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SAVINGS AND LOAN ON LINE BANKING APPLICATION  
DES MOINES U.S.A.

The Savings and Loan banking system in the U.S.A. is a similar banking system to the N.Z. regional savings banks.

The installation we visited was a Federal Agency responsible for control of these banks in four states. This agency has developed a computer system giving the banks an on-line transaction processing system for savings, mortgage and loan accounts. The system is so efficient that it now sells its services to nearly all Savings and Loan banks in fifteen states ranging from Montana in the North to Texas and Arkansas in the south. The network ranges from the centre of USA and lines extend 1500 miles to the North-west and 1200 miles to the South.

The Federal agency is a Burroughs installation which replaced two B3500 systems and has now been running on two B4700's for about one year. The remarkable aspect is that contrary to the normal N.Z. belief, this U.S. installation has made maximum use of minimum hardware. The network consists of 26 lines running through a multi-line control into a 300KB B4700. The lines service 700 terminals and each line has from 3 to 40 terminals multi-dropped onto it. A hardware configuration is attached as appendix A. The response time is all important to the Federal agency as they have lost one customer because of slow response time and do not intend to lose any more. They have done several things to ensure that the response time does not exceed 4.5. seconds.

1. The agency has two B4700 computers, but only one is used for data communications. However one reason for the two machines is that if the number of transactions exceeds 17,000 per hour or 1,700 per 6 minute period, the other machine is fired up for data communications and three or four of the busy lines are switched to this machine. This has only occurred ten times within the last twelve months.
2. Each six minutes a message is printed on the B4700 log, listing four fields
  - (a) the number of transactions processed to day
  - (b) the number of transactions processed within the last six minutes
  - (c) the average response time for the transactions processed within the last six minutes
  - (d) the time.

A copy of this is attached as appendix B.

The communications system runs from 8 a.m. until 8 p.m. each day, and processes 80,000 to 90,000 transactions in this time. The peak load to date has been 160,000 transactions in one day and they have estimated that they could handle 200,000 if required. My estimate is that our peak in each year will not exceed 90,000 transactions per day although the amount of data in each transaction will be much higher in our IRD/DSW system.

3. From the statistics gathered from the data communications area a comprehensive set of reports are produced for management and DC operations control. These reports cover
- (a) Network down time and interruptions
  - (b) daily reports in bar chart form of the number of transactions processed in each 10 minute period from 8 a.m. until 8 p.m.
  - (c) an analysis of the type of transaction and their percentage of the total.
  - (d) a detailed report of each line analysed by terminal, showing the terminal address, exceptions, transactions and response times, followed by the average number of transactions for each terminal on the line and the average response times. All transactions are then analysed under times from 1 second to 9 seconds and greater than 9 seconds.
  - (e) a list of all processing time exceptions followed by the same, in graphic form so that the bad transmission times of the day are easily identified.
- A copy of the reports are attached as appendix C.
4. The operations group includes a network control team dedicated to monitoring the lines and keeping the response times below 5.5 seconds. The team consisted of three persons. One data communications co-ordinator and two data communications technicians. Their lists of duties are attached as appendix D. As well as the reports in 3 above this team has a set of highly sophisticated line monitoring equipment and at the least suggestion of trouble the cause can be easily located from within the control room. The control room has two direct telephone lines that are available to all customers eighteen hours each day. Details of the monitoring equipment in attached as appendix E. The equipment which enables all signals, even noise and parity errors, to be read in "English" and captured for printing and later analysis, is machine, terminal and line protocol independent. This makes the job of interfacing different terminals and/or mainframes a relatively simple job, in the development situation. This alone for one job would recover the capital outlay of approximately US\$7500.
5. To improve response time they hold carrier up at all times on all lines, they have brought the stabilisation time for their Burroughs modems down from the standard 50 ms to 10ms and found this completely satisfactory. They also had a lot of trouble with terminals not being on the lines so they have reduced the "time-out" time from the software minimum of 1 second to 300 ms by cross wiring.
6. Although they have not achieved it yet, the ideal measurement they claim is a three dimensional report for each line of response by no of terminals per line by number of transactions.

7. The agency was also using memory and channel usage measuring equipment to optimise disk file access, eliminate redundant or poor code, in programs and maintain disk file access below 8.3 per transaction.
8. The graph attached shows the attempts to raise the number of transactions processed without raising the response time.
  - (a) line one is the original system
  - (b) the same system but with the BOLTS handler and the disk files optimised by using the monitoring equipment
  - (c) the introduction of two applications modules to handle the transactions
  - (d) the B4700 with one applications module
  - (e) the B4700 with dual modules.

An interesting discussion was held on the need for two B4700's. We noted the following points:

1. The second B4700 had been required only 10 times for data communications in the last year.
  2. The DC B4700 was processing batch work with tape and disk files as well as processing 200 transactions a minute - equivalent to 96,000 transactions per day.
- The Vice President data processing replied:
1. They must be able to handle peaks without degradation of response time if they are to expand and keep customers.
  2. They must have room for growth.
  3. They must be able to test changes in data communication throughout the day and therefore need a B4700 and lines to do this.
  4. They need the other machine for revision of and for testing software changes and software development.
  5. He equated Burroughs servicemen to 800 lb tigers who are, because of who they are, allowed to sit anywhere. Burroughs servicemen would only do P.M. between 8 a.m. and 5 p.m. and if forced to do otherwise would shift to another company. The banks wanted to use the system between 8 a.m. and 5 p.m., therefore the only answer is two machines.

