21 April 1993
Release of TNT-MIPS V4.20

Introduction - <u>now</u> recommending use of V4.20

MicroImages recommends for the first time that those of you who have properly equipped 386 or 486 completely convert their activities to **TNT-MIPS**. This release of **TNT-MIPS V4.20** is more than a 99% equivalent of **MIPS V3.33** and the short list of the missing features is provided below. Many of the few remaining features requiring conversion are highly specialized and were created for specific use in a particular problem area and user activity. MicroImages is proceeding forward to complete them all as rapidly as possible. Should one of them be something you need immediately please contact MicroImages via phone or FAX to have it completed first and shipped to you individually. Unless noted otherwise these features will be shipped as part of **V4.30** in June.

Most of MicroImages' software engineers have now completed their year-long conversion and rewrite process finishing off with a couple of months of 10 hour days including weekends. They will now turn their attention in the short run to improvements in the features, reliability, and functionality of **TNT-MIPS**. One of the reasons MicroImages has not previously recommended you move to **TNT-MIPS** is that the conversion process was preoccupying all our available software engineering time and could not be easily interrupted. Now that this is over we will be able to begin to resume business as usual especially by giving a high priority to fixing the problems you encountered in **TNT-MIPS V4.20** with highest priority. Often MicroImages will be able to airmail you corrections by the next day except in the case where the problem can not be recreated or is especially complex to resolve.

Soon MicroImages will be making a formal written call for your advice as to the enhancements you would like in the current processes in **TNT-MIPS V4.20**. Those of you who can make the switch now to **TNT-MIPS** will be able to provide such input and guide the adjustment of existing **TNT-MIPS** features to more closely meet your needs. MicroImages is also now able to begin planning the reassignment of a major portion of our software engineering resources to the development of completely new processes to extend and interrelate the extensive mix already available. This same call for advice will provide you the opportunity to outline completely new **IPS**, **GIS**, **CAD**, or related processes which would iexpand your applications of **TNT-MIPS**.

TNT-MIPS V4.30 will be shipped about mid-June reassuming the normal quarterly release schedule.

Features missing from V4.20

Those **MIPS V3.33** features marked below with an a single * will not likely be available until **TNT-MIPS V4.30** due MicroImages' plan to redesign the way in which they are handled. The few remaining import or export processes not provided with **V4.20** are noted by a double ** and are being worked on while **TNT-MIPS** is on its way to you. They should be available for individual distribution to those who are converting immediately to **TNT-MIPS** by the time you are set up. Please let us know which particular format you need via FAX or phone and they will be shipped via airmail. Those

remaining features not marked by an * or ** have lower priority and you should notify MicroImages if any particular feature is specifically holding up your conversion to **TNT-MIPS V4.20** or your projects so we can give their conversion a higher priority.

Generally used features.

       Raster profile display
       Displaying raw raster data values for an outline box in view window
       Measurement tool for solid areas and their boundaries
       Direct display from **TIFF** format

** ArcINFO Coverage	(vector import)
** **DXF** - AutoCAD	(vector export)
** **IDGS** - Intergraph internal format	(**CAD** export)
** **MMI** - Mapinfo Map Interchange	(**CAD** import and export)
** **MBI** - Mapinfo Boundary Interchange	(**CAD** import and export)
** Optional **DLG** - **USGS**	(vector and **CAD** export)

       Elliptical arcs - (arc, wedge, and chord) can not be created
       Snap to grid feature is not available **CAD** editor
       Vector route tracing
       Printers which communicate via **GPIB**, **SCSI**, and Xerox VPI cards
       Making legends for the screen and Map and Poster Layout (being redesigned)
       Preparing and showing a slide show
       "CLASS-CMAP" - special image analysis routine
       Forms - for user definable layouts for viewing /editing database fields
       Importing all raster formats directly from open reel CCT tapes.
       * Context sensitive help is absent from all processes
       * Batch processes are not yet available
       * Defaults are not retained in various processes

Specialized features used by 1 or a few users.

