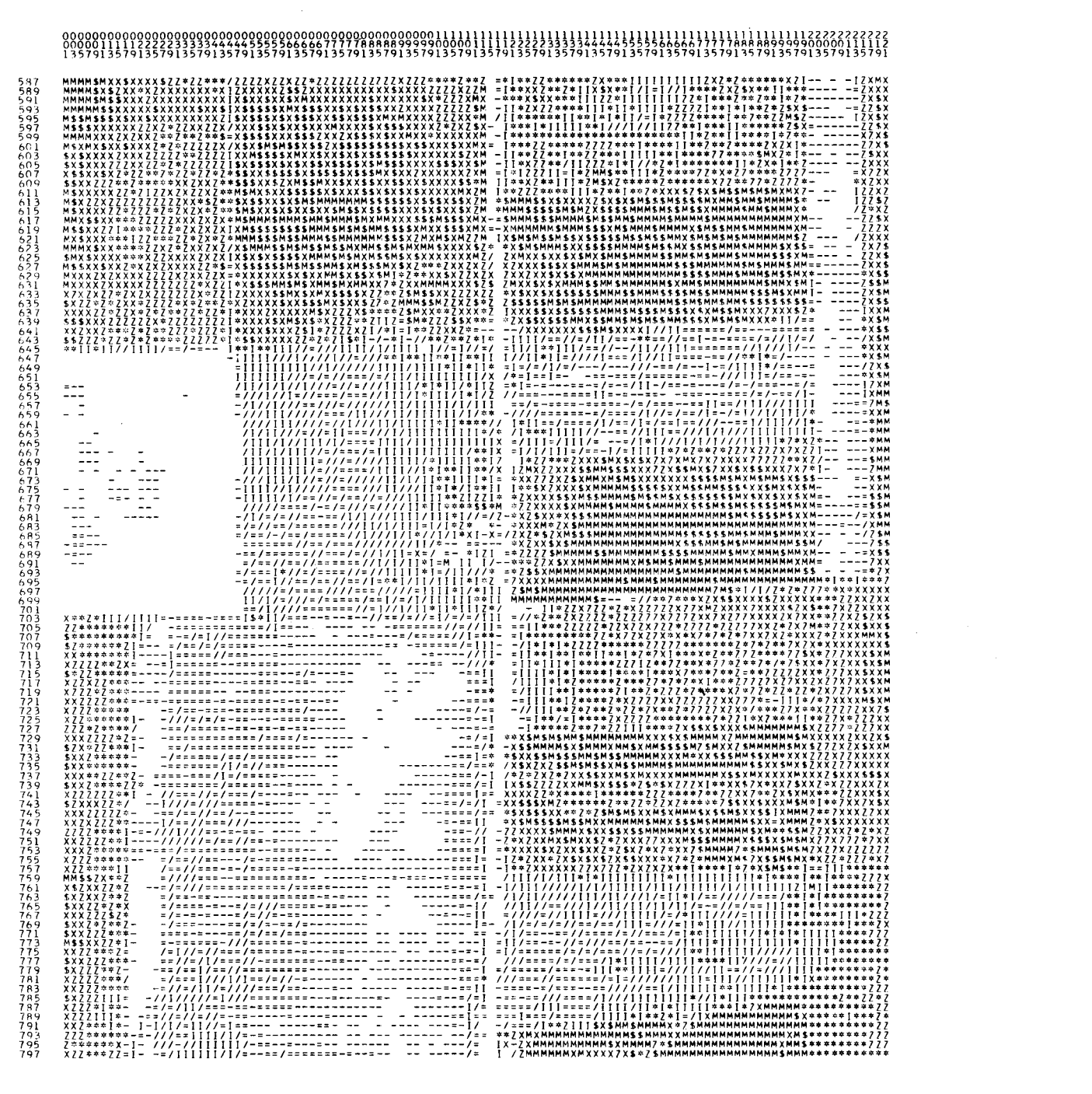
CHANNEL 4 SPECTRAL BAND 0.62 TO 0.66 MICROMETERS CALIBRATION CODE = 1 CO = 31.00

THE CHARACTER SET USED FOR DISPLAY IS

FROM	43.5	TO 54.5	DISPLAYED AS M
FROM	54.5	TO 56.5	DISPLAYED AS $
FROM	56.5	TO 59.5	DISPLAYED AS X
FROM	59.5	TO 62.5	DISPLAYED AS Z
FROM	62.5	TO 68.5	DISPLAYED AS *
FROM	68.5	TO 73.5	DISPLAYED AS 1
FROM	73.5	TO 76.5	DISPLAYED AS /
FROM	76.5	TO 81.5	DISPLAYED AS =
FROM	81.5	TO 88.5	DISPLAYED AS -
FROM	88.5	TO 153.5	DISPLAYED AS

HISTOGRAM BLOCK(S)

RUN NUMBER..... 66000600
LINES..... (587, 797, 2)
COLUMNS..... (1, 222, 2)
CALIBRATION CODE..... 1



RUN NUMBER..... 66000600
FLIGHT LINE.. PURDUE FLT LN C1
DATA TAPE..... 210
REFORMATTING DATE.JAN 27,1971

DATE..... 6/28/66
TIME..... 1229
ALTITUDE..... 2600
GROUND HEADING.... 180 DEGREES

CHANNEL 11 SPECTRAL BAND 0.72 TO 0.80 MICROMETERS CALIBRATION CODE = 1 CO = 31.00

THE CHARACTER SET USED FOR DISPLAY IS

FROM	59.5	TO 85.5	DISPLAYED AS M
FROM	85.5	TO 90.5	DISPLAYED AS $
FROM	90.5	TO 94.5	DISPLAYED AS X
FROM	94.5	TO 99.5	DISPLAYED AS Z
FROM	99.5	TO 102.5	DISPLAYED AS *
FROM	102.5	TO 104.5	DISPLAYED AS I
FROM	104.5	TO 115.5	DISPLAYED AS /
FROM	115.5	TO 127.5	DISPLAYED AS =
FROM	127.5	TO 141.5	DISPLAYED AS -
FROM	141.5	TO 183.5	DISPLAYED AS

HISTOGRAM BLOCK(S)

RUN NUMBER..... 66000600
LINES..... (547, 797, 2)
COLUMNS..... (1, 222, 2)
CALIBRATION CODE..... 1

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

DEC 23,1971
10 43 08 AM

RUN NUMBER..... 66000600
FLIGHT LINE.. PURDUE FLT LN C1
DATA TAPE..... 210
REFORMATTING DATE,JAN 27,1971

DATE..... 6/28/66
TIME..... 1229
ALTITUDE..... 2600
GROUND HEADING.... 180 DEGREES

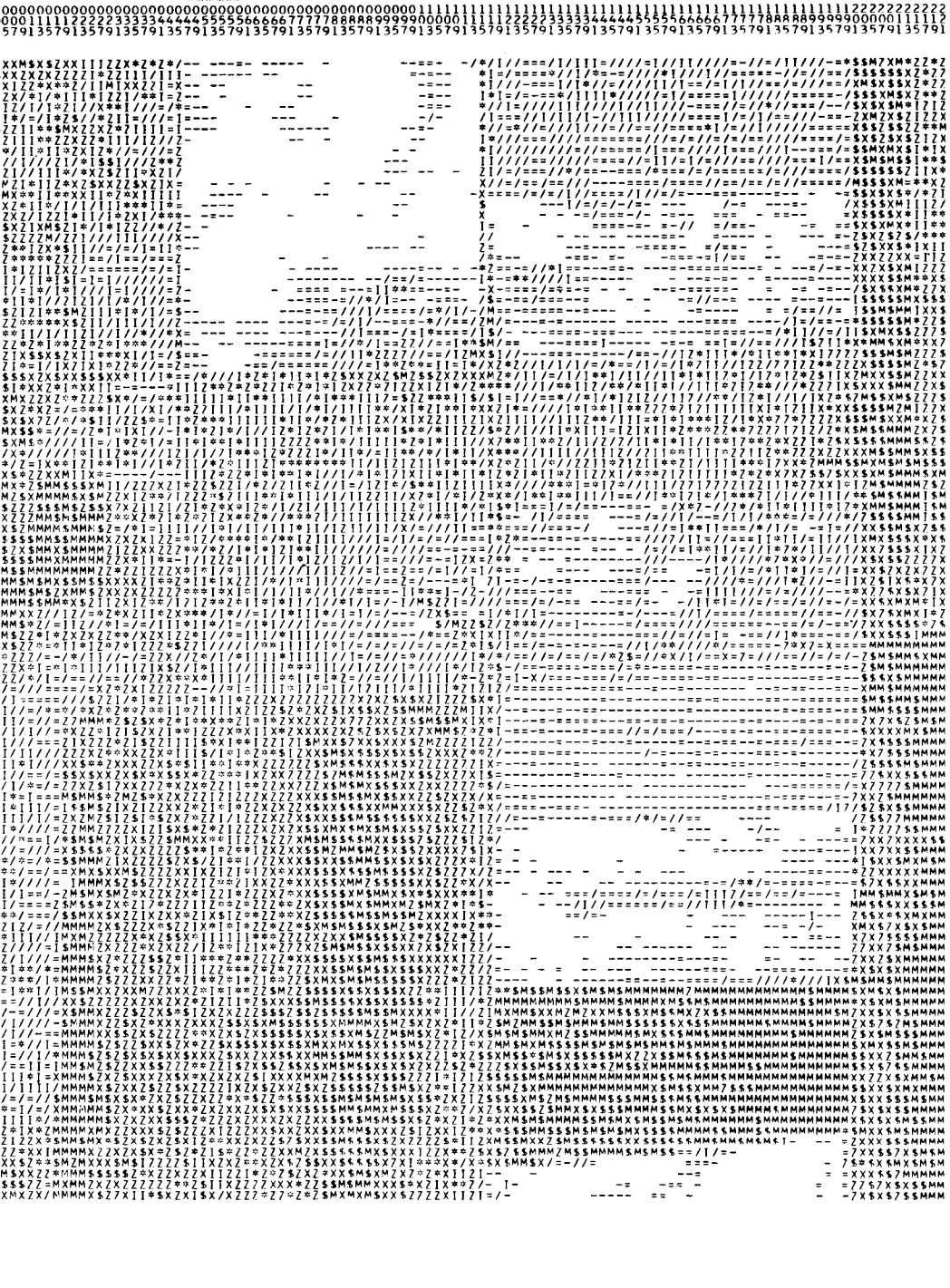
CHANNEL 11 SPECTRAL BAND 0.72 TO 0.80 MICROMETERS CALIBRATION CODE = 1 CO = 31.00

THE CHARACTER SET USED FOR DISPLAY IS

FROM	59.5 TO 63.5	DISPLAYED AS @
FROM	63.5 TO 67.5	DISPLAYED AS #
FROM	67.5 TO 71.5	DISPLAYED AS $
FROM	71.5 TO 75.5	DISPLAYED AS %
FROM	75.5 TO 79.5	DISPLAYED AS &
FROM	79.5 TO 83.5	DISPLAYED AS *
FROM	83.5 TO 87.5	DISPLAYED AS +
FROM	87.5 TO 91.5	DISPLAYED AS =
FROM	91.5 TO 95.5	DISPLAYED AS -
FROM	95.5 TO 99.5	DISPLAYED AS :
FROM	99.5 TO 103.5	DISPLAYED AS .
FROM	103.5 TO 107.5	DISPLAYED AS /
FROM	107.5 TO 111.5	DISPLAYED AS '
FROM	111.5 TO 115.5	DISPLAYED AS (
FROM	115.5 TO 119.5	DISPLAYED AS)
FROM	119.5 TO 123.5	DISPLAYED AS ?
FROM	123.5 TO 127.5	DISPLAYED AS <
FROM	127.5 TO 131.5	DISPLAYED AS >
FROM	131.5 TO 135.5	DISPLAYED AS "
FROM	135.5 TO 139.5	DISPLAYED AS ;
FROM	139.5 TO 143.5	DISPLAYED AS ,
FROM	143.5 TO 147.5	DISPLAYED AS !
FROM	147.5 TO 151.5	DISPLAYED AS ~
FROM	151.5 TO 155.5	DISPLAYED AS ^
FROM	155.5 TO 159.5	DISPLAYED AS `
FROM	159.5 TO 163.5	DISPLAYED AS _
FROM	163.5 TO 167.5	DISPLAYED AS [
FROM	167.5 TO 171.5	DISPLAYED AS]
FROM	171.5 TO 175.5	DISPLAYED AS {
FROM	175.5 TO 179.5	DISPLAYED AS }
FROM	179.5 TO 183.5	DISPLAYED AS \

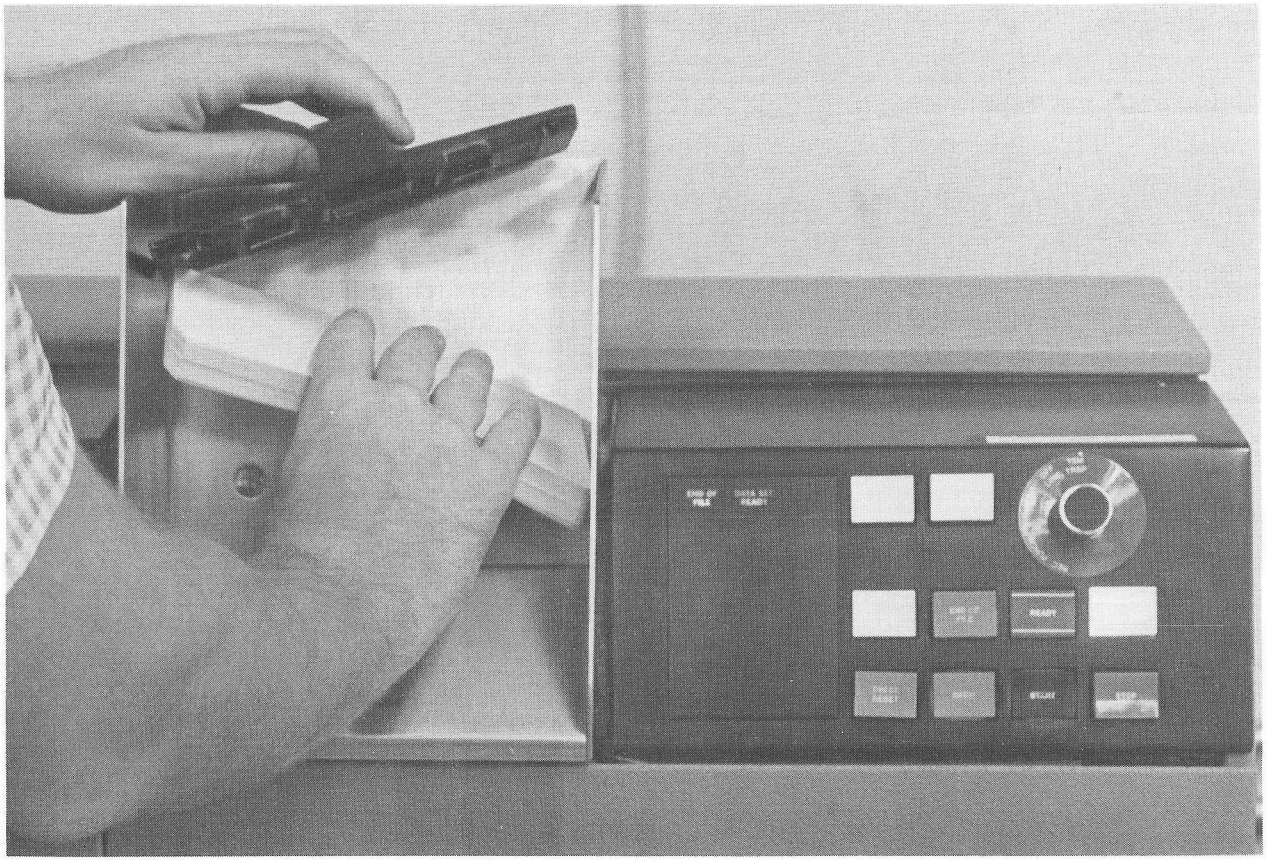
HISTOGRAM BLOCK(S)

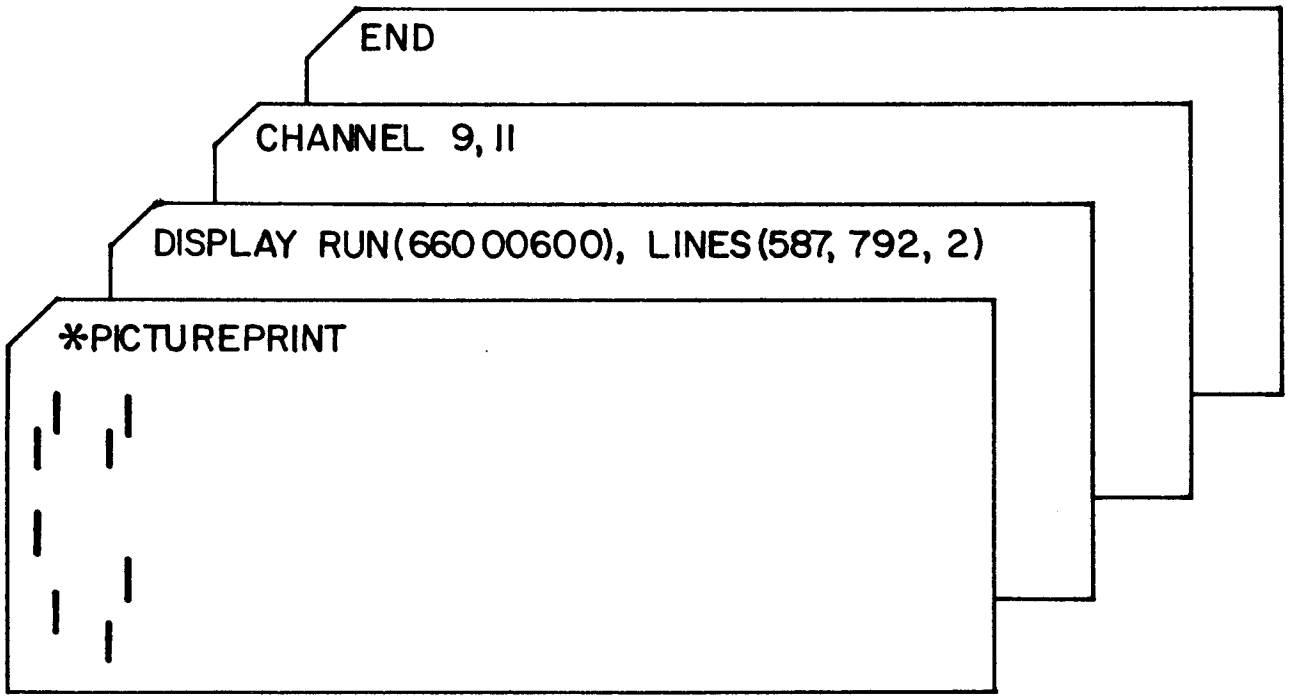
RUN NUMBER..... 66000600
LINES..... (587, 797, 2)
COLUMNS..... (1, 222, 2)
CALIBRATION CODE..... 1

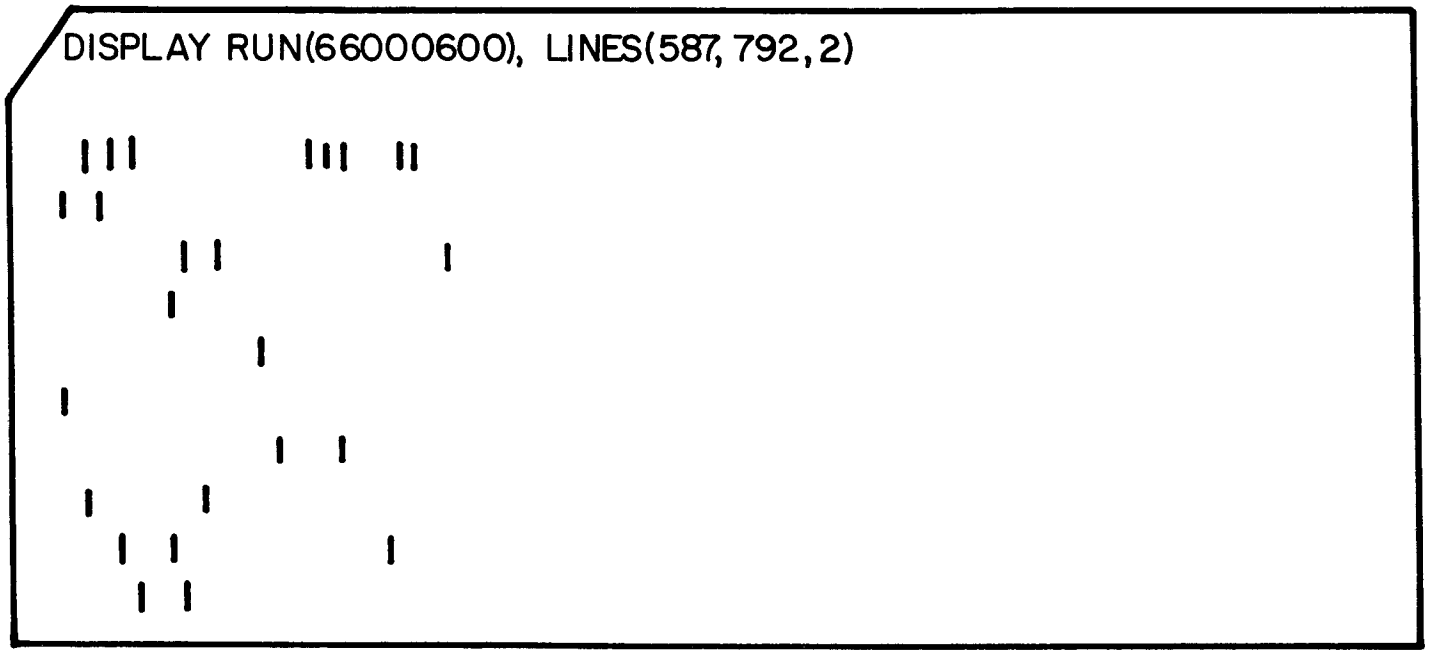


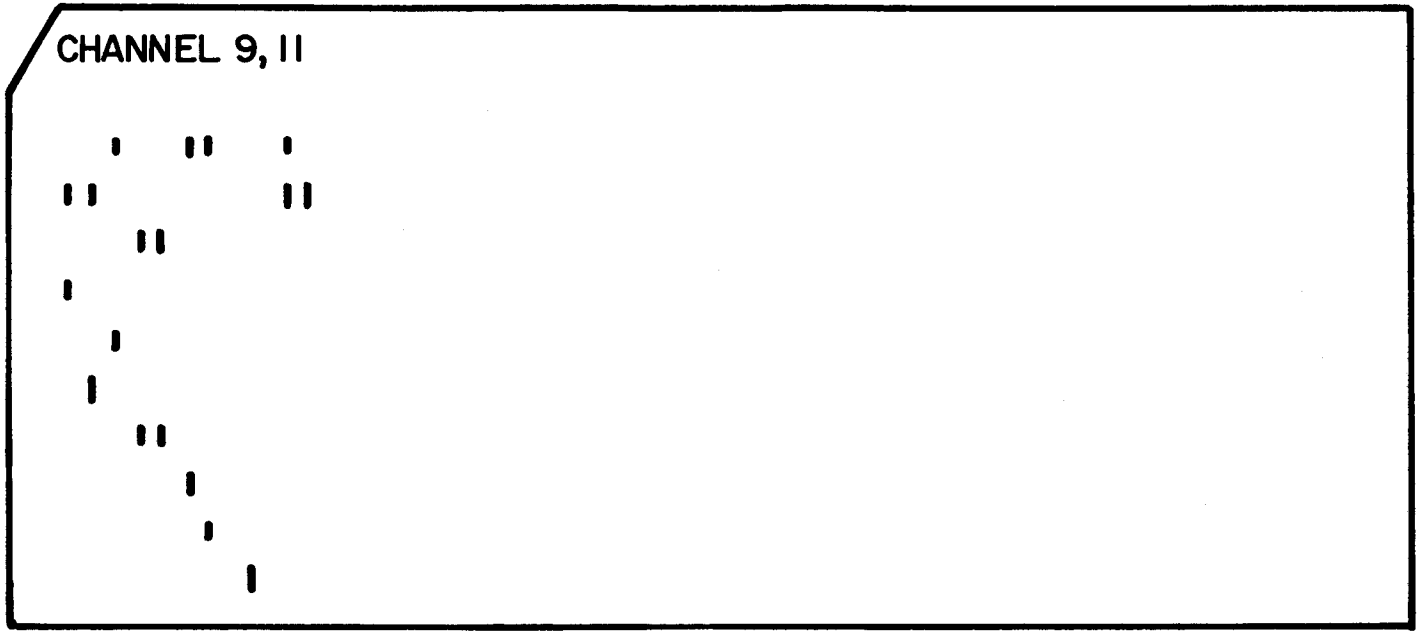
LARSYS can produce Alphanumeric Pictorial Printouts