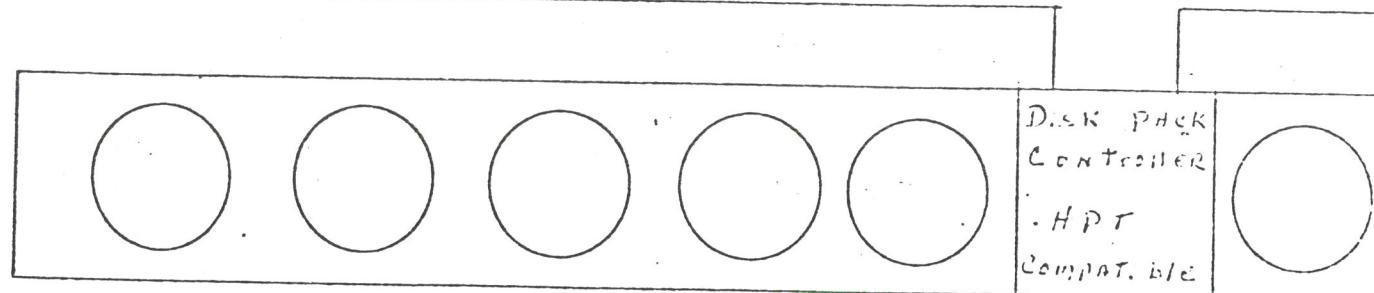
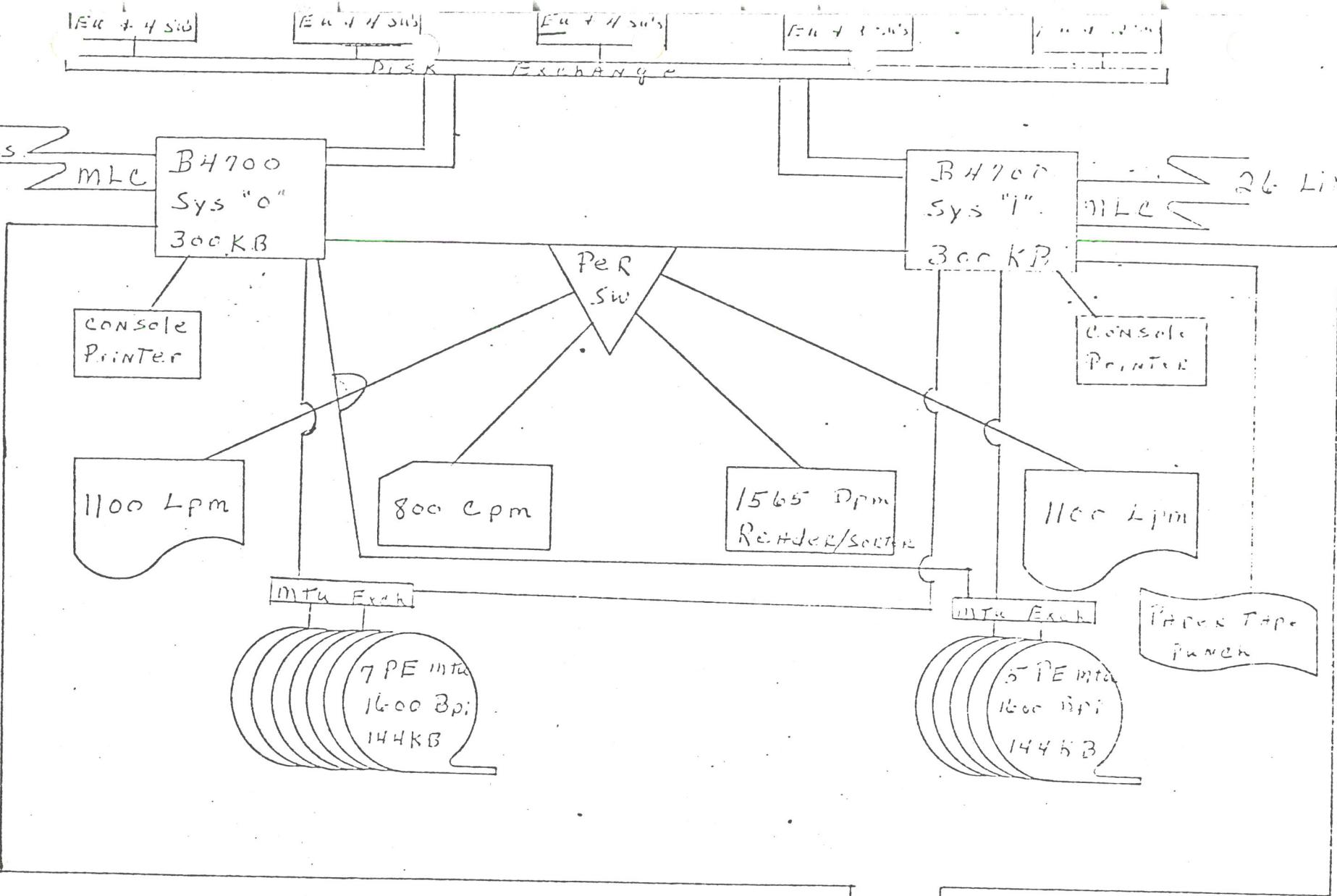
Other points of note from the discussion were:

- (a) All disk files are dumped to tape each night and this takes 26 minutes using both B4700 machines.
- (b) The B4700 has averaged 99.2% up time with down times ranging from 2 minutes to 3 hours 20 minutes. The majority of down time has been caused by programmer errors and strange/odd hardware errors.

- (c) Although the systems uses the BOLTS data communications handler it is claimed that NDL although more generalised has the same data comm code. This should be verified by C.S.D. as soon as possible.
- (d) The channel/memory monitor at US\$4000 was stated to be the best buy in USA for any EDP installation.
- (e) Although the B4700 out performed the B3500 the greatest gain was in processing (3.3 times) I/O was not significant.
- (f) All programs and systems must be optimised on reads and seeks before time is spent on processing. To do this successfully a channel monitor is required to prove the theory.

To summarize we gained confidence in the reliability of the B4700 and the disk pack, and the ability of the B4700 software to handle the network. We also were made aware of the planning and equipment needed to make such a network run and the need for a second B4700 machine.

