Special Manufacturing Industry Issue

No. 0302.01-20A

FAST-FAX

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August, 1980

COMPUTERS IN MANUFACTURING IN THE 80's

Greensboro Team Signs I-RCS To MIMS®

The Greensboro Branch and the Carolinas District has the distinction of being one of the first field offices to have signed a customer to use the MIMS System. The customer is Ingersoll Rand Construction (I-RCS), responsible for constructing factories to build compressors and compactors for road building contractors. Currently, I-RCS is charged with building a plant for making equipment in Ain-Smara, Algeria. Construction will be managed from a corporate office in Geneva. Stragely enough, it wasn't the availability of the international network that led to the sale, it was the persistent sales effort and perception of a match between the customer's requirements and a GEISCO service.

Mark Feldman, Senior AR in Greensboro had been calling on the account, with the assistance of Sr. T/R John Dowis. They were working on providing IR with a manufacturing information system, using DMS and other standard foreground products.

A Challenge

Ingersoll Rand wanted to know how long it would take to come up with a Bill of Materials Program for parts explosions and implosions to establish product structure relationships. The catch was that the program had to be up and running in 30 days. Competition for the order came from IBM wanting to sell them a separate machine using MAPICS for the project, and WANG proposing to write the software for one of their mini computers.

CA Summoned

Mark Feldman was sure that it was going to be a MARK 3000℠ Service application based on the size of the files being discussed. He called CA in Atlanta for help, and Atlanta CA arranged to have Pete Dorer of Rockville sent to Greensboro. It became obvious that MIMS was a perfect fit for this particular application. The team

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The manufacturing industry in this country has historically generated a major portion of our gross national product. As we enter the 1980's, over 110,000 manufacturing establishments employing some 9 million people have begun searching for cost-effective resource management systems.

The needs for effective information processing in the manufacturing sector have been heightened even more as our economy enters its current recessionary slump. Many manufacturers have become acutely aware of the need to more effectively allocate their limited resources of manpower, machinery, materials and money through a better grasp of the interrelationships of the critical elements in production planning.

The role of Manufacturing Industry Market Development is to identify various segments of this market for GEISCO participation, to guide the development of the products and services needed to serve these market segments, and to assume a leadership role in making GEISCO a major supplier of comprehensive information services to manufacturers.

In the months and years ahead, Manufacturing Industry Market Development has planned a business scope that will include consulting, education, programming, operations and maintenance, systems engineering, remote computer services along with software licensing and the application of specific (turnkey) minis as required to serve manufacturer's needs. Products will cover a full range of manufacturing needs from engineering design, analysis and testing of a new product all the way to tracking the sale of products through distribution channels.

The ultimate objective is to position GEISCO as a world leader in the manufacturing information services market and the goal is to achieve that position by 1985.

Computer-Aided Engineering

Energy and material shortages, increasing government regulations and customer expectations are driving up the cost of new product development. Breakthroughs in Computer-Aided Engineering (CAE) methods have dramatically reduced the time and cost associated with the product development cycle.

In this regard, Computer-Aided Engineering is a key program in the GEISCO manufacturing industry marketing thrust.

CAE Programs developed by Structural Dynamics Research Corporation (SDRC), and available through GEISCO, are designed to help engineers reduce the cost and lead-time required to develop new products. This analytical software allows the designer to model and predict product performance prior to building prototypes. Benefits to the manufacturer include dramatically reduced design time, material consumption reductions, the ability to test more design concepts and improved product quality.

SDRC is one of the leading technology companies in the Computer-Aided Engineering field. The SDRC CAE Mechanical Design Library contains more than 50 applications programs for mechanical design and analysis. This library is fully supported by an experienced computing staff of consultants and is available on GEISCO's MARK 3000^{sm} Service. Education and training in CAE are provided by SDRC to the industry at their headquarters in Cincinnati.

Assistance in sales of Computer-Aided Engineering products available through GEISCO is provided through our CAE project office in Cincinnati. This office is managed by Dick Burke, dial comm 8*333-3660.

NC Plotting Via NSS

SDRC—has a library of programs used in programming numerically controlled lathes, machining centers, turret drills and punch presses. Their library also contains a graphics package that provides visual verification of output files through plotter output. This is particularly efficient in SDRC's HI PRO.

HI PRO is a unique NC tape preparation system for punching, shearing and other sheetmetal fabrication operations. An outstanding feature of the HI PRO system is the path minimizer program which provides a method of producing NC tapes with minimum cycle times. The graphics system allows each step involved in programming and job set up to be plotted, showing hit locations with the actual tool profile shown.