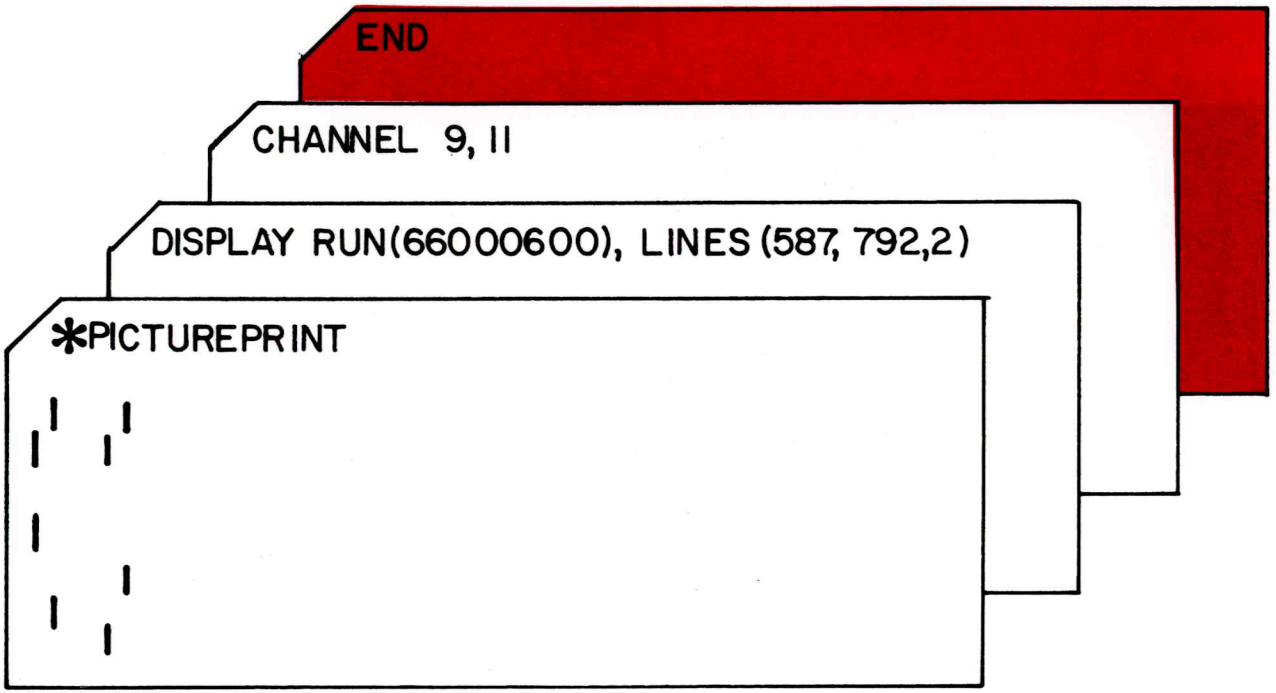
LARSYS Summary

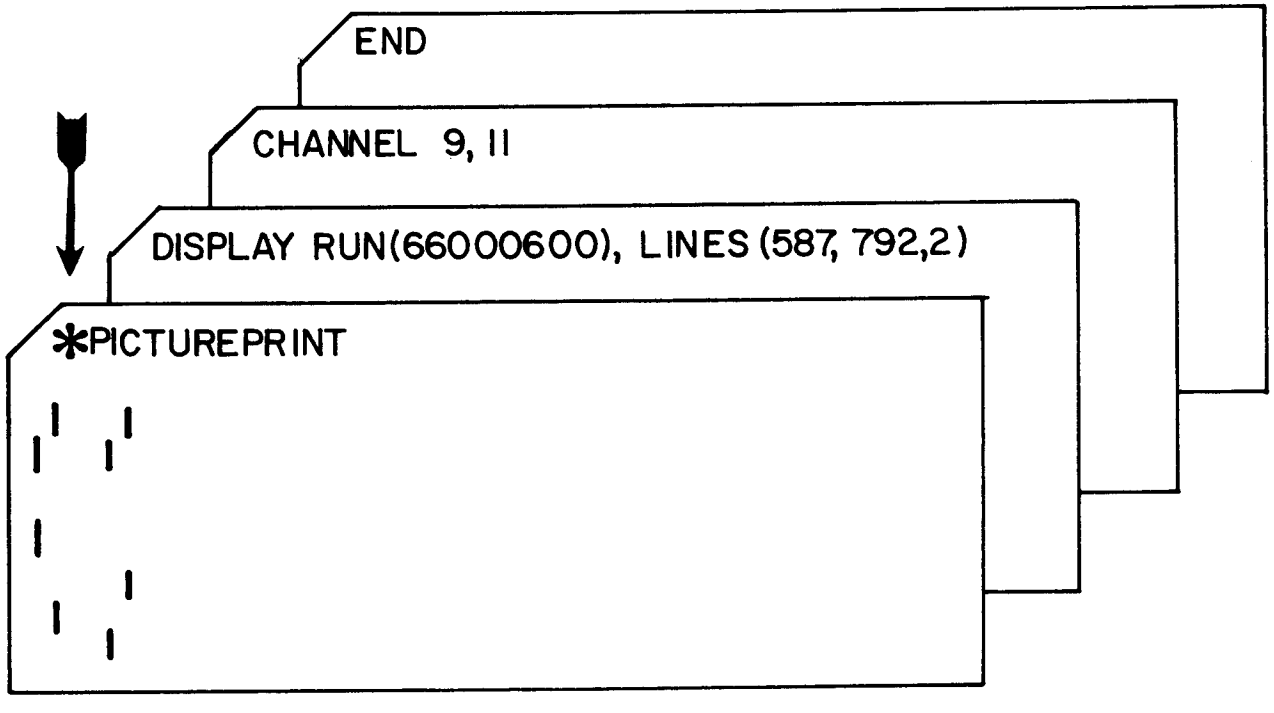



END
CHANNEL 9, 11
DISPLAY RUN(66000600), LINES(587, 792, 2)
*PICTUREPRINT

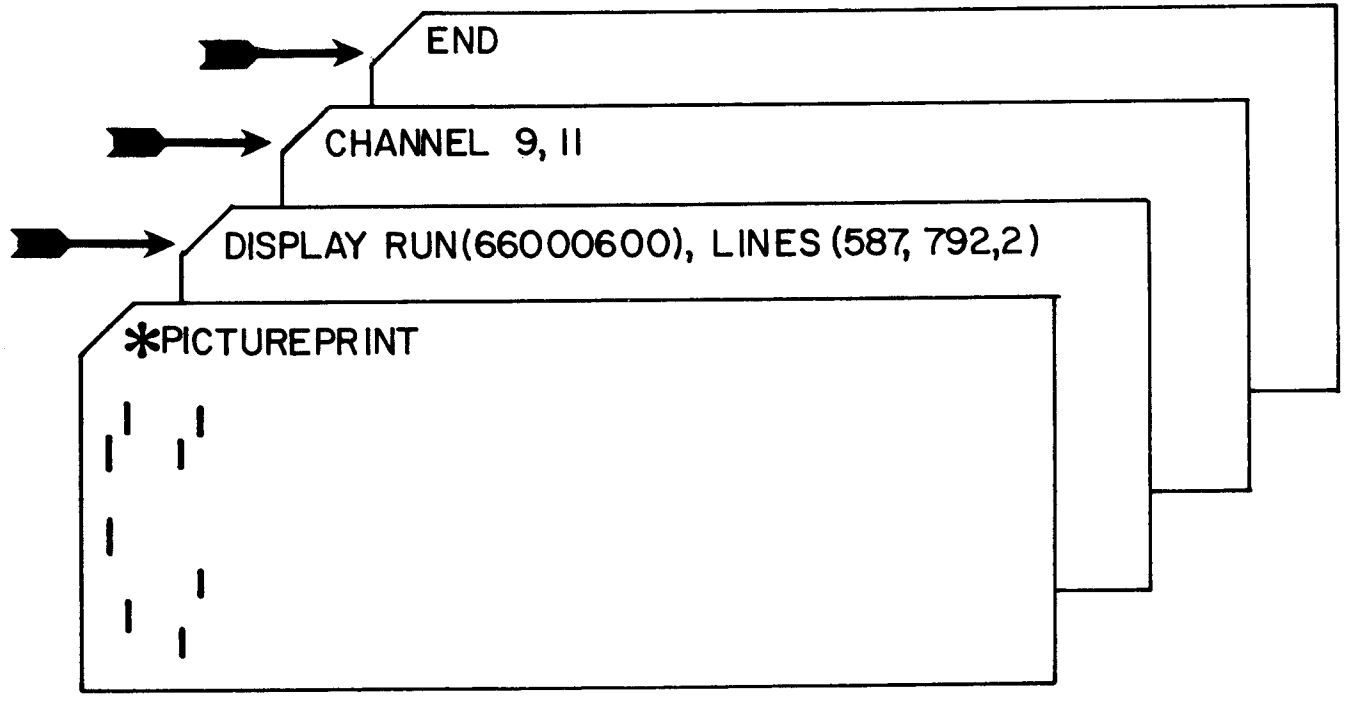

DISPLAY RUN(66000600), LINES(587, 792, 2)


CHANNEL 9, 11


END
CHANNEL 9, 11
DISPLAY RUN(66000600), LINES (587, 792,2)
*PICTUREPRINT



Function Selector Card



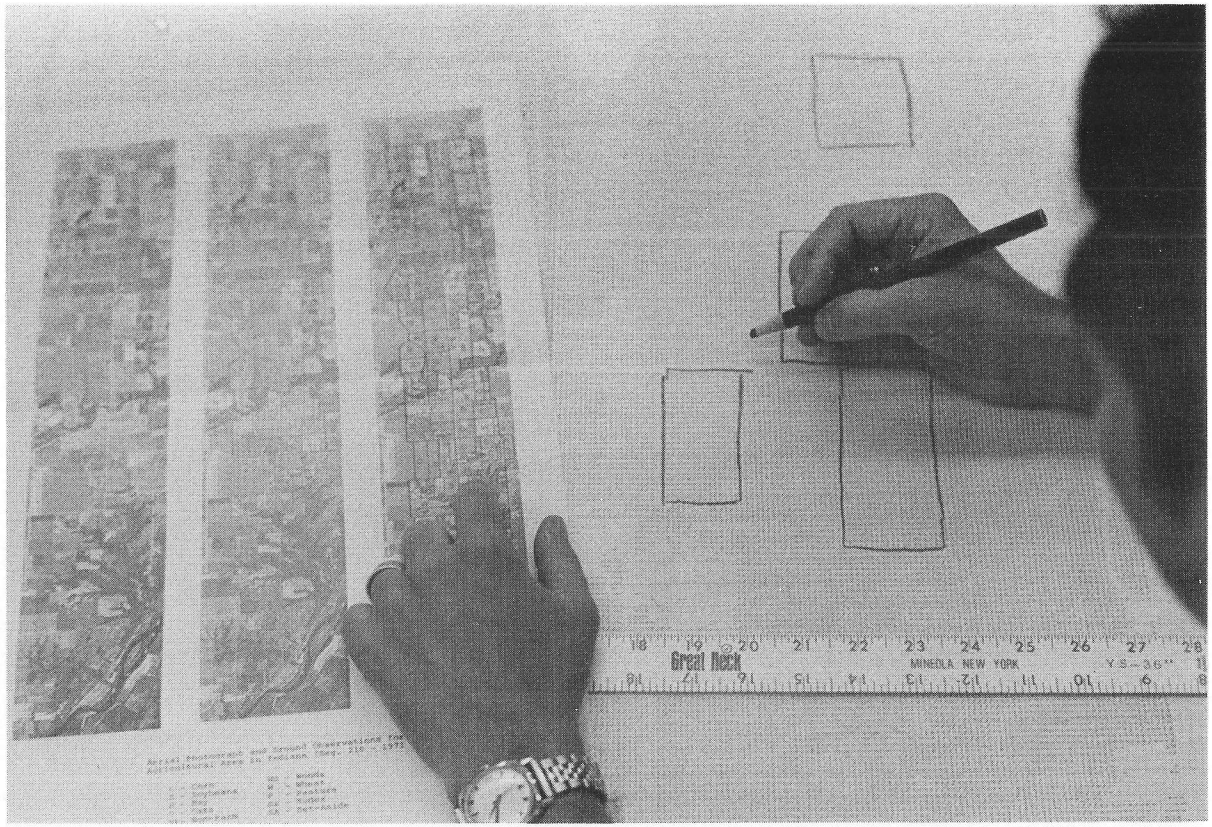
Function Control Cards

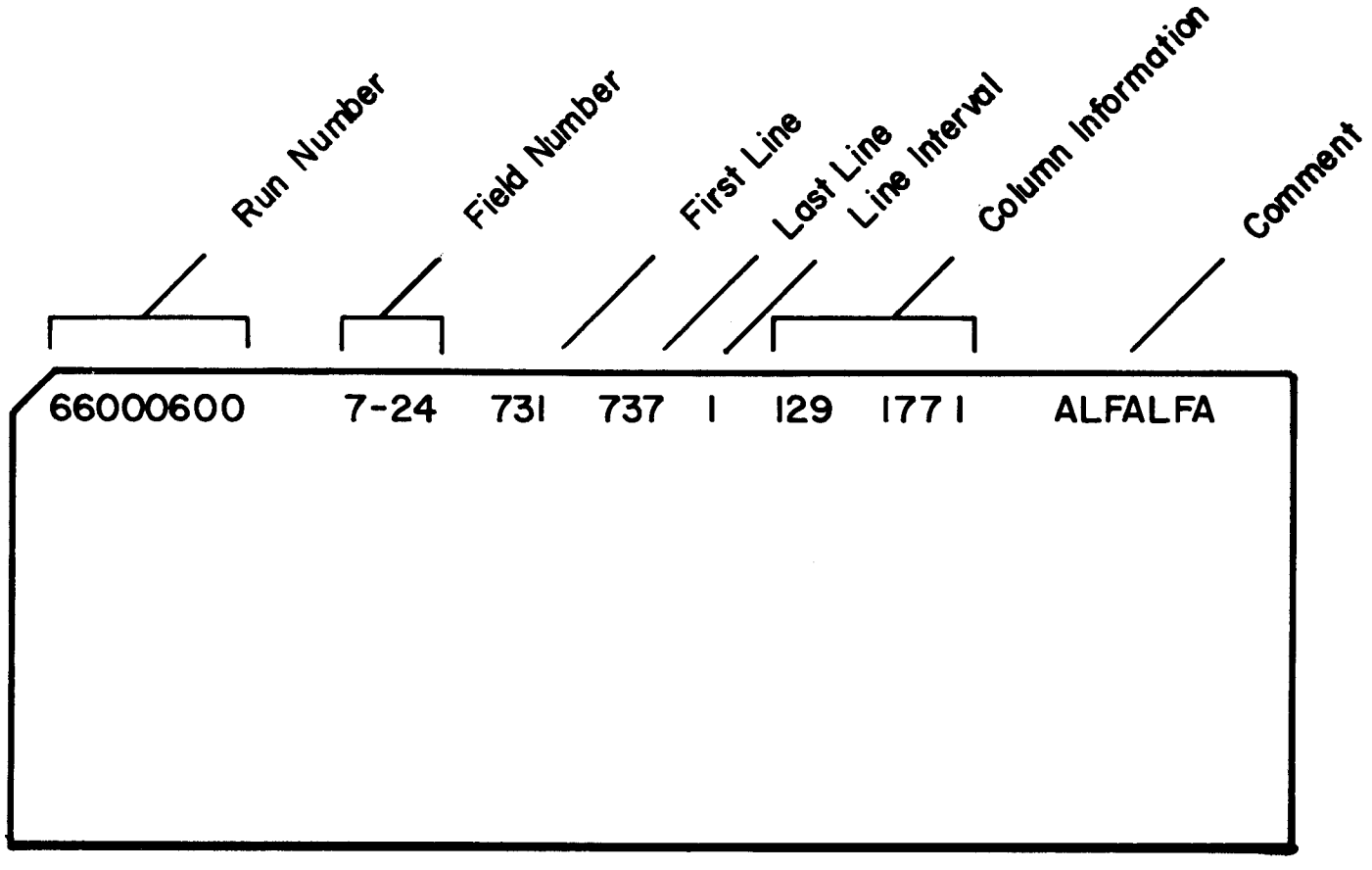
LARSYS Operations are specified by

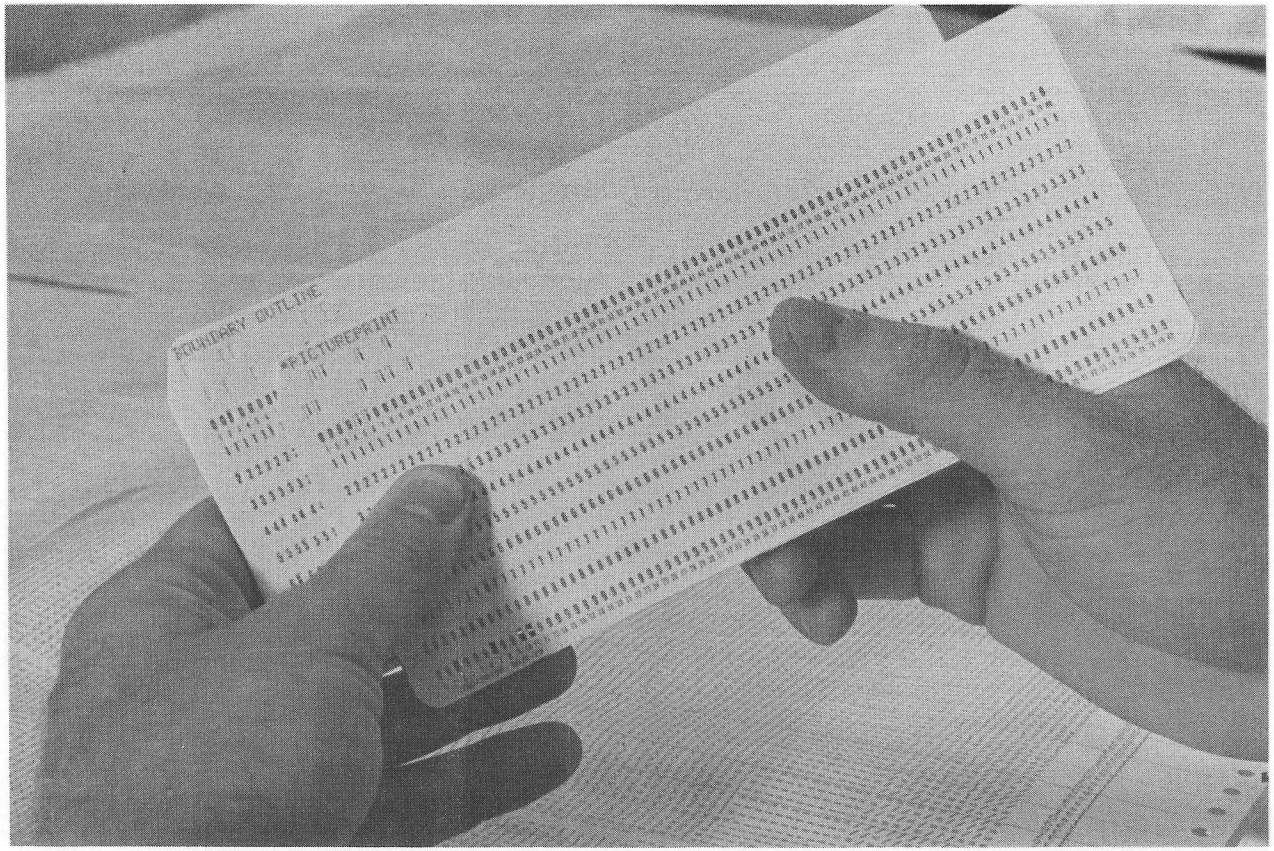
- Function Selector Cards
- Function Control Cards

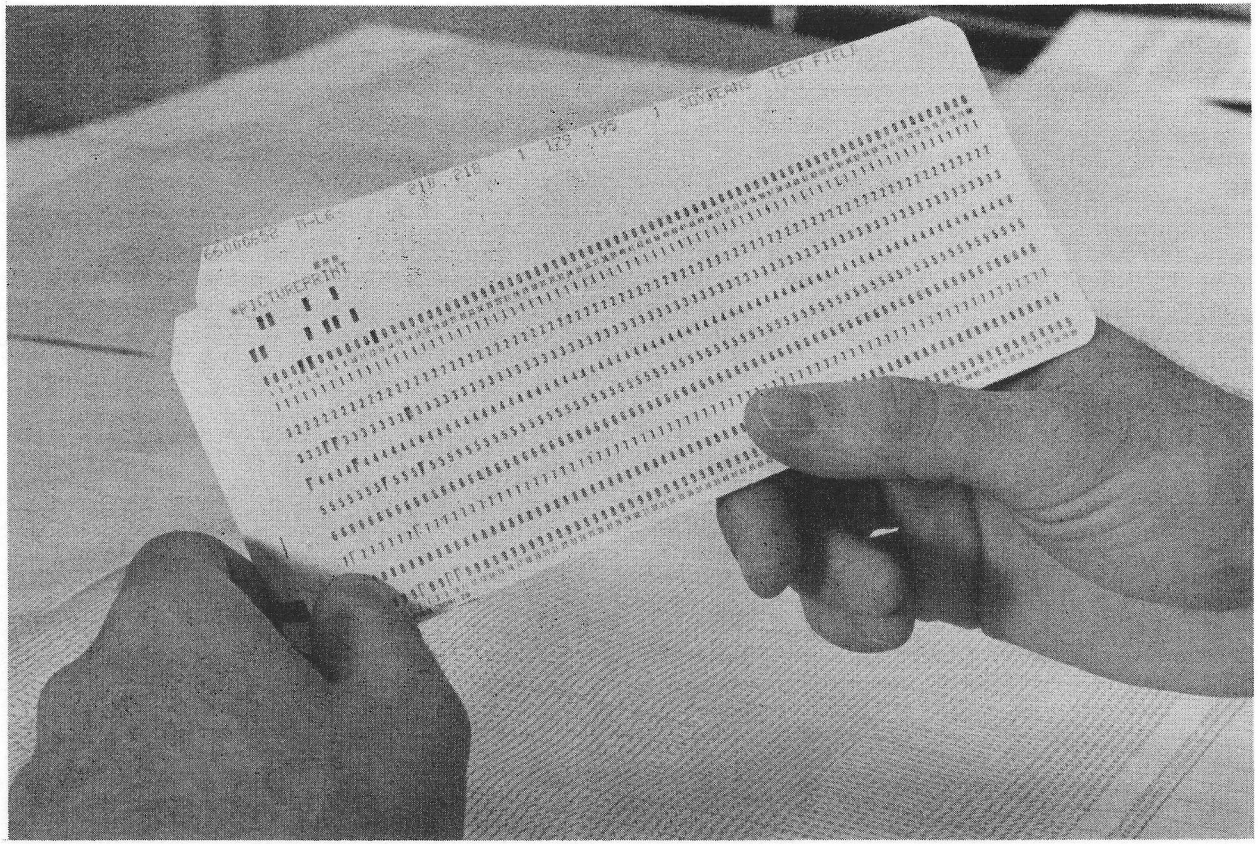
LEFT BLANK INTENTIONALLY.

REST YOUR EYES--AND LISTEN.


Great Neck
MINEOLA NEW YORK


Run Number
Field Number
First Line
Last Line
Line Interval
Column Information
Comment
66000600
7-24
731
737
1
129
1771
ALFALFA


BOUNDARY OUTLINE
*PICTUREPRINT



LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

DEC 23,1971
10 43 39 AM

RUN NUMBER..... 66000600
FLIGHT LINE.. PURDUE FLT LN C1
DATA TAPE..... 210
REFORMATTING DATE.JAN 27,1971

DATE..... 6/28/66
TIME..... 1229
ALTITUDE..... 2600
GROUND HEADING.... 180 DEGREES

CHANNEL 9 SPECTRAL BAND 0.62 TO 0.66 MICROMETERS CALIBRATION CODE = 1 CO = 31.00

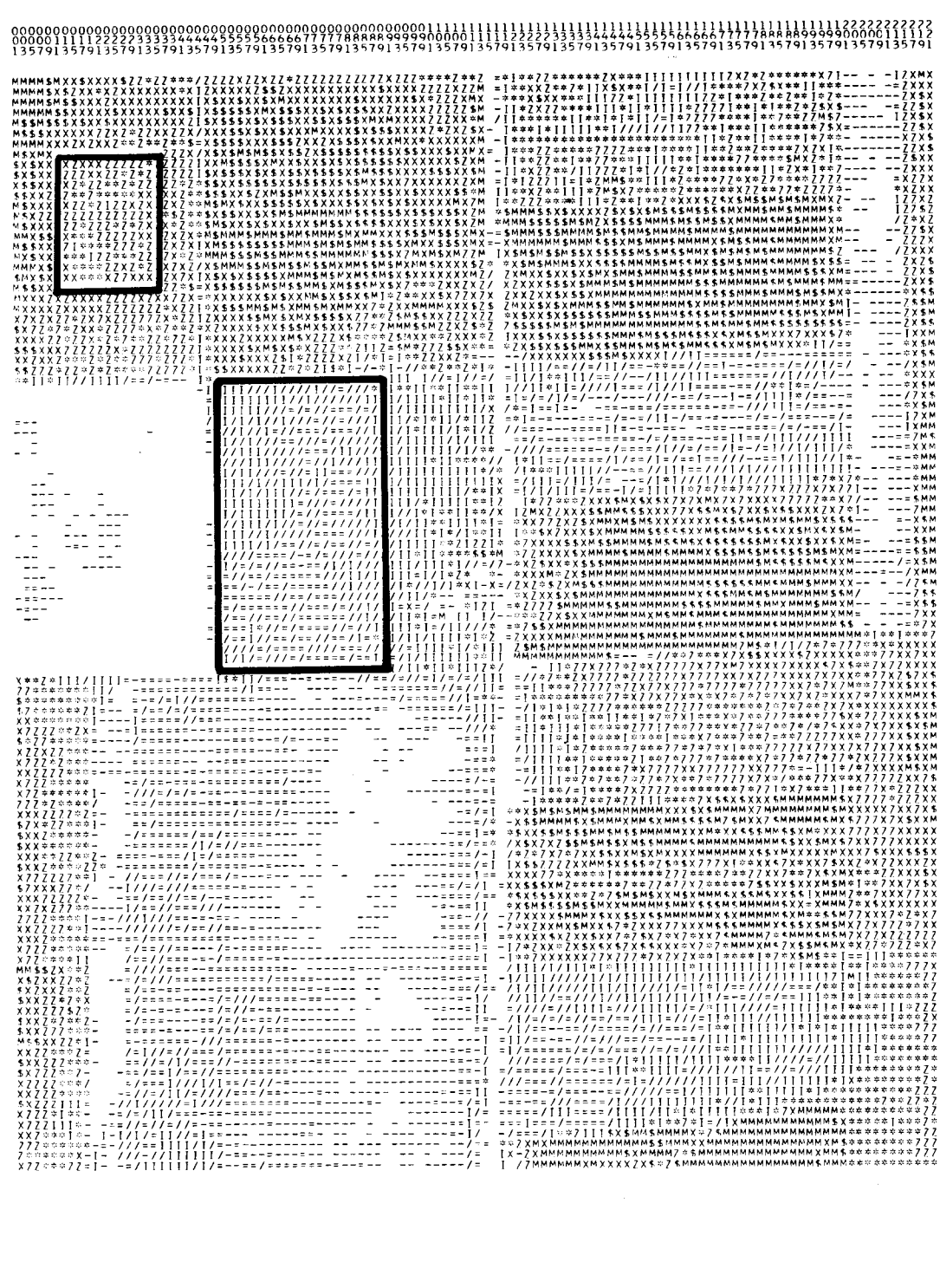
THE CHARACTER SET USED FOR DISPLAY IS

FROM	43.5	TO 54.5	DISPLAYED AS M
FROM	54.5	TO 56.5	DISPLAYED AS $
FROM	56.5	TO 59.5	DISPLAYED AS X
FROM	59.5	TO 62.5	DISPLAYED AS Z
FROM	62.5	TO 68.5	DISPLAYED AS *
FROM	68.5	TO 73.5	DISPLAYED AS I
FROM	73.5	TO 76.5	DISPLAYED AS /
FROM	76.5	TO 81.5	DISPLAYED AS =
FROM	81.5	TO 88.5	DISPLAYED AS -
FROM	88.5	TO 153.5	DISPLAYED AS

TRAIN FIELD BOUNDARIES MARKED WITH .
TEST FIELD BOUNDARIES MARKED WITH ;

HISTOGRAM BLOCK(S).

