Editorial

The size of the Newsletter has increased so rapidly that we are finding it increasingly difficult to meet our publication deadlines. Therefore, it appears that the time has come to make some revisions in format.

Our aim is to make the Newsletter more relevant and timely to its readers. Beginning with this issue, we will eliminate the Software Package Listing and condense some of the longer articles. Rather than reprinting articles word for word, we will also begin to attach more separate documents.

In addition, we will make a more concerted effort to seek out information that is of value to you as Software Consultants and Field Technical Support personnel. Because of these new guidelines, our new goal will be to publish an issue every six to eight weeks. Hopefully, we can keep the information timely and meaningful this way.

An expanded Software Package Listing has been printed and distributed separately to the Wang Field Analysts. This listing has been printed in industry (SIC Code) sequence and includes all of the abstracts our Software Consultants submitted in response to a questionnaire of August 1978. If you are looking for either a package or experienced vendor in a particular industry, contact your Wang analyst. The Software Package Listing should help the analyst find a package to fill your needs.

To maintain the effectiveness of the listing, we need two forms of feedback. First, we need continuous input in the form of new listings. You can help by submitting a description of your package(s) on the form in the back of this Newsletter. Second, we need to hear from you regarding your experiences in working with those packages already listed. We would greatly appreciate any significant feedback you could give us. Call me at my office in Lowell, or use the enclosed mailer.

Bob Soucy
(617) 851-4111, Ext. 2324

Software Maintenance Report

Beginning with this issue, the Systems Newsletter will include the Software Maintenance Report. Publication of this report is estimated to be monthly, and it will be included with future issues on an "as needed" basis.

The Maintenance Report was created to keep the users and the programmers of the Wang 2200 systems better informed as to the problems being reported to the Quality Assurance department.

The following is a brief description of the sections in the Maintenance Report:

A. SYSTEM NAME
   The name given to the system at the time of release.

B. PRIORITY
   The severity of the problem, which was determined by the researcher. The priorities are:
   1. EMERGENCY
      System is being held up pending resolution to the problem.
   2. DETRIMENTAL
      New development is being held up pending a resolution to the problem.
   3. INCONVENIENT
      Causes some difficulty in processing a relatively minor problem.
   4. SUPERFICIAL
      Not a processing problem; however, a minor error exists.

C. STATUS
   The status possibilities are:
   1. FIXED (F)
      The problem is corrected.
   2. ACTIVE (A)
      The problem will be repaired in the next release of that system.
3. NOT APPL. (N/A)
   Indicates a notation or suggestion; however, no coding changes were necessary.

D. VERSION OCCURRED/DISK ID
   The software version and the diskette number on which the problem occurred.

E. VERSION CORRECTED/DISK ID
   The new software version and the updated diskette number on which the correction was made.

F. ERRATA #
   The control number assigned by the Quality Assurance department.

G. DESCRIPTION
   A brief explanation of the problem reported on the errata sheet.

It is the intention of the Quality Assurance department to maintain an up-to-date file of all the problems reported. We hope you will find this report informative as well as helpful.

### MAINTENANCE REPORT
APPLICATION SOFTWARE DEVELOPMENT
AS OF DECEMBER 29, 1978

<table>
<thead>
<tr>
<th>SYSTEM NAME</th>
<th>PRIORITY</th>
<th>STATUS</th>
<th>VERSION OCCURRED/DISK ID</th>
<th>VERSION CORRECTED/DISK ID</th>
<th>ERRATA #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL LIBRARY</td>
<td>3</td>
<td>A</td>
<td>1.2/0121B</td>
<td></td>
<td>1012</td>
<td>The T-plot plots data incorrectly.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>1.2/2043B</td>
<td></td>
<td></td>
<td>The T-plot plots data incorrectly.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>1.0/8043</td>
<td></td>
<td></td>
<td>The T-plot plots data incorrectly.</td>
</tr>
<tr>
<td>GENERAL VOL II</td>
<td>2</td>
<td>A</td>
<td>1.0/0235C</td>
<td></td>
<td>1039</td>
<td>To correct cross-reference problem.</td>
</tr>
<tr>
<td>GUS</td>
<td>2</td>
<td>F</td>
<td>4.0/2305A</td>
<td>4.1/2305B</td>
<td>1041</td>
<td>Memory overflow error.</td>
</tr>
<tr>
<td>ISS</td>
<td>2</td>
<td>A</td>
<td>3.2/2238</td>
<td></td>
<td>1020</td>
<td>The &quot;Numeric Entry&quot; subroutine leaves console output in mode 205.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>3.2/2240</td>
<td></td>
<td>1022</td>
<td>Defn' 246 + 245 leave console at C0205.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>3.2/2238</td>
<td></td>
<td>1023</td>
<td>In the list Utility, a branch is made for special care of line 0; remainder of program is ignored. If a line is too long to compress, the error message indicates the previous line #.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>3.2/2238</td>
<td></td>
<td>1017</td>
<td>After prompt &quot;Enter Desired Function&quot;, a flag is set and it will not be possible to correctly enter parameters. Copy 1st sector of a file; the 1st byte is tested to identify a program file. The prompt following edit mode doesn't erase.</td>
</tr>
<tr>
<td>ISS</td>
<td>3</td>
<td>F</td>
<td>4.0/2423</td>
<td>4.1/2423A</td>
<td>1011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>F</td>
<td>4.0/2423</td>
<td>4.1/2423A</td>
<td>1010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>3.2/2238</td>
<td></td>
<td>1006</td>
<td></td>
</tr>
</tbody>
</table>