Trade Shows Tell Manufacturing Story

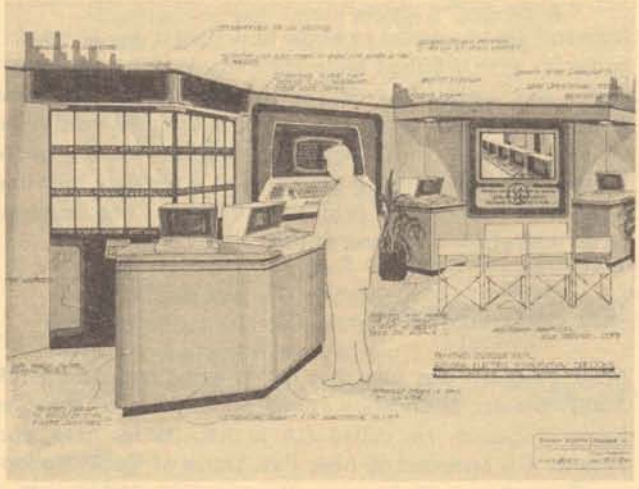
"How Manufacturers Can Use Computers Best" has been selected as the overall theme for three Manufacturing Industry trade shows scheduled this fall. These trade shows continue to be an important means of informing the manufacturing community about the varied full-function services available from GEISCO. At the same time, they provide an excellent forum for the presentation of new GEISCO products.

Current plans include using the same booth that has proven to be very effective, utilizing custom-designed demonstrations and audio-visual slide shows. The overall "Best" theme will be emphasized in each show but tailored to the individual audiences.

Chicago, Sept. 3-12 IMTS

The first of the scheduled trade shows is the International Machine Tool Show to be held September 3-12 in Chicago. This, the largest of all North American trade shows will feature nearly 1200 exhibits and attract over 100,000 visitors. GEISCO's booth on the second floor of the main building (McCormick Place) is adjacent to both the GE Corporate and the GE Carboloy booths. This excellent location allows all three booths to share resources.

The GEISCO booth will present an entertaining audio-visual show as well as demonstrations on numerical control and Computer-Aided Engineering from SDRC. Visitors will hear GEISCO's presentation on revolutionary changes in product development and manufacturing engineering brought about through computer-aided design techniques.



Artist's rendering of proposed GEISCO display area at the International Machine Tool Show — McCormick Place — Chicago September 3-12.

Los Angeles, Oct. 14-17 — MIMS APICS Exhibit

Certain to generate interest at the second scheduled trade show, the American Production and Inventory Control Society Show in Los Angeles, October 14-17, is the Mitrol Industrial Management System (MIMS). MIMS is a superior Industrial Management Software system available through GEISCO which has received excellent field support and has a bright future in the manufacturing industry. Over 6000 potential customers are expected to attend the APICS Show.

Chicago, Nov. 18-20 Info-Mfg. '80 Exhibit

Third on the list of trade shows GEISCO plans to participate in this fall is the Info-Manufacturing '80 Show, November 18-20 in Chicago. GEISCO's full function manufacturing capability will be featured, with such products as MIMS, CAE, N/C and Order Service. Show organizers estimate that 10,000 people will attend this show.

Overall, GEISCO hopes to reach current and potential customers with the message "We Know How Manufacturers Can Use Computers Best," through continued participation in these important trade shows in the upcoming months—and into 1981.

The Manufacturing Industry Market Development Team

Organization as of 7-21-80

Pat Horgan, Manager
Manufacturing Industry
Market Development
8*273-4320

Rosalind Ferro
Secretary
8*273-5828

Bob Hofmann
Program Manager, PAC
Production Automation
& Communications
8*273-5699

Tom Mazurowski
Specialist, NC
8*273-5347

Bill Gates
Program Manager, MIS
Management Information
Systems
8*273-5769

John Wrage
Specialist
8*273-3603

Dave Bruce
Program Manager, CAE
Computer-Aided
Engineering
8*273-5726

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of Feldman, Dowis and Dorer, convinced I-RCS that the Bill of Materials Program could be produced in time if I-RCS would agree to a PSA. I-RCC contracted for the programming effort and the Bill of Materials system was produced on schedule.

Getting Started

Knowing that they wanted to begin work with MARK 3000 Service rather than foreground service, the team decided to use the Informatics Software (MARK IV) for doing the sorting of files that would be required to get the work done. From these files the MIMS transactions were created and loaded. The customer had a working MIMS database within four weeks.

In addition to the Bill of Materials processing one of the functions to be performed by the MIMS package will be the simulation of inventory planning in advance of actual operation. The simulation process will look at lot size, lead times, scrap factors, and determine material requirements for specific time periods.

Inventory Management

Another phase of the processing to be performed by the MIMS software, prior to the opening of the factory will be inventory management of everything that goes into opening a new factory. The factory will be shipped—piece by piece—over to Algeria to the port of Skidka, and will then be shipped inland to the factory site. Two major warehouses in the states and the ship used to carry the materials overseas will be resident points for thousands of inventoried items that must be tracked in the process of setting up the new factory.