7  
82/2  
75



FHLB of Des Moines



POSSIBLE

AVAILABLE

%

THRU  
N

1659:00

44:58

1605:02

99,000

96,302

97.27

| DATE    | POSSIBLE HOURS |        |        | INTERRUPTIONS |       |      | AVAILABLE HOURS |       |        | CONVERTED TO MINUTES |          |           | MONTH-TO-DATE | TWO WEEKS | UPTIME PERCENTAGE |
|---------|----------------|--------|--------|---------------|-------|------|-----------------|-------|--------|----------------------|----------|-----------|---------------|-----------|-------------------|
|         | DAY            | M-T-D  | 2WKS   | DAY           | M-T-D | 2WKS | DAY             | M-T-D | 2WKS   | MINUTES              | POSSIBLE | AVAILABLE |               |           |                   |
| JULY 1  | 600            | 600    | 129.00 | 0             | 0     | 0    | 600             | 600   | 127.20 | 360                  | 360      | 360       | 1080          | 1059      | 100.00 98.70      |
| 3       | 1200           | 1800   | 129.00 | 41✓           | 41    | 216  | 1119            | 1719  | 126.44 | 1080                 | 1059     | 1059      | 1800          | 1713      | 96.20 98.74       |
| 5       | 12.00          | 30.00  | 129.00 | 46✓           | 127   | 302  | 1114            | 2833  | 125.58 | 2520                 | 2453     | 2453      | 2520          | 2428      | 95.17 97.65       |
| 6       | 12.00          | 42.00  | 130.30 | 0✓            | 127   | 302  | 1200            | 4033  | 127.28 | 2240                 | 3153     | 3153      | 2240          | 3153      | 91.55 97.68       |
| 7       | 12.00          | 54.00  | 130.30 | 0✓            | 127   | 245  | 1200            | 5333  | 127.45 | 2240                 | 3153     | 3153      | 2240          | 3153      | 97.31 97.89       |
| 8       | 600            | 600    | 126.30 | 5✓            | 132   | 250  | 555             | 5828  | 181.40 | 3600                 | 3508     | 3508      | 7470          | 7390      | 97.44 97.72       |
| 10      | 12.00          | 72.00  | 130.30 | 0✓            | 132   | 250  | 1200            | 7028  | 127.40 | 4320                 | 4228     | 4228      | 7830          | 7660      | 97.87 97.85       |
| 11      | 12.00          | 84.00  | 130.30 | 0✓            | 132   | 153  | 1200            | 8228  | 128.37 | 5040                 | 4968     | 4968      | 7830          | 7717      | 98.17 98.51       |
| 12      | 12.00          | 96.00  | 133.00 | 0✓            | 132   | 149  | 1200            | 9428  | 131.11 | 5760                 | 5668     | 5668      | 7980          | 7871      | 98.40 98.63       |
| 13      | 12.00          | 108.00 | 133.00 | 0✓            | 132   | 132  | 1200            | 10628 | 131.38 | 6480                 | 6388     | 6388      | 7980          | 7868      | 98.58 98.84       |
| 12      | 12.00          | 119.00 | 133.00 | 5✓            | 137   | 137  | 1155            | 11823 | 131.23 | 7200                 | 7103     | 7103      | 7980          | 7863      | 98.65 98.71       |
| 15      | 600            | 12.500 | 126.00 | 0✓            | 137   | 137  | 600             | 12423 | 124.73 | 7560                 | 7463     | 7463      | 7560          | 7463      | 98.72 98.7        |
| 17      | 1200           | 13.800 | 132.00 | 7✓            | 144   | 144  | 1153            | 12616 | 130.16 | 8280                 | 8176     | 8176      | 7920          | 7816      | 98.74 98.65       |
| 18      | 1200           | 15.000 | 132.00 | 0✓            | 144   | 103  | 1200            | 14816 | 180.57 | 9000                 | 8896     | 8896      | 7920          | 7851      | 98.84 99.21       |
| 19      | 12.00          | 162.00 | 132.00 | 0✓            | 144   | 17   | 1200            | 16016 | 131.43 | 9720                 | 9616     | 9616      | 7920          | 7903      | 98.93 99.19       |
| 20      | 12.00          | 174.00 | 132.00 | 5✓            | 149   | 22   | 1155            | 17211 | 131.38 | 10240                | 10331    | 10331     | 7920          | 7898      | 98.96 99.1        |
| 21      | 12.00          | 186.00 | 132.00 | 0✓            | 149   | 22   | 1200            | 18411 | 131.38 | 11160                | 11051    | 11051     | 7920          | 7898      | 99.02 99.7        |
| 22      | 600            | 192.00 | 132.00 | 0✓            | 149   | 17   | 600             | 19011 | 131.43 | 11520                | 11411    | 11411     | 7920          | 7903      | 99.05 99.7        |
| 24      | 12.00          | 204.00 | 132.00 | 0✓            | 149   | 17   | 1200            | 20211 | 131.43 | 12240                | 12131    | 12131     | 7920          | 7903      | 99.11 99.7        |
| 25      | 12.00          | 216.00 | 132.00 | 4✓            | 153   | 24   | 1156            | 21407 | 131.39 | 12950                | 12847    | 12847     | 7920          | 7899      | 99.13 99.7        |
| 26      | 12.00          | 228.00 | 132.00 | 5✓            | 158   | 26   | 1155            | 22602 | 131.34 | 13680                | 13562    | 13562     | 7920          | 7894      | 99.14 99.6        |
| 27      | 12.00          | 240.00 | 132.00 | 0✓            | 158   | 26   | 1200            | 23802 | 131.34 | 14400                | 14282    | 14282     | 7920          | 7894      | 99.18 99.6        |
| 28      | 1200           | 252.00 | 132.00 | 0✓            | 158   | 21   | 1200            | 25002 | 131.39 | 15120                | 15002    | 15002     | 7920          | 7899      | 99.22 99.7        |
| 29      | 600            | 258.00 | 132.00 | 0✓            | 158   | 21   | 600             | 25602 | 131.39 | 15480                | 15362    | 15362     | 7920          | 7899      | 99.31 99.2        |
| JULY 31 | 1200           | 270.00 | 132.00 | 136✓          | 334   | 157  | 1024            | 26626 | 130.03 | 16200                | 15986    | 15986     | 7920          | 7810      | 98.67 98.6        |
| 01      | 1200           | 1200   | 133.00 | 105           | 405   | 602  | 755             | 755   | 121.55 | 720                  | 475      | 475       | 7920          | 7315      | 93.17 92.3        |
| 02      | 12.00          | 24.00  | 132.00 | 54            | 457   | 619  | 1106            | 1907  | 125.11 | 7440                 | 7741     | 7741      | 7920          | 7571      | 72.29 91.1        |
| 03      | 12.00          | 36.00  | 132.00 | 0             | 457   | 614  | 1200            | 3101  | 125.16 | 2120                 | 1861     | 1861      | 7920          | 7516      | 87.78 91.7        |
| 04      | 12.00          | 48.00  | 132.00 | 15            | 514   | 659  | 1145            | 4246  | 125.01 | 2840                 | 2566     | 2566      | 7920          | 7501      | 90.35 91.7        |