* LEGEND A=ACTIVE, TO BE INCLUDED IN NEXT MAINTENANCE RELEASE
F=FIXED IN LATEST VERSION
<table>
<thead>
<tr>
<th>SYSTEM NAME</th>
<th>PRIORITY</th>
<th>STATUS*</th>
<th>VERSION OCCURRED/ DISK ID</th>
<th>VERSION CORRECTED/ DISK ID</th>
<th>ERRATA #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>KFAM3-4-5-7</td>
<td>2</td>
<td>A</td>
<td>2.1/2049C</td>
<td>4.1/2423A</td>
<td>1024</td>
<td>The Code for KFAM &quot;Reorganize Sub-system&quot; causes a problem with type &quot;A&quot; records where the key is not in the first field of the record.</td>
</tr>
<tr>
<td>ISS KFAM 5-7</td>
<td>2</td>
<td>A</td>
<td>3.2/2240</td>
<td>3.7/2389</td>
<td>1007</td>
<td>The VP and MVP allow 124-byte fields. Subsystem and utilities with 124-byte fields require this change.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>3.7/2389</td>
<td>4.1/2389A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>4.0/2426</td>
<td>4.1/2426A</td>
<td>1008</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>4.0/2427</td>
<td>4.1/2427A</td>
<td>1009</td>
<td></td>
</tr>
<tr>
<td>ISS KFAM 7</td>
<td>3</td>
<td>F</td>
<td>4.0/2427</td>
<td>4.1/2427A</td>
<td>1013</td>
<td>Build subroutine module does not allow selection of single item.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>F</td>
<td>3.7/2389</td>
<td>4.1/2389A</td>
<td>1015</td>
<td>In &quot;Keyfile Recovery&quot;, V6 is not used and is set to 0.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>4.0/2427</td>
<td>4.1/2427A</td>
<td>1016</td>
<td>Eliminate lines 1944 and 1971.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>F</td>
<td>3.7/2389</td>
<td>4.1/2389A</td>
<td>1008</td>
<td>Reorganize subsystem — when file is closed the table entry is not removed.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>F</td>
<td>3.7/2389</td>
<td>4.1/2389A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>4.0/2427</td>
<td>4.1/2427A</td>
<td></td>
<td>1040</td>
<td>GIO is not supported on the MVP/keyboard.</td>
</tr>
<tr>
<td>ISS (ON MVP)</td>
<td>3</td>
<td>F</td>
<td>3.2/ALL</td>
<td>4.1/ALL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISS SORT 4</td>
<td>4</td>
<td>F</td>
<td>3.7/2391A</td>
<td>4.1/2425A</td>
<td>1014</td>
<td>Does not work with BA mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>4.0/2425</td>
<td>4.1/2425A</td>
<td>1018</td>
<td>Does not work with BA mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>3.7/2391A</td>
<td>4.1/2425A</td>
<td>1014</td>
<td>VP/MVP allow 252-byte fields but SORT 4 originally limited; it reads to 64-byte fields.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>F</td>
<td>4.0/2425A</td>
<td>4.1/2425A</td>
<td>1014</td>
<td></td>
</tr>
<tr>
<td>RIADS-22</td>
<td>2</td>
<td>A</td>
<td>1.0/2169A</td>
<td>1.0/8090A</td>
<td>1000</td>
<td>Drops assays.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>1.0/2169A</td>
<td>1.0/8090A</td>
<td>1001</td>
<td>Drops assays.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>A</td>
<td>1.0/2169A</td>
<td>1.0/8090A</td>
<td>1002</td>
<td>The logistics RIA program crashes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>1.0/2169A</td>
<td>1.0/8090A</td>
<td>1002</td>
<td>The logistics RIA program crashes.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>N/A</td>
<td>1.0/ALL</td>
<td>N/A</td>
<td>1031</td>
<td>Reading pipertape, a program error occurs.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>A</td>
<td>1.0/2169A</td>
<td>1.0/8090A</td>
<td>1032</td>
<td>Improper column heading for CRT review of assays in logistic QC Utility.</td>
</tr>
</tbody>
</table>