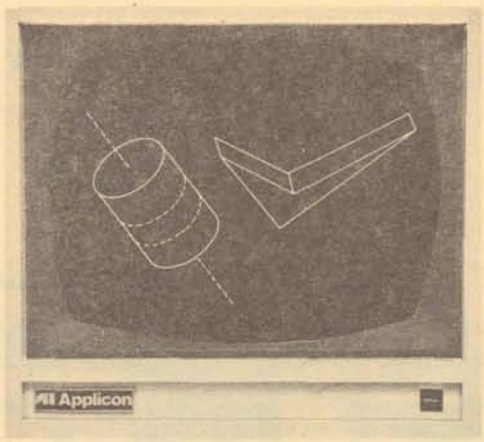
I-RCS has consented to share their MIMS experience as appropriate, with interested people. Contacts must be coordinated through Mark Feldman, John Dowis, or Branch Manager, Jim Patrick.

Use of CRT Graphics Terminals in Manufacturing

A time-saving advantage in having a visual graphics system in the manufacturing cycle is the ability to visualize the part that is to be machined. In many shops, people spend considerable time studying drawings and tracings in the first stages of design and NC programming. With a visual graphics system, the engineer/designer can bring to the screen a visual picture of the part being prepared for production. With single commands to the mini-driven system, the designer can get multiple views of the part—side, bottom, angle—any orientation that will help him visualize the path of the cutting tool. Many of the new visual graphic systems will let the viewer "zoom" in on an area in question to examine closely what the results of the cutting operation will be. The 3-dimensional aspect of the part would take hours to produce at a drafting table, but visual graphics terminals can do it with a single command.

In addition to visually verifying the part geometry, size, placement of clamps and drill bushings, the system can generate the tool path, to prevent errors, and to increase the efficiency of tool movement in the actual production cycle.

Two visual graphics systems have been successfully integrated into the manufacturing cycle that uses MARK III Service. The ComputerVision and Applicon systems prepare what is called a CL file which is sent to MARK III Service as a source of input to one of the post processors. The post processor then produces the NC tape which directs the machine tool controller.



Visual graphics terminals and plotters are playing an ever-increasing role in the preparation of parts prior to production. Mini and micro-driven visual systems are springing up in drafting rooms. The draftsmen who formerly sat at those large tilt-top drafting tables are now manipulating keyboards and light pens preparing data for computers to generate NC tapes.

A company with this kind of equipment is the kind of prospect you want to approach to find areas where MARK III Service can be used. Chances are they have in-house computers, but if they have to wait for turn-around from their finance-dominated, in-house computers, you have a good chance to get the work done on MARK III Service.

Plotters in Manufacturing

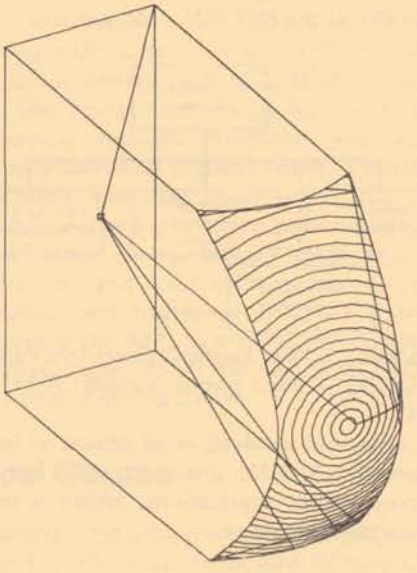
Plotters are used in NC manufacturing to provide visual part program verification, thus assuring error-free NC tapes. By "dry-running" the prepared program to paper on a plotter, the user benefits through:

1. reduced programming time
2. reduced machine prove-out time
3. reduced machine run time
4. decreased scrap.

The program CLPLT*** converts the cutter location file (CLFILE) into a path file to allow the APT/ADAPT language user to obtain a graphic representation of his program.

Illustrative examples of plots used today in industry are shown on this page.

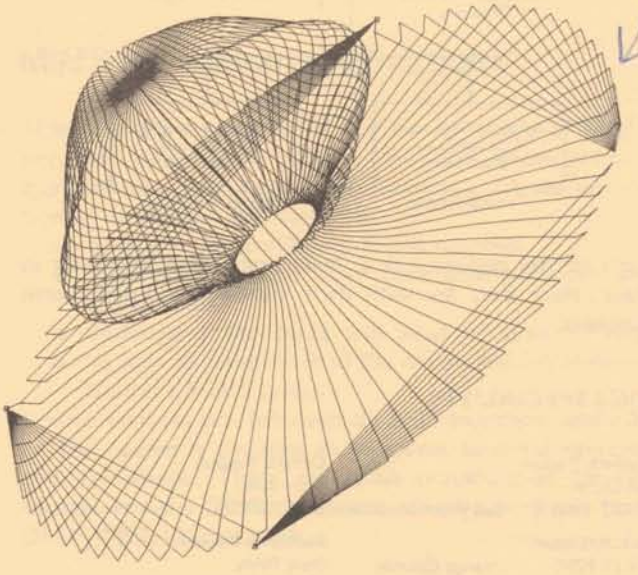
Documentation available for plotters to check NC program is OLOS No. 5304.02—Tape Verification System. For more information on plotting with CLPLT***, list CLPLTINF***.