RUN NUMBER..... 66000600
LINES..... (587, 797, 2)
COLUMNS..... (1, 222, 2)
CALIBRATION CODE..... 1



LARSYS will outline Field Boundaries on gray scale printouts

LARSYS Summary

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

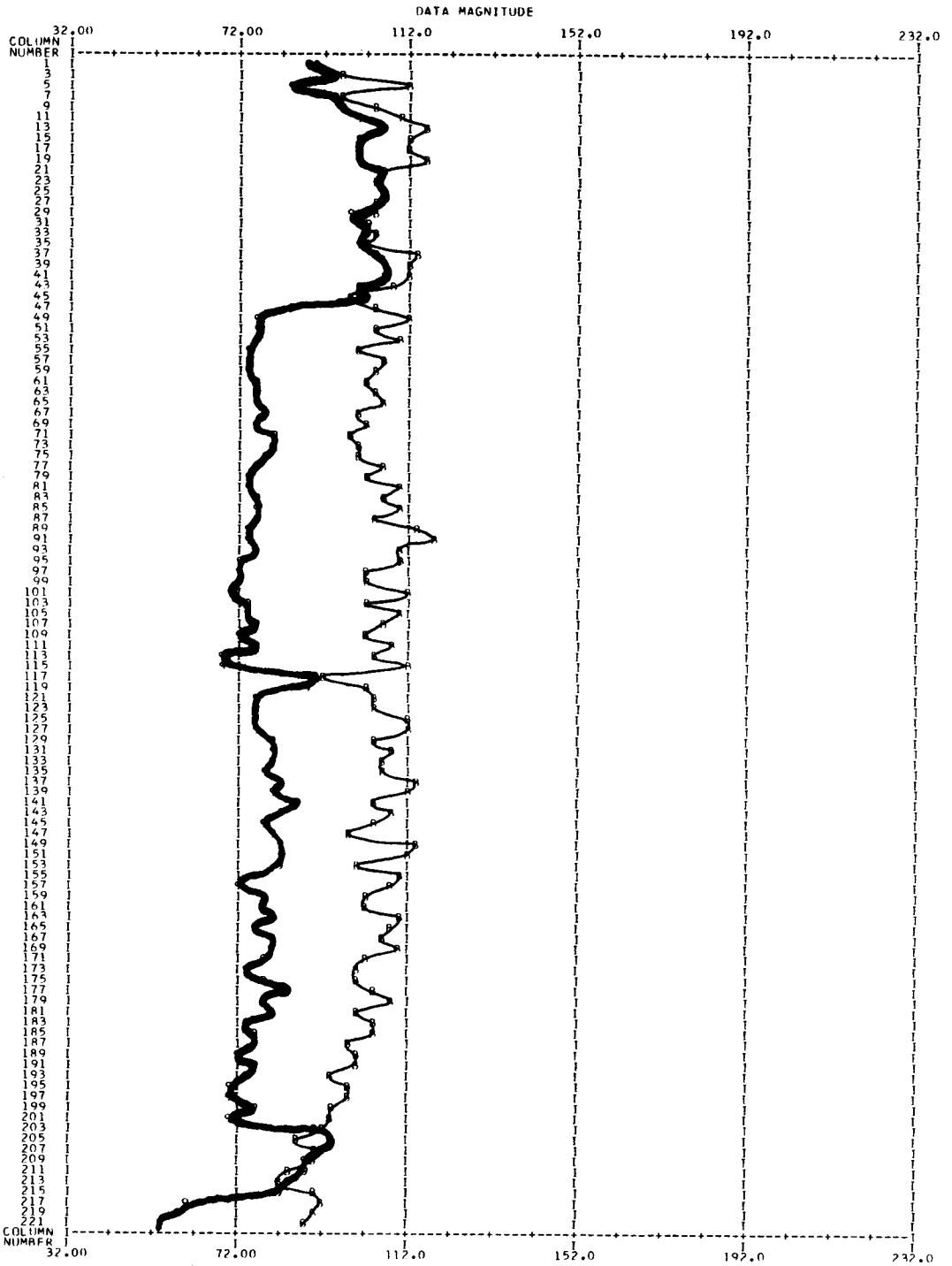
DEC 23,1971
11 01 53 AM

****** GRAPH OF LINE 659 ******

RUN NUMBER..... 66000600
FLIGHT LINE.. PURDUE FLT LN C1
DATA TAPE..... 210
REFORMATING DATE. JAN 27,1971

DATE..... 6/28/66
TIME..... 1229
ALTITUDE..... 2600
GROUND HEADING.... 180 DEGREES

CHANNEL 9 SPECTRAL BAND 0.62 TO 0.66 MICROMETERS DISPLAYED AS.. 9 CALCODE = 1 CO = 31.00
CHANNEL 11 SPECTRAL BAND 0.72 TO 0.80 MICROMETERS DISPLAYED AS.. B CALCODE = 1 CO = 31.00



CALIBRATION FOR LINE 659

CHANNEL	C0 MEAN	C0 VARIANCE	C1 MEAN	C1 VARIANCE	C2 MEAN	C2 VARIANCE
9	31.0	1.0	96.0	4.0	230.0	1.0
11	31.0	4.0	99.0	5.0	218.0	3.0

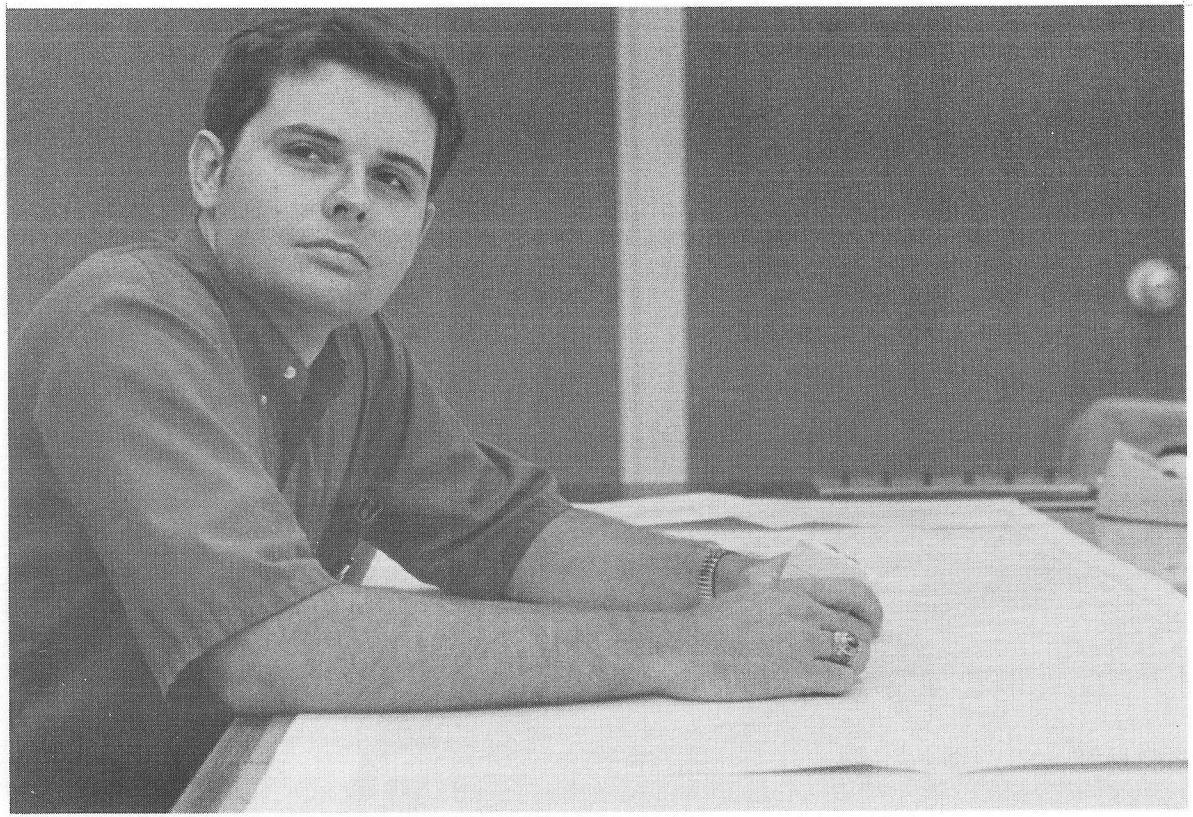
ROLL WAS NOT CALCULATED FOR THIS DATA.

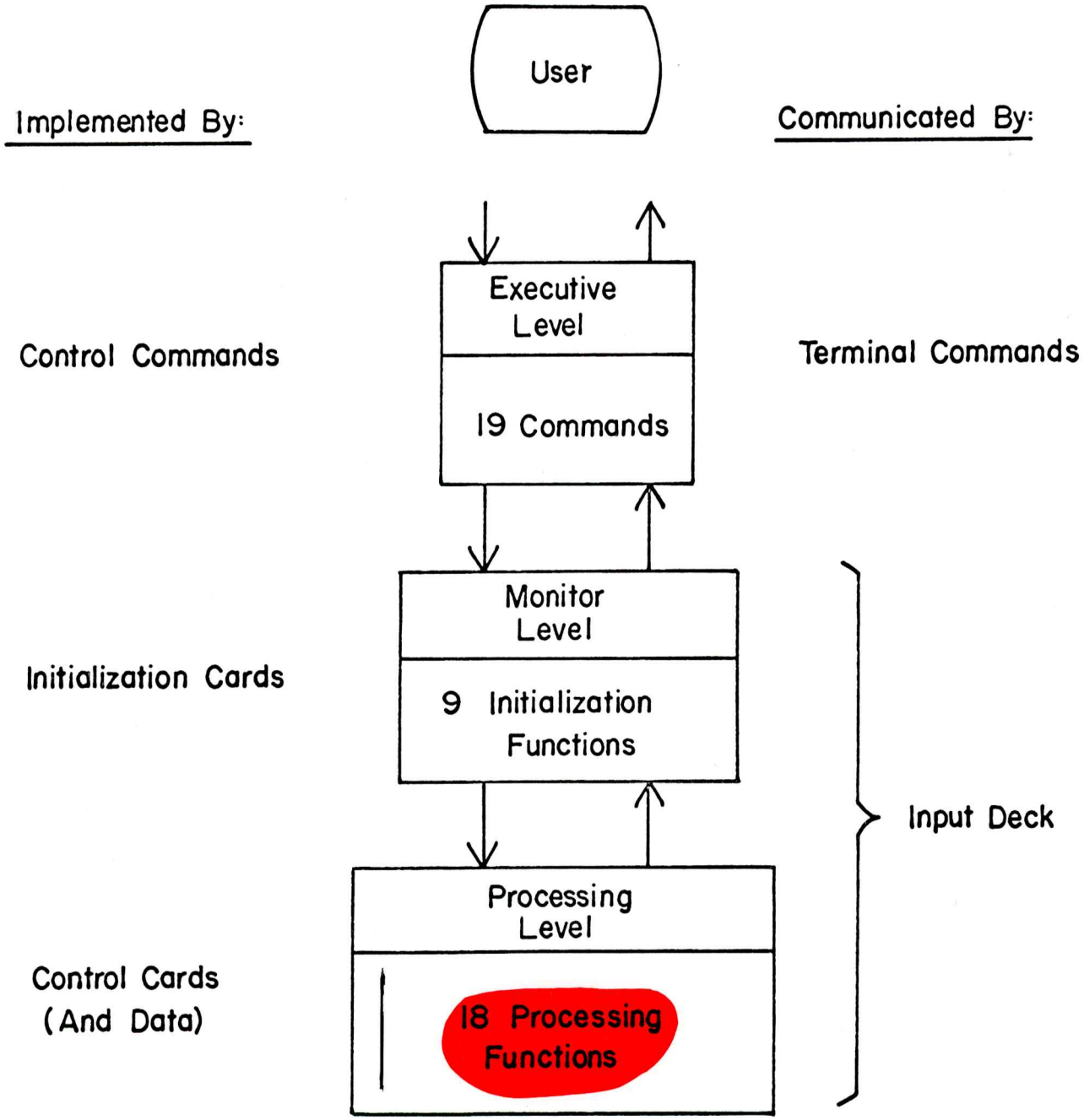
LARSYS can produce Graphs of specified lines or columns of data

LARSYS Summary

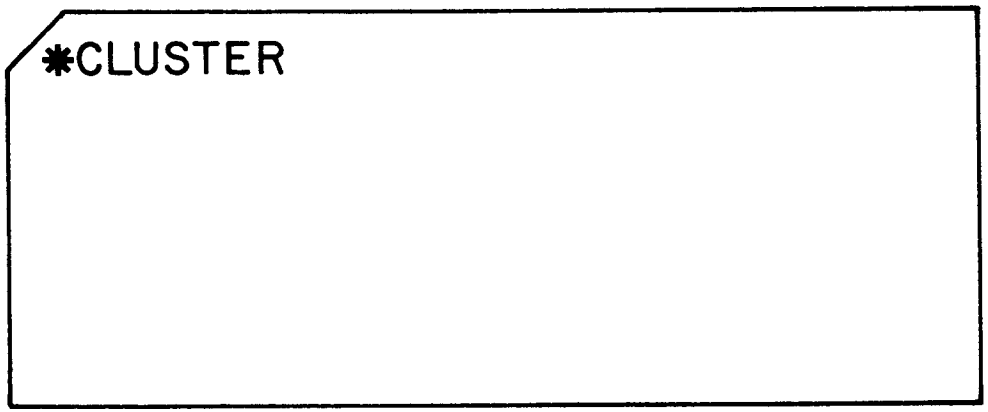
LEFT BLANK INTENTIONALLY.

REST YOUR EYES--AND LISTEN.





The LARSYS Organization



Function Selector Card for CLUSTER Function

QUEST1
ED BELCHER

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

JULY 26,1973
8 37 27 PM
LARSYS VERSION 3

FIELD INFORMATION

FIELD DD1
RUN NO. 71053900
OTHER INFORMATION

TYPE SOYBEANS
NO. OF SAMPLES 361

LINES 425- 443 (BY 1)
COLUMNS 109- 127 (BY 1)

```
          1111111111111111111
          0111111111122222222
          9012345678901234567

425       2222222222222222242
426       2222222222222222222
427       2222222222222222242
428       2222222222222222222
429       2222222222244442244
430       2222222222422222244
431       2222222144424444244
432       2343414422222222222
433       2222222222222222222
434       2222222222222222222
435       2222222222222222222
436       2222222255555554452
437       2222222255455554454
438       2222222255555566445
439       2222222225545564442
440       2222222222222222422
441       2222222222225442224
442       2222222222222222222
443       2222222222222222244
```

NUMBER OF POINTS PER CLUSTER

CLUSTER	1	2	3	4	5	6
SYMBOL	1	2	3	4	5	6
POINTS	2	285	2	42	27	3

QUEST1
ED BELCHER

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

JULY 26,1973
8 37 25 PM
LARSYS VERSION 3

FIELD INFORMATION

FIELD J5
RUN NO. 71053900
OTHER INFORMATION

TYPE SOYBEANS
NO. OF SAMPLES 629

LINES 307- 323 (BY 1)
COLUMNS 33- 69 (BY 1)

```
     00000000000000000000000000000000000
     33333334444444445555555556666666666
     34567890123456789012345678901234567 89

307  22222222222222222222222222222222222222
308  22222222222222222222222222222222222222
309  22222222222222222222222244222222222222
310  22222222222222222222222222222222222222
311  22222222222222222222222222222222222222
312  22222222222222222222222222222222222222
313  22222222222222222222222222222222222222
314  22222222222222222222222222222222222222
315  22222222222222222222222222222222222222
316  22222222222222222222222222222222222222
317  22222222222222222222222222222222222222
318  22222222222222222222222222222222222222
319  22222222222222222222222222222222222222
320  22222222222222222222222222222222222222
321  22222222222222222222222222222222222222
322  22222222221222222222222222222222222222
323  22222222222222222222222222222222222222
```

NUMBER OF POINTS PER CLUSTER

CLUSTER	1	2	3	4	5	6
SYMBOL	1	2	3	4	5	6
POINTS	1	626	0	2	0	0

FIELD INFORMATION

FIELD KK2
RUN NO. 71053900
OTHER INFORMATION

TYPE SOYBEANS
NO. OF SAMPLES 357

LINES 873- 893 (BY 1)
COLUMNS 91- 107 (BY 1)

```
      00000C0000111111111
      99999999900000000
      12345678901234567

873   22222222222222222
874   22222222222222222
875   22222222222222222
876   22222222222222222
877   22222212122224222
878   11222222222222224
879   21222222222222244
880   22222222222222222
881   22222222222222222
882   22222222222222222
883   22222222222224242
884   22222222222224442
885   22222222222224222
886   22222122222222222
887   44224222222222222
888   22222222222222222
889   34222222222222222
890   22222222222222224
891   22222222222422224
892   22222222244442222
893   22242222444442224
```

NUMBER OF POINTS PER CLUSTER

CLUSTER	1	2	3	4	5	6
SYMBOL	1	2	3	4	5	6
POINTS	6	322	1	28	0	0

SEPARABILITY INFORMATION

I	J	D(I,J)	C(I)	D(J)	D(I)+D(J)	QUOT
1	2	29.389	13.847	9.158	23.005	1.277
1	3	14.602	14.526	10.499	25.025	0.584
1	4	27.353	14.511	8.191	22.701	1.205
1	5	38.778	14.431	7.456	21.886	1.772
1	6	39.598	14.335	8.377	22.713	1.743
2	3	21.046	9.726	11.363	21.089	0.998
2	4	16.462	9.877	11.655	21.533	0.965
2	5	26.791	9.706	8.940	18.646	1.437
2	6	30.379	9.592	9.340	18.932	1.605
3	4	17.549	11.229	9.013	20.242	0.867
3	5	24.958	10.358	7.457	17.815	1.401
3	6	27.406	10.609	8.505	19.113	1.434
4	5	17.991	9.481	7.916	17.398	1.034
4	6	17.415	9.287	9.074	18.362	0.948
5	6	8.763	8.574	10.450	19.024	0.461

SEPARABILITY INFORMATION

I	J	D(I,J)	C(I)	D(J)	D(I)+D(J)	QUOT
1	2	29.389	13.847	9.158	23.005	1.277
1	3	14.602	14.526	10.499	25.025	0.584
1	4	27.353	14.511	8.191	22.701	1.205
1	5	38.778	14.431	7.456	21.886	1.772
1	6	39.598	14.335	8.377	22.713	1.743
2	3	21.046	9.726	11.363	21.089	0.998
2	4	16.462	9.877	11.655	21.533	0.965
2	5	26.791	9.706	8.940	18.646	1.437
2	6	30.379	9.592	9.340	18.932	1.605
3	4	17.549	11.229	9.013	20.242	0.867
3	5	24.958	10.358	7.457	17.815	1.401
3	6	27.406	10.609	8.505	19.113	1.434
4	5	17.991	9.481	7.916	17.398	1.034
4	6	17.415	9.287	9.074	18.362	0.948
5	6	8.763	8.574	10.450	19.024	0.461

FIELD INFORMATION

FIELD KK2
RUN NO. 71053900
OTHER INFORMATION

TYPE SOYBEANS
NO. OF SAMPLES 357

LINES 873- 893 (BY 1)
COLUMNS 91- 107 (BY 1)

```
          0000CCC0CC011111111
          9999999990000C0CC0
          1234567890123456 7
873       2222222222222222 2
874       2222222222222222 2
875       2222222222222222 2
876       2222222222222222 2
877       2222221212222422 2
878       1122222222222222 4
879       2122222222222244 4
880       2222222222222222 2
881       2222222222222222 2
882       2222222222222222 2
883       2222224222222442 2
884       2222222222222442 2
885       2222222222222242 2
886       2222212222222222 2
887       4422422222222222 2
888       2222222222222222 2
889       3422222222222222 2
890       2222222222222224 4
891       2222222222242224 4
892       2222222244442222 2
893       2224222244444224 4
```

NUMBER OF POINTS PER CLUSTER

CLUSTER	1	2	3	4	5	6
SYMBOL	1	2	3	4	5	6
POINTS	6	322	1	28	0	0

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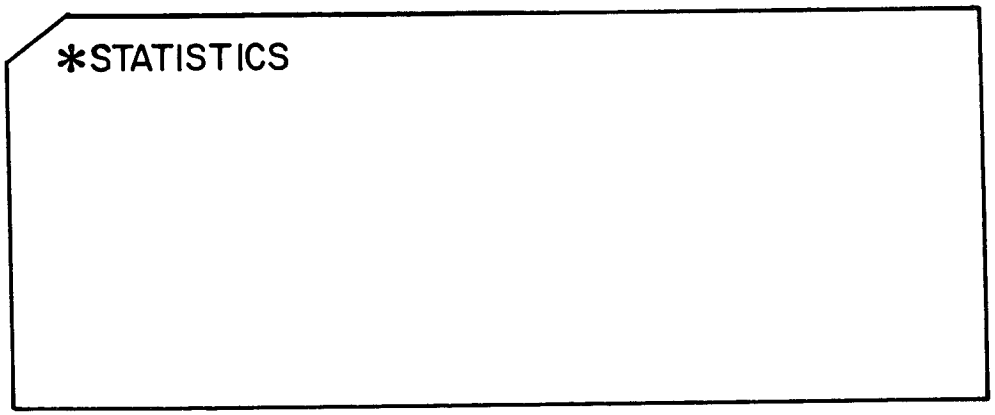
REST YOUR EYES--AND LISTEN.

LARSYS can be used to CLUSTER data sets.

- Cluster maps and
- Cluster separability information

are produced as output.

LARSYS Summary



Function Selector Card for STATISTICS Function

CLASS....CORN

FIELD 12-9
RUN NO. 66000600
OTHER INFORMATION

TYPE CORN4
NO. OF SAMPLES 483

LINES 603- 625 (BY 1)
COLUMNS 13- 33 (BY 1)

THE MEAN AND STANDARD DEVIATION VECTORS FOR FIELD 12-9

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12
SPECTRAL BAND	0.40 - 0.44	0.44 - 0.46	0.46 - 0.48	0.48 - 0.50	0.50 - 0.52	0.52 - 0.55	0.55 - 0.58	0.58 - 0.62	0.62 - 0.66	0.66 - 0.72	0.72 - 0.80	0.80 - 1.00
MEAN	85.58	78.89	60.16	60.56	82.93	86.95	62.46	76.90	61.99	72.52	103.87	79.13
STD. DEV.	2.30	2.61	1.65	1.54	2.74	1.97	1.56	2.78	2.65	2.77	8.26	5.04

CORRELATION MATRIX

SPECTRAL BAND	0.40 - 0.44	0.44 - 0.46	0.46 - 0.48	0.48 - 0.50	0.50 - 0.52	0.52 - 0.55	0.55 - 0.58	0.58 - 0.62	0.62 - 0.66	0.66 - 0.72	0.72 - 0.80	0.80 - 1.00
0.40-0.44	1.00											
0.44-0.46	0.61	1.00										
0.46-0.48	0.72	0.58	1.00									
0.48-0.50	0.58	0.66	0.56	1.00								
0.50-0.52	0.71	0.65	0.69	0.59	1.00							
0.52-0.55	0.48	0.58	0.48	0.53	0.64	1.00						
0.55-0.58	0.48	0.51	0.53	0.60	0.52	0.64	1.00					
0.58-0.62	0.63	0.68	0.60	0.69	0.67	0.65	0.62	1.00				
0.62-0.66	0.56	0.63	0.50	0.70	0.55	0.56	0.61	0.80	1.00			
0.66-0.72	0.48	0.49	0.47	0.57	0.55	0.66	0.67	0.76	0.72	1.00		
0.72-0.80	-0.25	-0.32	-0.23	-0.39	-0.15	0.10	0.00	-0.36	-0.47	-0.11	1.00	
0.80-1.00	-0.35	-0.32	-0.30	-0.40	-0.19	0.14	-0.02	-0.33	-0.43	-0.08	0.78	1.00

CLASS....CORN

FIELD 8-20
RUN NO. 66000600
OTHER INFORMATION

TYPE CORN5
NO. OF SAMPLES 945

LINES 669- 713 (BY 1)
COLUMNS 171- 191 (BY 1)

THE MEAN AND STANDARD DEVIATION VECTORS FOR FIELD 8-20

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12
SPECTRAL BAND	0.40 - 0.44	0.44 - 0.46	0.46 - 0.48	0.48 - 0.50	0.50 - 0.52	0.52 - 0.55	0.55 - 0.58	0.58 - 0.62	0.62 - 0.66	0.66 - 0.72	0.72 - 0.80	0.80 - 1.00
MEAN	73.88	69.85	54.75	54.84	73.39	79.86	58.84	70.77	56.73	74.11	119.35	93.30
STD. DEV.	2.83	2.83	2.30	2.25	4.45	4.65	3.23	5.59	4.63	7.06	10.96	7.62

CORRELATION MATRIX

SPECTRAL BAND	0.40 - 0.44	0.44 - 0.46	0.46 - 0.48	0.48 - 0.50	0.50 - 0.52	0.52 - 0.55	0.55 - 0.58	0.58 - 0.62	0.62 - 0.66	0.66 - 0.72	0.72 - 0.80	0.80 - 1.00
0.40-0.44	1.00											
0.44-0.46	0.78	1.00										
0.46-0.48	0.82	0.78	1.00									
0.48-0.50	0.77	0.84	0.80	1.00								
0.50-0.52	0.84	0.84	0.83	0.86	1.00							
0.52-0.55	0.78	0.81	0.76	0.84	0.90	1.00						
0.55-0.58	0.78	0.80	0.79	0.85	0.87	0.92	1.00					
0.58-0.62	0.79	0.86	0.81	0.89	0.92	0.91	0.89	1.00				
0.62-0.66	0.77	0.84	0.79	0.89	0.89	0.88	0.88	0.95	1.00			
0.66-0.72	0.77	0.79	0.77	0.83	0.89	0.93	0.92	0.91	0.89	1.00		
0.72-0.80	0.37	0.29	0.31	0.28	0.41	0.52	0.51	0.35	0.30	0.59	1.00	
0.80-1.00	0.44	0.38	0.38	0.39	0.51	0.62	0.57	0.48	0.43	0.69	0.85	1.00

CLASS....CORN TOTAL NUMBER OF SAMPLES... 1428

THE MEAN AND STANDARD DEVIATION VECTORS

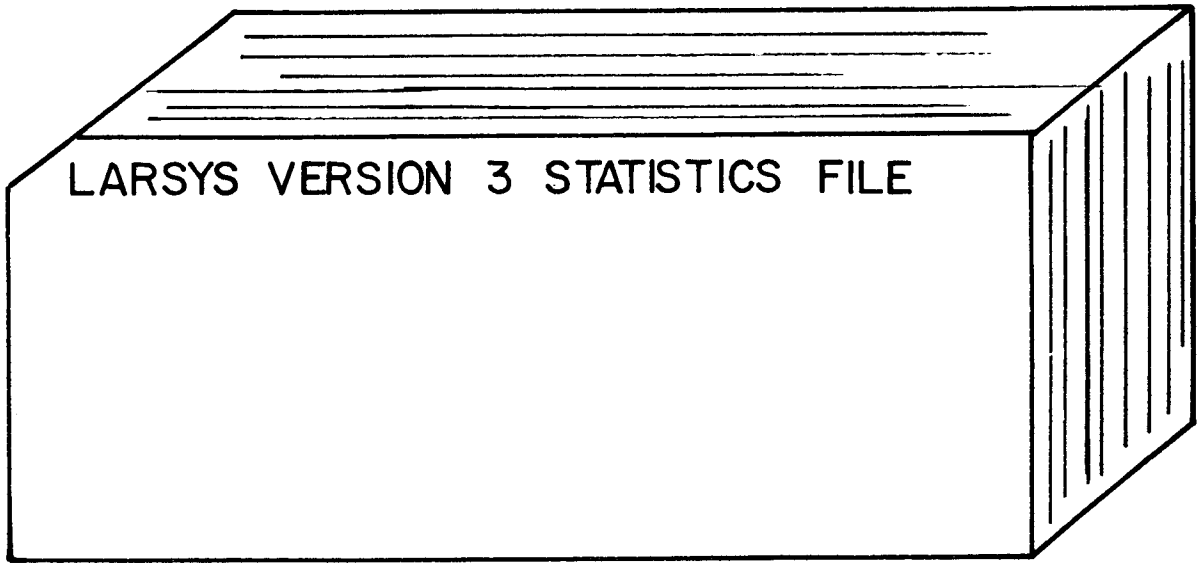
CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12
SPECTRAL BAND	0.40 - 0.44	0.44 - 0.46	0.46 - 0.48	0.48 - 0.50	0.50 - 0.52	0.52 - 0.55	0.55 - 0.58	0.58 - 0.62	0.62 - 0.66	0.66 - 0.72	0.72 - 0.80	0.80 - 1.00
MEAN	77.84	72.91	56.58	56.77	76.62	82.26	60.07	72.84	58.51	73.57	114.12	88.51
STD. DEV.	6.08	5.09	3.31	3.39	6.00	5.18	3.26	5.63	4.77	6.01	12.50	9.59

CORRELATION MATRIX

SPECTRAL BAND	0.40 - 0.44	0.44 - 0.46	0.46 - 0.48	0.48 - 0.50	0.50 - 0.52	0.52 - 0.55	0.55 - 0.58	0.58 - 0.62	0.62 - 0.66	0.66 - 0.72	0.72 - 0.80	0.80 - 1.00
0.40-0.44	1.00											
0.44-0.46	0.93	1.00										
0.46-0.48	0.91	0.90	1.00									
0.48-0.50	0.91	0.93	0.90	1.00								
0.50-0.52	0.90	0.91	0.92	0.92	1.00							
0.52-0.55	0.81	0.85	0.84	0.88	0.92	1.00						
0.55-0.58	0.73	0.77	0.81	0.83	0.86	0.92	1.00					
0.58-0.62	0.73	0.81	0.82	0.85	0.89	0.91	0.90	1.00				
0.62-0.66	0.73	0.80	0.80	0.84	0.86	0.88	0.88	0.95	1.00			
0.66-0.72	0.17	0.28	0.35	0.37	0.46	0.61	0.69	0.70	0.67	1.00		
0.72-0.80	-0.46	-0.44	-0.36	-0.40	-0.28	-0.10	-0.02	-0.14	-0.20	0.47	1.00	
0.80-1.00	-0.56	-0.51	-0.43	-0.45	-0.34	-0.15	-0.07	-0.14	-0.19	0.51	0.89	1.00

LARSYS can provide means, standard deviations and correlation matrices of data fields and classes

LARSYS Summary



STATISTICS DECK

The STATISTICS processing function produces the statistics deck needed for the SEPARABILITY and CLASSIFYPOINTS processing functions

LARSYS Summary

CLASS....CORN

FIELD 12-9
RUN NO. 66000600
OTHER INFORMATION

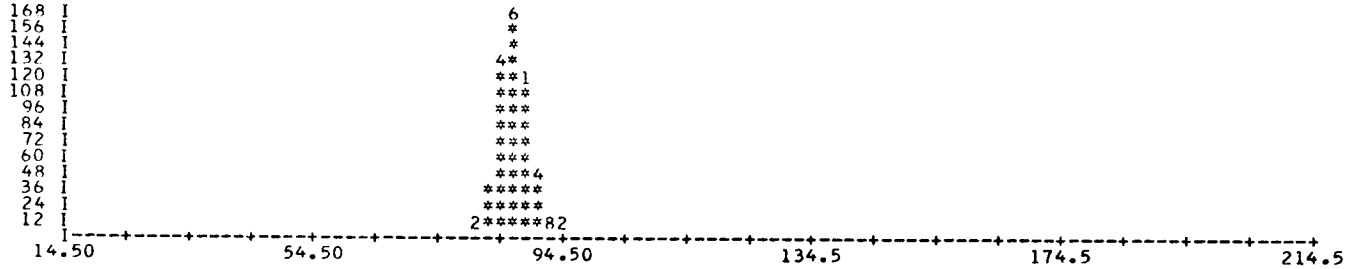
TYPE CORN4
NO. OF SAMPLES 483

LINES 603- 625 (BY 1)
COLUMNS 13- 33 (BY 1)

HISTOGRAM(S) FOR..FIELD 12-9

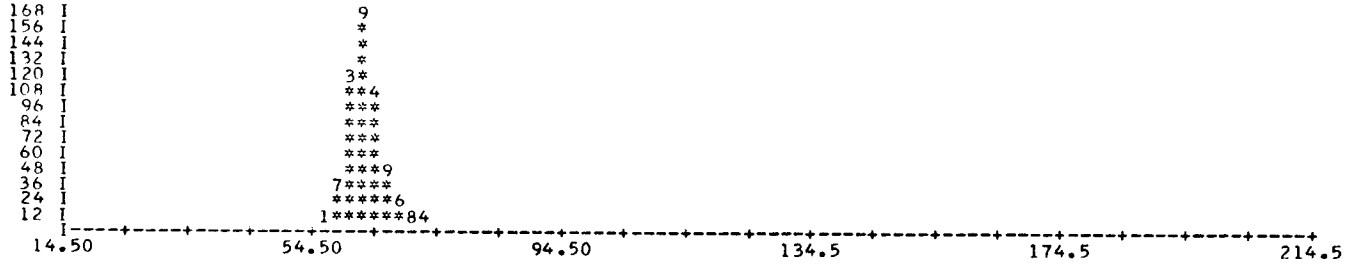
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



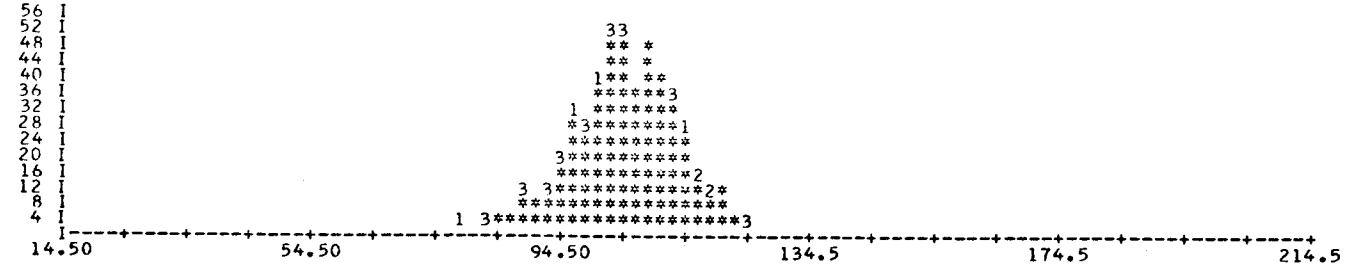
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 4 POINT(S).