* LEGEND A = ACTIVE, TO BE INCLUDED IN NEXT MAINTENANCE RELEASE
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<table>
<thead>
<tr>
<th>SYSTEM NAME</th>
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<th>STATUS*</th>
<th>VERSION OCCURRED/ DISK ID</th>
<th>VERSION CORRECTED/ DISK ID</th>
<th>ERRATA #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIADS-22</td>
<td>2</td>
<td>A</td>
<td>1.0/2167A</td>
<td></td>
<td>1034</td>
<td>Hard disk system — CRT display of I/O parameters is wrong.</td>
</tr>
<tr>
<td>RIADS-22</td>
<td>2</td>
<td>A</td>
<td>1.0/All FI</td>
<td></td>
<td>1035</td>
<td>Error if more than 16 assays are used in multi-assays.</td>
</tr>
<tr>
<td>RIADS-22</td>
<td>2</td>
<td>A</td>
<td>1.0/2167A</td>
<td>1.0/8087A</td>
<td>1036</td>
<td>Occasional crash when trying to display or print data plot.</td>
</tr>
<tr>
<td>RIADS-22</td>
<td>2</td>
<td>A</td>
<td>1.0/8087A</td>
<td>1.0/8088A</td>
<td>1037</td>
<td>Logistic RIA program crashes. Logistic RIA program crashes.</td>
</tr>
<tr>
<td>RIADS-22</td>
<td>2</td>
<td>A</td>
<td>1.0/2169A</td>
<td>1.0/8090A</td>
<td>1038</td>
<td>File RIawl SCF was distributed with an improperly set pointer.</td>
</tr>
<tr>
<td>RPL</td>
<td>4</td>
<td>N/A</td>
<td>1.0/2247A</td>
<td>N/A</td>
<td>1030</td>
<td>Make note — error checking occasionally fails.</td>
</tr>
<tr>
<td>TC SUPPORT UTIL</td>
<td>3</td>
<td>A</td>
<td>2.0/2110B</td>
<td></td>
<td>1019</td>
<td>This utility may crash when trying to atomize an illegal BASIC program line.</td>
</tr>
<tr>
<td>TC SUPPORT UTIL</td>
<td>2</td>
<td>A</td>
<td>2.0/2110B</td>
<td>2.0/8114A</td>
<td>1003</td>
<td>File with unprintable character causes erratic display.</td>
</tr>
<tr>
<td>TC SUPPORT UTIL</td>
<td>2</td>
<td>A</td>
<td>2.0/8114A</td>
<td>2.0/8114A</td>
<td>1004</td>
<td>Saving records from edit area may get extra records with garbage data.</td>
</tr>
<tr>
<td>TC SUPPORT UTIL</td>
<td>3</td>
<td>A</td>
<td>2.0/2110B</td>
<td>2.0/8114A</td>
<td>1025</td>
<td>De-atomize cannot handle 192 characters.</td>
</tr>
<tr>
<td>TC SUPPORT UTIL</td>
<td>2</td>
<td>A</td>
<td>2.0/2110B</td>
<td>2.0/8114A</td>
<td>1026</td>
<td>The ENTER NUMBER OF SECTORS prompt does not properly clear the previous response.</td>
</tr>
<tr>
<td>TEXT EDITING</td>
<td>2</td>
<td>F</td>
<td>3.0/2055D</td>
<td>3.1/2055E</td>
<td>1042</td>
<td>If system is defined for multi user-system, it hangs.</td>
</tr>
<tr>
<td>TEXT EDITING</td>
<td></td>
<td>F</td>
<td>3.0/2055D</td>
<td>3.1/2055E</td>
<td>1043</td>
<td>Underlined keyword not recognized.</td>
</tr>
<tr>
<td>TEXT EDITING</td>
<td></td>
<td>F</td>
<td>3.0/8073A</td>
<td>3.1/8073B</td>
<td>1044</td>
<td>Unable to specify same I/O volume for assem. utility.</td>
</tr>
<tr>
<td>TEXT EDITING</td>
<td></td>
<td>F</td>
<td>3.0/8073A</td>
<td>3.1/8073B</td>
<td>1045</td>
<td>Underlined keyword not recognized.</td>
</tr>
<tr>
<td>3741 DISK SOFT</td>
<td>2</td>
<td>F</td>
<td>2.0/2212A</td>
<td></td>
<td>1029</td>
<td>3741 format record to TC format writes incorrect control byte.</td>
</tr>
</tbody>
</table>

* LEGEND A=ACTIVE, TO BE INCLUDED IN NEXT MAINTENANCE RELEASE
F=FIXED IN LATEST VERSION
VS Remote Work Stations

This release announces the availability of Remote Work Station support on the VS System. The addition of this feature to the VS product line provides a telecommunications based facility by which devices, physically remote from the VS, can access the VS. Remote Work Stations have been implemented in such a manner that these devices appear to the VS as if they were local devices. However, there are certain ground rules which must be followed when including remote Work Stations in a VS Configuration.

There are two types of remote Work Stations — Standalone (2246R) and Cluster (2249V).

- The 2246R Standalone is an integral system. The terminal housing contains not only the CRT and keyboard but the control unit and optionally a parallel printer interface to which a parallel printer may be attached. The Standalone eliminates the need for an entire cluster controller at a remote location where only one terminal and possibly a printer is required.
- The 2249V Cluster consists of a control unit capable of driving up to six individual devices. These devices may be a combination of 2246S displays and any of the serial Wang printers.

Remote Work Stations may either be used in a point-to-point (dial-up or leased line) or a polled multipoint (leased line) environment. In a point-to-point environment each line will accommodate only a single system — Standalone or Cluster — whereas a multipoint environment allows multiple remote Work Stations to share a single communications line. Remote Work Stations communicate directly over a telephone line to the 22V06/IOP in the VS System via modems.
A maximum of 32 work stations are supported on a single VS system. Of these 32 work stations, one must be designated as the systems console which is locally attached to the VS, while the other 31 may be any combination of local or remote work stations. Certain configuration restrictions exist, however, which can affect the actual number of devices supported. Each 22V06 supports a maximum of three communications lines. Therefore, the number of lines which may be allocated to Remote Work Stations (each line may contain multiple Standalones/Clusters) is dependent upon:

- Which model of 22V06 is ordered. The 22V06-1 supports one communications line, the -2 supports two communications lines, and the -3 supports three communications lines.
- The number of 22V06 IOP's that are ordered (as limited by the number of slots available in the system).
- The number of telecommunications protocols desired on the single VS system. Each emulation package (2780, 3270, etc) requires a separate line from that of the Remote Work Stations.