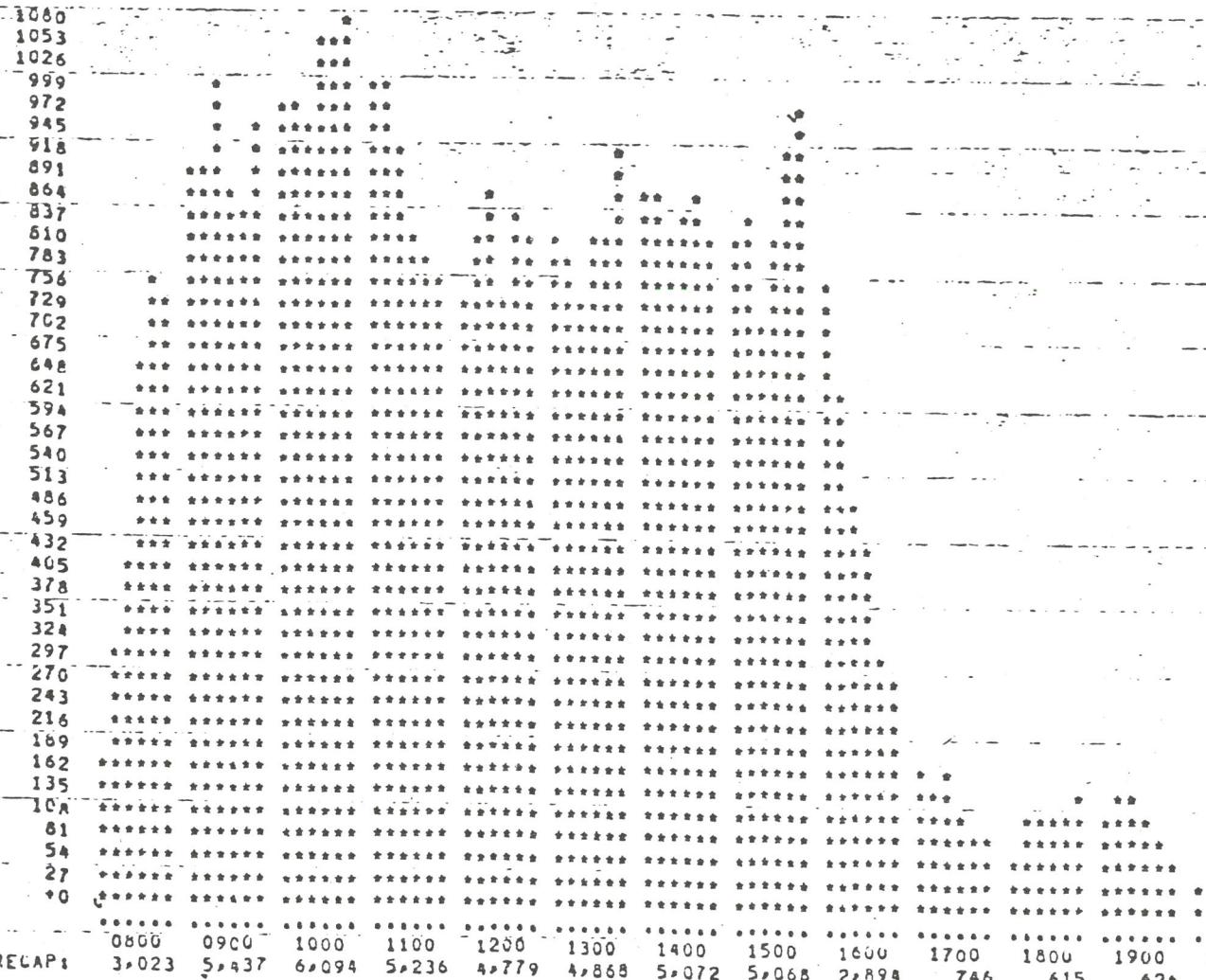
STARS3-1

FEDERAL HOME LOAN BANK OF DES MOINES  
STATISTICAL TRANSACTION ACTIVITY REPORTING SYSTEM

Ave 1 day

03/26/73

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TRANSACTIONS OUTSIDE GRAPHED HOURS:

TOTAL ACTIVITY:

42  
44,515\*\*

STAPS3-2

FEDERAL HOME LOAN BANK OF DES MOINES  
 STATISTICAL TRANSACTION ACTIVITY REPORTING SYSTEM  
 TRANSACTION ACTIVITY BY TYPE

03/26/73

PAGE # 1

| TRANS. TYPE | TYPE TOTAL | % OF TOTAL | DATA CNTR TOT |
|-------------|------------|------------|---------------|
| 03          |            |            |               |
| 11          | 7,227      | 16.2 %     |               |
| 12          | 3,977      | 8.9 %      |               |
| 13          | 2,642      | 5.9 %      |               |
| 14          | 111        | .2 %       |               |
| 15          | 1,616      | 3.6 %      |               |
| 16          | 226        | .5 %       |               |
| 19          | 603        | 1.4 %      |               |
| 21          | 4,197      | 9.4 %      |               |
| 22          | 341        | .8 %       |               |
| 23          | 1,223      | 2.7 %      |               |
| 24          | 71         | .2 %       |               |
| 25          | 3,311      | 7.4 %      |               |
| 26          | 1,690      | 3.8 %      |               |
| 31          | 2,944      | 6.6 %      |               |
| 32          | 2,364      | 5.3 %      |               |
| 33          | 830        | 1.9 %      |               |
| 34          | 1,314      | 3.0 %      |               |
| 41          | 62         | .1 %       |               |
| 43          | 17         | .0 %       |               |
| 45          | 68         | .2 %       |               |
| 46          | 73         | .2 %       |               |
| 61          | 68         | .2 %       |               |
| 62          | 66         | .1 %       |               |

STAPS3-4

FEDERAL HOME LOAN BANK OF DES MOINES  
STATISTICAL TRANSACTION ACTIVITY REPORTING SYSTEM  
D/C LINE AND TERMINAL ACTIVITY.

03/26/73

PAGE # 1

## D/C LINES

## D/C LINE TOT.

| 00 | TERMINAL ADRS. | DA   | DB   | DC   | DS   | DM | LA   | LL   | UN   | DE   | DF   |
|----|----------------|------|------|------|------|----|------|------|------|------|------|
|    | TERMINAL TOT.  | 307  | 193  | 276  | 77   | 6  | 83   | 52   | 126  | 193  | 85   |
|    | EXCEPTION TOT. | 2    | 2    | 2    |      |    | 2    | 1    | 3    | 1    | 2    |
|    | AVRG. XMIT.    | 3.0  | 3.1  | 3.1  | 3.5  |    | 3.6  | 3.7  | 3.8  | 3.5  | 3.1  |
|    | AVRG. RCV.E.   | 1.5  | 1.9  | 2.1  | 2.4  |    | 2.0  | 2.1  | 1.7  | 1.9  |      |
|    | AVRG. PRC.S.   | 4.5* | 5.0* | 5.2* | 5.9* |    | 5.6* | 5.8* | 5.5* | 5.2* | 7.0* |

|  | TERMINAL ADRS. | DK   | DL   | DM   | DN   | JK   | JL   | JM  | JN   | JO   | JP   |
|--|----------------|------|------|------|------|------|------|-----|------|------|------|
|  | TERMINAL TOT.  | 44   | 174  | 167  | 117  | 348  | 327  | 213 | 142  | 211  | 155  |
|  | EXCEPTION TOT. |      | 1    | 7    | 1    | 2    | 1    |     |      | 2    | 1    |
|  | AVRG. XMIT.    | 3.0  | 3.2  | 4.7  | 3.3  | 3.1  | 3.2  |     | 3.2  | 3.5  | 3.6  |
|  | AVRG. RCV.E.   | 2.1  | 2.0  | 1.6  | 1.6  | 1.7  | 1.6  |     | 1.6  | 2.0  | 1.8  |
|  | AVRG. PRC.S.   | 5.1* | 5.2* | 6.3* | 4.9* | 4.8* | 4.8* |     | 4.8* | 5.5* | 5.4* |

|  | TERMINAL ADRS. | JG   | JR   | JS   | JT  | PU  | TA   | LH   | LN   |
|--|----------------|------|------|------|-----|-----|------|------|------|
|  | TERMINAL TOT.  | 143  | 61   | 68   | 242 | 193 | 98   | 110  | 123  |
|  | EXCEPTION TOT. |      |      | 1    |     |     | 3    | 1    | 1    |
|  | AVRG. XMIT.    | 3.0  | 3.7  | 2.6  |     |     | 3.7  | 3.3  | 3.7  |
|  | AVRG. RCV.E.   | 1.7  | 1.5  | 1.3  |     |     | 1.3  | 1.6  | 1.5  |
|  | AVRG. PRC.S.   | 4.7* | 5.2* | 4.1* |     |     | 5.0* | 4.9* | 5.2* |

\*\*\*AVRG # TRANSACTIONS PER TERMINAL FOR LINE 00 = 154.