CLASS....CORN

FIELD 12-9
RUN NO. 66000600
OTHER INFORMATION

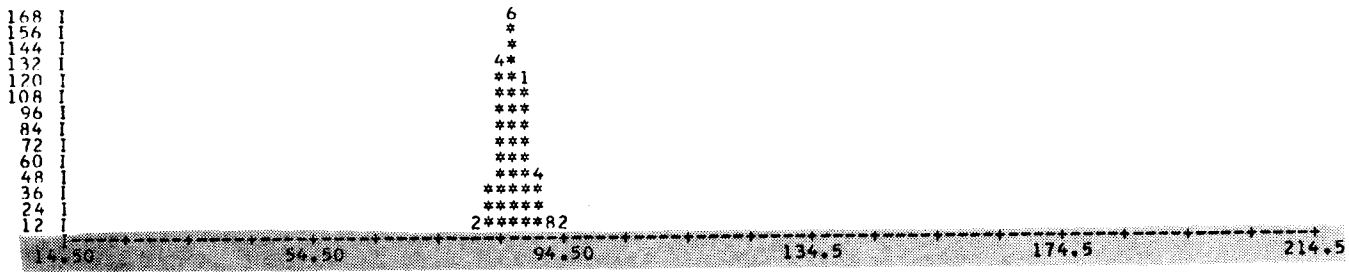
TYPE CORN4
NO. OF SAMPLES 483

LINES 603- 625 (BY 1)
COLUMNS 13- 33 (BY 1)

HISTOGRAM(S) FOR...FIELD 12-9

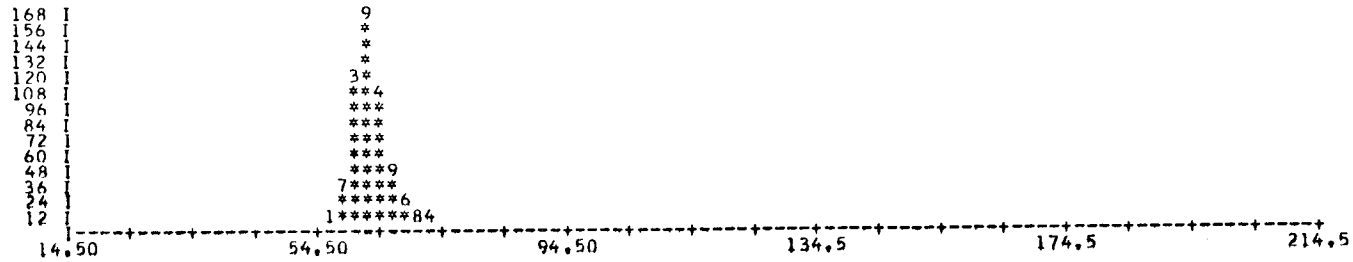
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



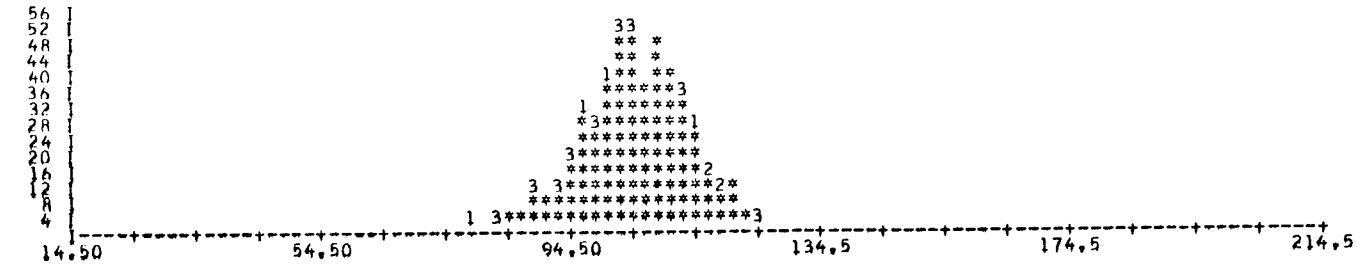
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 4 POINT(S).



CLASS....CORN

FIELD 12-9
RUN NO. 66000600
OTHER INFORMATION

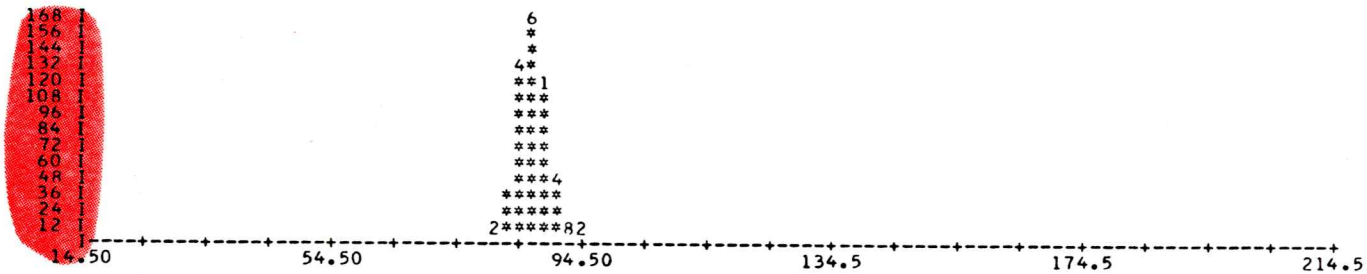
TYPE CORN4
NO. OF SAMPLES 483

LINES 603- 625 (BY 1)
COLUMNS 13- 33 (BY 1)

HISTOGRAM(S) FOR...FIELD 12-9

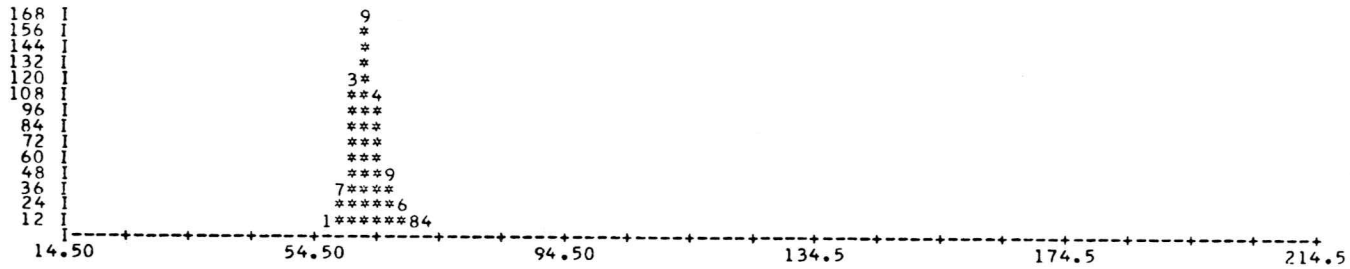
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



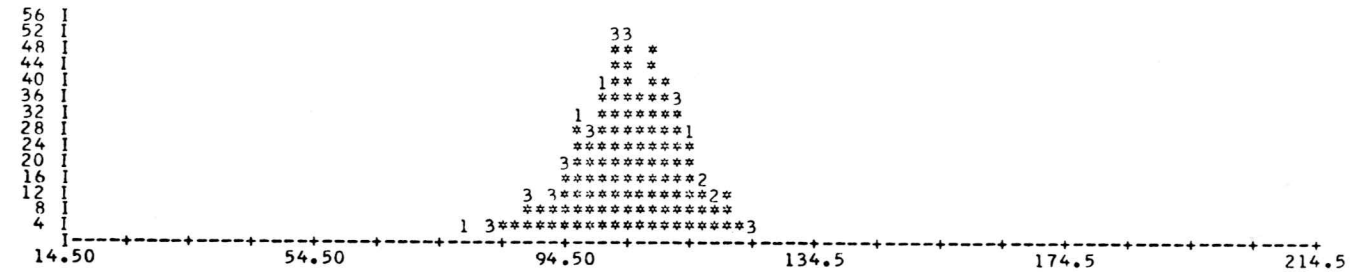
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 4 POINT(S).



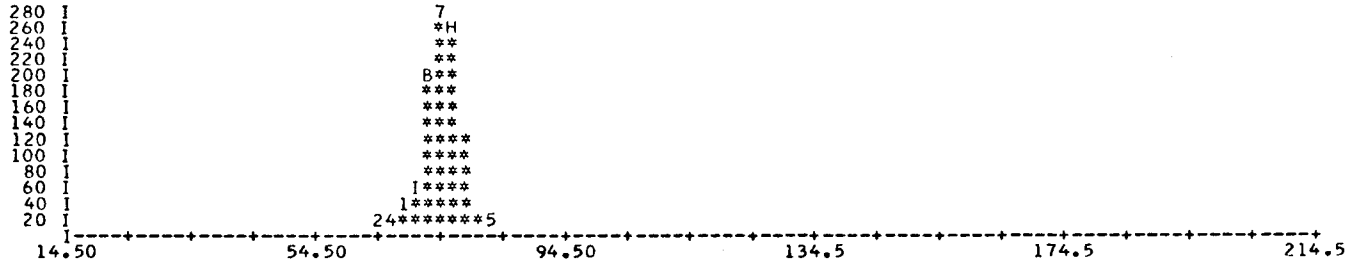
CLASS....CORN

FIELD 8-20 TYPE CORN5 LINES 669- 713 (BY 1)
RUN NO. 66000600 NO. OF SAMPLES 945 COLUMNS 171- 191 (BY 1)
OTHER INFORMATION

HISTOGRAM(S) FOR...FIELD 8-20

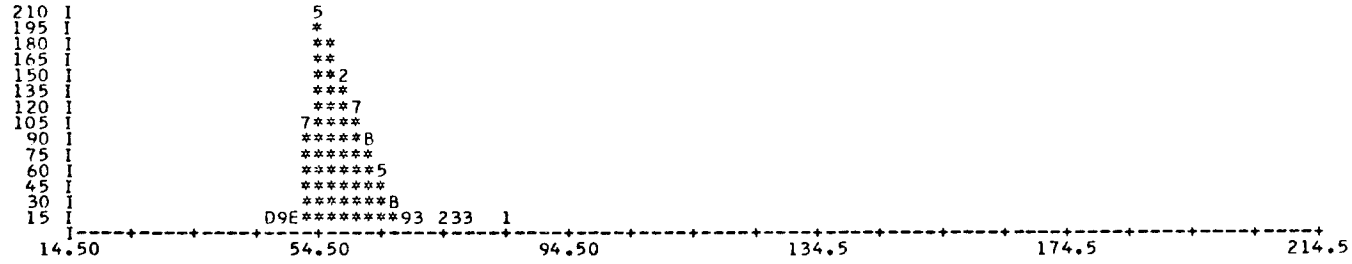
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 20 POINT(S).



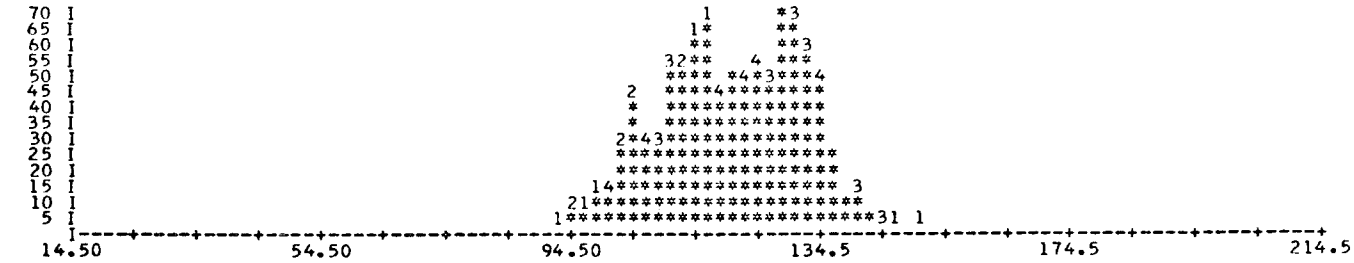
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 15 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 5 POINT(S).



CLASS....CORN

FIELD 8-20
RUN NO. 66000600
OTHER INFORMATION

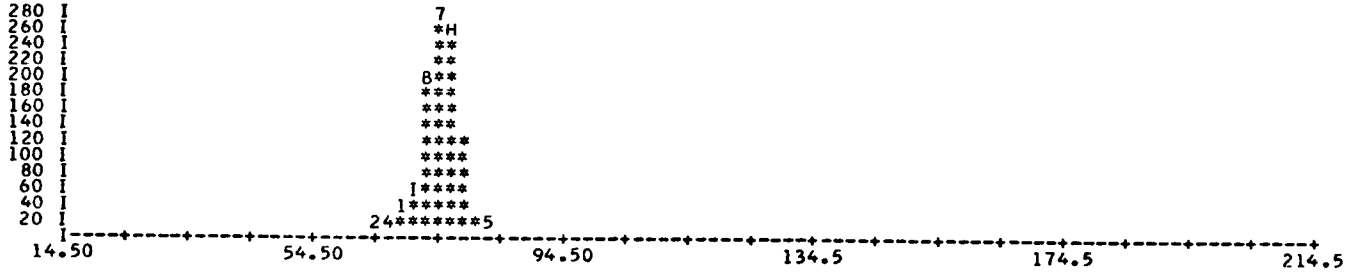
TYPE CORN5
NO. OF SAMPLES 945

LINES 669- 713 (BY 1)
COLUMNS 171- 191 (BY 1)

HISTOGRAM(S) FOR...FIELD 8-20

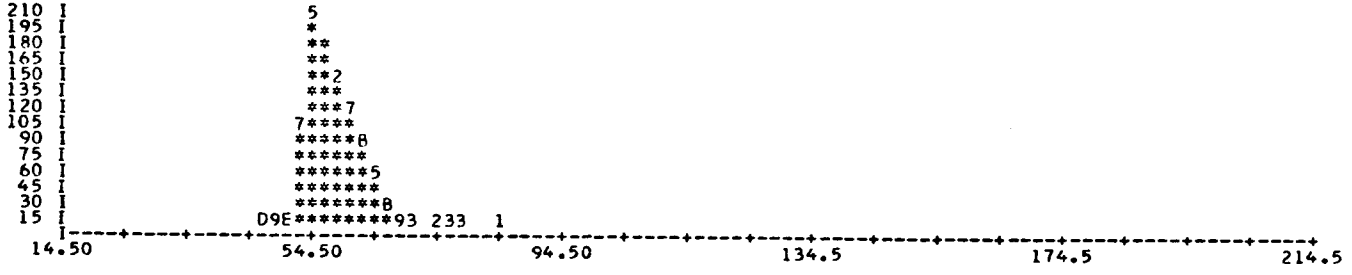
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 20 POINT(S).



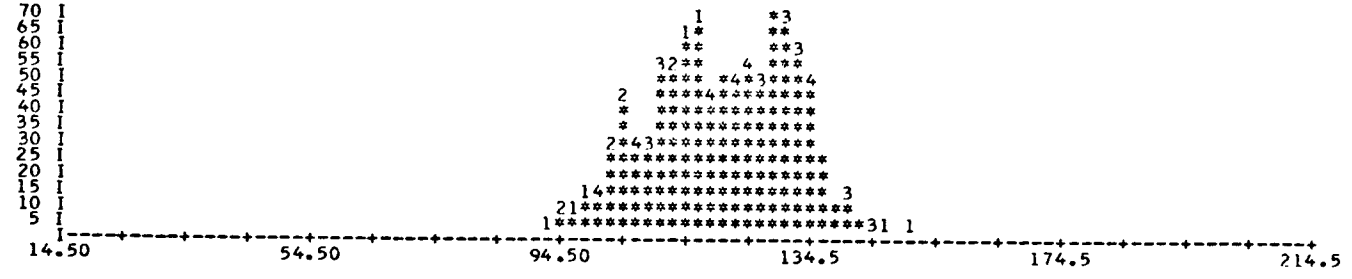
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 15 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 5 POINT(S).



CLASS....CORN

FIELD 12-9
RUN NO. 66000600
OTHER INFORMATION

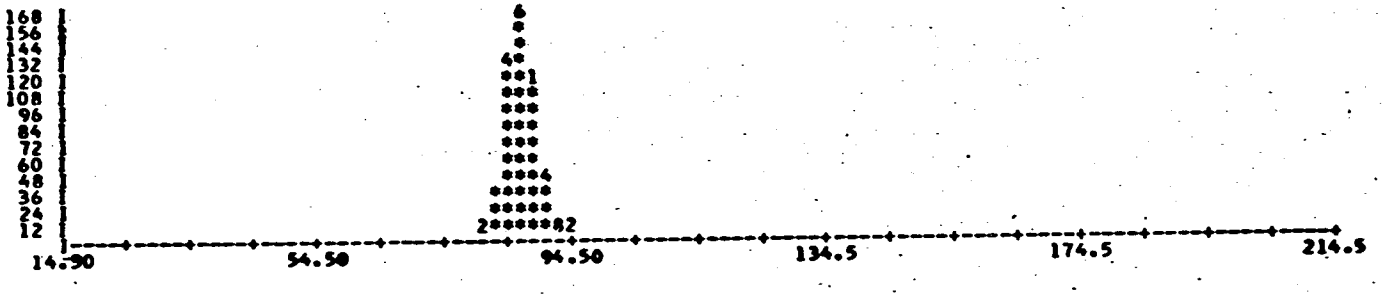
TYPE CORN4
NO. OF SAMPLES 483

LINES 403- 425 (BY 1)
COLUMNS 13- 33 (BY 1)

HISTOGRAM(S) FOR...FIELD 12-9

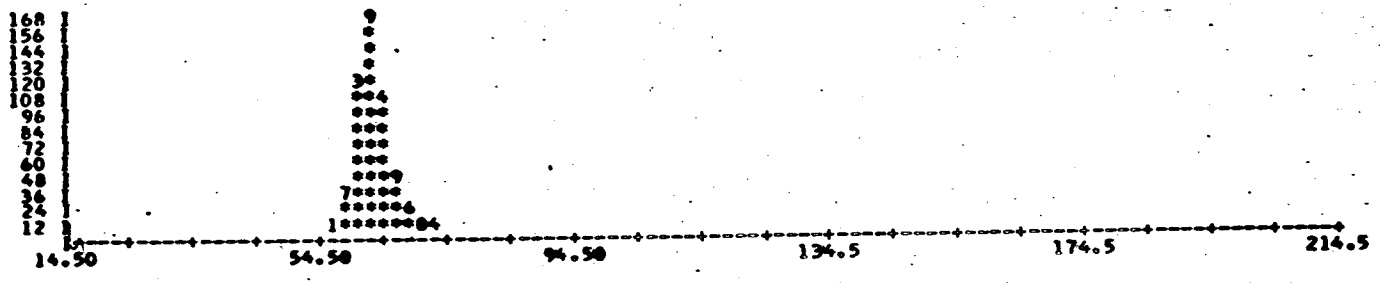
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



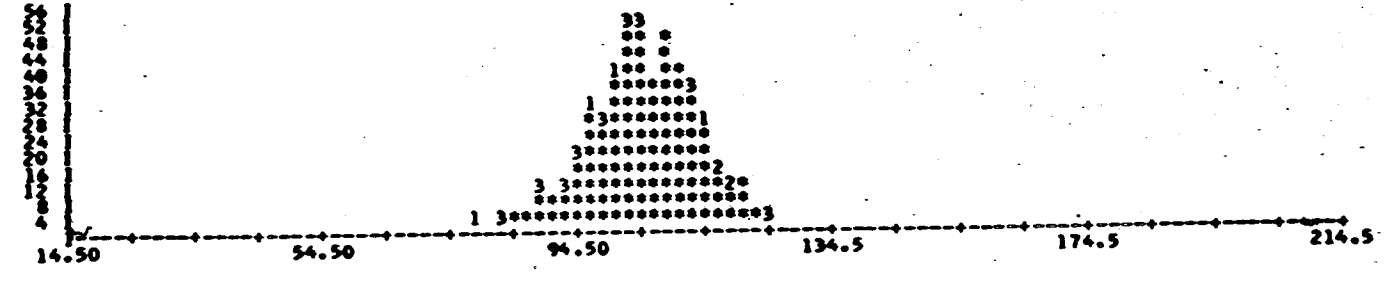
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 12 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 4 POINT(S).



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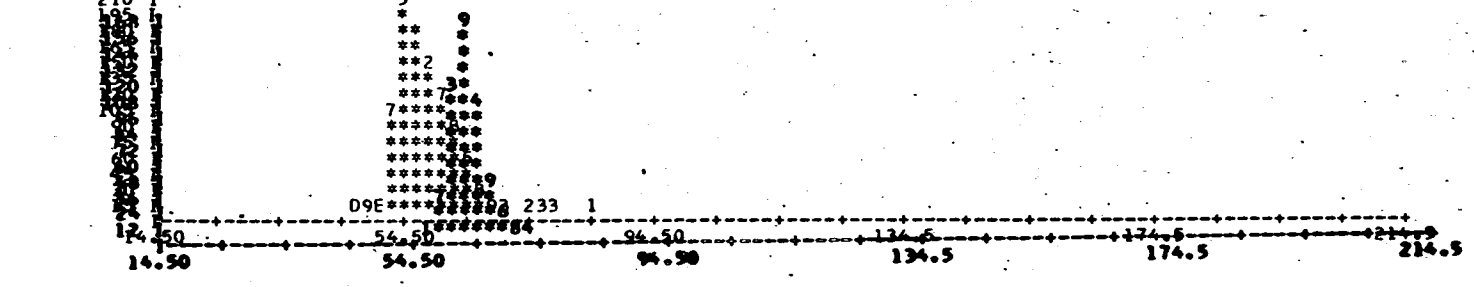
CLASS....CORN
FIELD 8-20
TYPE: CORN
NO. OF SAMPLES 945
LINES: 66003-71825(BY 1)
COLUMNS 17113-19133(BY 1)

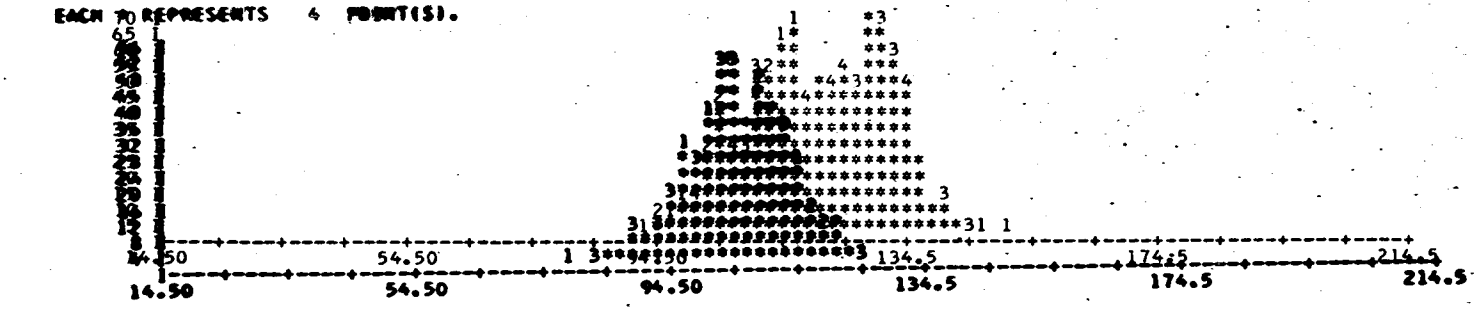
HISTOGRAM(S) FOR...FIELD 8-20

CHANNEL 1 0.40 - 0.44 MICROMETERS
EACH * REPRESENTS 20 POINT(S).
EACH # REPRESENTS 12 POINT(S).

CHANNEL 9 0.62 - 0.66 MICROMETERS
EACH * REPRESENTS 15 POINT(S).
EACH # REPRESENTS 12 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS
EACH * REPRESENTS 5 POINT(S).
EACH # REPRESENTS 4 POINT(S).