Remote Work Stations look like local Work Stations to VS application programs. Consequently, remote Work Stations perform identical functions to that of local Work Stations but at a slower speed due to the delays associated with communications lines.

Features

- Provides remote users with the capability of accessing a centrally located VS system.
- Operates under Wang Bisynchronous protocol with speeds from 1200 to 9600 bits per second.
- Both point-to-point (leased or dial-up line) and multipoint (lease line) configurations are supported.

Restrictions

- Maximum of 32 Work Stations (local and/or remote) are supported. (The first Work Station must be Local and designated as the System Console.)
- A 22V06-1, -2, or -3 Input/Output Processor (IOP) is required

Response Time Impact

VS remote Work Stations appear to the VS as if they were local Work Stations. To the operator, however, there is a difference in response time between a local Work Station and a remote Work Station. The length of this additional response time, over and above that of the local Work Station, is dependent on the following variables:

1. The speed of the telephone line (bits per second).
2. The number of terminals/printers multidropped off of the same telephone line.
3. The frequency of transmission to/from the remote Work Station.
4. The amount of data transmitted to/from the remote Work Station.
5. The amount of data being transmitted to a remote Printer.

The following tables represent \textit{Approximate} Average Response Times over and above that of a local Work Station, i.e., no application time is built into these figures. Table 1 assumes: 1) the Enter Key is depressed at one minute intervals from each Work Station; 2) the message length of each transaction is 100 characters; 3) the message from the VS to each remote Work Station is 1200 characters in length. Table 2 assumes: 1) the Enter key is depressed twice a minute from each Work Station; 2) the message length from each Work Station is 100 characters; 3) the message from the VS to each Work Station is 1200 characters in length.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{# CRT's} & \textbf{2400} & \textbf{4800} & \textbf{9600} \\
\hline
1 & 5.0 & 2.7 & 1.6 \\
4 & 6.1 & 3.1 & 2.0 \\
6 & 7.4 & 3.4 & 2.1 \\
12 & 45.7 & 4.7 & 2.7 \\
\hline
\end{tabular}
\caption{Approximate Response Time (Seconds) (Plus Application Time)}
\end{table}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{# CRT's} & \textbf{2400} & \textbf{4800} & \textbf{9600} \\
\hline
1 & 5.2 & 2.7 & 1.6 \\
4 & 9.6 & 3.4 & 1.9 \\
6 & 1 min + & 4.2 & 2.2 \\
12 & 23.6 & 3.1 & \\
\hline
\end{tabular}
\caption{Approximate Response Time (Seconds) (Plus Application Time)}
\end{table}

Read Altered command causes only display data which has been modified to be read. Use of these commands significantly decreases the amount of data moving down the communication line and consequently increases response time.

\textbf{Availability}

The 2246R Standalone Remote Work Station will be available for delivery during the fourth quarter of FY 1979. The 2249V Cluster Controller will be available during the first quarter of FY 1980.

\textbf{Support}

This is a Type 1, Wang-supported product. Any suspected bugs found in this package should be documented and sent to Wang Laboratories via the local District Analyst. Wang does not accept any responsibility for customer or vendor modifications to this package.

\textbf{Correct Operation Of Diablo Series 40 Load/Run Switch}

The procedure for operating the LOAD/RUN switch at power on is not sufficiently explained in the FLMG for Diablo Series 40 Disk Drives, or the Disk Reference Manual. This may or may not have been the cause of problems in the past, depending on the procedure used to power up the drives.

The two manuals state that if the LOAD indicator is off the cartridge retainers cannot be opened. If a cartridge is to be inserted at power on, there is no problem. You have to wait for the LOAD light. However, if the cartridge does not have to be changed, problems may arise because the manuals fail to mention that the operator should wait for the LOAD lamp to come on within 60 seconds after applying power. This should not cause any operating problems with a Model 43 or Model 44A because the LOAD lamp should come on immediately after power on. This is not exactly the case with the Model 44B, due to a 22-second delay in activating the LOAD indicator. The operator may assume that the drive is operating correctly and decide not to wait the 22 seconds for the LOAD lamp to come on. This is where a problem occurs! If the drive is placed into RUN mode before the LOAD lamp comes on, the brush cycle is not initiated. If this practice is continued long enough, head crashes will occur. \textit{Wait for the LOAD LAMP!}
## Shows and Exhibits

### 1979

#### February

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2</td>
<td>Albuquerque IWP Show</td>
</tr>
<tr>
<td>2 - 3</td>
<td>Hawaii Business Education Association</td>
</tr>
<tr>
<td>6 - 8</td>
<td>Midwestern Telephone Showcase</td>
</tr>
<tr>
<td>8 - 10</td>
<td>North Carolina Society of Surveyors</td>
</tr>
<tr>
<td>8 - 10</td>
<td>Minnesota Land Surveyors Assoc.</td>
</tr>
<tr>
<td>12 - 15</td>
<td>American Rental Assoc. Convention</td>
</tr>
<tr>
<td>13 - 15</td>
<td>IWP Symposium (National)</td>
</tr>
<tr>
<td>13 - 15</td>
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<td>14 - 15</td>
<td>Univ. of Washington Computer Fair</td>
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#### March