       Transfer of labels from vector polygons in Feature Mapping
       Dual raster color overlay method for georeferencing
       Support for Atronics Professional Image Board for video digitizing
       Automatic interval capturing (intervalometer) in video digitizing
       User defined map coordinate systems

NITF	(raster import)
WDBII - World Data bank II	(use **RVFTORVC** to convert)
** **MOSS** - **USF&WS** and **USFS** format	(vector and **CAD** export)
** **GSMAP** - **USGS** digitizer format	(vector and **CAD** export)

Installation

Microsoft Windows 3.1 (**MS W3.1**).

The 5.25" version has 31 disks as follows: 23 containing processes; 3 supplemental with additional processes; 4 containing both the **TNT-MIPS** and **MIPS** documentation; and 1 with the installation, utilities, and **MI** wrappers.

The 3.5" version has 26 disks as follows: 19 containing processes; 3 supplemental with additional processes; 3 containing both the **TNT-MIPS** and **MIPS** documentation; and 1 with the installation, utilities, and **MI** wrappers.

The special supplemental disks noted above contain additional processes and corrections added at the last moment and these disks will be requested in the appropriate order after the main processes are installed.

Running **INSTALL** upgrades your key to authorize it for **V4.20**. It then decompresses and writes a copy of each process you have licensed from the disks containing **V4.20** into the selected directory on your hard drive. You must use the **INSTALL** routine on the installation disk supplied with this release to decompress the files during installation. Installing this **V4.20** will completely replace the earlier **V4.11** or earlier versions of **TNT-MIPS** if the same hard drive is selected.

It is our suggestion that any **MIPS** user installing **TNT-MIPS** for the first time choose menu selection "**T**" (Install Minimal Test Version) offered by the **INSTALL** program. This approach will use about 5 megabytes of drive space. It will install only the **TNT-MIPS** display program and its associated support elements including the appropriate menu and the process to convert **RVF** project files into **RVC** project files. This comprehensive new display process is explained in detail in the printed reference material supplied earlier and in the on-line documentation and is the heart of **TNT-MIPS**.

When you experiment with the **TNT-MIPS** display process for the first time you will find that it is a much more comprehensive activity than in **MIPS V3.33**. It should be apparent that since the severe memory constraints of **MIPS** are being lifted by using **MS W V3.1**, all our new processes will be considerably larger. Correspondingly, however, there will be fewer, longer loading processes involved as many formerly independent processes are consolidated into fewer, more comprehensive procedures.

After you have familiarized yourself with the display process and determined that it is correctly functioning, choose menu selection "**M**" (Install **TNT-MIPS** Version **4.20**) on the **INSTALL** program to complete the loading of all the other available processes. **TNT-MIPS V4.20** will require more or less than 50 megabytes of your hard drive depending upon the options you have purchased. Eventually this hard drive requirement will shrink somewhat as processes are further streamlined and integrated together. Please see the section below on optimizing **MS W3.1** and also review the bright pink check sheet enclosed for sample times for loading typical processes.

Apple Macintosh.

The Mac via AU/X version is shipped on floppy disks with specific printed installation instructions ncluded.

Workstation.

The workstation versions are being shipped on 8 mm Exabyte, 4 mm **DAT,** or 1/4" QIC tape according to the preference you expressed. Specific installation instructions are included with each tape.

On-Line Documentation

A total of 360 printed pages of **TNT-MIPS** documentation are included with **V4.20** should you print the pages out. A few supplemental pages were completed after the on-line documentation disks were prepared and are included in printed form. The on-line documentation printing capability is available but will not yet print the on-line illustrations. The on-line documentation currently is detailed, current, and nearly complete on the Basic System Operation (91 pages) and Display (296 pages)

subsections of **TNT-MIPS** and all their complex new features, but only miscellaneous other sections are complete and available. Now that **TNT-MIPS** is a complete conversion of **MIPS V3.33**, our technical documenters can get on with documenting and illustrating it.

