

# WESTERNER

Omaha Works  
Special Edition 1989

## Works is committed to JIT

If you review the history of the Omaha Works, you will find that Works employees are not strangers to change and innovation. Technological progress and changing customer demands over three decades have made adaptability and flexibility passwords in the Works' manufacturing operations.

But perhaps never have change and innovation been as critical to the continued success of the Omaha Works than today when we face stiff competition for customer dollars in every product and service we provide.

That, said Jack McKinnon, is why the Works is fully committed to incorporating the "Just in Time" (JIT) manufacturing philosophy – "you could call it a common sense approach" – throughout the plant.

The overriding goal of the approach is "to make dramatic improvements in the performance of the Omaha Works," said the Works' manufacturing vice-president.

"We have certain cost targets we want to achieve – costs we have to meet because we know they are costs for which the competition can sell the same products."

Nearly one year ago the Works' manufacturing and engineering operations were restructured under the management of strategic business units – or SBUs. The SBUs are divided, basically, according to the three major product lines manufactured at the Works: elec-



*IT TAKES TEAMWORK... What does it take to make JIT a success? People working together – people like (from left) Bill Campbell, Steve Petersen, Chuck Mann, Lou Kosmicki, Hank Hendrix (now retired), Joe Avery, Linda Chollett and Evelyn Iselin.*

(Continued on Page 5)



# Overall JIT plan is team effort

People who live near the East Coast metropolises probably don't think twice about commuting long distances to their jobs. But 1200 miles one way?

Even Stan Hendryx will agree that's a lot of miles. And although it takes some juggling to balance his work here at the Omaha Works with his family life back in Allentown, Pa., it comes with the territory.

Hendryx is a consultant with AT&T Bell Laboratories' Engineering Research Center (ERC) in Allentown. As a consultant he has worked at AT&T locations around the world.

He was a consultant at the Richmond (Va.) Works when Greg Hughes, now AT&T Network Cable Systems president, was manufacturing vice-president there. At Hughes's suggestion, manufacturing engineering director JR Newland invited Hendryx to provide consulting services to the Omaha Works.

His job here is to help develop

an overall plan – incorporating Just-in-Time (JIT) manufacturing principles – that will foster teamwork between Bell Labs and our plant and “to improve the performance of the Works quickly,” Hendryx said. At the Richmond Works, and at the Denver Works where he also helped develop a similar plan, the highly successful efforts were termed “bold initiatives.”

“‘Bold’ because it was progressive and in some cases bold,” Hendryx said, and ‘initiative’ because it is something we voluntarily chose to do ourselves.”

The plans he helped develop and put into effect at the other factories continue to be successful. He is confident that the Omaha Works will be equally as successful, judging from what he has learned about the Works and its employees since arriving in May.

“I'm very much impressed by the readiness of the Omaha employees to make a major push forward,”

Hendryx commented. He cited the progress in numerous work areas where JIT manufacturing already is under way as well as employee appreciation for resulting improvements

“There is a very real, enthusiastic appetite to improve.”

Hendryx said he's been doing his homework, talking with management personnel, technical-professionals and shop operators. He asks employees to describe for him “what they would like to see for the Omaha Works' future” and problems they foresee “getting from where they are now to where they want to go.”

He said “there is a lot of commonality among the different employees” and an image of the Works is emerging which will help develop a plan.

Working with the Bell Labs consultant is an Omaha Works staff – his “team,” he said – of assistants: Merle Dinslage, David Tso, Bev Cavanaugh and Bob Attebery.

They help with the research that is so critical to developing a good plan and make proposals based on their findings. Then, they will help guide the different IBUs as they put the Omaha JIT manufacturing plan in action.

For example, a committee member may look into production setup procedures and problems, propose improvements, then assist an IBU in making changes. Excessive setup times make it difficult to manufacture products in smaller, day-to-day quantities in the JIT “make-only-what-you need” philosophy Hendryx said.

Basically, the plan will respond to two key questions: What is the

## Contents

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There are a lot of exciting ideas and changes in the air at the Omaha Works these days. Operating shops have been restructured into individual business units (IBUs), quality consciousness has never been so intense, and employees are taking on increasing participatory responsibilities as Just-in-Time (JIT) manufacturing principles are put in place.

Much has happened in less than a year's time in the united effort to improve performance at the Omaha Works. The key to this effort is teamwork involving employees from

every area and every level of the office and factory.

This special edition of the Westerner – its direction and contents themselves products of a team effort – serves as an update on what's been happening, and what will happen as employees work together to shape the Works' future. Included are stories on a Works committee whose role is to oversee the orderly plant-wide enactment of JIT manufacturing principles, and on employee involvement to date.

Regular features of the Westerner will resume in the next issue.





best way the Omaha Works can do business in its competitive environment? What do we have to do to get the job done?