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<td>Micrographics Giant Step for Cutting Cost</td>
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<td>WP Association of Northwest</td>
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<td>13 - 14</td>
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<td>5th Annual Federal DP Expo</td>
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<td>20 - 22</td>
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<td>Northwest Petroleum Association Word Processing Exposition ’79</td>
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<td>9 - 12</td>
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<td>1 - 3</td>
<td>Rhode Island Business Equipment Show</td>
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<td>1 - 3</td>
<td>Triad Information System Exhibit</td>
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<td>Washington Academy of Family Physicians</td>
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<td>16 - 17</td>
<td>Word Processing Symposium &amp; Exhibit</td>
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<td>Washington State Dental Association</td>
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<td>Hawaii Office Products Expo</td>
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<td>19 - 21</td>
<td>’79 AFCEA</td>
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<td>IWP Syntopican VII</td>
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<td>TYPEX ’79</td>
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September
6 - 8   Graphic A'nts '79/The Charlotte Show Charlotte, NC

October
15 - 18 Info '78 (National) New York, NY

April 1980
12 - 19 Print '80 Chicago, IL

Recent Publications

The following items were released from Wang between December 1, 1978 and January 31, 1979.

DATA SHEETS
TC-B3 Bistynchronous Communications Option Data Sheet (700-5047)
IP41L Image Printer Data Sheet (700-5058)
Word Processor Column Edit Application Sheet (700-5068)
Word Processor IP41F Intelligent Image Printer Data Sheet (700-5060)
Word Processor 130 Data Sheet (700-5061)
Word Processor AWS-1 Archiving Work Station Data Sheet (700-5054)
Word Processor Editor 6 Data Sheet (700-5108)
Word Processor System Security Application Sheet (700-5094)
Word Processor Sort Application Sheet (700-5095)
Word Processor Mathematics Support Package Application Sheet (700-5096)
Word Processor MCR-1 Mag Card Reader Data Sheet (700-5109)
W.P. Typesetter 44 and 48 Data Sheet (700-5117)

MANUALS
Time & Record Keeping System Demo Guide (700-5044)
2231W-6 Line Printer User Manual (700-5040)
GBS/MVP Mods I & II System Manual (700-5024)
Life Insurance Illustration System System Manual (700-4265A)
Life Insurance Illustration System Marketing Guide (700-5062)
Word Processor 130 Configuration Guide (700-5053)
2260BC/2260C Disk Drive User Manual (700-5100)
2200VS User Aids Reference Manual (800-1301UA-01)
Word Processor Column Edit Operating Instructions (700-5104)
Word Processor Typesetter 44 and 48 Photocomposition Character Set User Manual (700-5093)
Word Processor Photocomposition Executive Introduction (700-5055)
Manufacturing Management System Installation Guide (700-5099)
W.P. Photocomposition Glossary of Terms (700-5098)
1/23/79
Depreciation System User Manual (700-5119)
Manufacturing Management Installation Forms (700-5110)
2270 Series Diskette Drive User Manual (700-5107)
W.P. Typesetter 44148 Command Structures Card (700-5133)

PRODUCT BULLETINS
#176 PCS IIA

REPRINTS
2200 Disk Memory Reference Manual (700-3159H)
2260BC Fixed/Removable Disk Drive Data Sheet (700-4819A)
2200VS Programmer’s Introduction (800-1101P-02)
Word Processor 5 Configuration Guide (700-4720B)
Word Processor Mathpak Applications Operating Instructions (700-4732A)
2221W Line Printer User Manual (700-3638D)
Word Processor 5 Model II Data Sheet (700-4735B)
Word Processor 5 Model I Data Sheet (700-4734A)
Word Processor Photocomposition System Data Sheet (700-5018A)
Word Processor 30 Configuration Guide (700-3914D)
Word Processor 20 Configuration Guide (700-3913D)
W.P. 5531-2 Line Printer User Manual (700-4368A)
1/23/79
Word Processor 5, Model III Data Sheet (700-4837A)
Word Processor Operator’s Reference Guide (700-4465B)
VS Language Data Sheet (800-2201-03)
2200 Software List (700-3798B)
IP41L Image Printer Data Sheet (700-5058A)
Word Processor Glossary User Manual (700-4624B)
Easyform III Release 2 User Manual (Interim) (700-4775.01)
Word Processor 5531-2 120 CPS Line Printer Data Sheet (700-4333C)
Word Processor Mathematics Support Package Option User Manual (700-4671B)
VS Configuration Summary (800-5100-01)
VS Order Entry Inventory Application (800-14010E-02)
VS Data Conversion (800-5101-01)
Word Processor 25 Configuration Guide (700-4685C)  
227B or Option 62 Buffered Asynchronous Communications Controller D.S. (700-3830D) 1/23/79  
2780/3780 Emulation Software Utility Data Sheet (700-4709A) 1/23/79  
TC-B2 Bisynchronous Communications Option Data Sheet (700-4657B) 1/23/79  
TC-A1 Asynchronous Communications Option Data Sheet (700-4733B) 1/23/79  
2200VP Basic - 2 Language Reference Manual (700-4080C) 1/24/79

**Questions, Answers, and Amplifications**

Situation: Multiple bank MVP. Each bank has a global partition containing global KFAM, and two other partitions running code which uses the global KFAM.