\*\*\*AVRG PRCESSING TIME PER TERMINAL, LINE # 00 = 5.2 SECONDS.

| SEC. PER MSG. | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08 | 09 | GTR 09 | 09    |
|---------------|-----|-----|-----|-----|-----|-----|-----|----|----|--------|-------|
| ACTIVITY      | 268 | 531 | 662 | 677 | 484 | 291 | 132 | 99 | 87 | 195    | 4332* |

| 01 | TERMINAL ADRS. | AC   | AE   | AF   | AG   | AH   | AI   | AJ   | AL   | IK   | IL   |
|----|----------------|------|------|------|------|------|------|------|------|------|------|
|    | TERMINAL TOT.  | 75   | 127  | 163  | 157  | 104  | 210  | 89   | 138  | 57   | 102  |
|    | EXCEPTION TOT. | 1    | 2    | 2    |      |      |      |      |      | 1    | 1    |
|    | AVRG. XMIT.    | 2.9  | 3.0  | 3.1  | 3.0  | 3.0  | 2.2  | 3.0  | 3.5  | 4.6  | 3.1  |
|    | AVRG. RCV.E.   | 1.5  | 1.8  | 1.6  | 2.0  | 1.8  | 1.9  | 1.4  | 2.0  | 2.1  | 1.7  |
|    | AVRG. PRC.S.   | 4.4* | 4.8* | 4.7* | 5.0* | 4.8* | 4.1* | 4.4* | 5.5* | 6.7* | 4.8* |

|  | TERMINAL ADRS. | IA   | TC    | BZ | FJ   | FL   | HZ   | GI    | GJ   | NJ   |      |
|--|----------------|------|-------|----|------|------|------|-------|------|------|------|
|  | TERMINAL TOT.  | 198  | 17    | 48 | 213  | 139  | 150  | 10    | 56   | 44   | 15   |
|  | EXCEPTION TOT. | 2    | 1     |    | 3    | 2    | 2    | 1     |      |      |      |
|  | AVRG. XMIT.    | 3.3  | 9.1   |    | 3.0  | 3.5  | 2.9  | 6.9   | 3.1  | 3.1  | 2.7  |
|  | AVRG. RCV.E.   | 1.7  | 1.5   |    | 1.9  | 1.9  | 2.0  | 5.1   | 1.4  | 1.4  | 2.0  |
|  | AVRG. PRC.S.   | 5.0* | 10.6* |    | 4.9* | 5.4* | 4.9* | 12.0* | 4.5* | 4.5* | 4.7* |

|  | TERMINAL ADRS. | HJ   | HU   | HY | HW   | SA | SB | SC |
|--|----------------|------|------|----|------|----|----|----|
|  | TERMINAL TOT.  | 129  | 68   | 17 | 129  | 53 | 76 | 73 |
|  | EXCEPTION TOT. | 4    | 1    |    |      |    |    |    |
|  | AVRG. XMIT.    | 4.3  | 4.8  |    | 2.9  |    |    |    |
|  | AVRG. RCV.E.   | 1.4  | 1.7  |    | 1.2  |    |    |    |
|  | AVRG. PRC.S.   | 5.7* | 6.5* |    | 4.1* |    |    |    |

STARS3-5

FEDERAL HOME LOAN BANK OF DES MOINES  
 STATISTICAL TRANSACTION ACTIVITY REPORTING SYSTEM  
 PROCESSING TIME EXCEPTIONS

03/26/73

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| D/C<br>LINE# | TERMINAL<br>ADDRESS | TIME OF<br>DAY | XMIT<br>TIME | RCVE<br>TIME | TERMINAL<br>ACTIVITY | D/C LINE<br>ACTIVITY |
|--------------|---------------------|----------------|--------------|--------------|----------------------|----------------------|
| 00           | DA                  | 14:29          | 46.0         | 6.2          |                      |                      |
| 00           | DA                  | 17:55          | 59.5         | 3.2          |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | DB                  | 08:37          | 37.4         | 1.1          |                      |                      |
| 00           | DB                  | 16:08          | 3.2          | 1.3          |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | DC                  | 08:48          | 78.8         | .8           |                      |                      |
| 00           | DC                  | 15:22          | 8.5          | 15.8         |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | LA                  | 09:53          | 100.6        | 1.9          |                      |                      |
| 00           | LA                  | 16:39          | 34.3         | 2.9          |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | LL                  | 14:29          | 66.3         | 7.6          |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | DD                  | 08:41          | 29.1         | 2.1          |                      |                      |
| 00           | DD                  | 08:45          | 31.8         | 1.0          |                      |                      |
| 00           | DD                  | 14:29          | 38.6         | 4.3          |                      |                      |
|              |                     |                |              |              | 3*                   |                      |
| 00           | DE                  | 14:29          | 36.5         | 10.6         |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | DF                  | 08:45          | 66.8         | 1.5          |                      |                      |
| 00           | DF                  | 15:22          | 74.1         | 10.8         |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | DL                  | 14:28          | 3.5          | 54.3         |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | DM                  | 08:23          | 28.1         | .6           |                      |                      |
| 00           | DM                  | 08:27          | 48.4         | .7           |                      |                      |
| 00           | DK                  | 08:34          | 27.7         | .7           |                      |                      |
| 00           | DM                  | 08:41          | 36.1         | 2.7          |                      |                      |
| 00           | DM                  | 09:46          | 19.5         | 2.4          |                      |                      |
| 00           | DM                  | 10:19          | 20.3         | 3.0          |                      |                      |
| 00           | DM                  | 19:00          | 34.9         | 2.7          |                      |                      |
|              |                     |                |              |              | 7*                   |                      |
| 00           | DN                  | 08:30          | 122.7        | .5           |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | JK                  | 14:28          | 1.5          | 60.9         |                      |                      |
| 00           | JK                  | 15:22          | 112.0        | 12.1         |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | JL                  | 14:29          | 46.2         | 9.7          |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | JU                  | 07:55          | 1.8          | 73.2         |                      |                      |
| 00           | JU                  | 14:29          | 50.8         | 20.6         |                      |                      |
|              |                     |                |              |              | 2*                   |                      |
| 00           | JP                  | 15:22          | 26.5         | 13.8         |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | JS                  | 08:37          | 112.8        | .8           |                      |                      |
|              |                     |                |              |              | 1*                   |                      |
| 00           | TA                  | 09:24          | 42.5         | 1.3          |                      |                      |

STARS4\*1

FEDERAL HOME LOAN BANK OF DES MOINES  
STATISTICAL TRANSACTION ACTIVITY REPORTING SYSTEM  
PROCESSING TIME EXCEPTIONS\*

03/26/73

PAGE # 1

80

78

76

74

72

70

68

66

64

62

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40

.....