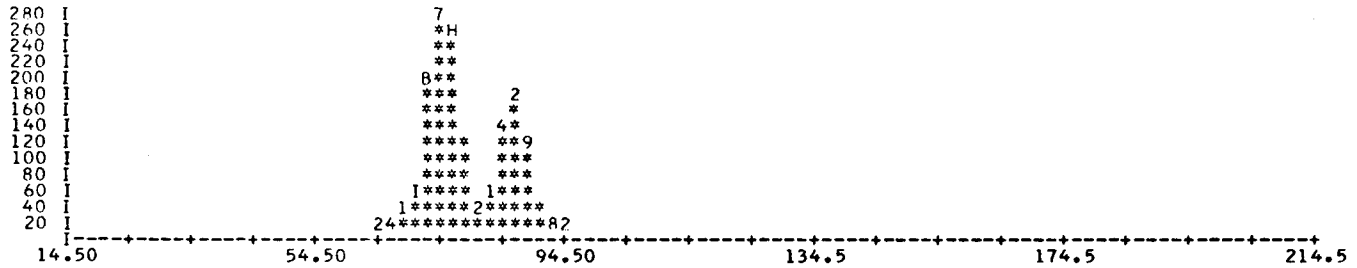


CLASS....CORN TOTAL NUMBER OF SAMPLES... 1428

HISTOGRAM(S)

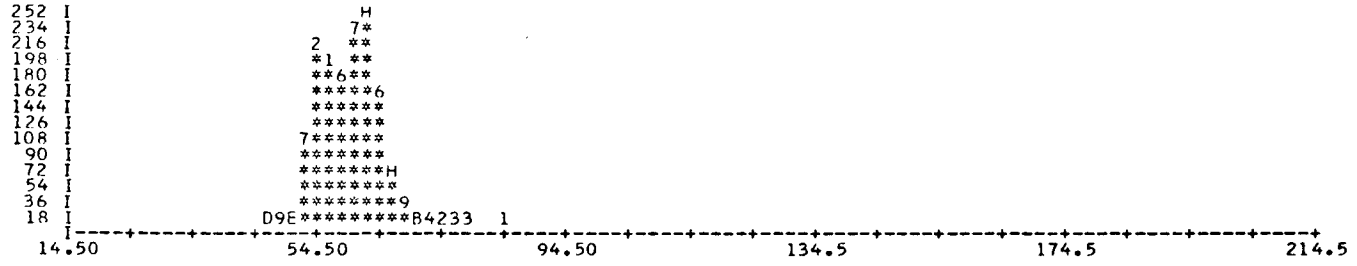
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 20 POINT(S).



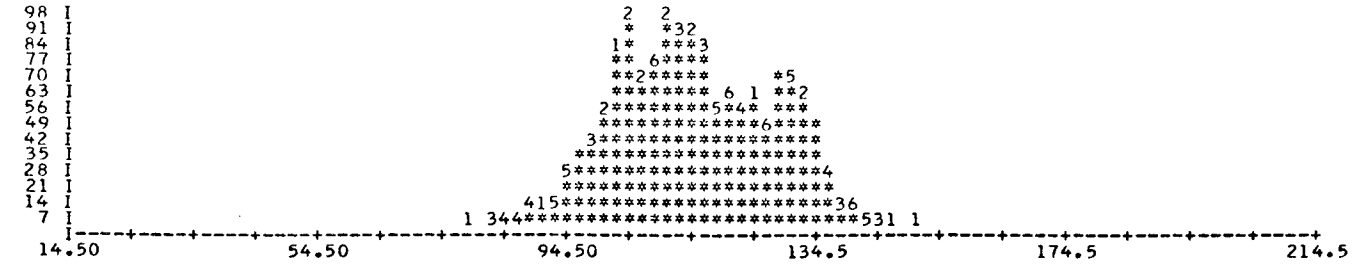
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 18 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 7 POINT(S).

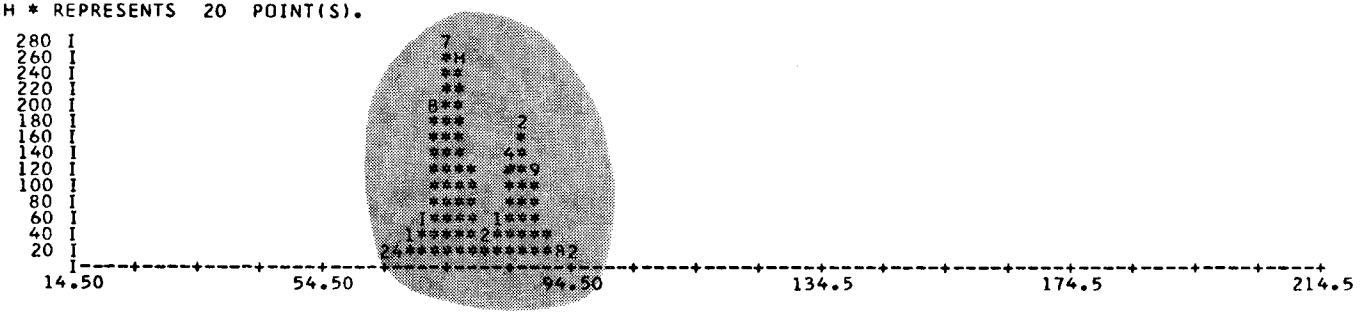


CLASS....CORN TOTAL NUMBER OF SAMPLES... 1428

HISTOGRAM(S)

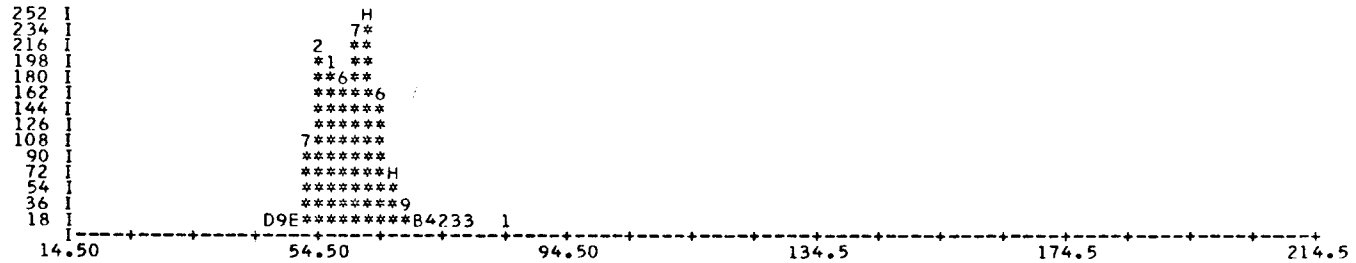
CHANNEL 1 0.40 - 0.44 MICROMETERS

EACH * REPRESENTS 20 POINT(S).



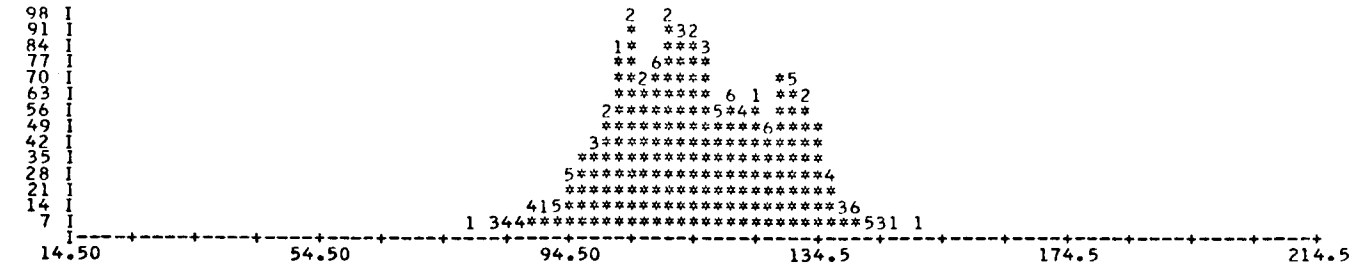
CHANNEL 9 0.62 - 0.66 MICROMETERS

EACH * REPRESENTS 18 POINT(S).



CHANNEL 11 0.72 - 0.80 MICROMETERS

EACH * REPRESENTS 7 POINT(S).



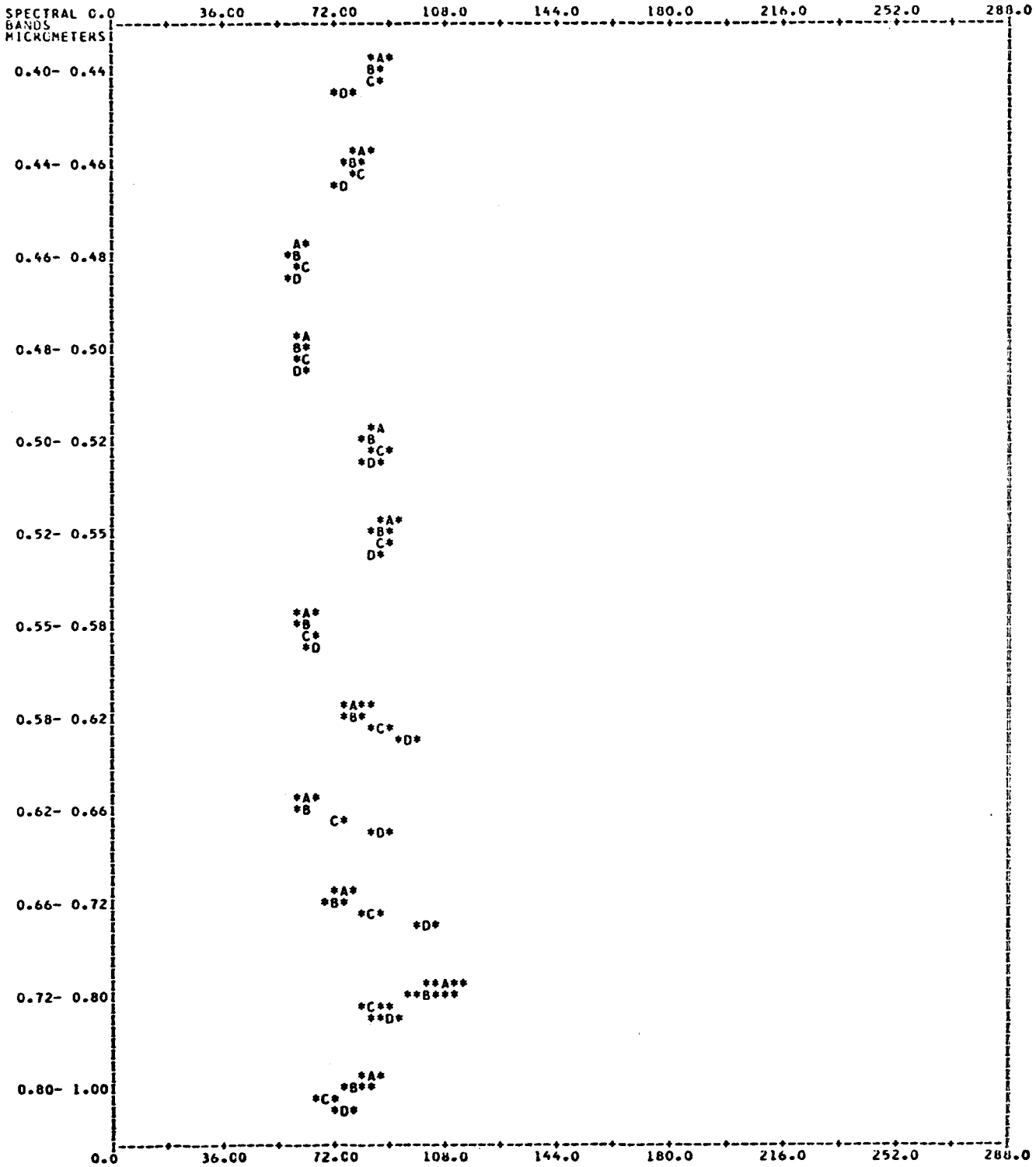
LARSYS can provide Histograms of data from individual field of data and from classes (groups of data fields)

LARSYS Summary

LARSYS DEMONSTRATION ** LARSYS

COINCIDENT SPECTRAL PLOT (MEAN PLUS AND MINUS ONE STD. DEV.) FOR CLASS(ES)

LEGEND
A = CLASS 1 CORN A
B = CLASS 2 CORN B
C = CLASS 3 SOYBEANS
D = CLASS 4 WHEAT



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PURDUE UNIVERSITY 3 29 20 PM

LARSYS DEMONSTRATION ** LARSYS

COINCIDENT SPECTRAL PLOT (MEAN PLUS AND MINUS ONE STD. DEV.) FOR CLASS(ES)

LEGEND
A = CLASS 1 CORN A
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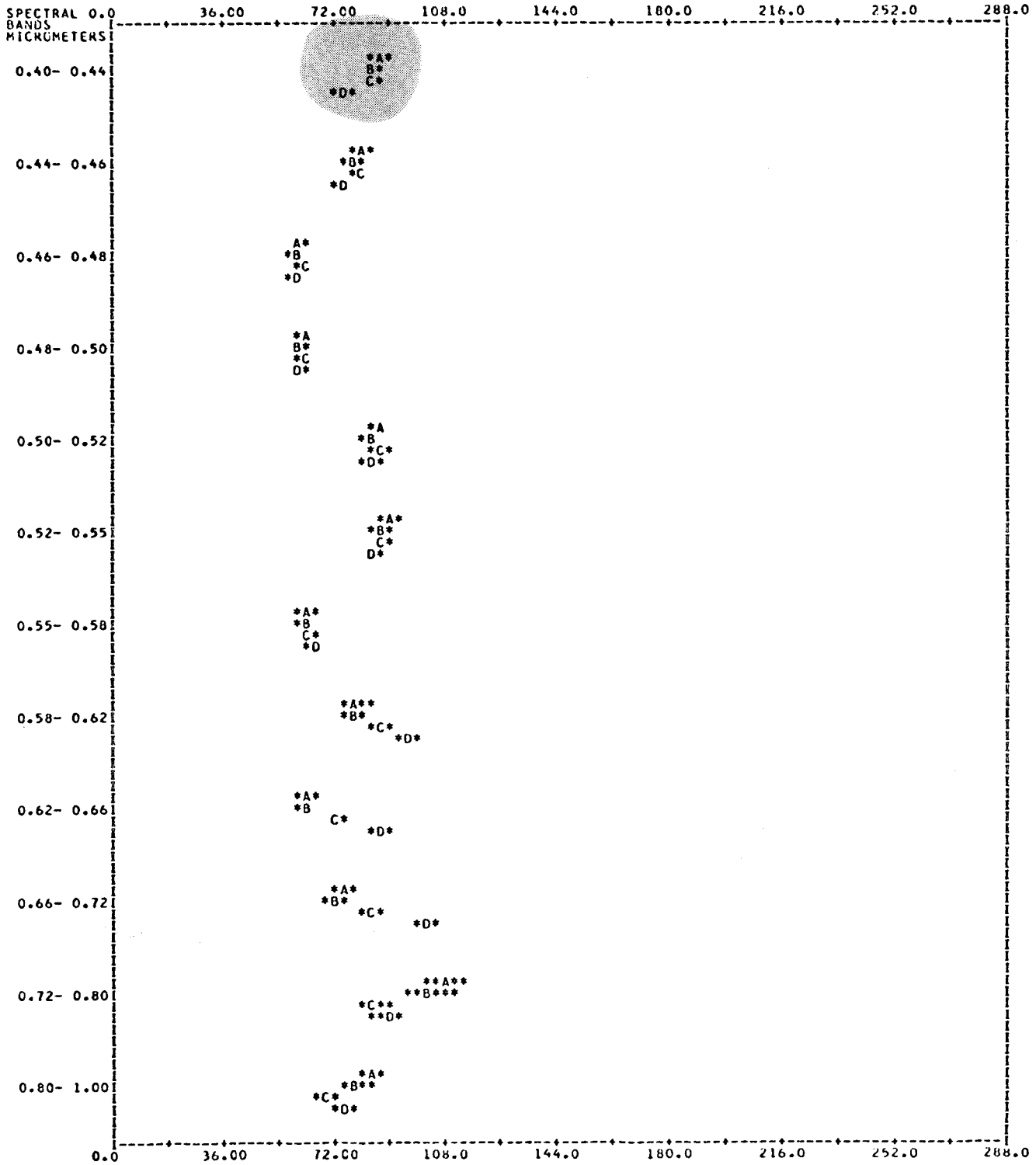

LARSYS DEMONSTRATION ** LARSYS

COINCIDENT SPECTRAL PLOT (MEAN PLUS AND MINUS ONE STD. DEV.) FOR CLASS(ES)

LEGEND
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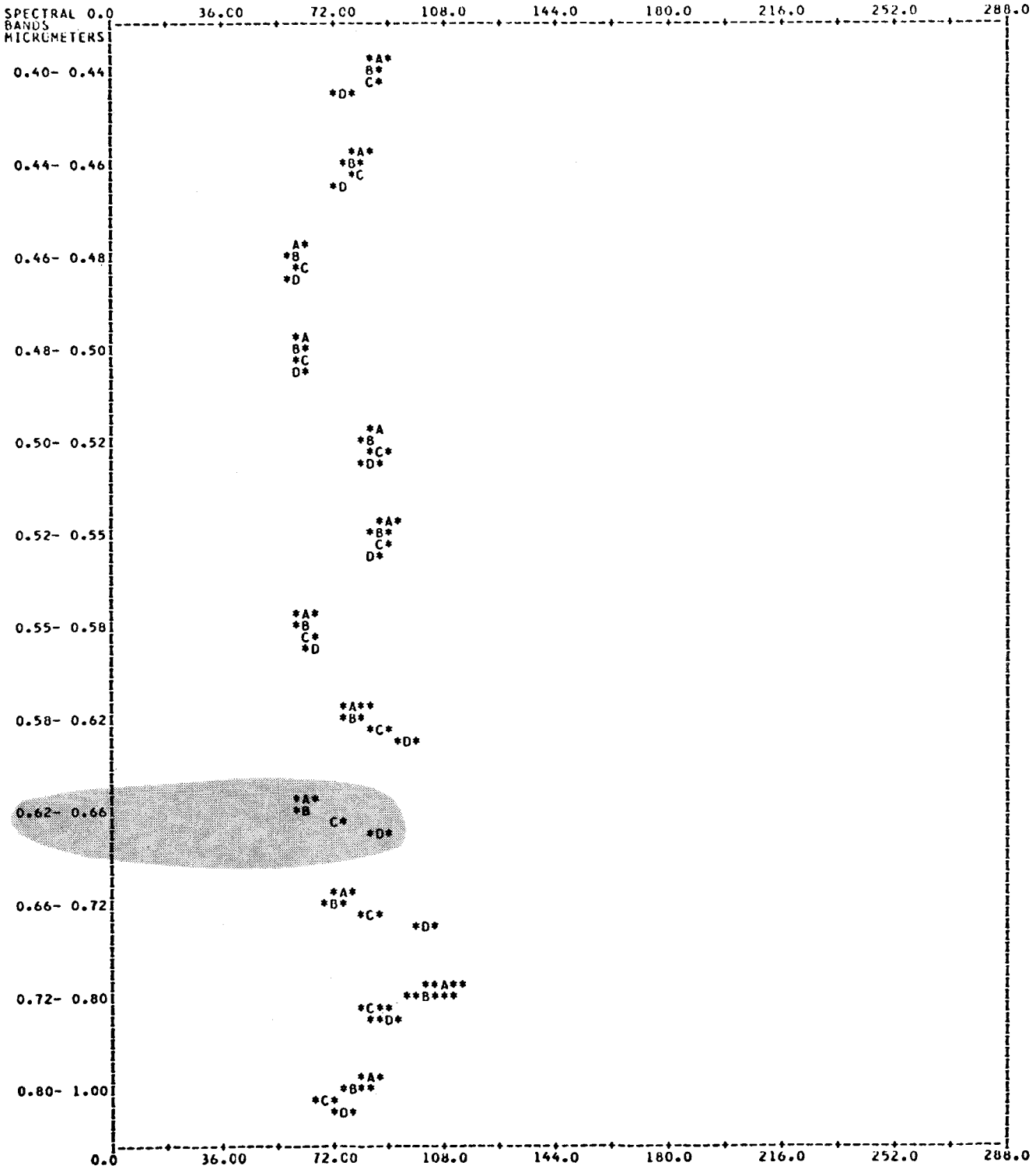

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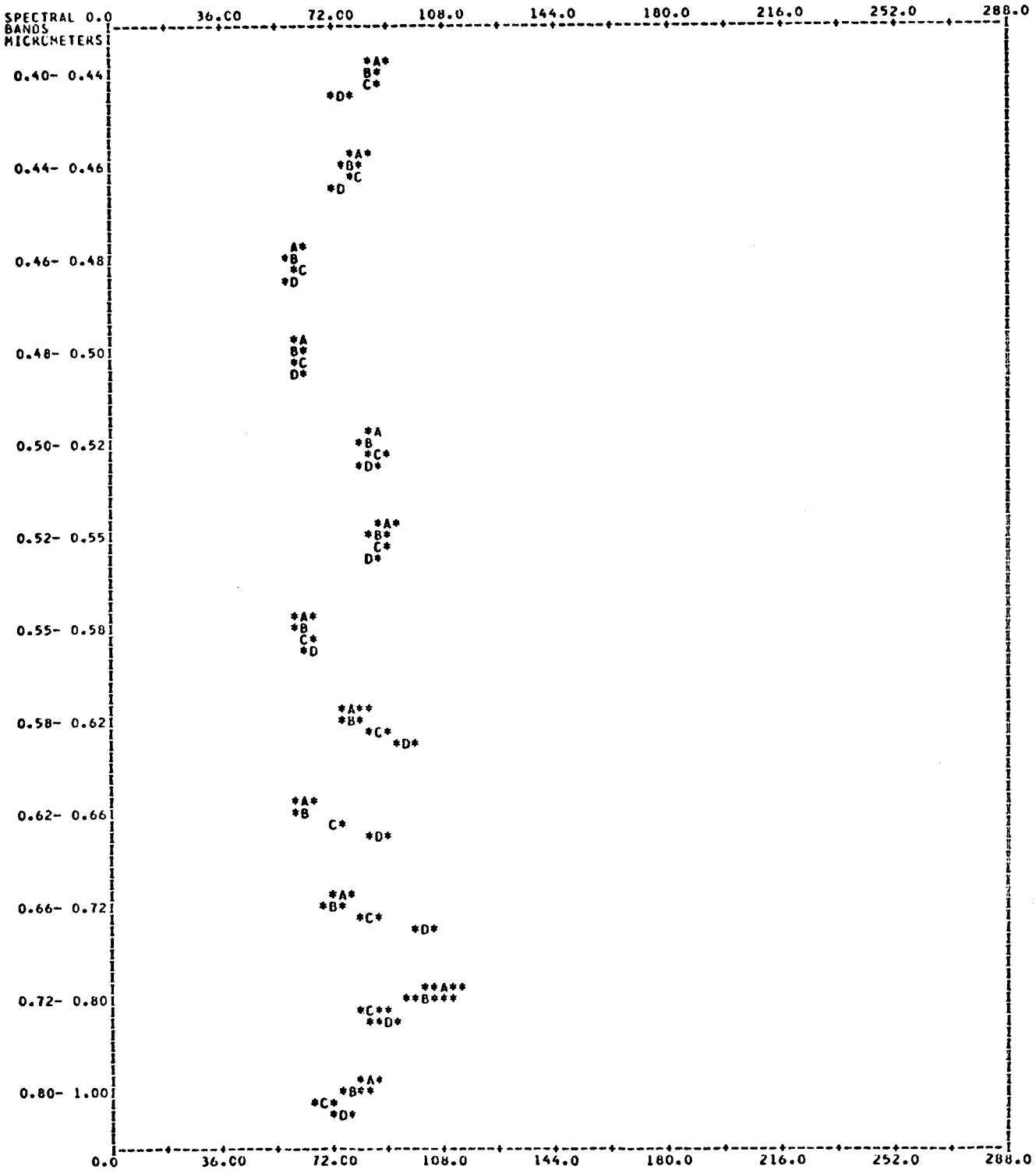
LARSYS DEMONSTRATION ** LARSYS

COINCIDENT SPECTRAL PLOT (MEAN PLUS AND MINUS ONE STD. DEV.) FOR CLASS(ES)

LEGEND
A = CLASS 1 CORN A
B = CLASS 2 CORN B
C = CLASS 3 SOYBEANS
D = CLASS 4 WHEAT

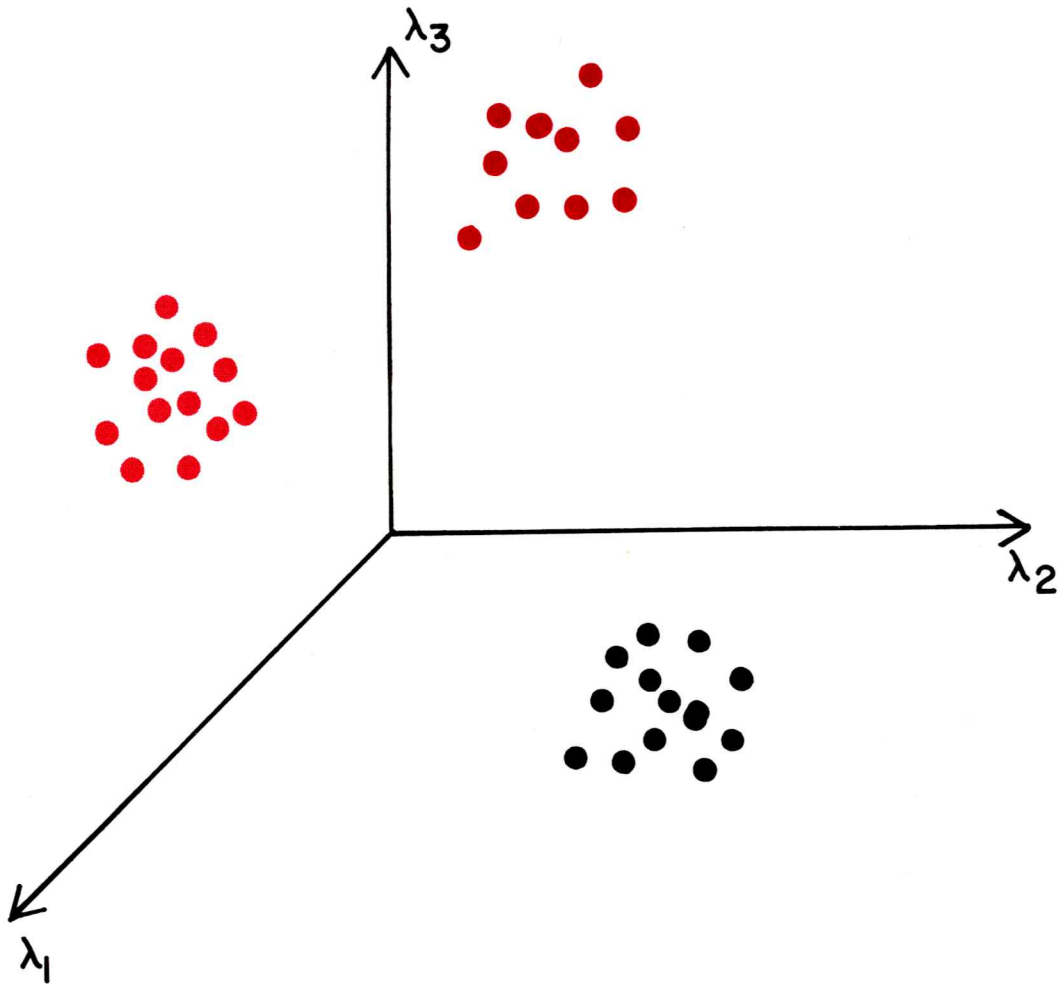


The STATISTICS processing function provides:

- Coincident spectral plots
- Mean and standard deviation vectors
- Correlation matrices
- Histograms

LEFT BLANK INTENTIONALLY.

REST YOUR EYES--AND LISTEN.