<table>
<thead>
<tr>
<th>EX: BANK 1</th>
<th>BANK 2</th>
<th>BANK 3</th>
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<tr>
<td>GLOBAL 5K</td>
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Under Release 1.4 of the operating system, each global partition must have a unique name, even though they are in different banks.

With Release 1.5 of the operating system, each global partition can, in fact, have the same name for the code such as 'KFAM', since the bank number will be made part of the global name with Release 1.5.

**2260BC UPDATE**

We would like to clear up any confusion that might exist about the 2260BC disk drive. The 2260BC disk drive must always be used with two I/O controller boards.

One of the boards will always be the 22C13 controller; this board is included in the purchase price of the 2260BC. The second board that is used depends on whether or not the disk is multiplexed: in a non-multiplexed environment, a 22C03 disk controller is necessary, while in a multiplexed environment, the 2230MXA controller is the second board. The 22C03 and 2230 MXA boards are not included in the price of the 2260BC.

For more information, please contact Jon Newman, on x-2674 in Lowell.

**MVP UPGRADE**

Any MVP shipped prior to August 4, 1978 may have its 2236MXD and all attached terminals field-upgraded with a single conversion kit (700-0200-32). This kit is priced at $200.00 plus standard installation charges. However, in order to upgrade all of the terminals, it is imperative that the total number of terminals be specified when ordering the conversion kit. This will ensure that the required parts are available to perform the needed upgrades.

**New Products**

**MVP BASIC-2 RELEASE 1.6**  
(Platter 701-2294G)

Release 1.6 of 2200MVP BASIC-2 replaces all previous MVP BASIC-2 releases. This release corrects all known system anomalies. Listed below are the changes since Release 1.5. Since Release 1.6 had a limited distribution, documentation for that release is also included. The following files on the system platter differ between Release 1.5 and 1.6:

- `"@@"` - MVP OS & BASIC-2 interpreter.
- `"@GENPART"` - Partition generation utility.
- `"@B"` - Control memory diagnostic.

**Corrected Anomalies**

1. Improper execution of a PACK statement could occur if another program was running in the MVP. Usually, this would result in an erroneous error X71 in the PACK statement. This bug was introduced into the system with Release 1.5 of BASIC-2.

2. The `"@GENPART"` utility provided with Release 1.5 of BASIC-2 was too large to execute in a 16K MVP.

**MVP BASIC-2 RELEASE 1.5**  
(Platter 701-2294E)

Release 1.5 of 2200MVP BASIC-2 replaces all previous MVP BASIC-2 releases, and is required for any MVP with more than 64K of data memory. This release also provides all MVP systems with several new features, and corrects all known system anomalies. Listed below are the system
changes since Release 1.4. Please note that Release 1.4 had a limited distribution; it corrected a problem concerning the 2260B-2 and 2260C-2 disk drives, but was otherwise identical to Release 1.3. The following files on the system platter now differ from Release 1.3 and 1.4:

- MVP OS & BASIC-2 interpreter. ("@"")
- Partition generation utility. (@GENPART)
- Partition generation description (@GENPART overlay).
- CPU diagnostic. (@A)
- Control memory diagnostic. (@B)
- Data memory diagnostic. (@C)
- Move system file utility. (@MOVE)

A. System Enhancements

1. Multiple Memory Banks

Release 1.5 supports MVP’s with up to 256K of data memory. The new "@GENPART" is required for configuring systems with more than 64K of data memory. Memory is divided into four banks, with bank 1 providing up to 61K for user partitions and banks 2, 3, and 4 providing up to 56K each for user partitions. The following definitions have been made for multi-bank MVP support:

a. SPACEK. Before partition generation, SPACEK equals the total amount of memory available for partitioning. After partition generation, SPACEK equals the partition size.

b. Global partitions. A partition in one bank may have the same global name as a partition in another bank. SELECT @PART refers only to partitions in the same memory bank or in the universal global area in bank 1 (i.e., the 1st 5K of partition space). However, $RELEASE TERMINAL TO "global-name" can refer to a partition in any bank. The system looks for the specified partition first in bank 1, then bank 2, etc., so the terminal is released to the 1st partition found with the specified name that is available to this terminal.

2. Background Printing to the Terminal

The OS now supports background printing to a printer attached to the terminal. One partition can be outputting to the printer while a second partition has control of the CRT and keyboard. $RELEASE TERMINAL releases the terminal CRT and keyboard, but not the terminal printer. $OPEN /204 can be used to hog the printer.

Background printing is not recommended to terminals using communication rates lower than 1200 baud, since keystroke echoing may be noticeably delayed when the printer is in operation.

In addition to Release 1.5 of the OS, Release 1.4 or later of the MXD firmware and Release 2.0 or later of the 2236D firmware are required for proper background printing operation. Background printing will appear to work with the old firmware, but data will be lost when the foreground partition is RESET.

The user can distinguish between the various sets of terminal and MXD firmware by simply testing the underline dead key, which allows underlined text to be entered: Hold down the shift key and touch the minus sign key (next to zero). Next, type the letter A. The screen display will be:

A - Release 1.4 MXD, Release 2.0 terminal.
-A - Release 1.0 terminal, ? MXD.
PRINT - Release 1.3 MXD, Release 2.0 terminal.

This test should be repeated for all terminals on the system.

3. System Diagnostics

The system diagnostics, accessible immediately after power on, have been rewritten to support the larger memory configurations and provide better memory diagnosing, more consistent error messages, and improved displays.