Hendryx outlined what the plan will cover:

- **Teamwork.** "The primary way to get improvements," said Hendryx, "is to focus on the people. Teamwork is essential." The plan will focus on strengthening the Works' individual business units (IBUs).

"IBUs are the way of the future. They promote interdisciplinary teamwork toward improving what goes on in the shop."

Hendryx wants employees to identify with their IBUs – experience "esprit de corps" to bring about improvements in performance. And as performance improves, "we will find we will become more inter-

dependent . . . the factory will have to work more synchronously" as inventories are reduced and teamwork becomes even more vital.

- **Increased revenue.** "For Omaha to survive and prosper, it must become more competitive. That's not a choice – it's a necessity," he said. But how?

There are two options. One is to cut the labor force while maintaining the same production levels. The other is to maintain the labor force while increasing output.

"We expect to 'cash the check' by increasing revenue – not laying off people," Hendryx said, "but everybody must cooperate to get this done."

On one hand it's up to Works employees to increase productivity. That requires less waste on the job.

(Continued on Page 4)

*PLANNING . . . Assisting Stan Hendryx (left) with JIT planning are (left to right) Merle Dinslage, Bob Attebery, David Tso and Bev Cavanaugh.*

# JIT plan to reflect teamwork

(Continued from Page 3)

Shorter intervals. Reduced inventories. Strict conformance to quality standards.

Another factor in increasing revenue is broadening our markets for our products, Hendryx added. We must rely on AT&T's marketing groups to increase sales of Works' products. Again, he said, teamwork is involved. "Marketing feeds on our success and vice-versa."

• **Quality.** Quality itself is so important to the success of JIT manufacturing that it is being given increased focus. An AT&T consultant on quality, Jack Keyser, is working with a couple of IBUs on improvements in quality. Programs are under way resulting in vendor certification (suppliers who meet Works' quality standards are identified) and process certification (an internal certification that assures our processes provide consistent quality). Process certification will involve training employees how to use quality control methods in all aspects of Omaha Works operations.

• **Change/flexibility.** Shortened intervals (the time it takes between ordering and shipping a product) are primary indicators of improved performance. They also allow less time to respond to problems that may come up, noted Hendryx.

"Therefore, we must respond more quickly and that means a change in how we manage our activities. It requires flexibility that is based on what the customer wants and when it is needed."

Hendryx said to look for changes in setup times in order to reduce lot sizes and speed product flow. "This will give us the flexibility to change more quickly from making one product to making another." And to make better use of time and to improve job performance, "we'll also need a high degree of cross-training of employees to have flexibility."

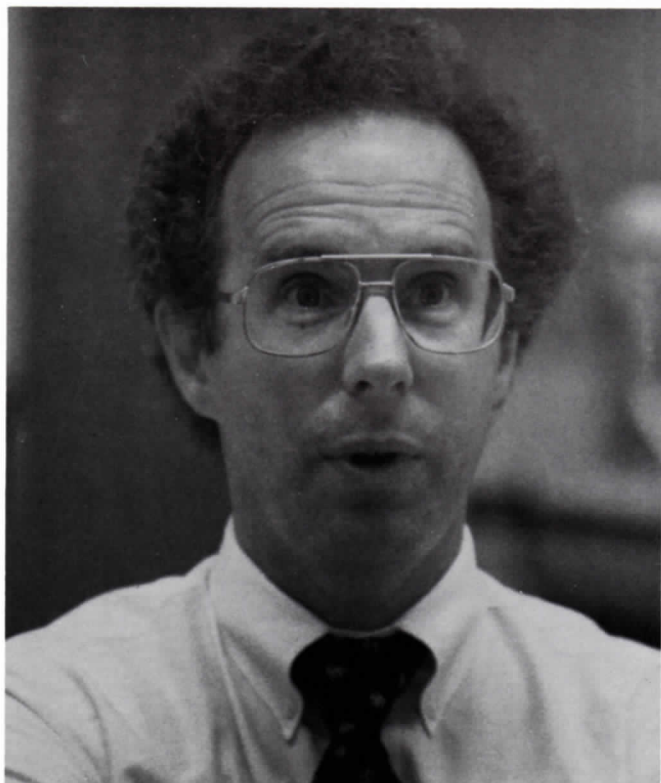
• **Measurement/feedback.** "An important part of the plan is knowing we are making progress," Hendryx said. "We're in the process of rethinking performance measurements in the factory — financial and non-financial," and reviewing the best channels for communication and feedback.

• **Empowerment/recognition.** "We want employees to think (about improvements), not just do" as the job prescribes, Hendryx said.

"We need to involve everyone — let them know what they can do to help. We must empower them with the tools to do it."