This plot demonstrates the capabilities of APT software which includes a variety of sculptured surface capabilities.

The following is a list of plotters supported for NC plotting.

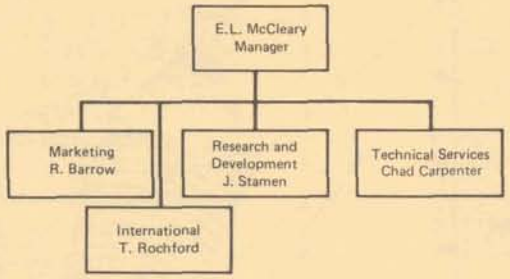
PLOTTER TYPE	CALL	CMD FILE NAME
ANDERSON JACOBS	TAPCMN$***	AJ
ANDERSON JACOBS	TAPCMN$***	AJU
CALCOMP	TAPLO$***	CAL
ARDS 100A CRT	TAPCL$***	ARDS
TPS	TAPTS$***	TPS
HP-7200 -7202	TAPHP$***	HP
HP-7203	TAPHP3***	HPB
HP-7221A	TAPCMN$***	HPA
TEKTRONIX T-4002	TAPTK$***	TEK
TEKTRONIX T-4662	TAPTK$***	TKX
HOUSTON COMPLOT 5M	TAPCMN$***	COM
ZETA 230 10M	TAPZT$***	ZETA
ZETA 230 10M	TAPCMN$***	ZNEW
ZETA 230 5M	TAPCMN$***	ZNEW
ZETA 1240/3640 10M	TAPCMN$***	ZTEN
ZETA 1240/3640 5M	TAPCMN$***	ZFIV
ZETA 1240/3640 2M	TAPCMN$***	ZTWO
ZETA 1250/3650	TAPCMN$***	ZFTWO



This is an APT isometric plot showing the "pocketing out" of an optical cavity. This 3-dimensional plot was programmed on APT66.

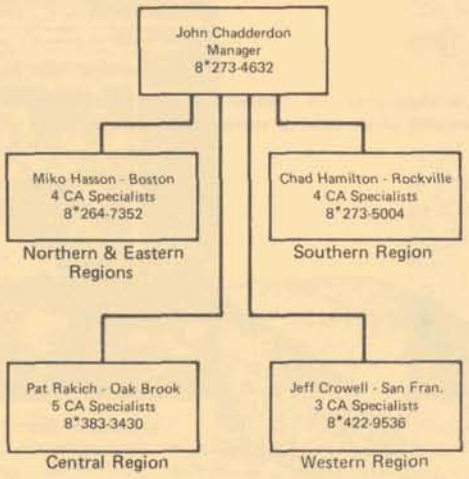
MIMS Support. . .In Depth

If you think that MIMS is just another manufacturing application, you're wrong. It doesn't touch just the fringes of the manufacturer, it gets the whole company involved. When a system does that, YOU need support. . . .and with MITROL you have support. Here's what the organization chart looks like at the MITROL headquarters.



Office Address: 1 New England Executive Park, Burlington, MA 01803 – Main phone number: (617) 273-4111 8*264-0111

Since CA is heavily involved in all phases of implementation, a special CA/MIMS group has been established to support only MIMS applications. Here's a look at the organization that's in place.



Each of the regions has at least one MIMS Specialist in place. Here they are with their locations and dial comm numbers.

MIMS SPECIALISTS

Western Region		**Central Region**	
Bill Dunn		Tom Jared	
8*422-1408	San Francisco, Ca.	8*383-3420	Oak Brook, Il.
Dick Atkinson		**Southern Region**	
8*431-1090	Orange County	Dick Riley	
		8*281-7680	Atlanta, Ga.
Eastern Region		**Northern Region**	
Don Frank		Rollin Stanton	
8*228-0293	New York, N.Y.	8*244-5512	Philadelphia, Pa.

The Regional MIMS Specialists are very busy, as you've no doubt already found out. You can help maximize their efficiency by being better prepared when you call them by (1) completing all preliminary data-gathering; (2) pre-qualifying the prospect prior to requesting a MIMS Specialist visit. Remember that all opportunities are going to be evaluated, but those demonstrated to have the best chances for success will be the ones first pursued.

The Procedure That's Proven Successful

In cases where GEISCO has been successful in getting Manufacturing Management to take a serious look at MIMS, there has been a procedure and a plan of action that involves the entire team. As you plan the call you should remember that for any manufacturing concern, the implementation of an MRP system is a significant undertaking which requires input from several functional areas within the organization.

Here's the procedure that should be followed:

1. **Initial Prospect Development**
   Sales call made by an AR/TR team utilizing a selection from the following sales aids:
   - Product profile 5300.00
   - Capabilities brochure 5310.01
   - Introduction to MRP 5310.08
   - LEADER - Special Edition 5300.04
   - MIMS Primer 5310.05
   - Slide Presentation – (an outline of one presentation presently in use is available via an EDIT RUNOFF of MD53 file named SLIDES.)