4. $RELEASE PART

A partition can be released from a terminal, by using the $RELEASE PART statement, so that it can be reassigned to another terminal (see the following pages for a complete description of $RELEASE PART).

5. Minimum Partition Size

The minimum partition size has been reduced from 2K to 1.25K.

6. MOVE/COPY

The MOVE and COPY disk operations now make more efficient use of memory for buffering; these operations are now up to 15% faster.
B. Corrected Anomalies

1. The $SIO microcommands CAhh, CBhh, CEhh and CFhh are illegal on the MVP. Attempting to execute these commands now generates ERR P46.

2. For certain errors, the ERR function was not set until the terminal was attached to the partition with the error. Thus, SPSTAT could not always be used to check for errors in background jobs.

3. When a LIST S V or LIST S T command was executed and the listing stopped at the bottom of the screen, pressing a special function key defined for text entry or edit/reCALL caused the keys to be ignored, an erroneous error message to be displayed, or a dump of parts of memory to appear on the CRT.

4. If the ERROR statement was used to recover from an error within a subroutine called from a special function key, the subroutine return information was lost. This would result in ERR P41 when RETURN was executed.

5. The text pointer, data pointer, and global partition pointer were returned in hexadecimal rather than packed decimal by SPSTAT.

6. LIST' did not work properly when executed after global text had been halted. LIST' should have listed DEFFN' references in the calling partition, but sometimes listed references in the global partition.

7. Unhogging an exclusive disk (i.e., one assigned to a particular partition by @GENPART) by CBS or address caused the disk to be made available to any partition.

8. The system did not always detect the illegal occurrence of alpha array elements where numeric variables were expected.

9. If variables were used to specify array dimensions (e.g., DIM X(R,C)) during program overlaying, erroneous memory overflow errors (ERR A02) might be reported by the system. This could only happen if the program text being overlaid was larger than that of the overlay loaded, more variables were defined in the overlay than existed in the original program, and most of memory was used.

10. A PACK statement with an exponential image could modify the values of the variables containing the data to be packed. If an exponential image in a PACK statement did not have exactly 1 integer digit specified and if the data to be packed was specified by a numeric array designator (e.g., N0), the result of the pack would be correct but the exponents of the values in the numeric array would be changed.

11. Errors in program lines entered after global text was halted caused an '@' to be displayed before the line in error. The '@' should not be displayed, since the line was being entered into the calling partition.

$RELEASE PART

General Forms

$RELEASE PART

Purpose:

Each partition normally has a terminal assigned to it for program control and operator interaction. If more than one partition is assigned to a single terminal, the terminal is attached to only one partition at any given time. (See $RELEASE TERMINAL.) The terminal assignment to a partition can be eliminated by executing a $RELEASE PART statement; the partition is then available for reassignment to a different terminal. In addition, the terminal will be attached to any partition waiting for it. (In effect, a $RELEASE TERMINAL is performed.) Note that $RELEASE PART does not clear the partition nor terminate program execution; however, program execution would be suspended if the program attempted to communicate with a terminal.

A terminal can assign itself to a released partition by executing a $RELEASE TERMINAL TO statement to the released partition. The terminal will be released from its current partition, and assigned and attached to the released partition. If more than one partition is available (i.e., released), the characteristics of those partitions (e.g., size and memory bank) can be examined with SPSTAT in order to determine which partition the terminal should be assigned. Released partitions are identified by the terminal number (byte 15) of $PSTAT being zero.

If a terminal is assigned to only one partition and that partition is released, the terminal is no longer part of the active MVP system. However, if RESET is pressed and a partition is available (i.e., released and waiting for a terminal), the partition will be assigned and attached to that terminal.

At partition generation time (after power on), partitions can be specified to not be assigned to any terminal by entering terminal number 0 as a partition parameter.

Example of Valid Syntax:

:10 $RELEASE PART
User Memory Allocation:

There are two distinct kinds of memory on the 2200MVP. The operating system, BASIC-2 interpreter, and other system data are contained in control memory. The 2200MVP has approximately 60K bytes of control memory, which is completely separate from memory available for user programs and data. User memory is available in 16K increments, from 16K bytes to 256K bytes. When referring to the memory size of a 2200MVP, only the user memory is considered.

User memory on the 2200MVP is divided into areas known as "banks," of which a maximum of four are allowed. A bank contains a maximum of 64K bytes of user memory; if a system containing from 16K bytes to 64K bytes of user memory is purchased, user memory is contained in only one bank. In this first bank, memory may be added in 16K-byte increments. A system containing more than 64K bytes of user memory contains more than one bank, depending on the amount of memory purchased. Memory in bank two may be purchased in 32K-byte increments only, while banks three and four may be purchased only as complete 64K-byte banks.

General system overhead on the 2200MVP requires only 3K bytes of user memory in bank #1. In banks #2, #3, and #4, 8K bytes in each bank are unavailable for partitions (regardless of the size of that bank), leaving a maximum of 56K bytes available in each of those banks for partitions. A 256K-byte MVP then provides a total of 229K bytes of user memory available for partitions. In addition to the general system overhead, each partition requires 1K bytes of housekeeping information for program control and buffering, leaving the remaining memory allocated for a partition free for programs and data. Partitions must be at least 1.25K bytes in size; they may be allocated space in 256-byte (0.25K byte) increments up to a maximum of the full extent of user memory in any one bank (exclusive of housekeeping and unavailable areas).