0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000

RECAP 1 99 38 29 23 14 18 71 96 15 3 2 5 413\*

TRANSACTIONS OUTSIDE GRAPHED HOURS:  
TOTAL ACTIVITY:12  
425\*\*

# DATA COMM COORDINATOR

## POSITION DESCRIPTION

### Purpose

To plan and coordinate the expansion and/or relocation of communications lines for providing on-line service for users.

To coordinate with the Control Division the requirements for adding new users to the on-line service.

To provide leadership and training for Operations personnel in the data communications area.

### Scope

Operations Division of the Data Center.

### Duties, Responsibilities and Authority

#### I. Planning

Develop plans for future expansion based on existing and projected requirements.

Authority: To prepare and submit to Manager of Operations.

Assign terminal addresses to new and existing associations as new terminals are added to the communications network.

Authority: To act.

Validate the on-line polling list and nightly transmitter list for correctness.

Authority: To act.

Research new advances in the data communications field which could improve service to users and/or lower operating costs.

Authority: To prepare and submit to Manager of Operations.

## II. Organizing

Establish and maintain procedures for coordinating line problems and installation of new users and extended service to existing users.

Authority: To act.

To initiate PCRs to provide improved performance and additional requirements for increased on-line usage and throughput.

Authority: To act.

To initiate and revise operational standards for improving operational performance.

Authority: To prepare and submit to Manager of Operations.

## III. Controlling

Coordinate communications line problems between users, FHLB, field engineers, and the telephone company to provide maximum service to the on-line users.

Authority: To act.

Audit on-line activity and problems documenting all problems and correcting those that are feasible.

Authority: To act.

Audit on-line interruptions preparing a report on each interruption.

Authority: To act.

Coordinate with Operations personnel the processing of the on-line system insuring that on-line service is available to all users during the specified periods.

Authority: To act.

## IV. Decision Making

To make operational decisions at the time required for action based on facts and needs.

Authority: To act.

## V. Climate

To create a pleasant working atmosphere which will insure teamwork coordination among employees and create job satisfaction insuring maximum customer satisfaction from the Operations area and self-motivation among the employees.

Authority: To act.

## VI. Leadership

Work with manager in conducting training seminars on data communications for Operations personnel.

Authority: To act.

### Working Relationship

Reports to the Manager of Operations.

# DATA COMMUNICATIONS COORDINATOR

## POSITION DESCRIPTION

Responsible for handling trouble calls and coordinating Customer Service with AT&T and Burroughs.

Responsible for monitoring online processing insuring that:

- Response time is 5.5 seconds and below.
- Backup tapes are properly logged.
- Service interruptions are logged and distributed on a timely basis.
- Operators are alerted when BACKUPS are near end of reel.
- BUILD2 and BUILD9 decks are correct and up to date with daily changes logged.
- Second processor is utilized when necessary.
- Switch 4 is set in USER every Monday morning.

Assist Data Communications Coordinator in configuration of new lines, researching potential problems, etc.

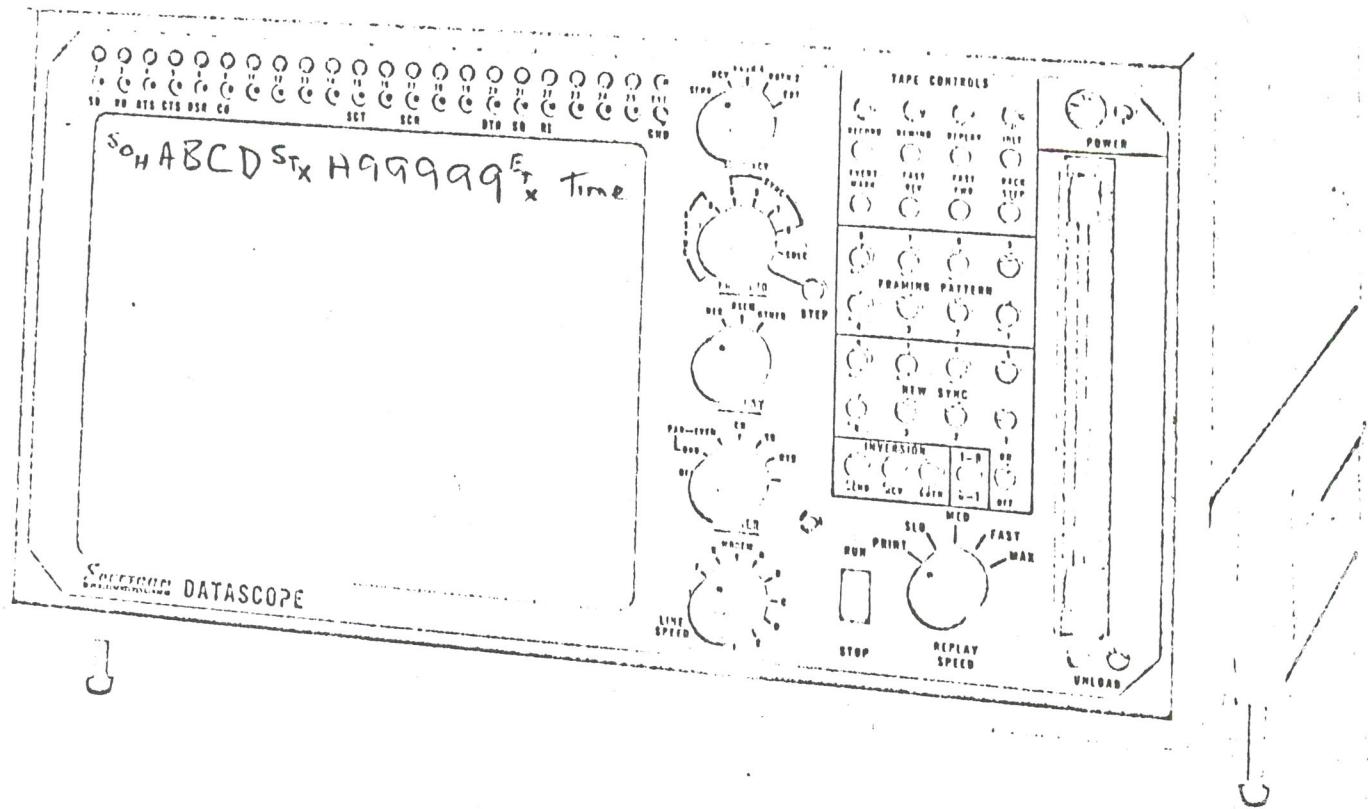
Develop and document procedures in Data Communications.