2. **Preliminary Prospect Qualification**
   An in-depth question and answer presentation is made, with support provided by the Regional MIMS specialist. Following analysis of the Q/A results, a preliminary evaluation of the prospect's "state-of-readiness' for MIMS is made.

3. **CA Survey**
   Following the normal ROP approval process, a pool funded survey is performed by the MIMS Custom Applications Group. Further system and GEISCO resource requirements are defined over a 1 to 3 day time span, through visits to the company and further clarification of requirements. At this time a more detailed CA/MIMS study is proposed and an agreement for the study is signed.

4. **The CA Study**
   CA/MIMS personnel begin developing the general system design and implementation specifications. When this is concluded, a final contract is submitted for system development, data loading, testing, documentation and training that will follow.

Direct or indirect sales support is available throughout the MIMS sales cycle from the Regional Specialists, the CA/MIMS staff, and from Sales Support in Mitrol.

MIMS Training

MIMS Course Schedule

For Customers

Understanding Your Mims System	October 1 November 5 December 3
Basic MIMS	July 14-15 August 4-5 September 8-9 October 2-3 November 6-7 December 4-5
Request Writing & DB Concepts	August 11-13 October 6-8 December 15-17
Transition to MARK 3000 Service	July 28-29 August 25-26 (on request)
Comprehensive MIMS - I Design and Implementation	October 13-24
Comprehensive MIMS - II	December 8-12

All Customer courses will take place at Mitrol in Burlington, Mass.

Beginning in the first quarter of 1981, selected courses will be taught at field locations.

Internal Training

MIMS Technical Course	August 18-22 October 27-31
MIMS for CA	October 13-24
MIMS for CA - Advanced (customers who qualify may attend)	December 8-12
Sales Training	To be announced

Sales Training

Sales Training introduces AR's and TR's to MIMS, providing the basics needed to present MIMS to prospective customers. The course includes workshops to develop a strategy showing features, functions and benefits for satisfying manufacturing systems needs. Lecture, round-table discussions and case study workshops cover: (a) manufacturing and manufacturing systems; (b) overview of the MIMS language; (c) typical MIMS manufacturing system; (d) selling aids and field support; and (e) marketing information and strategies. This is a 3-day course, with registration via XFL to the Regional Sales Planning and Support Manager. DY28 file named MITRO* reflects latest status of all pending classes.

Technical Course

This is a technical introduction to MIMS on how information is stored in the files, fields and records of a MIMS data base. Attendees will access the data base, create and modify records, retrieve information, and get an appreciation for the responsiveness of MIMS to manufacturing applications. The general course outline covers: (a) network data base model; (b) primary MIMS request verbs; (c) MIMS request language; (d) overview of application request verbs; and (e) terminal operations of MIMS. This is a 5-day course, with registration via XFL to the Regional Sales Planning and Support Manager.

MIMS for custom applications

This is a 2-week course in the fundamentals of MIMS, network data bases, request language, manufacturing applications and operating environment. At the conclusion of the course, attendees will

- be able to write efficient MIMS requests
- understand typical data base configurations and applications
- understand the tools and issue of system design
- be able to contribute to the design and implementation of a MIMS system.

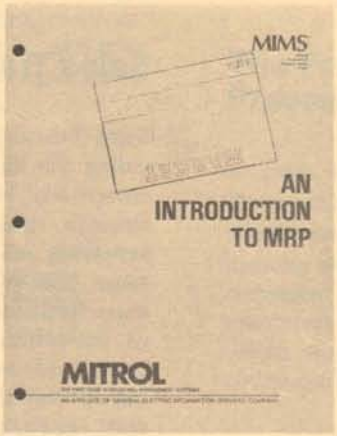
Course lectures are followed by brief exercises, and 40% of the course is devoted to hands-on terminal exercises and workshops. There are some prerequisites for this course. See the GEISCO internal training programs book OLOS 4001.12C, page 61.

MIMS for custom applications - advanced

This course focuses on MIMS as a manufacturing planning tool and on the problems of complex system design and implementation. The course includes presentations by experts from Mitrol Technical Services and R & D Department.

Sales Aids

Product Profile
A 6-page, 2-color description of customer benefits and key features of MIMS. OLOS 5310.00.



Intro to MRP
An introduction to the basic concepts and computations of an MRP system. OLOS 5310.08.

MIMS Primer
An introduction to the MIMS system written for the user. OLOS 5310.05.

Capabilities Brochure
An 8-page, 4-color publication summarizing full product capabilities, emphasizing cost effectiveness and customer support. OLOS 5310.01.

NC Capabilities Brochure
8-pages, 4 color OLOS 5304.83A

MIMS Fact Sheet
A prospect questionnaire for evaluation of a prospect's requirements. OLOS 5310.10.

NC Sales Tools Available

NC Audio Visual Cassette Sales Presentation
Copies of the presentation were made available to all field offices in December of 1979. AR's and TR's will find this to be a very useful and effective sales tool.