Should you require a paper printed version of the **TNT-MIPS** documentation completed to this date it will be 613 pages including all illustrations. A master copy has been deposited at Kinko's Copy Center in Lincoln as in the past for your direct ordering. Please be careful to specify the exact version number should you order a printed copy of the documentation from Kinko's as they have both **V3.32** (no changes for **V3.33**) and **V4.20** on hand. Please contact George Hiatt; Kinko's Copy Center; 1201 "Q" Street; Lincoln; NE 68508 at voice (402)475-2679 or FAX (402)475-2523 for this service. The printed copy of the 1320 pages for **MIPS V3.32** (specify single or double sided) is approximately $80 plus the charge for shipping by the method specified. The printed copy of 613 pages for **TNT-MIPS V4.20** (specify single or double sided) is approximately $40 plus the charge for shipping by the method you specify. A credit card is the best way to pay for both the printing and shipping from Kinko's.

MicroImages X Server (MI/X)

Commercial release. MicroImages now has now achieved a high level of confidence in the unique **MI/X** Server. A press release and color illustration are enclosed and were recently sent out to promote the use of this unique product separately by other software developers.

Windows **NT**. Currently MicroImages has installed the latest March 1993 beta release of Microsoft's Windows **NT** and its associated developer tools. It is likely that a MicroImages MI/X server for the use of **TNT-MIPS** on **NT** will be available approximately concurrent with Microsoft's release of Windows **NT**. References have also been located to others using the same X Server approach for porting **X** / Unix software to **NT**. These include public domain development libraries present on Compuserve and press releases of commercial products for this purpose.

Sun goes to Motif. The decision by MicroImages 18 months ago to go with the Motif Graphics User Interface (**GUI**) is being verified in the market place. Sun has recently joined a consortium called **COSE** made up of several prominent Unix developers to promote Unix in the face of **NT**. As a concession to the other members of this group Sun has tentatively agreed to phase out its proprietary Open Look **GUI** over the next 4 years and adopt Motif. It is the projection of MicroImages that this **GUI** change by Sun will happen much more rapidly than Sun plans.

INFORMATION UPDATES

A new MicroImages communication device entitled **INFORMATION UPDATE** appears with this release of **TNT-MIPS**. The MicroImages **MEMO** instrument of communication will still be used for the quarterly release of **TNT-MIPS** and other related information. An **UPDATE** will be used for short, more frequent and informal transmission of transient and volatile information at or between quarterly upgrades. In order to meet the requirements to get information to you as rapidly as possible an **UPDATE** may not be carefully edited as our objective will be to get the information into your hands as quickly as possible.

UPDATEs will be mailed primarily to keep you informed of what is happening with regard to the products that you have and answer questions frequently asked of MicroImages. For example, the **UPDATE** entitled Recommendations for PC Display Boards (10 April 1993) is in response to a question asked of MicroImages almost daily during this period of rapid changes in board technology. This **UPDATE** illustrates the type of topics to be covered which contain transient materials which may require periodic updating. The second **UPDATE** included with this release and entitled MicroImages X Server (**MI/X**) for Microsoft Windows 3.1 (3 march 1993) is of more casual interest and was included for your general reference.

Optimizing MS W 3.1

Previous **MEMO**s released with **TNT-MIPS** earlier versions contained progressively more and more information on setting up **MS W3.1**. This information has been further extended and reorganized in a section for an installation manual being prepared for **TNT-MIPS**. These materials when completed will eventually replace all the contents of the small 3-ring notebook originally distributed with each original **MIPS** kit and now with each **TNT-MIPS** kit.

The completed portion of this material is enclosed for your 3-ring notebook and concerns system optimization and **TNT-MIPS** installation. It should be reviewed carefully to help you in optimizing the installation of **DOS 5.0** or **6.0**, **MS W3.1**, and **TNT-MIPS V4.20**. Unfortunately these optimization steps have become somewhat more complex with the advent of **DOS 6.0**. The bright pink check sheet enclosed for provides a check list of the optional and manadory steps required to optimize **MS W3.1** for **TNT-MIPS**.

DOS 6.0

MicroImages has installed **DOS 6.0** with DoubleSpace on several machines and finds that **TNT-MIPS V4.20** works without alteration. Only minor speed differences are encountered with DoubleSpace (a few percent slower on 386s and a few percent faster on 486s) so it can be used to double your drive space.