Act as computer operator and communications technician during Saturday online hours.

Backup to regular day computer operator during lunch or sickness.

Act as Communications Coordinator in his absence.

# a new diagnostic tool for data communications systems



## Operates on-line to: **MINIMIZE DOWNTIME . . . . . PINPOINT SYSTEM FAILURES . . . . . DEBUG SOFTWARE**

- Provides CRT display of every data link character, sent or received
- Simultaneous full duplex data stream tape recording
- Accepts all codes, line disciplines and speeds up to 9600 bps
- Switch selectable alphanumeric or hexa-decimal display
- Monitors full and half duplex circuits
- Printed record available on standard teletype printer
- Designed for operating personnel, programmers and engineers
- Compatible with EIA Interface RS-232
- Lamp display of all EIA Interface signals
- Complete electrical isolation from monitored channel
- Lightweight portability . . . single compact unit
- Simple, straight forward connection

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CHURCH ROAD & ROLAND AVENUE, MOORESTOWN, N. J. 08057  
609-234-5700

## THE DATASCOPE

Unique in its field, the Spectron DATASCOPE is a portable test instrument for troubleshooting and monitoring data communications channels. It provides both a CRT display and a magnetic tape recording of all traffic at the business machine (EIA RS-232C) interface of any standard modem. It is connected to the data link through a Remote Connection Unit which bridges the EIA interface and provides electrical isolation without adding cable length or increasing electrical loading.

DATASCOPE helps pinpoint problems in system hardware and software by showing exactly what was sent and received over the data link. Errors caused by software bugs, equipment malfunctions or line troubles are immediately visible, and less time is spent tracing problems because system operation is shown in full detail.

DATASCOPE may be left on-line indefinitely to record and display data. Using an endless-loop tape format (even though the tape is not physically arranged as a loop) the last 40 minutes of traffic (at 2400 bps)\* is always retained. During on-line operation, data is delivered simultaneous to the display and the tape unit. Both Send and Receive Data are recorded along with Carrier Detect and Request-to-Send signals from the EIA Interface, plus an internally generated event marker controlled by a front panel push button.

During replay, these signals are read from the tape and displayed as if they were arriving on-line except that the replay speed may be slowed or stopped for close examination of the data stream. Character parity, Carrier Detect, Request-to-Send, or the event marker can be displayed, simultaneously with data. When the selected condition is present the data character image is made black-on-white instead of the normal white-on-black. Either an ASCII or hexa-

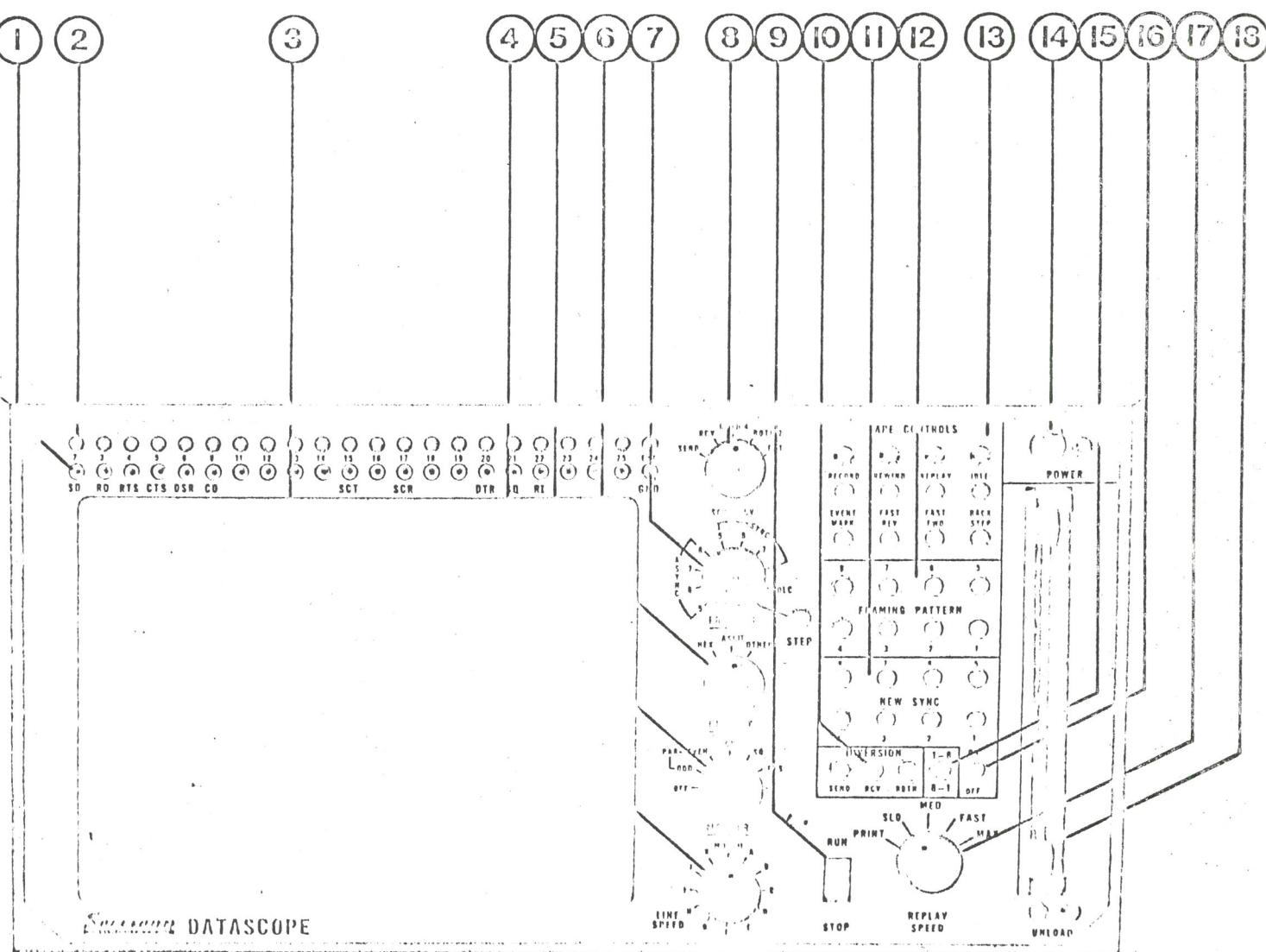
decimal display can be selected. EBCDIC is also available.