Equally important to encourage involvement in the management of the Works is recognition of ideas that bring about improvement — specifically, recognition of employee team accomplishment.

One of the most readily noted means of recognition within the company, he said, is the employee suggestion program which rewards individual ideas. But only about



STAN HENDRYX...  
"We're looking to make dramatic improvements in the performance of the Works."



# Works is committed to JIT

(Continued from Page 1)

tronic wire and cable SBU, copper apparatus SBU, and copper apparatus and metals SBU (see chart on Page 6).

Within each SBU are individual business units, or IBUs. The IBUs essentially are "self contained," he said, focusing on the manufacture of a specific product family within the SBU. Instead of grouping manufacturing operations according to their function as we did in the past, McKinnon explained, they are grouped according to product line.

The IBUs are responsible for planning and initiating action that will bring about improvements in performance, patterned along the principles of JIT manufacturing. The fruits of their labor in the various "JIT work cells" is becoming more apparent, McKinnon said, with several of the cells well into the changes required for improvement (see story beginning on Page 7).

The restructuring and incorpora-

tion of JIT principles is a move that puts more accountability within an organization, McKinnon explained. "The goal is for less bureaucracy up and down and for employees to take a more active role in shaping their future at the Works."

In this way we can "grow the business," McKinnon added. "Performing our jobs that much better improves our chances of broadening our base in the market — not just keeping the jobs we have but maybe increasing them, too."

Some of the changes that already have taken place "have gone smoothly — others not so smoothly," he said, "and we're going to make mistakes. It's been — and will continue to be — a real challenge for us."

"The bottom line is that we must be able to respond much quicker to customers... to give more responsibility to people at the lower levels as much as possible," McKinnon stressed.

"Most of all, we've got to work as a team."

two percent of the Works' population participates in the program, indicated, and much more involvement by employees is needed.

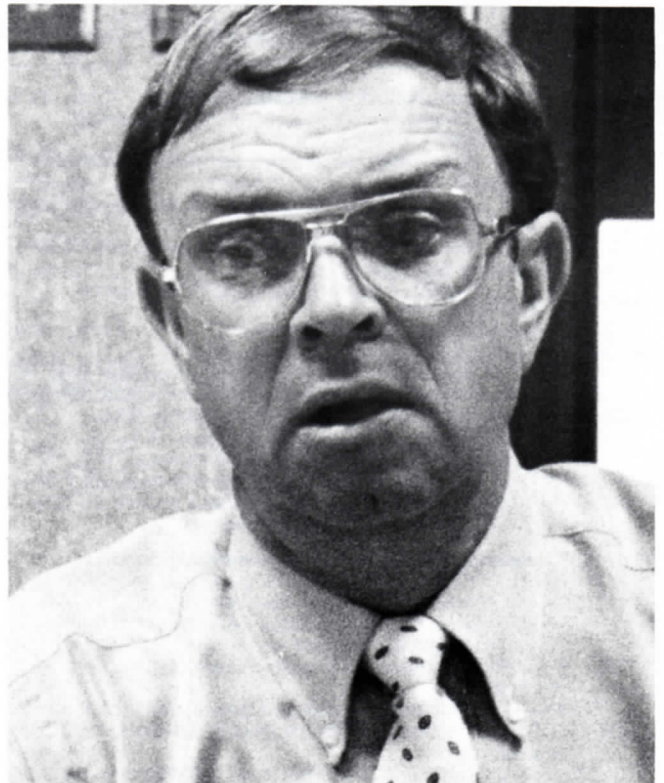
Hendryx has asked a task force, consisting of management and union representatives, to review the suggestion program and make recommendations that might tap more "brain power" and better reward team accomplishment.

Hendryx expects the overall Works plan will be announced sometime in the fall. But he is careful to emphasize that "I'm not here to start another new project. We're looking to make dramatic improvements in the performance of the Omaha Works... not an overlay (more work) on what's being done, but a transformation of what is done here."

The plan will encompass existing projects and activities supporting the current Omaha Works business agenda, he said. It will involve a "changed way for more success, more job security," he said.

"There are no guarantees," Hendryx said frankly, "but we can keep employees informed about what's going on, what is needed and what they can do. That's the most important part — what they can do as a team."