Please note that for maximum performance of **MS W3.1** and therefore **TNT-MIPS** your permanent virtual memory must be on the uncompressed portion of your drive (called the "host" drive in the **DOS 6.0** manual and designated as drive a H: or higher). This drive is automatically set up for you during the installation of DoubleSpace. If you have permanent virtual memory set up in **MS W3.1** and **DOS 5.0** when you install the upgrade of **DOS 6.0** and then DoubleSpace, you will find that your permanent virtual memory now occurs on the "host" or non-compressed drive. This is so that the **MS W3.1**'s constant swapping on and off the drive is not using the DoubleSpace compression feature thus optimizing user interface performance.

If you are forced to install **DOS 6.0** on a clean drive and then reinstall **MS W3.1**, then you must be sure to establish your permanent virtual memory on the "host" or non-compressed drive. This will require that you have twice the amount of drive space free on the "host" drive as you will specify as permanent virtual memory. As you may recall, this requirement for twice as much space as needed is because your permanent virtual memory is always limited by **MS W3.1** to no more than 1/2 the available drive space. To accomplish this first install DoubleSpace using the "express" technique. Then reboot

and execute DBLSPACE again and use the menus presented to free up the necessary space on the "host" drive. All these procedures are outlined in detail in the **DOS 6.0** manual.

New Features

The following new features have been added with the release of **TNT-MIPS V4.20** and were not present in **V4.11**.

Edit **CAD** objects. A map grid can now be created in this process. The view position window is available to select the area to be displayed. A line can now be broken into multiple segments for editing (instead of only 2).

Scanning. Scanning directly into a **TIFF** file now works (did not work previously in **MIPS**).

Pen Plotting. The vector and **CAD** elements can now be selected for plotting by field attribute or by database query.

Principal Component Analysis. When using a raster as a mask the process can determine the **PCA** statistical model for the irregular area(s) of the source raster objects as defined by the mask. The previous version allowed this model to be applied only to the same irregular data area(s) to produce the new rotated **PCA** raster objects. You can now apply the model computed from the irregular data areas to the entire original rasters.

In this fashion, **PCA** can be trained upon selected irregular shaped areas of interest which exclude anomalous areas of uninteresting scattered features of significantly different data values which would significantly impact the **PCA** model. This "guided" **PCA** model can then be applied to the total area of the original raster objects to compute the new rotated raster objects. When these new rasters are displayed in false color combinations (or otherwise interpreted), the colors of the known features inside the original irregular training area(s) can be sought in the balance of the original raster area. This technique has been suggested by our mining clients to extend ground maps of known outcrop areas in large complex images such as **TM** and has similar application in other disciplines.

Text Editor. You can now use 2-byte encoding and fonts.

DEM/orthophoto A statistical result is reported for the auto-correlation process which reports the accuracy of the extracted elevation compared to the ground control points available.

Edit Raster. Any fill pattern you define and save in the raster pattern editor can be used to draw the border of polygons, boxes, circles, and ellipses. The border thickness can be set for polygons, boxes, circles, and ellipses. Rectangular areas can be zoomed, shrunk, or rotated to non-integer scale and rotation using an elastic box anywhere in the raster. You can define collections of brushes and save them in named files and reopen them for later use.

SML. Previously clicking on a function name with the mouse in the "Insert Function ..." control panel will show which parameters the function requires and what it returns. This has been modified to show which parameters are optional. A CopySubObjects () function has been added. Input functions, input () and input$ () prompt to have you

enter a number or a string. Additional "constants" can be read from UNITS.TXT. Raster reading and writing have revised buffering <u>to increase their speed</u>.

<u>Map and Poster Layout.</u> The lat/long coordinates can be displayed in one of 3 formats: **DD MM SS**; **DD MM.mmm**; or **DD.dddddd**. Only **DD MM SS** was available in **MIPS** (more flexibility is planned so send in your requests for other formats).

Map grids and scale bars now use outline fonts instead of bit-mapped fonts. The previous use of bit-mapped fonts had the disadvantage that the did not scale attractively and you only got a close approximation of what you requested.