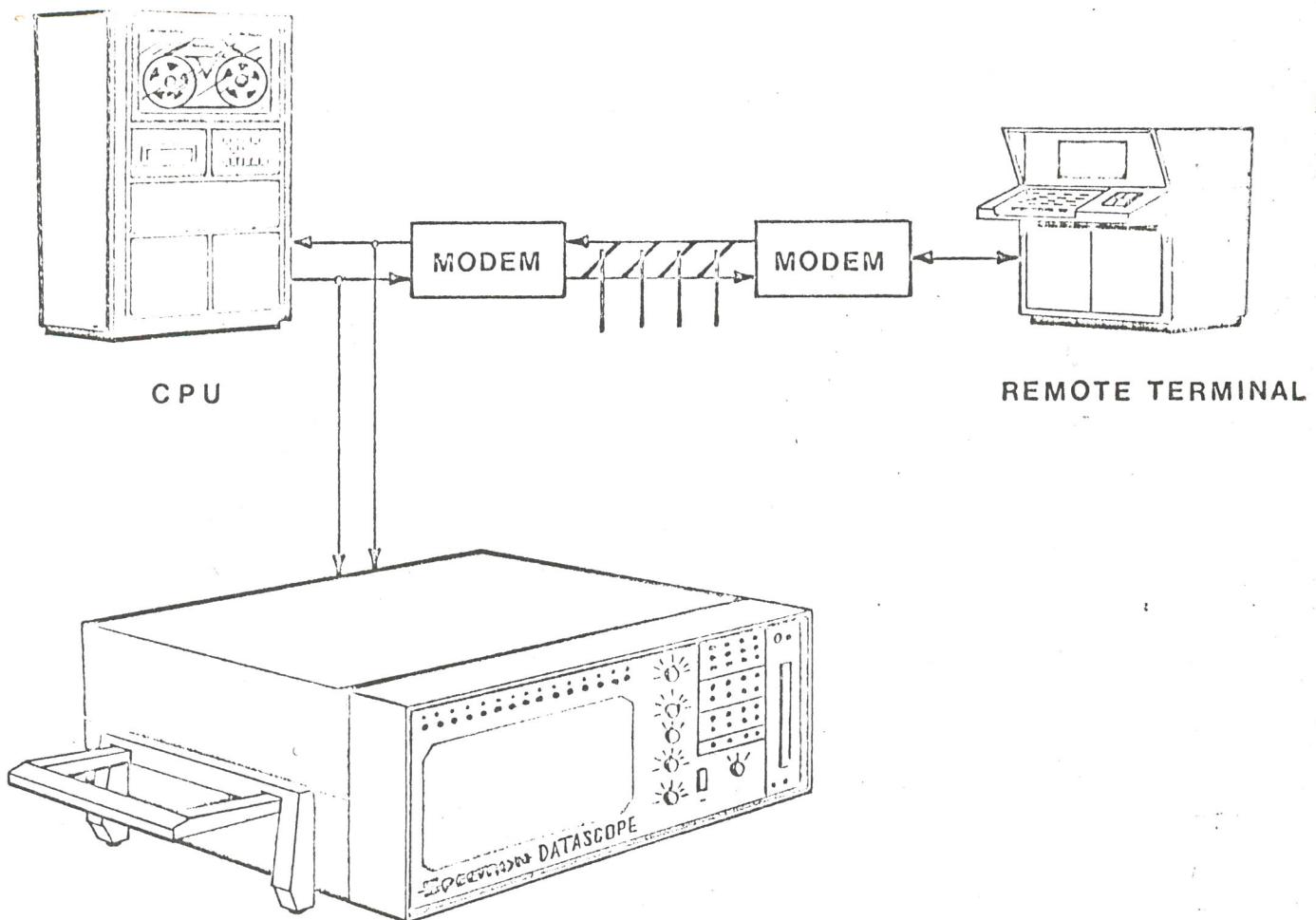
The 9-inch screen contains a total of 375 large, easy-to-read data characters, formed on a 7 x 9 matrix and arranged in 15 lines of 25 characters each. Incoming data ripples from left to right and top to bottom with one full blank line for demarcation between old and new data. The display may be frozen at any time or the tape can be replayed as necessary to locate events of interest. Data from the tape can also be printed on an optional low speed printer operating at 110 bauds.

DATASCOPE is the product of Spectron's many years experience in data communications monitoring. An outgrowth of the Spectron Universal Communications Monitor, DATASCOPE offers all the capability of the earlier equipment plus many new features never before available in such compact form. Simple to install, DATASCOPE is as easy for operating personnel to use as it is for programmers or engineers. With DATASCOPE, an operator can choose continuous on-line display of either the send or receive side of the data line, or of both combined—he can display both data and significant interface control signals simultaneously to observe important time relationships among them—he can select either English language or hexadecimal format—he can freeze the display at any time for a closer look at transient occurrences, and then resume his analysis on-line—and all the while a continuous tape recording of both sides of the line is being made so he can instantly replay any portion of the last forty minutes\* of traffic to search out subtle problems—or he can remove the tape cartridge for later analysis, or to retain a record of some significant event—he can even mark that event for quick location with the event marker button—and when a printed copy is required, it can be made on a standard teletype printer.

\*Storage time is dependent on transmission speed.

1. Test point access to EIA Interface
2. LED display of EIA Interface
3. CRT display
4. Clock selector
5. Negative image marker selector
6. Hex or ASCII display selector
7. Code selector
8. Receive or Transmit Data selector
9. CRT freeze control
10. Data polarity inversion switches
11. Pattern selector to initiate new sync acquisition
12. Framing pattern selector for synchronous operation
13. Tape controls
14. Power switch
15. Bit stream reversal switch
16. New sync activate switch
17. Replay speed control
18. Tape cartridge





## DATASCOPE, Model D-601

### SPECIFICATIONS

Data Speed: up to 9600 bps

CRT: 9-inch diagonal

Character font: alpha—7 x 9  
hex—side by side 5 x 7

Character Height: 0.2 inches

Tape Cartridge: 3M Type DC300A—1/4 inch tape, 300 feet long

Tape Capacity: 11.5 million bits

Weight: 40 pounds

Size: 20.2 inches long, 18 inches wide, 9.5 inches high

Rack Mount: 8.75 inches high, 19 inches wide

Power Requirement: 120V, 50/60 Hertz, 3 Amps., 350 Watts

Temperature Range: 0° to 50° C

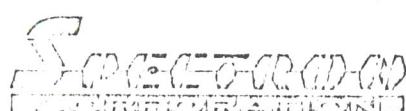
Humidity Range: 10 to 90 per cent, non-condensing

Warranty: one year

### OPTIONS

1. Remote Connection Unit, with data set cable, Model RCU-220
2. Remote Connection Unit for use with a 20/60 ma teletype interface, Model RCU-220 TTY
3. High speed printer interface for Litton Data-log MC4600 optical printer for real time on-line printing
4. Special double sync package for certain airline reservation systems
5. Additional internal speeds
6. Rack mounting
7. Luggage-type carrying case
8. Freight shipping case

specifications subject to change



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# RESPONSE TIME ANALYSIS