NC Capabilities Brochure
This brochure describes GEISCO's NC capabilities, NC software libraries, postprocessors, and related services. OLOS 5304.83A.

NC Technical Profile
This publication describes in detail GEISCO's NC programming languages available on MARK III Service. OLOS 5304.00B.

POSTLIST
This is a DY28 listable file with an alphabetized list of 89 postprocessors available for use by customers.

NC Training — 1980

ADAPT – Customer Oriented
September 17-24 at Maryland Training Center
November 12-19 at Maryland Training Center;

NCPPL - GEPOST – Customer Oriented
Held June 16-24 at Maryland Training Center

NC Sales Seminar (for GEISCO Sales Force)
These NC seminars will be scheduled as requested by field sales management. If your area has need for an NC Sales Seminar, request same via XFL to IAGE/Bob Hofmann.

NSS Software for the Manufacturing Market

CASTPACK – Production planning for the precast concrete industry.
Author: METCON President George Zilberts
(312) 256-4612 BQ85 FG

SLITPACK – Maximizes profits in slitting flat rolled material coils in the steel, paper, plastic and textile industries.
Author: METCON President George Zilberts
(312) 256-4612 BQ85 FG

WOCOM System – For industrial engineers' analysis of human and machine work. The package provides analysis and design of assembly line operations and maintenance of labor standards.
Author: WOFAC CO. John Barker, V.P.
(609) 235-9200
GEISCO Contact: Bonnie Lombardo 8*244-5540

MOLDFLOW System – Analyzes the flow of plastics into injection molds.
Author Representative: Arnold Varner Assoc.
(203) 333-0095 CQ69 FG
Note: Author's rep has planned instruction course for users in Rockville in August of 1980. Capacity is 8 to 12 persons. Call him for details.

Quality Control – Predictor performs analyses associated with reliability, maintainability and logistics in evaluation of systems and their components.
Author: Management Sciences, Inc.
Contact: Robert Zamora
(505) 255-8611

CAPE – Computer Assisted Packaging Evaluation. Programs evaluate pallet arrangements of shipping cases, compares multiple shippers and/or pallets across a product line.
Author Contact: John Phillips
(214) 233-4380

GEMS – Calculates material and energy balances.
Author Contact: Dr. L. L. Edwards
(208) 885-6793

MICLASS System – This classification system makes it easy to retrieve drawings, reduce duplication, and helps standardize drawings.
Author Contact: A. Houtzeel, V.P. (617) 890-4030
GEISCO Contact: Bill Hatch 8*261-3990

Coil Planning & Optimization – The Compucut System has programs to determine the number and sizes of sheets to shear, the detailed layout of items and the sequence of use, to minimize scrap and shearing time. A punched paper tape is prepared for actual control of the shear.
Author: Warner & Swasey
Contact: Wm. Richards
(215) 265-2000

COIL BANKS – Minimizes scrap in processing flat rolled products. AQ66.
Author Contact: Robert Hastings
(513) 367-7441
GEISCO Contact: Cincinnati Branch 8*333-3660

NC Lathes – Postprocessors working in conjunction with ADAPT produce tapes for the complete product line of Warner & Swasey NC lathes.
Author: Warner & Swasey AQ08 FG
Contact: Supervisor of NC programming
(216) 368-5634

Cinturn – A powerful program for numerical control tape generation for Milacron turning machines.
Author: Cincinnati Milacron BQ12 GCOS
Contact: Gene Peters (513) 841-8317

APT Postprocessor – Converts APT and ADAPT centerline data into the tape format required by Bridgeport Milling Machines and Machining centers.
Author: Bridgeport Textron AQ08 GCOS
Contact: NC Sales Manager (203) 367-3651

NCL – Numerical Control Library with programs for lathes, machining centers, turret drills and punchpresses. A graphics package allows verification of program before NC tapes are generated.
Author: SDRC BQ40 FG
Contact: Bruce Cameron (513) 576-2400

GETURN – Programming system for NC turning machines. A postprocessor is available for use for any 2-axis NC turning machine.
Author: TNO Co. AQ95 FG
Contact: Technical assistance - Don Rhea
8*277-2921

MIPUNCH – For NC nibbling and punching machines. A generalized postprocessor is also available.
Author: TNO Metal Research - Holland
AQ95 FG
Contact: P.A. Bockholts, Apeldoorn, Hol.