λ3
λ2
λ1

REVISED 4/23/73

LARSYS CONTROL CARDS

SEPARABILITY

REQ	KEY WORD(COL.1)	CONTROL PARAMETER	FUNCTION	DEFAULT
+	*SEPARABILITY	(NONE)	SELECT SEPARABILITY FUNCTION.	(NONE)
+	COMBINATIONS	N1,N2,...	ANALYZE ALL COMBINATIONS OF N1 CHANNELS OUT OF TOTAL CHANNELS AS SPECIFIED ON CHANNELS CARD, THEN N2,ETC.	(NONE)
+	SYMBOLS	S1,S2,...	USE THESE SYMBOLS TO REPRESENT THE RESPECTIVE CLASSES.	(NONE)
	WEIGHTS	S1S2S3...SN(W)	ASSIGN WEIGHT W TO ALL CLASS PAIRS REPRESENTED BY ANY PAIR COMBINATION OF THE SYMBOLS S1,S2,S3,...SN.	W=10 FOR ALL PAIR COMBINATIONS
	CLASSES	NAME(P1/C1,C2,../)	POOL STATISTICS FOR TRAINING CLASSES C1,C2,.., ASSIGN 'NAME' AS POOL NAME AND P1 AS POOL NUMBER. (SEE NOTE BELOW)	INDIVIDUAL CLASSES USED
	CARDS	READSTATS	STATISTICS FILE WILL BE INPUT ON CARDS.	STATISTICS EXPECTED FROM DISK
	CHANNELS	I,J,K...	USE ONLY CHANNELS I,J,K	USE THE CHANNELS IN STATISTICS FILE
	PRINT	BEST(N)	PRINT RESULTS FOR BEST N COMBINATIONS.	N=30
		STATS	PRINT SUMMARY OF STATISTICS USED.	NO STATISTICS
		SHOW(F1,F2,...)	PRINT RESULTS FOR THIS CHANNEL COMBINATION REGARDLESS OF RANK.	BEST(N) PRINTED
		DIV(VALUE)	ALL CLASS PAIRS WHOSE N VALUES EACH GIVE A SEPARABILITY OF 'VALUE' OR LESS WILL BE PRINTED WITH THE AVERAGE OF THOSE N DIVERGENCES.	NOT PRINTED
	OPTIONS	MAX(VALUE)	SET UPPER BOUND ON THE SEPARATION MEASURE TO VALUE.	VALUE =30000
		MIN(VALUE)	SET LOWER BOUND ON THE SEPARATION MEASURE TO VALUE.	VALUE=0
		EXCLUDE(F1,...)	EXCLUDES FROM CONSIDERATION ANY CHANNEL SET THAT CONTAINS SUBSET F1,F2,... .	USE ALL
		TYPE	TO REQUEST CAPABILITY TO ENTER OPTIONS AT THE TYPEWRITER.	KEYBOARD NOT UNLOCKED
		UNTRANS	USE AND PRINT UNTRANSFORMED DIVERGENCE RESULTS.	TRANSFORMED RESULTS
		SORT	SORT AND PRINT RESULTS BY DIJ(MIN).	ORDERED BY D(AVE)

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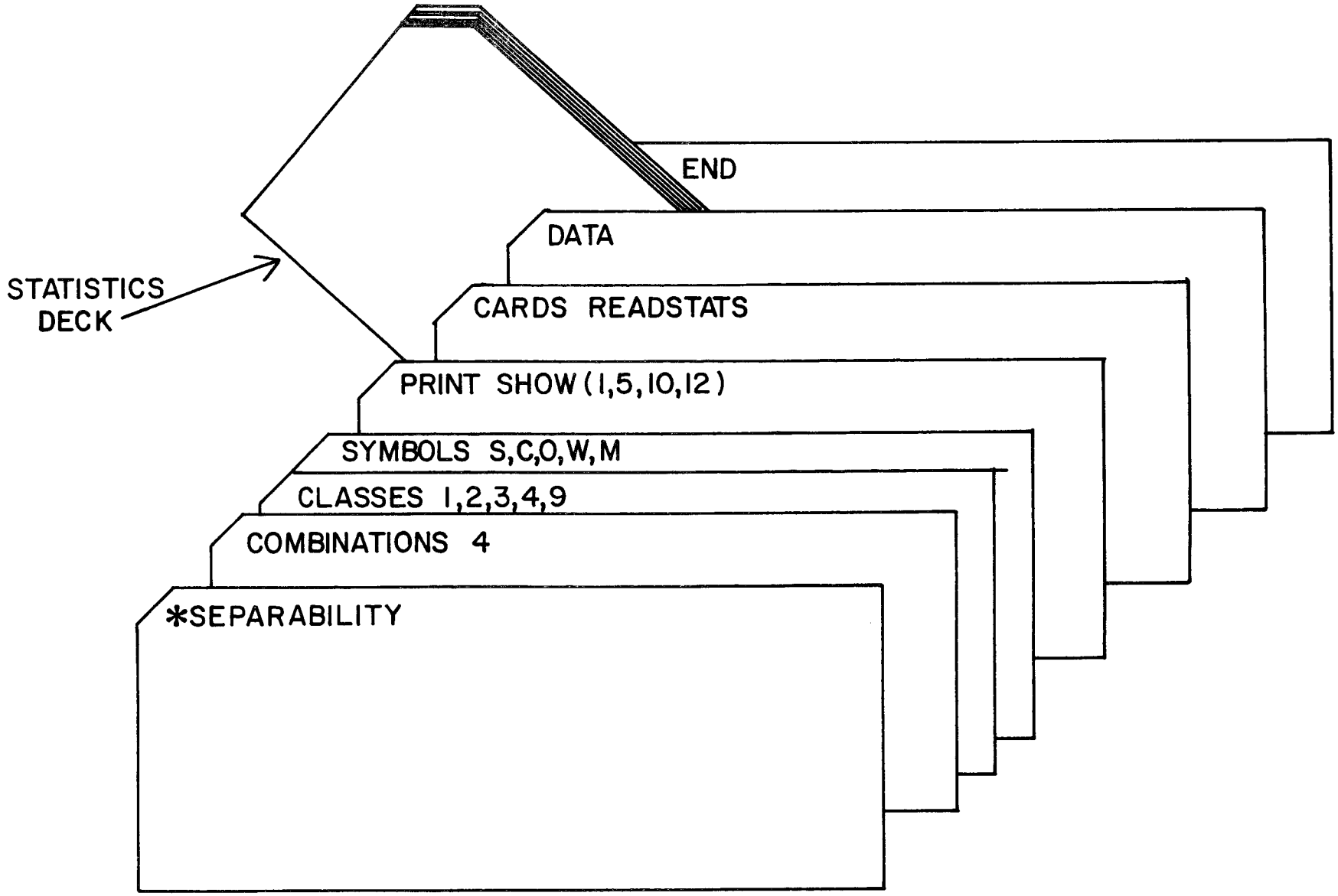
LARSYS DEMONSTRATION ** LARSYS

CLASSES CONSIDERED

SYMBOL	CLASS
S	SOYBEANS
C	CORN
O	OATS
W	WHEAT I
M	WHEAT II

FEATURES CONSIDERED

CHANNEL NO.	SPECTRAL BAND	
1	0.40	0.44
2	0.44	0.46
3	0.46	0.48
4	0.48	0.50
5	0.50	0.52
6	0.52	0.55
7	0.55	0.58
8	0.58	0.62
9	0.62	0.66
10	0.66	0.72
11	0.72	0.80
12	0.80	1.00


STATISTICS
DECK
END
DATA
CARDS READSTATS
PRINT SHOW(1,5,10,12)
SYMBOLS S,C,O,W,M
CLASSES 1,2,3,4,9
COMBINATIONS 4
*SEPARABILITY

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LARSYS DEMONSTRATION ** LARSYS

RESTORED DATA
RETENTION LEVEL .. 495

MINIMUM C
MAXIMUM 30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DIJ(MIN)	D(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SO (10)	SW (10)	SM (10)	CO (10)	CW (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1994	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1994
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1758	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1992
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1986
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1998	2000	2000	1987	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
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LARSYS DEMONSTRATION ** LARSYS

RESTORED DATA
RETENTION LEVEL .. 495

MINIMUM 0
MAXIMUM 30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DIJ(MIN)	D(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SU (10)	SW (10)	SM (10)	CU (10)	CW (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1994	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1994
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1758	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1992
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1986
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1998	2000	2000	1987	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
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JAN 18,1972

LARSYS DEMONSTRATION ** LARSYS

RESTURED DATA
RETENTION LEVEL .. 495

MINIMUM C
MAXIMUM 30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DIJ(MIN)	D(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SO (10)	SW (10)	SM (10)	CO (10)	CW (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1994	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1994
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1758	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1972
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1966
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1998	2000	2000	1967	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

JAN 18,1972

LARSYS DEMONSTRATION ** LARSYS

RESTORED DATA
RETENTION LEVEL .. 495

MINIMUM C
MAXIMUM 30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DIJ(MIN)	D(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SO (10)	SW (10)	SM (10)	CO (10)	CW (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1994	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1994
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1758	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1992
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1986
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1998	2000	2000	1987	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

JAN 18,1972

LARSYS DEMONSTRATION ** LARSYS

RESTORED DATA
RETENTION LEVEL .. 495

MINIMUM 0
MAXIMUM .....,.30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DIJ(MIN)	D(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SO (10)	Sw (10)	SM (10)	CO (10)	Cw (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1996	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1994
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1758	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1992
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1966
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1996	2000	2000	1967	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

JAN 18,1972

LARSYS DEMONSTRATION ** LARSYS

RESTORED DATA
RETENTION LEVEL .. 495

MINIMUM C
MAXIMUM 30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DI(MIN)	D(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SO (10)	SW (10)	SM (10)	CO (10)	CW (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1994	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1994
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1756	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1992
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1986
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1998	2000	2000	1987	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943

LABORATORY FOR APPLICATIONS OF REMOTE SENSING
PURDUE UNIVERSITY

JAN 18,1972

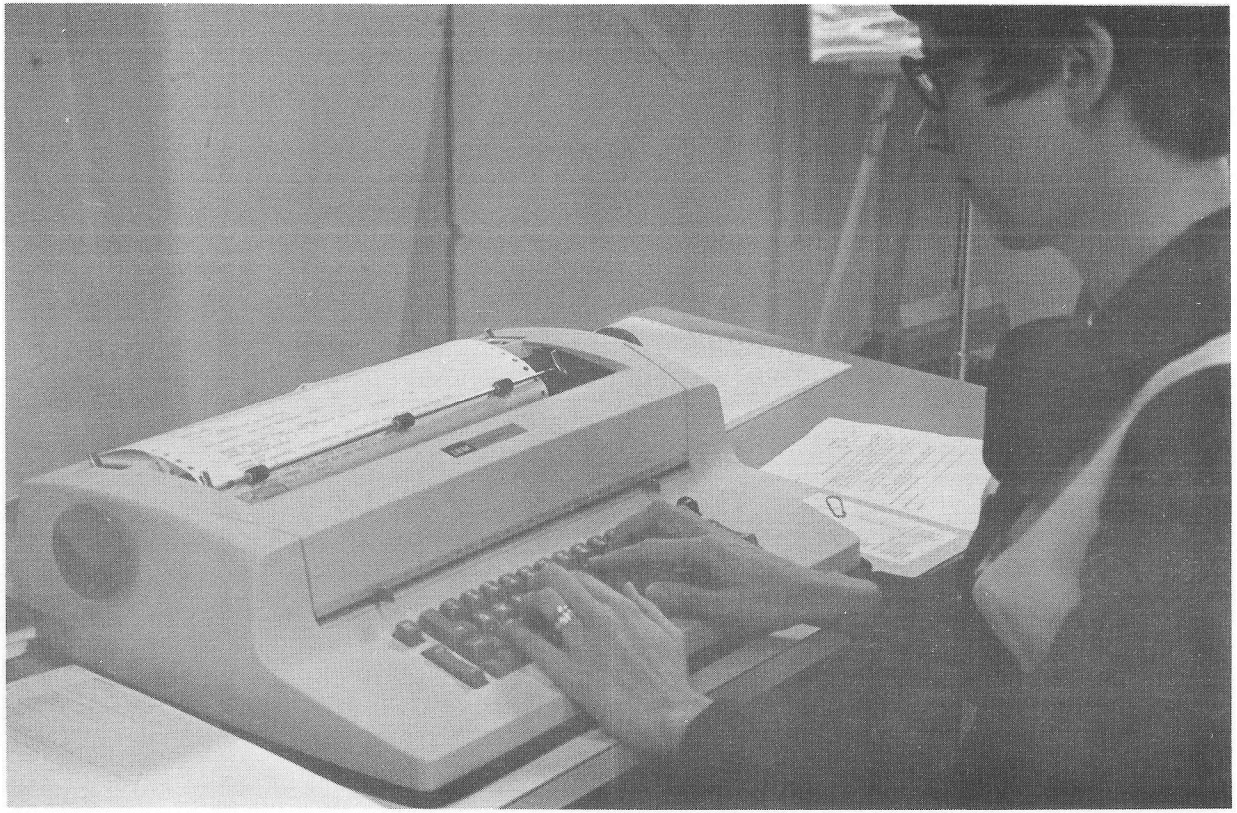
LARSYS DEMONSTRATION ** LARSYS

RESTORED DATA
RETENTION LEVEL .. 495

MINIMUM 0
MAXIMUM 30000

DIVERGENCE **WITH** SATURATING TRANSFORM

	FEATURES	DIJ(MIN)	DIJ(AVE)	WEIGHTED INTERCLASS DIVERGENCE (DIJ)									
				SC (10)	SU (10)	SW (10)	SM (10)	CU (10)	CW (10)	CM (10)	OW (10)	OM (10)	WM (10)
1.	1 6 10 11	1767.	1975.	1767	1994	2000	2000	1999	2000	2000	1994	2000	1993
2.	1 6 10 12	1762.	1974.	1762	1993	2000	2000	1999	2000	2000	1993	2000	1997
3.	6 10 11 12	1773.	1974.	1773	1978	2000	2000	1998	2000	2000	1998	2000	1974
4.	4 6 10 12	1764.	1974.	1764	1985	2000	2000	1999	2000	2000	1993	1999	1996
5.	2 6 10 12	1760.	1973.	1760	1984	2000	2000	1999	2000	2000	1994	2000	1996
6.	2 6 10 11	1764.	1973.	1764	1984	2000	2000	1999	2000	2000	1995	2000	1991
7.	6 9 10 12	1774.	1973.	1774	1967	2000	2000	1998	2000	2000	1998	2000	1995
8.	4 6 10 11	1769.	1973.	1769	1984	2000	2000	1998	2000	2000	1994	1999	1988
9.	6 9 10 11	1779.	1973.	1779	1964	2000	2000	1998	2000	2000	1998	2000	1988
10.	6 8 10 12	1762.	1972.	1762	1969	2000	2000	1998	2000	2000	1997	2000	1997
11.	6 8 10 11	1768.	1972.	1768	1967	2000	2000	1998	2000	2000	1997	2000	1992
12.	5 6 10 12	1760.	1972.	1760	1973	2000	2000	1998	2000	2000	1994	1999	1995
13.	3 6 10 11	1758.	1972.	1758	1982	2000	2000	1998	2000	2000	1994	1999	1987
14.	5 6 10 11	1765.	1972.	1765	1974	2000	2000	1997	2000	2000	1995	1999	1987
15.	3 6 10 12	1750.	1971.	1750	1979	2000	2000	1998	2000	2000	1993	1999	1995
16.	6 7 10 12	1752.	1970.	1752	1963	2000	2000	1998	2000	2000	1993	1999	1998
17.	6 7 10 11	1758.	1970.	1758	1960	2000	2000	1997	2000	2000	1994	1999	1994
18.	1 7 10 11	1721.	1969.	1721	1991	2000	2000	1998	2000	2000	1993	2000	1982
19.	1 7 10 12	1716.	1968.	1716	1988	2000	2000	1998	2000	2000	1990	2000	1991
20.	1 6 9 10	1719.	1966.	1719	1968	2000	2000	1999	2000	2000	1984	1998	1992
21.	2 7 10 12	1707.	1965.	1707	1971	2000	2000	1996	2000	2000	1991	2000	1986
22.	2 7 10 11	1713.	1965.	1713	1972	2000	2000	1996	2000	2000	1993	2000	1973
23.	1 8 10 11	1698.	1964.	1698	1992	2000	2000	1997	2000	2000	1995	2000	1958
24.	1 8 10 12	1692.	1964.	1692	1987	2000	2000	1996	2000	2000	1992	2000	1971
25.	5 7 10 12	1700.	1963.	1700	1957	1999	2000	1994	2000	2000	1989	1999	1972
26.	5 7 10 11	1705.	1963.	1705	1959	2000	2000	1994	2000	2000	1991	1999	1982
27.	4 7 10 12	1680.	1962.	1680	1973	1998	2000	1995	2000	2000	1988	1999	1966
28.	4 7 10 11	1692.	1962.	1692	1971	1999	2000	1995	2000	2000	1991	1999	1970
29.	2 6 9 10	1716.	1962.	1716	1929	2000	2000	1998	2000	2000	1967	1998	1988
30.	1 5 10 12	1693.	1961.	1693	1987	2000	2000	1997	2000	2000	1990	2000	1943



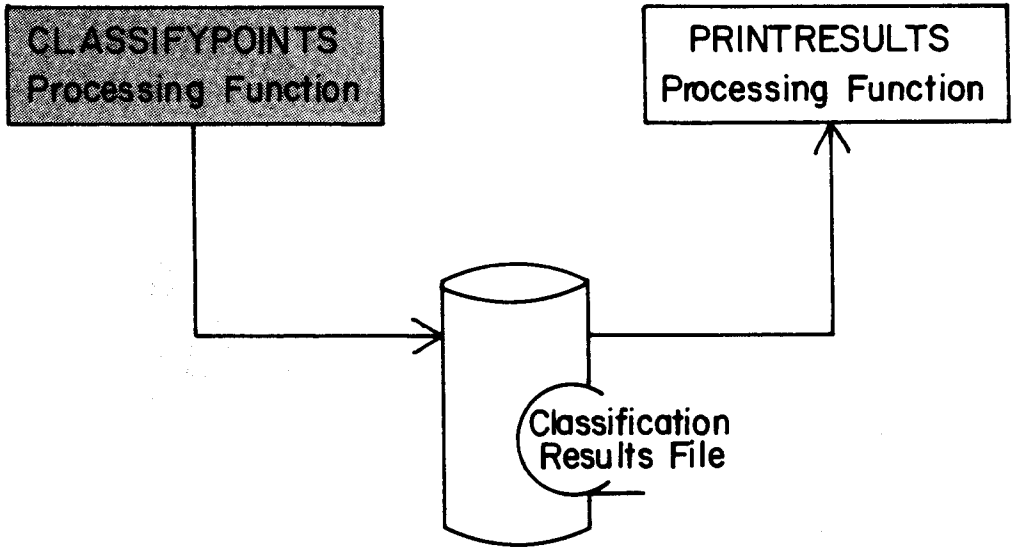
LARSYS Summary

- LARSYS assists in determining the degree of separability of classes
- LARSYS helps select the best set of features

LARSYS Summary

LEFT BLANK INTENTIONALLY.

REST YOUR EYES--AND LISTEN.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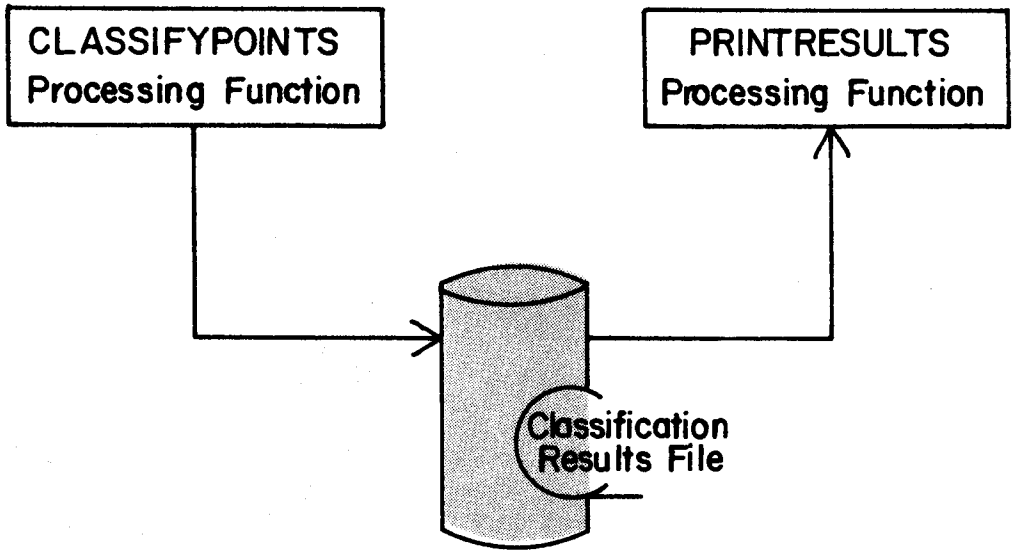
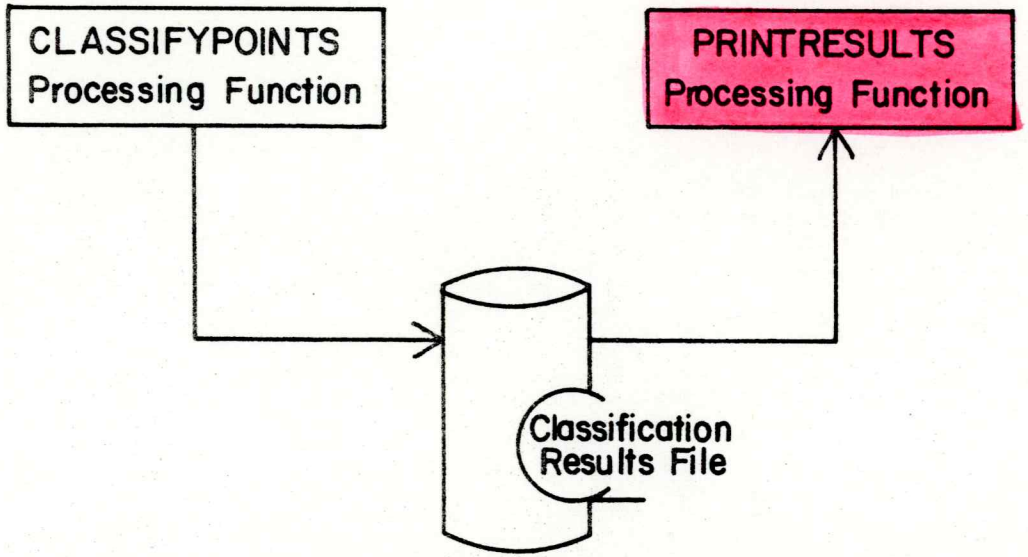
Processing Function
PRINTRESULTS
Processing Function
Classification
Results File


CLASSIFYPOINTS
Processing Function
PRINTRESULTS
Processing Function
Classification
Results File


CLASSIFYPOINTS
Processing Function
PRINTRESULTS
Processing Function
Classification
Results File

LANSYS LABORATORY FOR APPLICATIONS OF REMOTE SENSING JAN 18,1972
PURDUE UNIVERSITY 3 20 23 PM

LANSYS DEMONSTRATION ** LANSYS

SERIAL NUMBER-------- 428000001	CLASSIFIED- JAN 18,1972
RUN NUMBER---------- 66000600	DATE---------- JUNE 28,1966
FLIGHT LINE--- PURDUE FLT LN C1	TIME---------- 1229 HOURS
DATA STORAGE TAPE/FILE-- 210/ 1	ALTITUDE---------- 2600 FEET
REFORMATTING DATE- JAN 27,1971	GROUND HEADING---------- 180

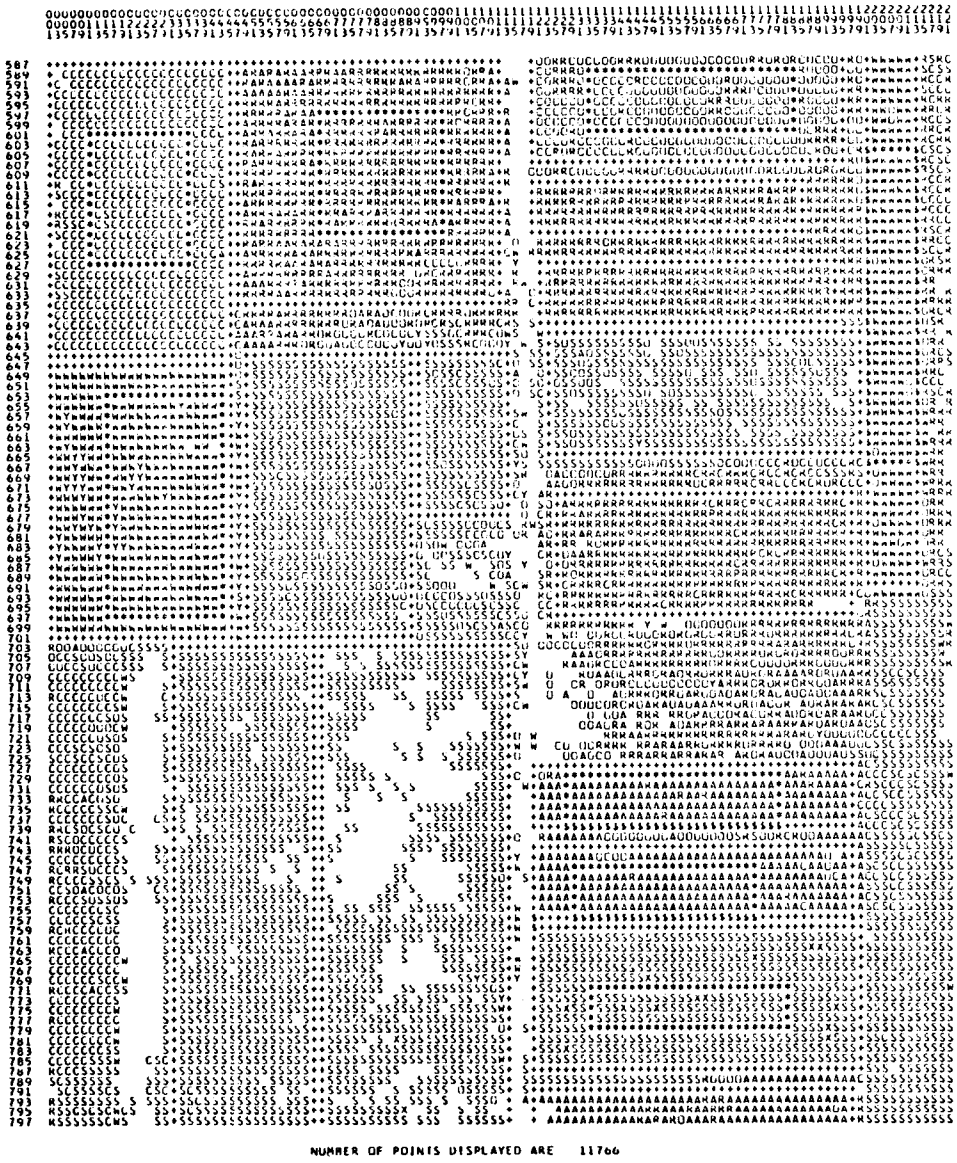
CHANNELS USED

CHANNEL 1	SPECTRAL BAND	0.40 TO 0.44 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00
CHANNEL 6	SPECTRAL BAND	0.52 TO 0.55 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00
CHANNEL 10	SPECTRAL BAND	0.66 TO 0.72 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00
CHANNEL 11	SPECTRAL BAND	0.72 TO 0.80 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00

CLASSES

SYMBOL	CLASS	GROUP	THRES PCT	SYMBOL	CLASS	GROUP	THRES PCT
S	SOYBEANS	SOYBEANS	0.5	A	ALFALFA	ALFALFA	0.5
C	CORN	CORN	0.5	Y	RYE	RYE	0.5
O	OATS	OATS	0.5	X	BR SOIL	SOIL	0.5
W	WHEAT I	WHEAT	0.5	H	WHEAT II	WHEAT	0.5
R	RED CLVR	RED CLVR	0.5				

TRAINING FIELDS OUTLINED WITH A *
TEST FIELDS OUTLINED WITH A +



NUMBER OF POINTS DISPLAYED ARE 11766

LARSYS DEMONSTRATION ** LARSYS

CLASSIFICATION STUDY .. SERIAL NO. 428000001

CLASSES CONSIDERED

SYMBOL	CLASS
1	SOYBEANS
2	CORN
3	OATS
4	WHEAT I
5	RED CLVR
6	ALFALFA
7	RYE
8	BR SOIL
9	WHEAT II

CHANNELS CONSIDERED

CHANNEL NO.	SPECTRAL BAND		CAL. CODE
1	0.40	0.44	1
6	0.52	0.55	1
10	0.66	0.72	1
11	0.72	0.80	1

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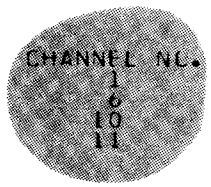
LARSYS DEMONSTRATION ** LARSYS