Some printers and film recorders support more than one resolution mode. (For example, film recorders that have 4000 dpi resolution also accept 200 dpi input and **HP** printers can be addressed at 300, 150, or 75 dpi.) An options menu has now been added to the printer setup dialog to select what resolution to use, defaulting to the last setting used for that printer, or the highest available if not previously used. Sometimes selecting lower than maximum resolution will provide improved results. Temporary selection of lower resolution will always allow much quicker previews of the general layout of complex maps.

<u>HyperIndex.</u> Vector objects used as overlays can now be linked as a layer in a stack to some other daughter object. Previously a vector object could only be linked as an object in a stack if it was the primary or base object and not an overlay. Thus vector objects used as overlays are no longer limited to retrieving database records attached to elements.

Lateral movement in a stack in **MIPS** was limited to up, down, left, and right. You can now move diagonally as well. In **MIPS** you had to manually specify the lateral objects for the up, down, left, and right links. Adjacent lateral links are now automatically formed to nearby objects in the same layer. When you click on a direction arrow in the user interface, you will be presented a list of all nearby objects in that same direction, sorted nearest to farthest order.

The quadrilateral which you could draw in earlier versions to define the area to link to has now been replaced by the ability to draw any polygon area you choose. The earlier quadrilateral had a tendency to flip itself into an hourglass for no apparent reason. Circles used to define link areas have now been generalized into any shape and orientation of ellipse.

When you select a new layer on a control panel, the HyperIndex Linker control panel is informed of this action and switches to an editing mode for the HyperIndex area links for that layer. If all layers are deleted, or the "background" layer is selected all the controls on the HyperIndex control panel are disabled.

<u>RVFTORVC.</u> It appears that it has not been previously clearly noted that this process <u>does not check</u> the **TNT-MIPS** hardware protection key. It is important to emphasize that this program RVFTORVC.EXE can be copied from your **TNT-MIPS** directory and used on any other convenient PC microcomputer. Furthermore it is important to emphasize that while this process can be run from within **TNT-MIPS** for occasional file conversion, for production work it should be executed at a **DOS** prompt. Executing from a **DOS** prompt makes much more memory available to the process (no MS W3.1 or **TNT-MIPS** loaded) and thus significantly increases its speed and other performance.

When executed from a **DOS** prompt the following additional new options are available (but not from within **MS W3.1**): 1) wild cards can be sued which are particularly valuable when large numbers of ***.RVF** files are to converted; 2) a destination directory can now be created; and 3) the output size of the file is <u>estimated</u> and the destination drive checked for the space; and project file and element **ID** are converted.

Application Notes

<u>Software Development Kit (**SDK**).</u> This new draft of this Application Note has been expanded to about twice the size of the version provided earlier. This new version is essentially a complete treatment of this subject but needs additional editing. This version now provided a sample program which is covered <u>in great detail</u> on how to use the **SDK** to create and add a **X** / Motif window to **TNT-MIPS** which reads data from a raster object in a Project File. The final version of this Application Note will contain source code on additional sample processes, each successively more complex and finally including source for a mainline **TNT-MIPS** process. However, only 1 or 2 pages of explanation will accompany these additional samples.

<u>Feature Mapping.</u> A draft copy of this important new Application Note is enclosed. Unfortunately, the original of this note is filled with color illustrations which are important to the understanding of this valuable process which is unique to **TNT-MIPS**. It is possible that the final version of this Application Note can be supplemented by a **CD-ROM** which can be used to view these color illustrations within **TNT-MIPS** as the Note is reviewed. MicroImages will be polling you all shortly to determine how many **TNT-MIPS** systems have or will shortly have a **CD-ROM** available.

Miscellaneous

<u>Moving files from **PC**s to workstations without a network.</u> Many of you are becoming involved in **TNT-MIPS** and other products on various platform. Occasionally it may be necessary to move things between various platforms where a network is not available. NovaStor provides software products which support many kinds of magnetic tape drives (**QIC**, Exabyte, **DAT**, 9 track, 3480, and others) via **DOS** and **OS/2** and via many **SCSI** interface cards on the **PC** and the **SCSI** connector on the Mac. With the various NovaStor software kits you can prepare and read tapes for the movement of materials between PCs and workstations. A typical use might be to "tar" a large number of Project Files on a **DOS PC** and then upload them to a Unix workstation.