EXCELLO 1050 – An APT postprocessor for Ex-Cell-O model 108, 208, 408, 508 and 608 workcenters married to GE 105 CNC controls.
Author: Ex-Cell-O Corp. BQ93 GCOS
Contact: Harry Fitzgerald (517) 546-5330

TRIM – Helps materials systems designers and managers design, install, and supervise improved inventory control systems. An inventory simulator.
Author: GE Materials Flow Planning
AQ13 GCOS
Contact: Tom O'Brien (203) 334-1012
x2725

Training Classes Ask Questions. . .Tom Mazurowski Responds

Q. What is a postprocessor?

A. It's software written for a particular control unit that drives an NC production machine. The postprocessor marries the ADAPT program and the control unit. Postprocessor output is received at the customer site as an 8-channel punched tape: It drives a control unit that is attached to a production machine, like a drilling machine, for example. The postprocessor fits into the sequence of events like this: The NC parts programmer writes a parts program and saves it in his catalog on MARK III Service. ADAPT checks for syntax errors and then creates a CL record. The parts programmer then runs the postprocessor using the CL record as an input file. The output is the 8-channel punched tape containing X, Y, and Z coordinates, control codes and other codes to make the production machine duplicate movements coded in the ADAPT program. The control unit accepts the punched tape in its tape reader, and now acts as the interpreter, directing the various functions of the production machine. For example, move 2" in direction X, 1" in direction Y, turn on the drilling function and drill to depth Z.

Q. Will most NC shops I call on be familiar with the remote computing concept and how it relates to parts programming?

A. Yes, it's been going on for 15 years—and there are numerous competitors out there who have done a good job making users aware of it.

Q. Some competitors are selling a minicomputer with the ADAPT software loaded in it. Do we offer ADAPT for use on their in-house machines?

A. No. We don't offer it that way at the present time.

Q. What type of graphic capabilities are available for NC work?

*A. We have terminal plot and CLPLT***. The user doesn't have to purchase any special hardware to use the terminal plot. He gets a plot on a TermiNet® Terminal, or other 300/1200 baud terminal. The most widely used device is the flat-bed plotter which produces a 2 or 3-dimensional plot representing the part. Most of these plotters can be driven from MARK III Service using the CLPLT*** program. CLPTINF*** has information on the use of the program.*

Q. Can we support graphics terminals?

A. Yes, we can support CRTs so that instead of the plot going onto the flat-bed plotter, it appears on the face of the screen.

Q. The first call I made to an NC prospect, he showed a good interest and wanted to know the start-up costs. Can you help?

A. He can get started in computer assisted NC programming for as little as the monthly cost of leasing the TermiNet®30 Terminal (with paper tape punch and reader). Before getting the terminal, he should enroll himself in the Intro to MARK III Service course offered at the branch level. The next step would involve signing up for one of the ADAPT courses offered at the ITC and in many field locations. The Course Quarterly will list locations.

Q. If my customer has 6 or 7 people that he wants to start right away and can't wait until the next ADAPT course, is there any other way?

A. Yes. Give the NC support team a call and let them check their schedule. If it's possible, the class will be brought to the customer.

Q. Will the class be held in the customer's plant?

A. No, it's not advisable. Experience has shown that when classes are held at the customer site, they are always pulled out of class for emergencies, and usually miss important parts of the course, disrupting the whole course outline. The class is best taught at the nearest branch office.

Q. When I visited a parts programming area, I saw an operator moving a light pen on the face of a CRT, and typing into the keyboard. Can we accept that output into MARK III Service and help him make an NC tape?

A. Two successful applications of these graphic terminals are the ComputerVision and the Applicon Systems. In these cases they give us their CL file, generated by the graphics terminal and we run this against the postprocessor to produce and transmit to them their NC tape.

Q. How can we get some of the trade publications so we can learn what's going on? What periodicals do you recommend?

A. First choice is the NC Comm Line, published by Numeridex Co. in Wheeling, IL. Second choice is Modern Machine Shop. Third choice is American Machinist. These magazines are free to industry-related persons, and you can get your subscription relatively easily by filling out a qualification card.

Q. Is there a possibility of meeting the GE Mark Century salesperson in my territory—they certainly know who the prospects are?

A. Yes, the phone book in your city will list the GE components that are selling there. The group that is selling Mark Century controllers is the Industrial Controls Department. Call and find the person's name and take him/her to lunch. Your product is of interest to his customers and prospects.

Prospecting for NC Customers

Where to Look

SIC Code 35 yields the highest concentration of NC machine tools with SIC's 36 and 37 following in 2nd and 3rd place respectively. Big is not always beautiful for NC prospecting however. Our best chances are with the medium-size user. Look for manufacturers who require a form of computer-aided NC processing service but who do not have in-house computer resources that can be allocated to day-to-day manufacturing use. The ideal NC customer employs 100 to 500 workers including 2 to 6 NC part programmers. They are sensitive to cost and sophisticated in their product and their methods of manufacturing it.

The top ten industry possibilities are: 1. Guided Missile Space Vehicles; 2. Aircraft and Aircraft Parts; 3. Engines and Turbines; 4. Ordnance Accessories; 5. Railroad Equipment; 6. Construction Mining and Material Handling Equipment; 7. Office Computing Equipment; 8. Metal Working Machinery; 9. Farm and Garden Machinery; and 10. Special Industrial Machinery.

Decision makers vary with the size and nature of the organization. Here are some of the possiblities.