CLASSIFICATION STUDY .. SERIAL NO. 428000001

CLASSES CONSIDERED

SYMBOL	CLASS
1	SOYBEANS
2	CORN
3	OATS
4	WHEAT I
5	RED CLVR
6	ALFALFA
7	RYE
8	BR SOIL
9	WHEAT II



CHANNELS CONSIDERED

SPECTRAL BAND		CAL. CODE
0.40	0.44	1
0.52	0.55	1
0.66	0.72	1
0.72	0.80	1

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001	CLASSIFIED- JAN 18,1972
RUN NUMBER---------- 66000600	DATE---------- JUNE 28,1966
FLIGHT LINE--- PURDUE FLT LN C1	TIME---------- 1229 HOURS
DATA STORAGE TAPE/FILE-- 210/ 1	ALTITUDE---------- 2600 FEET
REFORMATTING DATE- JAN 27,1971	GROUND HEADING---------- 180

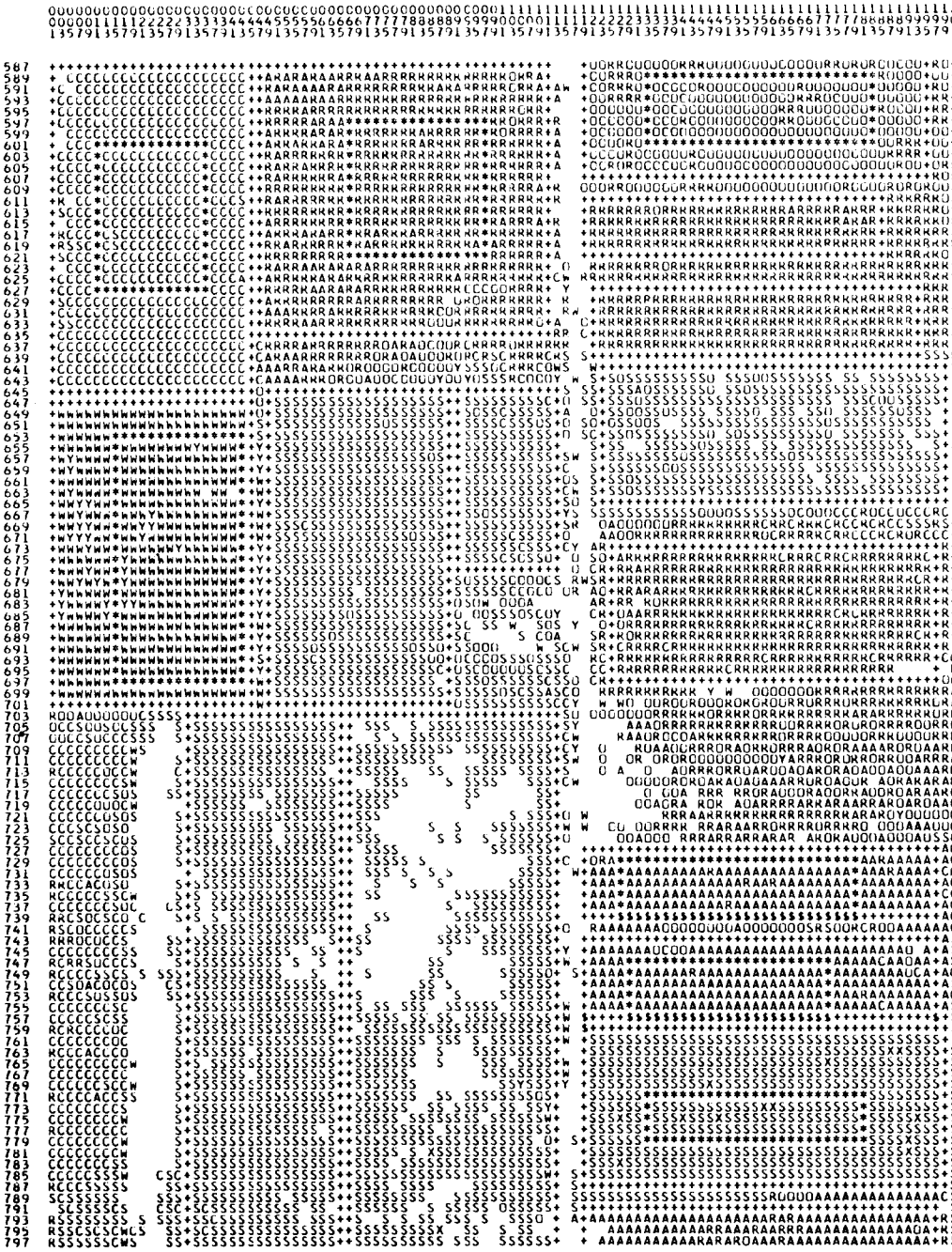
CHANNELS USED

CHANNEL 1	SPECTRAL BAND	0.40 TO	0.44 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 6	SPECTRAL BAND	0.52 TO	0.55 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 10	SPECTRAL BAND	0.66 TO	0.72 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 11	SPECTRAL BAND	0.72 TO	0.80 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00

CLASSES

SYMBOL	CLASS	GROUP	THRES PCT	SYMBOL	CLASS	GROUP	THRES PCT
A	SOYBEANS	SOYBEANS	0.5	A	ALFALFA	ALFALFA	0.5
C	CORN	CORN	0.5	Y	RYE	RYE	0.5
O	OATS	OATS	0.5	X	BR SOIL	SOIL	0.5
W	WHEAT 2	WHEAT	0.5	W	WHEAT 1	WHEAT	0.5
R	RED CLVR	RED CLVR	0.5				

TRAINING FIELDS OUTLINED WITH A *
TEST FIELDS OUTLINED WITH A +



NUMBER OF POINTS DISPLAYED ARE 11766

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001
RUN NUMBER---------- 66000600
FLIGHT LINE--- PURDUE FLT LN C1
DATA STORAGE TAPE/FILE-- 210/ 1
REFORMATTING DATE- JAN 27,1971

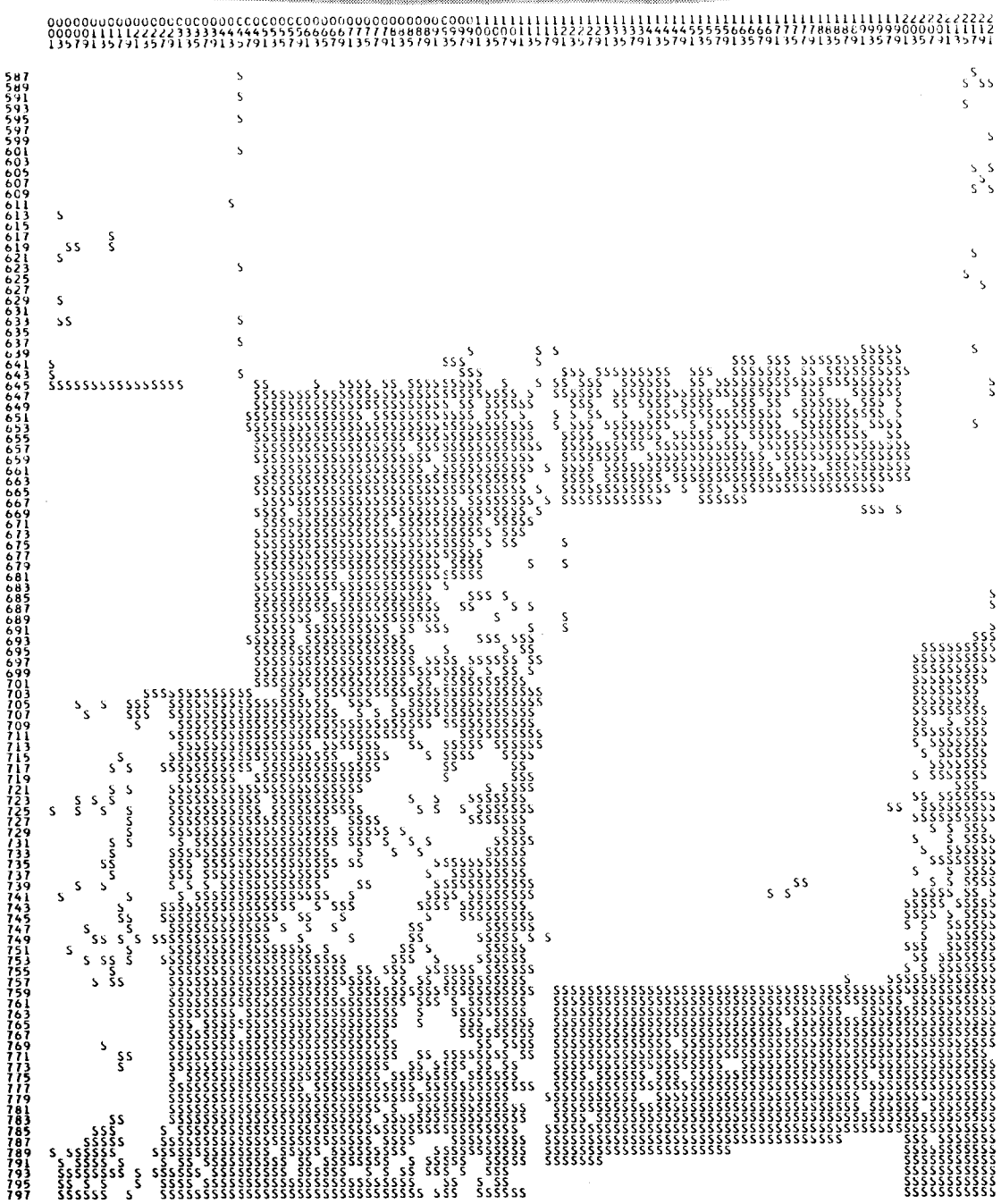
CLASSIFIED- JAN 18,1972
DATE---------- JUNE 28,1966
TIME---------- 1229 HOURS
ALTITUDE---------- 2600 FEET
GROUND HEADING---------- 180

CHANNELS USED

CHANNEL 1 SPECTRAL BAND 0.40 TO 0.44 MICROMETERS CALIBRATION CODE = 1 CO = 31.00
CHANNEL 6 SPECTRAL BAND 0.52 TO 0.55 MICROMETERS CALIBRATION CODE = 1 CO = 31.00
CHANNEL 10 SPECTRAL BAND 0.66 TO 0.72 MICROMETERS CALIBRATION CODE = 1 CO = 31.00
CHANNEL 11 SPECTRAL BAND 0.72 TO 0.80 MICROMETERS CALIBRATION CODE = 1 CO = 31.00

CLASSES

SYMBOL	CLASS	THRES PCT	SYMBOL	CLASS	THRES PCT
	SOYBEANS	0.9		ALFALFA	0.5
	CORN	0.5		RYE	0.5
	OATS	0.9		BR SOIL	0.5
	WHEAT I	0.5		WHEAT II	0.5
	RED CLVR	0.5			



NUMBER OF POINTS DISPLAYED ARE 11766

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001
RUN NUMBER---------- 66000600
FLIGHT LINE--- PURDUE FLT LN C1
DATA STORAGE TAPE/FILE-- 210/ 1
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CLASSIFIED- JAN 18,1972
DATE---------- JUNE 28,1966
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CHANNELS USED

CHANNEL 1	SPECTRAL BAND	0.40 TO 0.44 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
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CHANNEL 10	SPECTRAL BAND	0.66 TO 0.72 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 11	SPECTRAL BAND	0.72 TO 0.80 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00

CLASSES

SYMBOL	CLASS	THRES PCT	SYMBOL	CLASS	THRES PCT
S	SOYBEANS	0.5		ALFALFA	0.5
	CORN	0.5		RYE	0.5
	OATS	0.5		BR SOIL	0.5
	WHEAT I	0.5		WHEAT II	0.5
	RED CLVR	0.5			

NUMBER OF POINTS DISPLAYED ARE 11766

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001 CLASSIFIED- JAN 18,1972

SAVED TEST FIELDS

	RUN NUMBER	FIELD DESIG.	FIRST LINE	LAST LINE	LINE INT.	FIRST COLUMN	LAST COLUMN	COLUMN INT.	FIELD TYPE	OTHER INFORMATION	DISPLAY CLASS
1	66000600	30-4	63	79	2	115	169	2		SOYBN COVERS W	SOYBEANS
2	66000600	25-6	57	89	2	47	103	2		SOYBEANS	SOYBEANS
3	66000600	31-1	93	101	2	113	183	2		SOYBN COVERS W	SOYBEANS
4	66000600	36-2	123	133	2	43	101	2		SOYBEANS	SOYBEANS
5	66000600	36-2	133	149	2	43	83	2		SOYBEANS	SOYBEANS
6	66000600	31-13	217	273	2	109	201	2		SOYBEANS	SOYBEANS
7	66000600	12-3	705	797	2	69	111	2		SOYBN E PRT PR	SOYBEANS
8	66000600	36-7	291	341	2	43	97	2		SOYBN VOLUNTR	SOYBEANS
9	66000600	6-9	489	519	2	115	161	2		SOYBEANS	SOYBEANS
10	66000600	7-27	643	663	2	125	197	2		SOYBEANS	SOYBEANS
11	66000600	12-7	647	699	2	51	87	2		SOYBEANS	SOYBEANS
12	66000600	12-2	647	675	2	93	111	2		SOYBEANS	SOYBEANS
13	66000600	12-3	705	797	2	33	63	2		SOYBN W. PRT P	SOYBEANS
14	66000600	7-23	759	785	2	121	197	2		SOYBN PLT CIRC	SOYBEANS
15	66000600	36-4	157	187	2	17	101	2		CORN	CORN
16	66000600	36-4	189	215	2	17	79	2		CORN	CORN
17	66000600	36-10	221	255	2	39	55	2		CORN	CORN
18	66000600	36-9	261	287	2	39	65	2		CORN	CORN
19	66000600	36-8	307	349	2	19	35	2		CORN	CORN
20	66000600	6-11	401	421	2	111	199	2		CORN	CORN
21	66000600	12-9	589	643	2	3	43	2		CORN DIFF VARI	CORN
22	66000600	31-11	327	335	2	109	197	2		OATS	OATS
23	66000600	6-2	365	377						OATS DITCH W E	OATS
24	66000600	1-11	413							[illegible]	OATS
25	66000600	7-1									OATS

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001 CLASSIFIED- JAN 18,1972

CHANNELS USED

CHANNEL 1	SPECTRAL BAND	0.40 TO 0.44 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 6	SPECTRAL BAND	0.52 TO 0.55 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 10	SPECTRAL BAND	0.66 TO 0.72 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 11	SPECTRAL BAND	0.72 TO 0.80 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00

CLASSES

	CLASS	GROUP	THRES PCT		CLASS	GROUP	THRES PCT
1	SOYBEANS	SOYBEANS	0.5	6	ALFALFA	ALFALFA	0.5
2	CORN	CORN	0.5	7	RYE	RYE	0.5
3	OATS	OATS	0.5	8	BR SOIL	SOIL	0.5
4	WHEAT I	WHEAT	0.5	9	WHEAT II	WHEAT	0.5
5	RED CLVR	RED CLVR	0.5				

TEST FIELD PERFORMANCE

FIELD DESIG.	GROUP	NO OF SAMPS	PCT. CORCT	NUMBER OF SAMPLES CLASSIFIED INTO SOYBEANS	CORN	OATS	WHEAT	RED CLVR	ALFALFA	RYE	SOIL	THRSHOLD
12-3	SOYBEANS	1034	65.7	679	0	5	2	0	0	2	2	344
7-27	SOYBEANS	407	65.5	348	1	31	0	0	1	1	0	25
12-7	SOYBEANS	513	97.1	498	3	10	0	0	0	0	0	2
12-2	SOYBEANS	150	92.7	139	5	6	0	0	0	0	0	0
12-3	SOYBEANS	752	94.9	714	3	0	0	0	0	0	0	35
7-23	SOYBEANS	546	97.3	531	0	0	0	0	0	0	15	0
12-9	CORN	588	96.4	10	567	0	0	3	1	0	0	7
7-1	OATS	370	84.3	0	0	312	0	58	0	0	0	0
7-2	WHEAT	260	95.4	0	0	12	248	0	0	0	0	0
12-10	WHEAT	546	93.4	0	0	0	510	0	0	32	0	4
12-8	RED CLVR	713	86.0	0	0	18	0	613	81	0	0	1
7-29	RED CLVR	128	96.1	0	0	1	0	123	4	0	0	0
7-28	RED CLVR	175	100.0	0	0	0	0	175	0	0	0	0
	RED CLVR	385	92.2	0	15	4	0	355	6	0	0	5
7-24	ALFALFA	190	94.7	0	0	3	0	7	180	0	0	0
7-24	ALFALFA	266	90.2	1	8	11	0	4	240	0	0	2
7-22	ALFALFA	114	85.1	0	0	2	0	12	97	0	0	3
	TOTAL	7137		2920	602	415	760	1350	610	35	17	428

OVERALL PERFORMANCE(6329/ 7137) = 88.7

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001	CLASSIFIED- JAN 18,1972
RUN NUMBER---------- 66000600	DATE---------- JUNE 28,1966
FLIGHT LINE--- PURDUE FLT LN C1	TIME---------- 1229 HOURS
DATA STORAGE TAPE/FILE-- 210/ 1	ALTITUDE---------- 2600 FEET
REFORMATTING DATE- JAN 27,1971	GROUND HEADING---------- 180

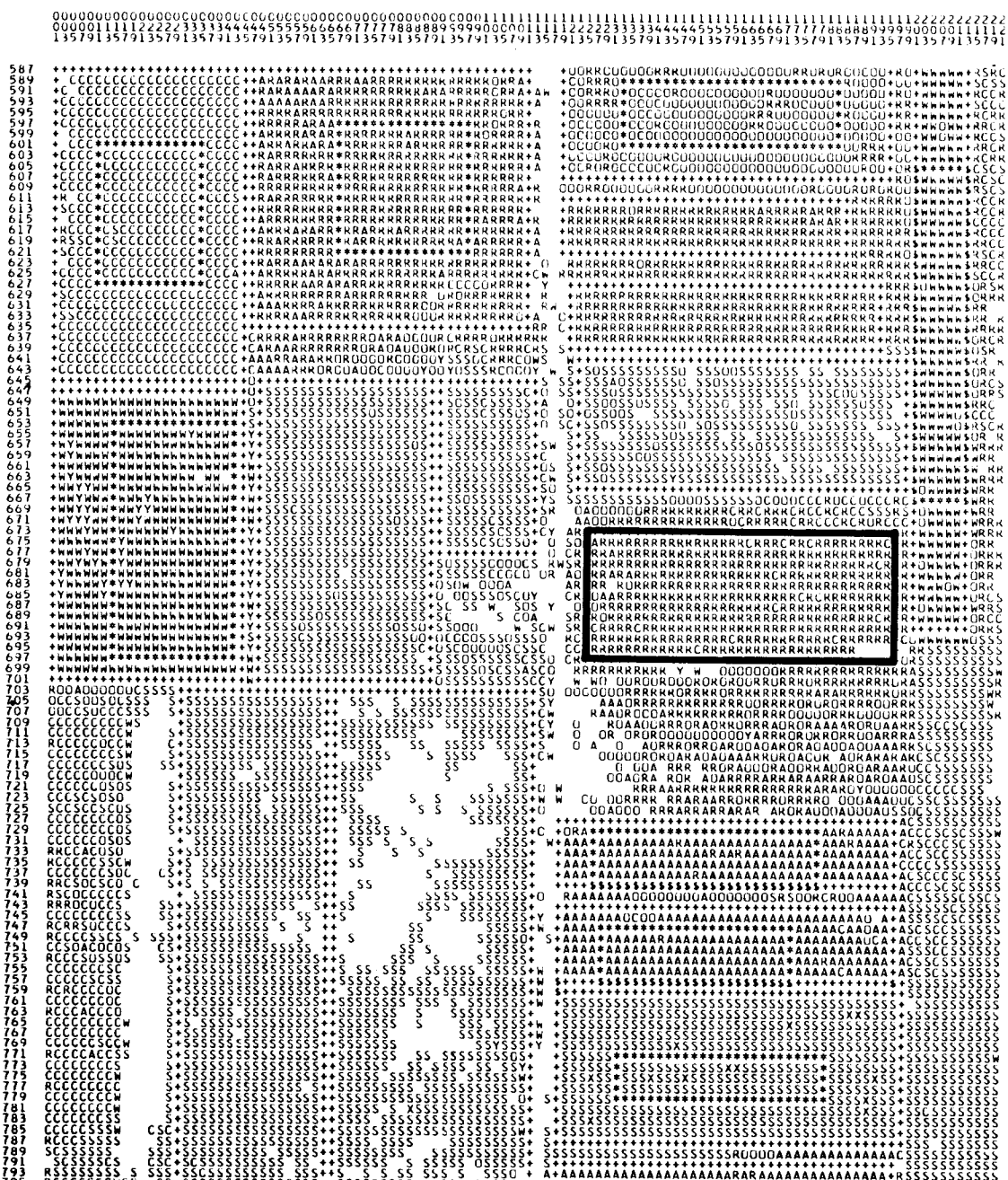
CHANNELS USED

CHANNEL 1	SPECTRAL BAND	0.40 TO 0.44 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 6	SPECTRAL BAND	0.52 TO 0.55 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 10	SPECTRAL BAND	0.66 TO 0.72 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00
CHANNEL 11	SPECTRAL BAND	0.72 TO 0.80 MICROMETERS	CALIBRATION CODE = 1	CO =	31.00

CLASSES

SYMBOL	CLASS	GROUP	THRES PCT	SYMBOL	CLASS	GROUP	THRES PCT
S	SOYBEANS	SOYBEANS	0.5	A	ALFALFA	ALFALFA	0.5
C	CORN	CORN	0.5	Y	RYE	RYE	0.5
O	OATS	OATS	0.5	X	BR SOIL	SOIL	0.5
W	WHEAT I	WHEAT	0.5	W	WHEAT II	WHEAT	0.5
R	RED CLVR	RED CLVR	0.5				

TRAINING FIELDS OUTLINED WITH A *
TEST FIELDS OUTLINED WITH A +



NUMBER OF POINTS DISPLAYED ARE 11766

LARSYS DEMONSTRATION ** LARSYS

SERIAL NUMBER------- 428000001 CLASSIFIED- JAN 18,1972

CHANNELS USED

CHANNEL 1	SPECTRAL BAND	0.40 TO	0.44 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00
CHANNEL 6	SPECTRAL BAND	0.52 TO	0.55 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00
CHANNEL 10	SPECTRAL BAND	0.66 TO	0.72 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00
CHANNEL 11	SPECTRAL BAND	0.72 TO	0.80 MICROMETERS	CALIBRATION CODE = 1	CO = 31.00

CLASSES

	CLASS	GROUP	THRES PCT		CLASS	GROUP	THRES PCT
1	SOYBEANS	SOYBEANS	0.5	6	ALFALFA	ALFALFA	0.5
2	CORN	CORN	0.5	7	RYE	RYE	0.5
3	OATS	OATS	0.5	8	BR SOIL	SOIL	0.5
4	WHEAT I	WHEAT	0.5	9	WHEAT II	WHEAT	0.5
5	RED CLVR	RED CLVR	0.5				

TEST CLASS PERFORMANCE

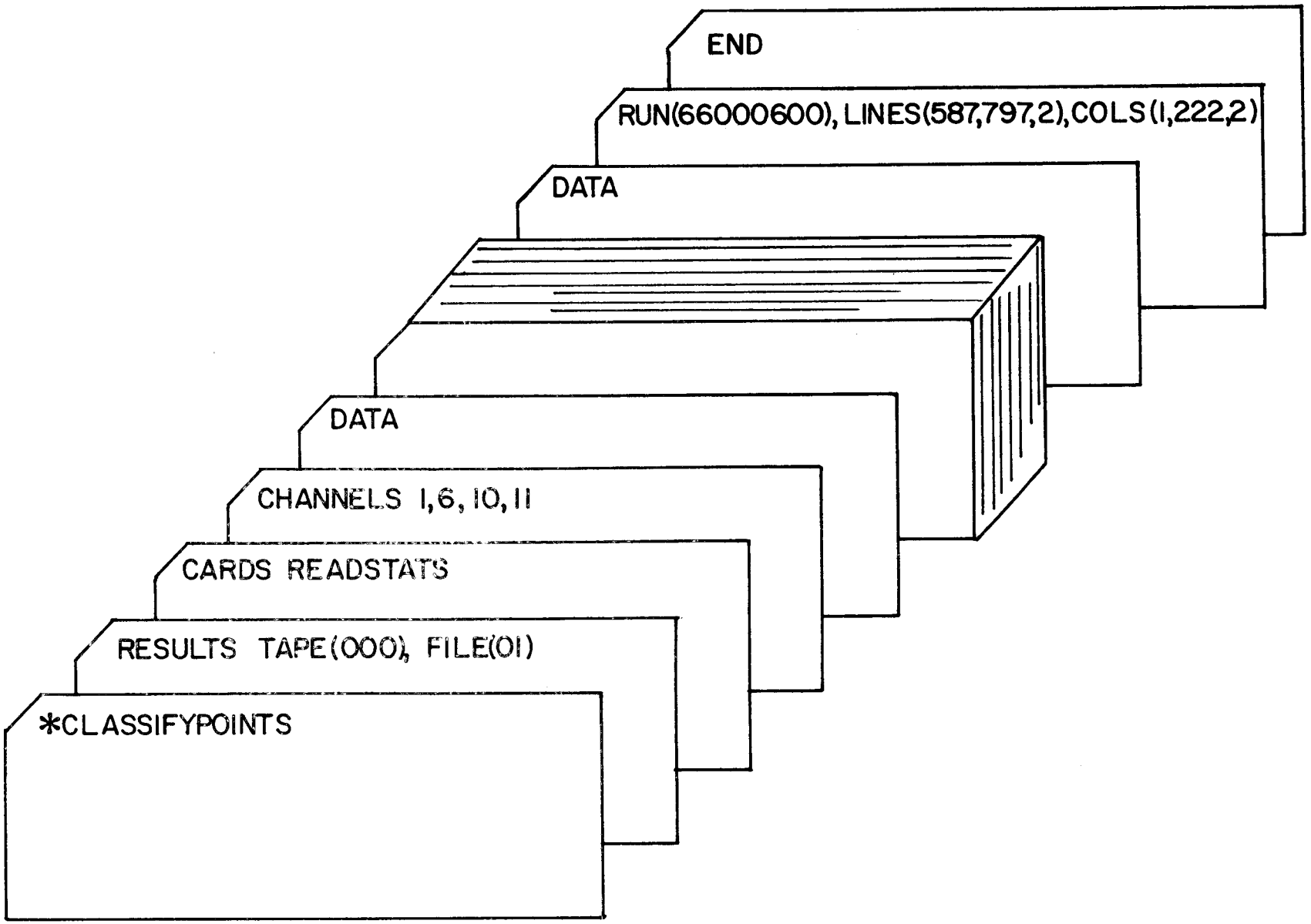
	GROUP	NO OF SAMPS	PCT. CORCT	NUMBER OF SAMPLES CLASSIFIED INTO SOYBEANS	CORN	OATS	WHEAT	RED CLVR	ALFALFA	RYE	SOIL	THRSHOLD
1	SOYBEANS	3402	85.5	2909	12	52	2	0	1	3	17	406
2	CORN	588	96.4	10	567	0	0	3	1	0	0	7
3	OATS	370	84.3	0	0	312	0	58	0	0	0	0
4	WHEAT	806	94.0	0	0	12	758	0	0	32	0	4
5	RED CLVR	1401	90.4	0	15	23	0	1266	91	0	0	6
6	ALFALFA	570	90.7	1	8	16	0	23	517	0	0	5
	TOTAL	7137		2920	602	415	760	1350	610	35	17	428