The available NovaStor software kits include:
    Backup and restore software for many tape devices
        for **DOS**, for **OS/2**, for Macs, and for networks
    Data interchange software for many magnetic tape devices
        for reading tapes on **DOS**, for **OS/2**, and for Macs
        for moving files from **DOS** to "tar" format
    Please request any additional details from:
        NovaStor Corporation
        30961 Agoura Rd., Suite 109
        Westlake Village, CA 91361
            voice (818)707-9900
            FAX (818)707-9902

Exclusive International Representatives

MIPS is currently in operation in 43 nations. The following new Representatives have been welcomed to our distribution network since the distribution of **TNT-MIPS V4.11**.

ACT Australia   The Australian Capital Territory will now be serviced for MicroImages products by **ERIC** Pty., Ltd.; 5 Salkauskas Crescent; N. Lyneham; Canberra; **ACT** 2602; Australia; voice (616)248-8490; FAX (616)248-8490.   Jim Longworth is the principal to contact at **ERIC** (Environmental Research and Information Consortium Pty., Ltd.).   **ERIC** is engaged in providing environmental and land management consulting focused on policy making to Federal, State, and Local government entities in Australian. In support of these activities **ERIC** provides **GIS** and image processing services, training, and installation.

Finland.   KARELSILVA Oy Ltd. will service MicroImages clients in Finland and can be reached at Kaijanlahdentie 2; SF-54800 Savitaipale; Finland.   Bart Braam is the principal to contact at voice (358)533-60805 or FAX (358)533-61266. KARELSILVA is engaged in providing remote sensing analysis and image collection in Finland, The Netherlands, and other nearby Nations in geology, forestry, and other related natural resources and environmental projects.   They are also active in the development of remote sensing instruments and are the source of the SILVACAM, the color-infrared **PAL** or **SVHS** video camera for which promotional material was distributed by MicroImages several quarters earlier. This is the only single lens color-infrared camera of modern design available to the best of MicroImages' knowledge. KARELSILVA also markets a 256 band multispectral imaging scanner called **AISA** (Airborne Imaging Spectrometer of different Applications) and promotional material describing this device is enclosed with this shipment.

Portugal and Angola.   GEOGRAF Sistemas de informacao Geografica, Lda. will service MicroImages clients in Portugal, Angola, Cape Verde, Guinea-Bissau, Principe, and Sao Tome. GEOGRAF can be reached at Rua Jorge Barradas Lote 1 Loja 4; 1500 Lisboa; Portugal. Joao Romana is the marketing manager to contact at GEOGRAF at voice (351)170-4101 or FAX (351)170-345. GEOGRAF is engaged in providing services in their region in GIS and image processing which include systems, training, and contract services on microcomputers and workstations.

Domestic Resellers and VARS

Texas Area.   Advanced Programming Concepts, Inc. (**APC**) located in Texas will provide access to the products of MicroImages as both a reseller and a **VAR** via their El Paso and Austin locations in Texas. **APC** produces Command-Control-Communication related microcomputer systems for a wide range of military and commercial **RADAR**s as well as other related custom military software. Don Buckley, an experienced **MIPS** user, can be reached for direct sales at their office at 4600 Hellas Drive; El Paso; TX 79924 at voice (915)821-8183 and FAX (915)821-7640. David Sietseman is the contact at their main office at 102 Westlake Dr., suite 109; Austin; TX 78746; at voice (512)327-6795 and FAX (512)327-8043.