Organization	No. of Employees	Decision Makers
Proprietor or Partnership	50	Owners
" "	50-100	Manager, Manufacturing
" "	100	Manager, Mfg. Eng.
Corporation one-location	50	Senior Officer
" "	50-100	Jr. Officer
" "	100-250	General Manager
" "	250-500	Manager, Manufacturing
" "	500	Manager, Mfg. Eng.
Corporation mutli-location	50	General Manager
" "	50-100	General Manager
" "	100-500	Manager, Manufacturing
" "	500-1000	Manager, Mfg. Eng.
" "	1000	NC Mgr. or Supervisor

Of course, it's a diverse world and you'll find every combination of the above along with many others not shown.

Revenue Expectations

There is no hard rule for NC revenue expectations. The best estimate is a range of $600 to $1000 per month per part programmer. This varies widely, however, depending on the nature of the business and business cycles. In any case, NC revenue can be expected to grow at an annual rate of 15% as the entire industry grows. A typical NC customer will be triggered to go "in-house" with NC prcessing at the monthly expenditure level of $7.5 to $10 thousand. GEISCO's answer to that customer need is on the drawing boards now.

The Field's NC Support Team in Rockville

Joe Schartman, Manager
NC Applications 8*277-2931

Bob Bruning
Engineering Senior Systems Specialist
8*277-2916

Len Smith
Senior System Specialist
8*277-2934

Don Rhea
Engineering Systems Analyst
8*277-2921

Diane Harris
Engineering Programming Analyst
8*277-2923

The Role of Order Service in the Manufacturing Cycle

Manufacturers are by necessity distributors, either to other distributors, to retailers, or to their own outlets. Ideally, a good distribution system provides fast service to customers and helps to control inventory assets.

GEISCO offers order service systems (1) built from scratch by the local CA office personnel, or (2) built through a software generative capability (OMNI) by the special service office in Dallas, managed by Don Bishop.

Systems begun in category 2 above are then customized to meet individual customer needs—in about half the time required to build a system from scratch. GEISCO order service system may be batch or real time, dumb-terminal based on MARKLINK[tm] or terminal based. Some notable systems recently installed include Motorola, Airwick, and within the GE family, Insulated Materials, and GESCO.

For OMNI based systems you can count on heavy support from the Dallas order service office, together with technical presentations, site surveys, proposal preparation/presentation, and most importantly, enthusiasm.

To get you acquainted with order service and help you sell our capabilities, the following publications are available in OLOS, a complete set of which has already been sent to the branches.

5302.31 Order Service Sales Information Summary
5302.25 Order Service Sales Guide
5302.29 Glossary of Order Service Terms
5302.17 Order Service Systems Product Information
5302.28 Order Service System Sales Brochure
5302.32 Levi-Strauss Application
5302.33 GE Plastics Division Application
5302.35 GE Component Sales Department (GESCO) Application
* Executive Presentation (script 35mm slides, sync-pulsed tape)
** GESCO film

The Executive Presentation is available from Application Sales Integration—call Larry Kristiansen—8*273-4463.

The GESCO film is available at each District and Region Office.

Factory Work Scheduler

The Work Scheduling System (WSS) on MARK III Service (FG) is essentially a database application for operations where a job moves from one work center to another during the production process. WSS is a general priority job scheduler that ranks jobs according to a user-selected priority system, where each job is composed of operations. Each operation has a specific capacity need and is done at a specific work center that has a specific capacity availability. More simply stated, it lets production managers know exactly where they stand on each and every job. Described by one user as a lower cost alternative to other methods available, the various characteristics of jobs, work centers and shop policies are loaded into the system, and the program processes the files to help gain best work flow scheduling.

Since WSS produces schedules each day for a 3-day period, management has an up to date document for tracking jobs put on hold, and can inform customers as soon as changes occur, resulting in better customer service. In some cases the best time to run the system coincides with the Independent Run schedules to bring about a 60% reduction of overall cost.

WSS is essentially a FG stand alone system with limited support, while MIMS operates on MARK 3000 Service. There are plans underway to develop a finite scheduling capability in MIMS in 1981.

An application story on the use of WSS at the 3M Company is written up on page 9 in the Spring of '78 Time Sharing Leader. The Users Guide is OLOS 5306.10.

MIMS Prospecting

There's a convenient way to find out about the MIMS potentials in your sales territory without leaving your office. The first step in finding the prospects to call on is to get the person responsible in your region to produce a copy of the Territory Analysis Report for your area. It can be pulled from the system for your branch by the following people:

Eastern Region: Dorothy Schan 8*228-0302
Southern Region: Mary Alwes 8*404 325-1622
Northern Region: Maura McCollum 8*244-5500
Central Region: Janine Wallin 8*383-3419
Western Region: Jim Carro 8*422-1465

You can get the Dunn and Bradstreet report sorted by SIC codes for a particular cost center, displaying the D & B potential/current customers and revenue for each SIC. For MIMS prospecting, this can help point out the potential prospects in the targetted manufacturing SICs 35, 36 and 37.

Another report, the D & B Potential Establishments Report produces the SIC, the company name, street address, city, county, state, corporate sales, number of employees there, and expected revenue.

Let your fingers do the walking through the SIC reports.

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