OVERALL PERFORMANCE(6329/ 7137) = 88.7

AVERAGE PERFORMANCE BY CLASS(541.4/ 6) = 90.2

- LARSYS Produces Gaussian maximum likelihood classifications
- Results are displayed in map or tabular form

LARSYS Summary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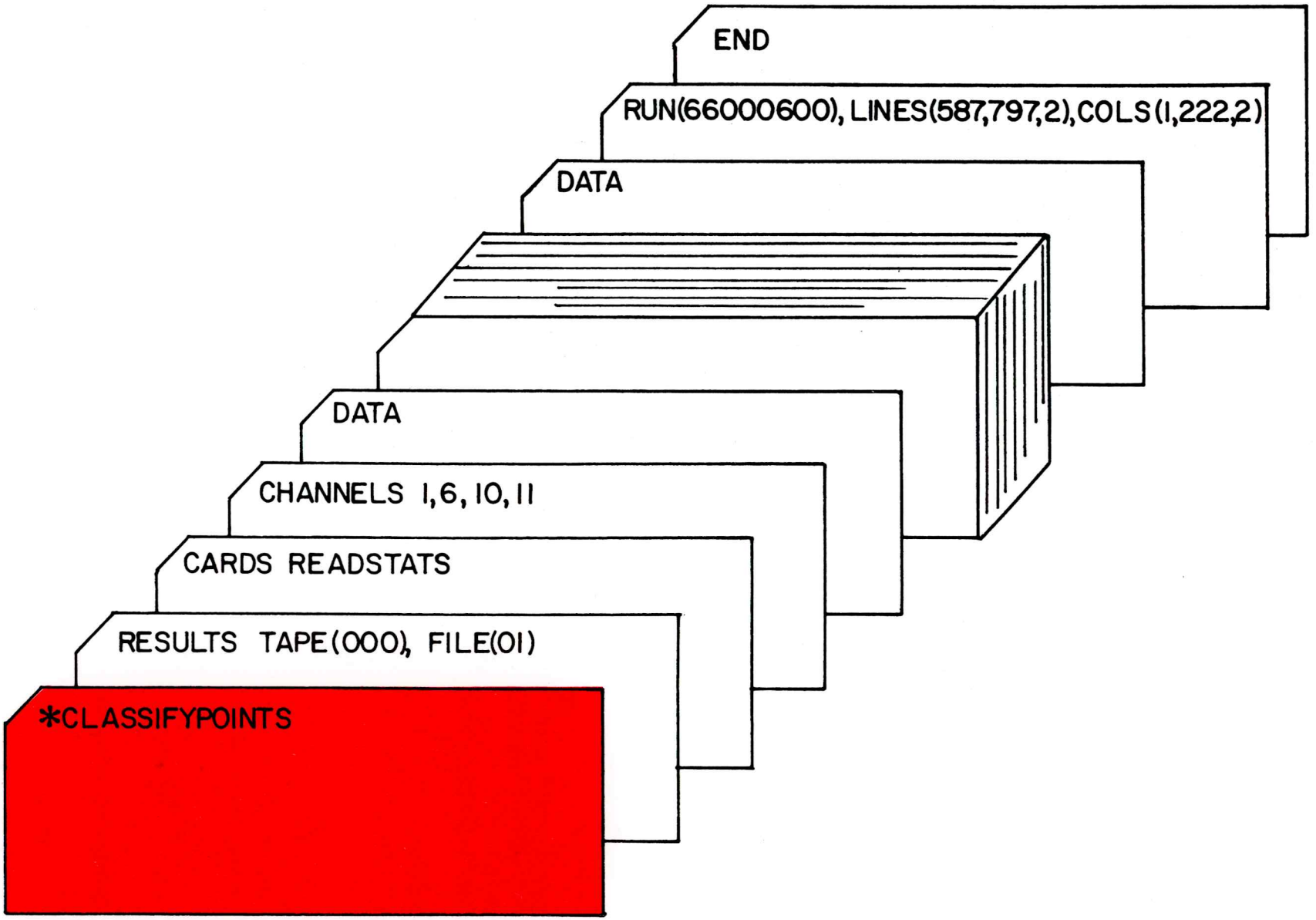
DATA
DATA
CHANNELS 1,6,10,11
CARDS READSTATS
RESULTS TAPE(000), FILE(01)
*CLASSIFYPOINTS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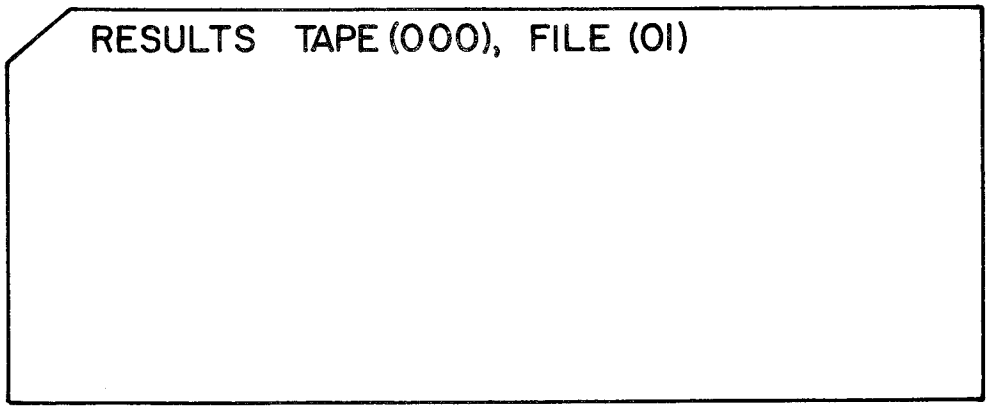
DATA
DATA
CHANNELS 1,6,10,11
CARDS READSTATS
RESULTS TAPE(000), FILE(01)
*CLASSIFYPOINTS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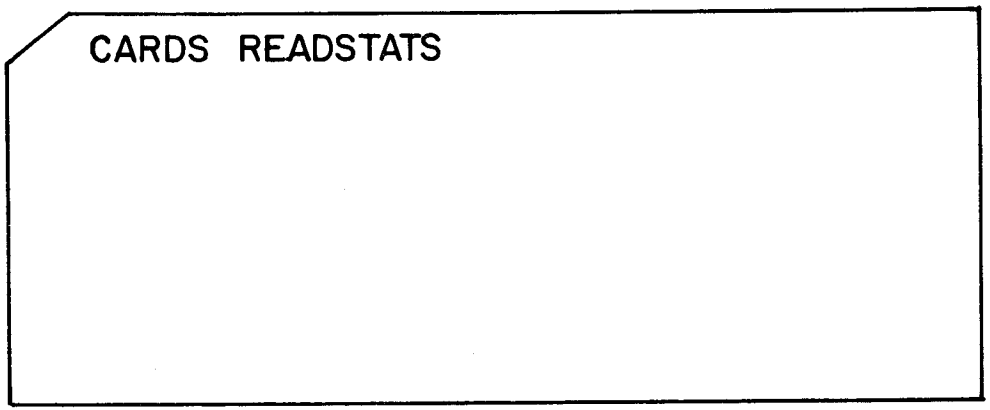
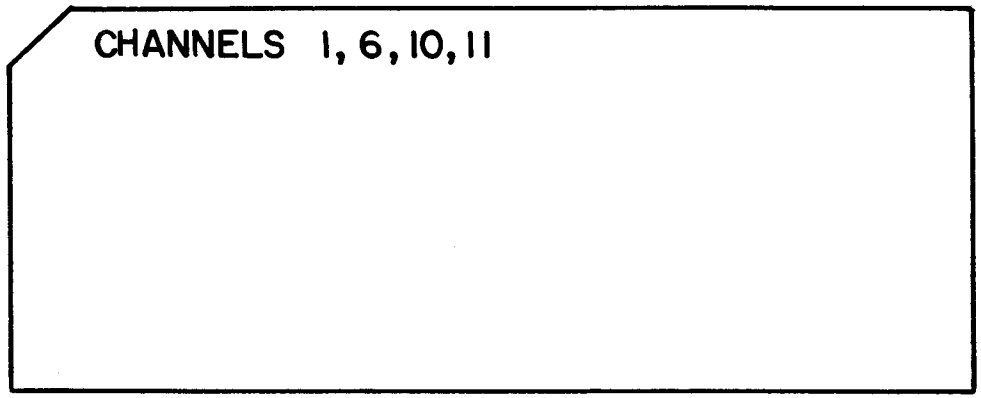
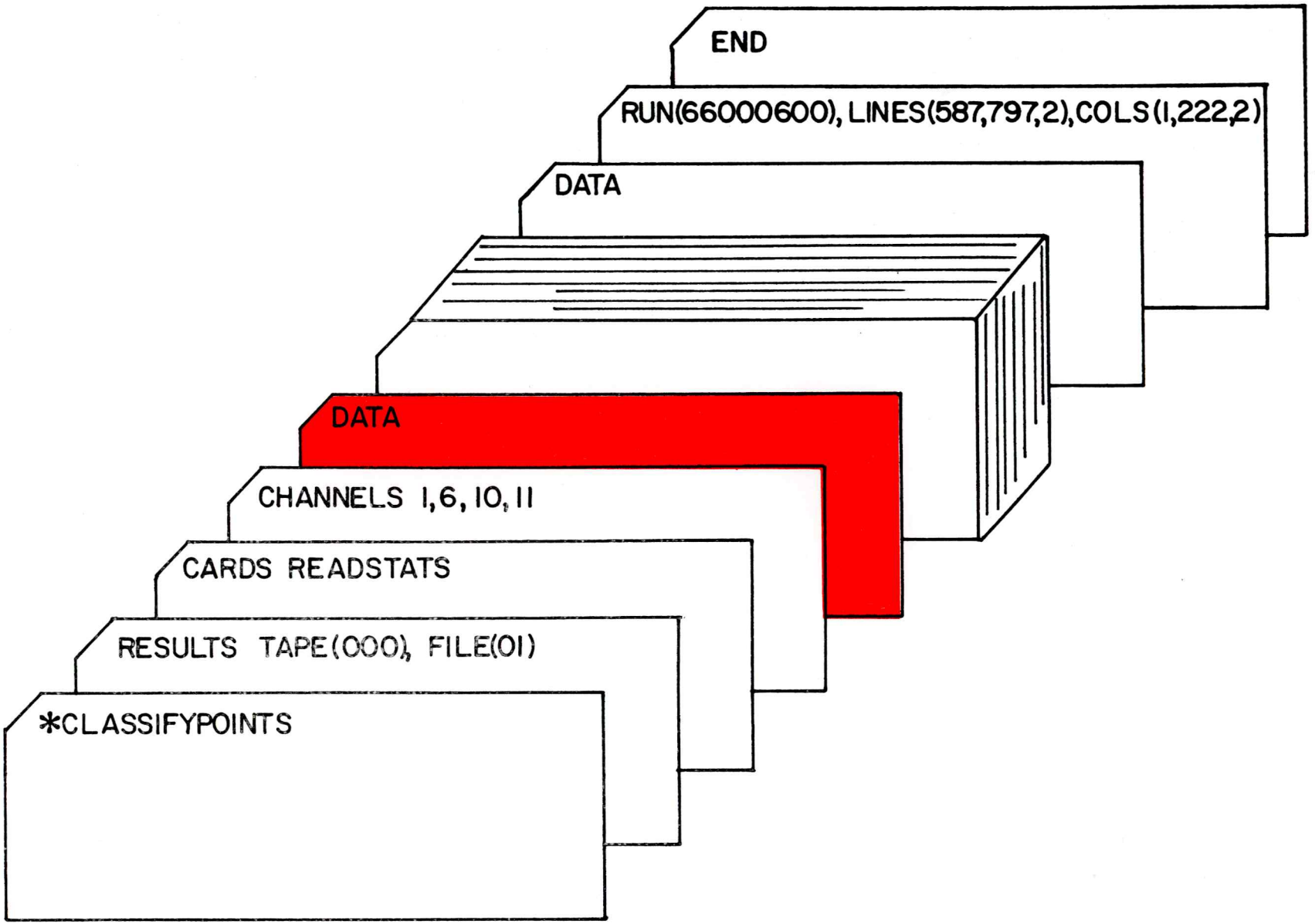

CARDS READSTATS


CHANNELS 1, 6, 10, 11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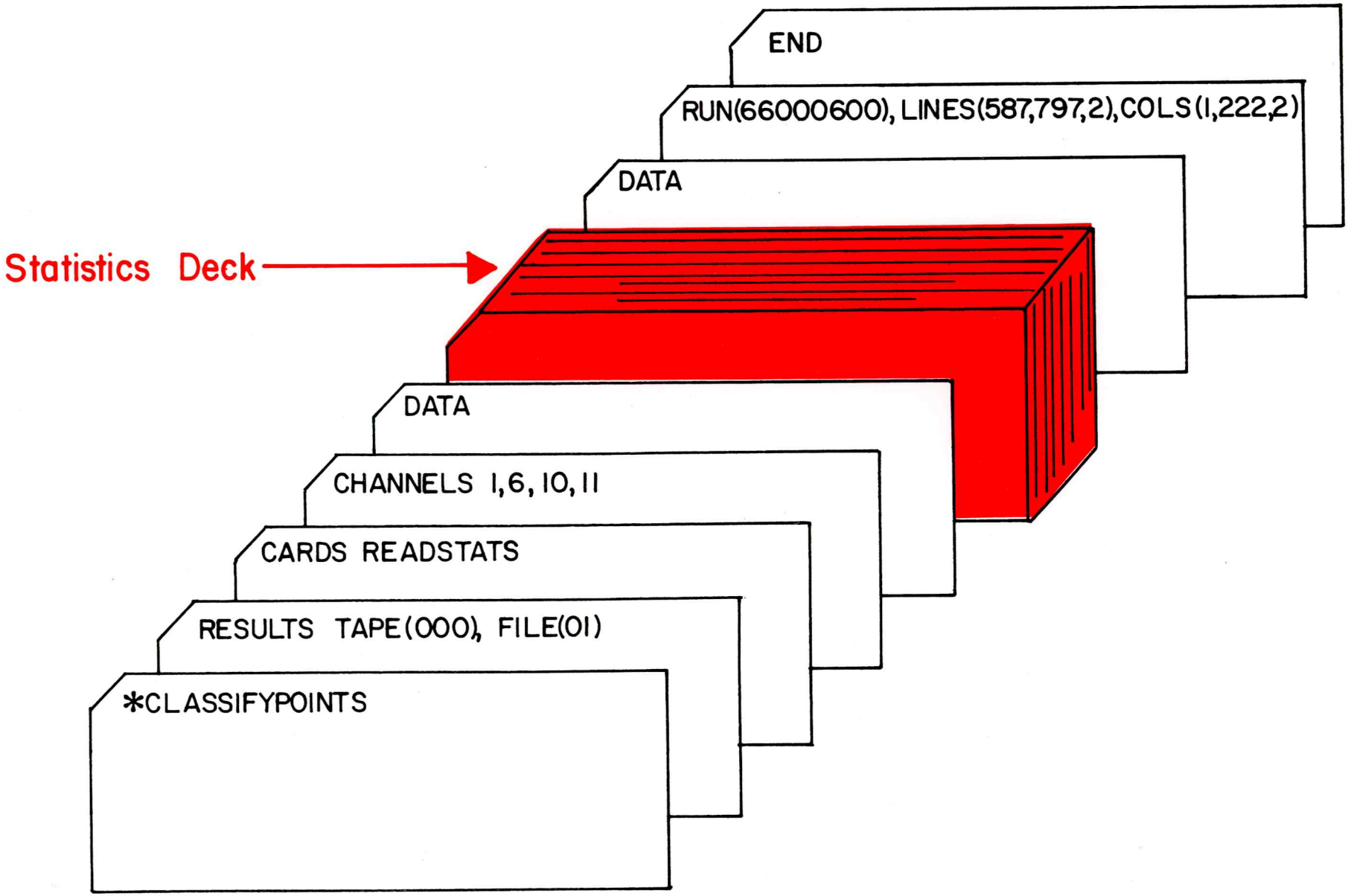
CHANNELS 1,6,10,11
CARDS READSTATS
RESULTS TAPE(000), FILE(01)
*CLASSIFYPOINTS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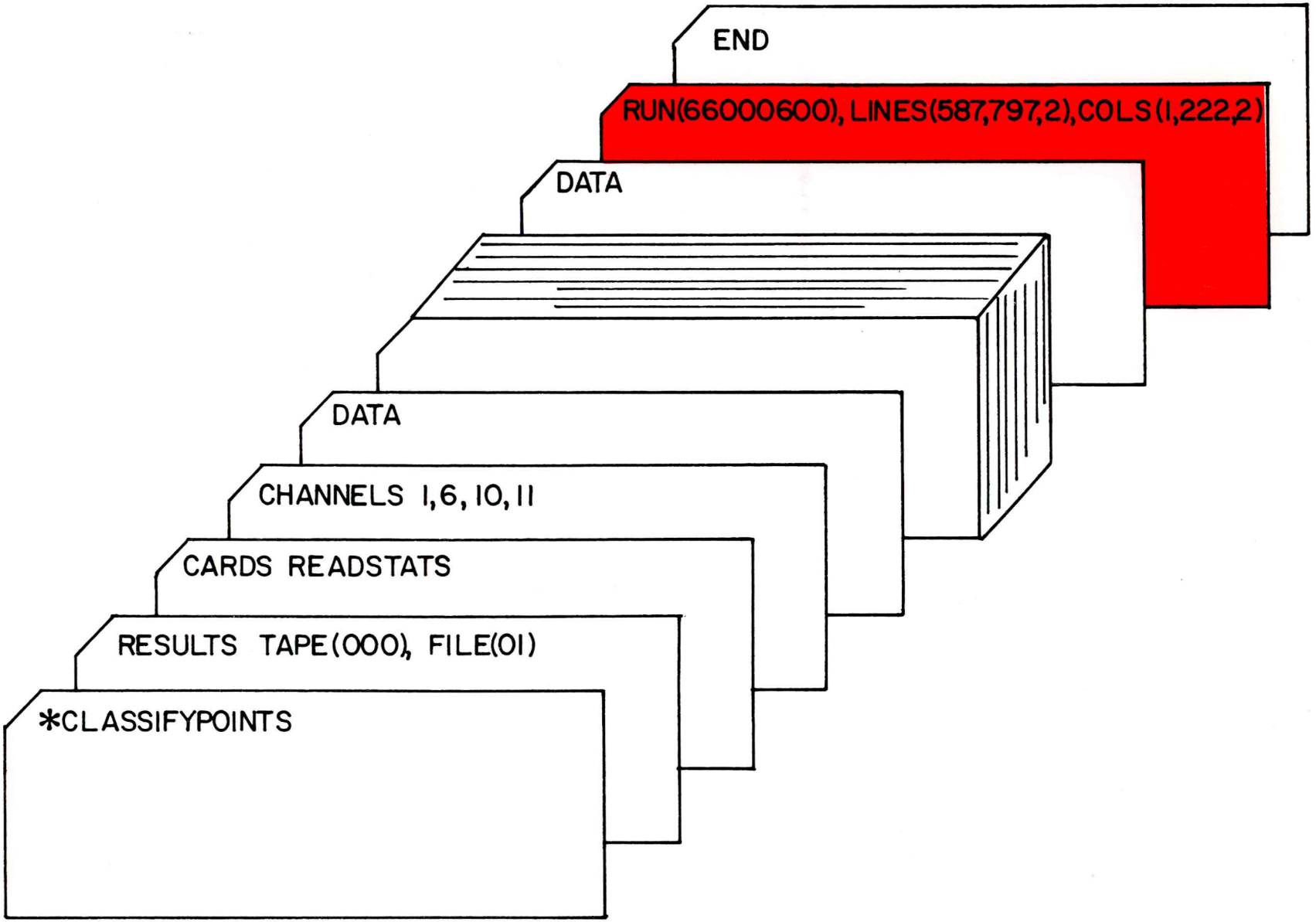
DATA
CHANNELS 1,6,10,11
CARDS READSTATS
RESULTS TAPE(000), FILE(01)
*CLASSIFYPOINTS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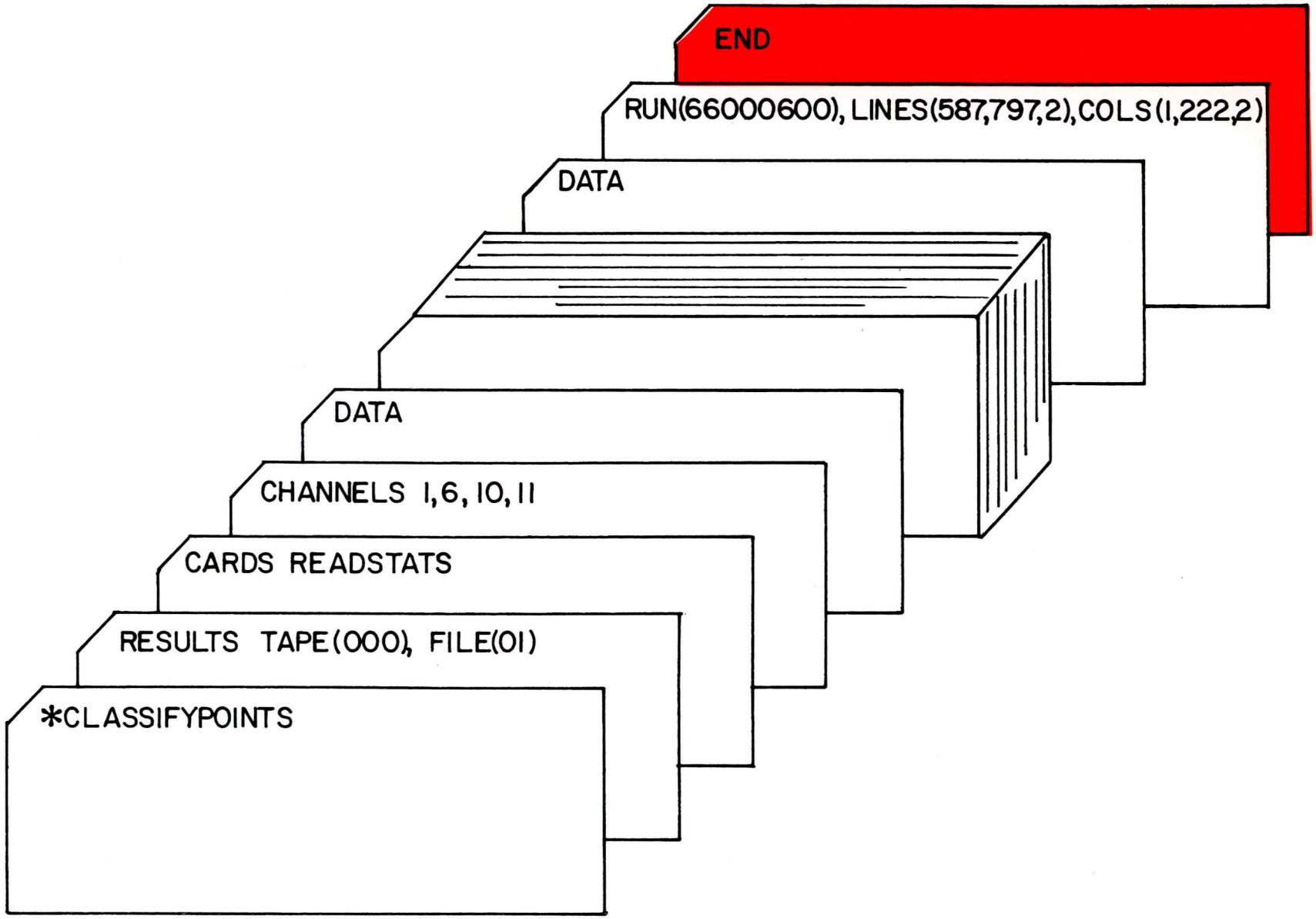
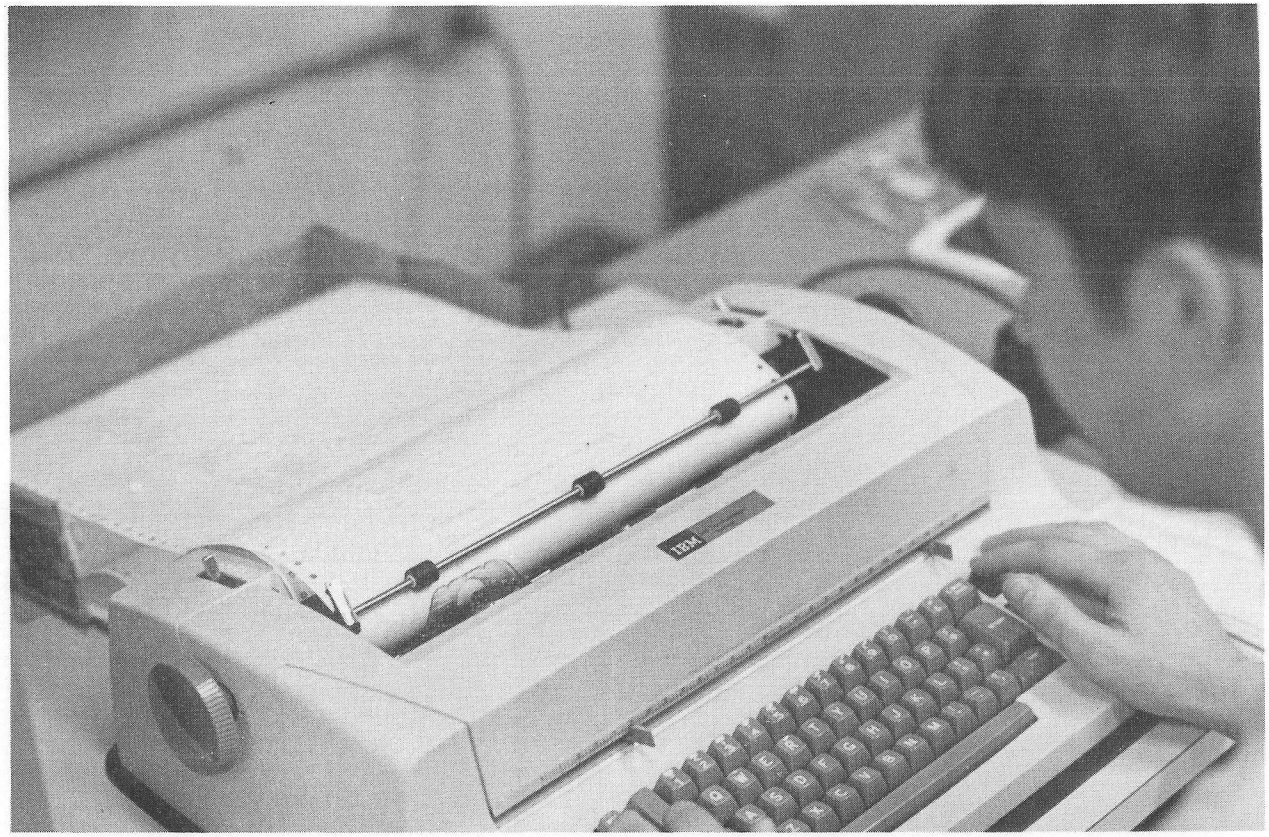
DATA
CHANNELS 1,6,10,11
CARDS READSTATS
RESULTS TAPE(000), FILE(01)
*CLASSIFYPOINTS


END
RUN(66000600), LINES(587,797,2), COLS(1,222,2)
DATA
DATA
CHANNELS 1,6,10,11
CARDS READSTATS
RESULTS TAPE(000), FILE(01)
*CLASSIFYPOINTS

LARSYS uses three types of control cards:

- Initialization cards
- Function selector cards
- Function control cards

LARSYS Summary


IBM

Multispectral Image Storage Tapes contain:

- Data values
- Data addresses
- Identification information
- Calibration information

LARSYS Summary

LARSYS output examples:

- ID records
- Grayscale printouts
- Graphs of lines and columns

LARSYS Summary

LARSYS output examples:

- Histograms
- Spectral plots
- Mean and covariance matrices

} STATISTICS

- Statistics deck

- Separability information – SEPARABILITY
- Classification maps – CLASSIFYPOINTS
- Performance tables – PRINTRESULTS