Alabama Area. Geo Technologies located in Huntsville, Alabama will provide access to the products of MicroImages in the general area of Alabama, Tennessee, Georgia, and Mississippi. Geo Technologies is particular interested in the application of **TNT-MIPS** and **MIPSview** in the collection, management, analysis, distribution, and access to

property, environmental, engineering, and infrastructure information in urban and rural county areas. Dr. Harold Pirtle, an experienced **MIPS** and **TNT-MIPS** user, is the Principal who should be contacted at 2315 Bob Wallace Ave., Suite 100; Huntsville; AL; 35805 at voice (205)776-2478 and FAX (205)895-6382.

New Image Printers/Plotters Supported

Seiko SII PhotoMaker (model CH-6104H). This dye sublimation or continuous tone printer is capable of 300 dpi with paper sizes of letter, legal, and A4. It is supported by **TNT-MIPS** directly via a parallel port or via Postscript using an optional Postscript card which is inserted into the **PC** bus. The standard printer without Postscript and with 8 megabytes of memory is $8500 retail and requires **TNT-MIPS** printer support level P15 for use on a **PC** or for a Mac with the non-Postscript version of the printer. With the optional Postscript interface card for the **PC** or Mac the printer would require **TNT-MIPS** printer support at level P8. For operation via Postscript the printer should also be upgraded to its full 24 megabyte memory capacity. This additional memory is optional for operation with direct operation via parallel with **TNT-MIPS** and will simply speed up operation in this case especially when printing multiple copies from the same image. Supplies for this printer retail at about $3 per page.

ENCAD's Novajet (model 840). This larger format color inkjet printer is capable of 300 dpi and using dithering with paper sizes from letter to E-size (34 by 44"). It is supported directly by **TNT-MIPS** via printer support feature P15 by both its serial and parallel interfaces. The best approach would be to use the parallel for printing and plotting via feature P15 and the serial for direct pen plotting via **HPGL** if desired via plotting feature L3. The retail price for this printer is $10,000. Supply costs for this printer are unknown to MicroImages.

This printer was on-loan to MicroImages for support from a client who needed it immediately after the support was finished. Furthermore, the correct large paper recommended by ENCAD for use with this printer when printing images was not available. As a result, MicroImages is unable to comment upon the quality of the results produced by this device.

New Printers. The following new printers are in MicroImages possession on loan and will be supported after the shipment of **V4.20**. Drivers and support software will become available prior to general release via **TNT-MIPS V4.30** upon special request for anyone needing them.

> HP LaserJet 4 (model C2001A). This 600 dpi black and white laser printer supports letter and legal size via parallel or serial ports. Its use for printing and plotting within **TNT-MIPS** requires printer support feature P0 which is included in the basic price of every **TNT-MIPS** package.

> HP DesignJet 600 (model C2848A). This 600 dpi black inkjet printer is capable of printing and plotting on letter to E-size paper via serial or parallel ports. Its use for printing and plotting via a raster within **TNT-MIPS** requires printer support feature P15. Its direct support as strictly as a pen plotter will be via **HPGL** requiring feature L3.

> FARGO Premeria (model 76000). This 204 dpi color thermal transfer printer is capable of printing on letter paper via a parallel port. For those of you who are

familiar with the early Calcomp ColorMaster and PlotMaster thermal transfer color printers, this printer produces similar results at a much lower price and higher speed using printer support feature P5. The retail price of the printer is $1000 and supplies cost $.40 per page.

Staff Changes and Expansions

An earlier **MEMO** neglected to announce that Sirisuda (Hui) Gawgirdwiboon joined MicroImages as a Software Engineer in October of 1992. Hui is from Thailand and completed her BS degree in Computer Science (1988) and **MS** degree in Mathematics (1991) both at the University of Nebraska at Lincoln. Hui's initial responsibilities have been the creation of **TNT-MIPS** editor and more recently its conversion to handle 2-byte fonts in preparation for its use in the Internationalization and Localization of **TNT-MIPS**.

Judy L. Wright is no longer on the staff of MicroImages as Technical Documentor.

Ed Stetz is not longer on the staff of MicroImages as Software Engineer.

Jeff Thompson has left MicroImages Technical Support Staff to join **EDS** in Connecticut.

MicroImages is currently seeking and interviewing new staff in the positions of Software Engineer for software creation (2), Software Engineer for technical support (2), and Techncial Documentor (1).