User memory in one bank is inaccessible to user memory in any other bank; thus, a partition may not extend from one bank to another. Figure 1 illustrates memory bank organization.

![Figure 1: Memory Bank Organization](image)

A global partition is accessible only by other partitions in the same bank. However, the first available 5K bytes of user memory in bank #1 constitute a special area of memory known as the "universal global" area, which is illustrated in Figure 2 below. A global partition which is contained entirely in this area may be accessed by a partition in any bank. A universal global partition can be used to store programs and data which are to be shared by all users on the system.

Note that the entire universal global area need not be used for universal global partitions; the only restriction is that a universal global partition reside entirely within that area. For all other purposes, the entire area is treated exactly as all other memory in bank #1.
Consider the multibank system configuration in Figure 3 below:

![Diagram of multibank system configuration]

If partition #3 was defined as global, it could be accessed only by partition #4, since that is the only other partition in bank #2. However, if partition #1 were defined to be global, it could be accessed by any of the other partitions, since partition #1 resides entirely within the universal global area.

The END statement, and SPACE and SPACEK functions apply to the current partition. For example, SPACEK returns the partition size (e.g., 32K for partition #3 above) rather than the total amount of memory in the system. However, before memory has been partitioned, SPACEK will return the total amount of memory available for partitioning in all banks.

The system configuration utility, "@GENPART", has been modified to configure MVP systems with more than 64K of user memory. When entering a new configuration, "@GENPART" displays the size of each memory bank as follows:

AVAILABLE USER MEMORY = 61.00K 56.00K 56.00K 56.00K
REMAINING USER MEMORY = 61.00K 56.00K 56.00K 56.00K

The sizes of banks 1, 2, 3 and 4 are displayed in that order. "@GENPART" requests the number of partitions in each bank and the number of terminals on the system, and then displays the partition attributes for editing. A dotted line is displayed to separate partitions in different memory banks. If a partition can be universally global (i.e., it resides entirely within the 1st 5K of partition space in bank 1), a "u" is displayed next to the partition number.

Please note that this release is not applicable to systems with the 2280 series disk drives.

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14
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DESCRIPTION: _______________________________________________________

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**NEWSLETTER NO.** __________
## North America:

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<tr>
<td>Canada</td>
<td>Wang Laboratories (Canada) Ltd., Don Mills, Ontario, Calgary, Alberta, Edmonton, Alberta, Winnipeg, Manitoba, Ottawa, Ontario, Montreal, Quebec, Burnaby, B.C.</td>
</tr>
</tbody>
</table>

## International Subsidiaries:

### Australia
- Wang Computer Pty. Ltd., Sydney, N.S.W.
- Melbourne, Vic.
- Canberra, A.C.T.
- Brisbane, Qld.
- Adelaide, S.A.
- Pers, W.A.
- Darwin, N.T.

### Austria
- Wang Gesellschaft M.B.H., Vienna

### Belgium
- Wang Europe, S.A., Brussels
- Erpe-Mere

### Brazil
- Wang do Brasil Computadores Ltda., Rio de Janeiro, Sao Paulo

### China
- Wang Industrial Co., Ltd., Taipei, Taiwan

### France
- Wang France S.A.R.L., Bagnolet, Ecully, Nantes, Toulouse

### Great Britain
- Wang Electronics Ltd., Northwood Mts., Middlessex
- Northwood, Middlessex
- Harrogate, Yorkshire
- Glasgow, Scotland
- Uxbridge, Middlessex

### Hong Kong
- Wang Pacific Ltd., Hong Kong

### Japan
- Wang Computer Ltd., Tokyo

### Netherlands
- Wang Nederland B.V., IJsselstein

### New Zealand
- Wang Computer Ltd., Grey Lynn, Auckland

### Panama
- Wang de Panama
- ICPECI S.A., Panama

### Republic of Singapore
- Wang Computer Pte., Ltd., Singapore

### Republic of South Africa
- Wang Computers (South Africa) Pty Ltd., Bordeaux, Transvaal
- Durban, Capetown

### Sweden
- Wang Skandinaviska AB
- Solna, Gothenburg
- Arlöv, Västerås

### Switzerland
- Wang S.A. / A.G., Zurich
- Bern, Pulil

### West Germany
- Wang Laboratories GmbH, Berlin
- Cologne
- Dusseldorf
- Fellbach
- Frankfurt/M.
- Freiburg/Brg.
- Hamburg
- Hannover
- Kassel
- Munich
- Nuernberg
- Stuttgart

## International Representatives:

### Argentina
- Kenya

### Bolivia
- Korea

### Canary Islands
- Lebanon

### Chile
- Liberia

### Colombia
- Malaysia

### Costa Rica
- Mexico

### Cyprus
- Morocco

### Denmark
- Netherlands

### Dominican Republic
- Nicaragua

### Ecuador
- Nigeria

### Finland
- Norway

### France
- Pakistan

### Georgia
- Peru

### Greece
- Philippines

### Guatelema
- Portugal

### Iceland
- Saudi Arabia

### India
- Spain

### Indonesia
- Sri Lanka

### Iran
- Syria

### Ireland
- Thailand

### Israel
- Tunisia

### Italy
- Turkey

### Jamaica
- United Arab Emirates

### Japan
- Venezuela

### Jordan
- Yugoslavia