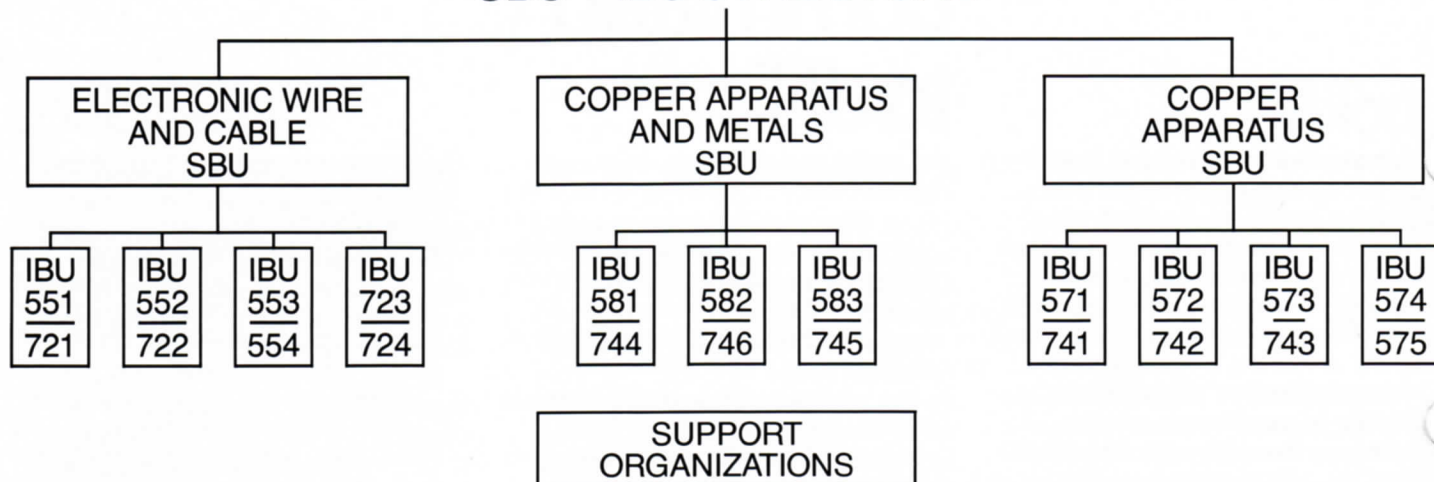
*JACK MCKINNON  
... "The bottom line is we must be able to respond much quicker to customers."*





# Omaha Works Organizational Chart

## SBU – IBU STRUCTURE



### ORGANIZATION SUMMARY: SBUs/IBUs

#### Electronic Wire and Cable (EW&C) SBU

R. G. Seiter, manager, EW&C SBU operations  
G. S. Epp, manager, EW&C SBU product and development engineering

##### Wire IBU operations managers

551 — R. K. Kull  
721 — J. M. Osterchill

##### Cable IBU operations managers

552 — J. M. Curbeam  
722 — M. L. Parizek

##### D inside wire pilot IBU manager

553/554 — L. E. Dembowski

##### Plenum development and production manager

723/724 — P. G. Koehler

#### Copper Apparatus and Metals SBU

R. F. Tatten, manager, SBU operations  
R. K. Swartz, manager, SBU engineering

##### Outside cabinet fabrication IBU managers

581 — R. T. Cefrey  
744 — L. J. Bailey

#### Metal piece parts and tools IBU managers

582 — B. G. Orley  
746 — C. F. Zoucha

#### Metal fabrication and custom fabrication IBU manager

583/745 — J. F. Orley

#### Copper Apparatus SBU

J. L. LaFollette, manager, SBU operations  
R. K. Swartz, manager, SBU engineering

##### Connector and electronic systems IBU managers

571 — F. C. Tirschman  
741 — D. J. Svoboda

##### Central office connectors and building entrance protectors IBU managers

572 — R. R. Wustrack  
742 — P. D. Bracken

##### Protectors and cable terminals IBU managers

573 — W. A. Lawson  
743 — S. L. Alloway

##### Plastic products IBU manager

574/575 — J. F. May

### ORGANIZATION SUMMARY: SUPPORT ORGANIZATIONS

#### J. F. McKinnon — manufacturing vice-president

#### 500 — J. J. Andry, manufacturing operations director

500A — M. F. Dinslage, JIT implementation and planning manager  
511 — G. W. Schabloske, plant trades and plant procurement manager  
521 — E. T. Saab, personnel, labor relations, security and wage practices manager  
523 — R. M. McGaughey, public relations, training and office services manager  
532 — C. L. Schmidt, customer service/SIPP operations manager  
550 — R. G. Seiter, manager, EW&C SBU  
555 — N. Shaw, SBU quality manager, Bldg. 50  
556 — G. W. Schabloske, SBU maintenance manager, Bldg. 50  
557 — P. R. Meiman, SBU production control manager, Bldg. 50  
570 — J. L. LaFollette, manager, Copper Apparatus SBU  
576 — G. C. Parkerson, SBU quality manager, Bldg. 30  
577 — R. S. McKulsky, SBU maintenance manager, Bldg. 30  
578 — D. J. Allen, SBU production control manager, Bldg. 30  
580 — R. F. Tatten, manager, Copper Apparatus and Metals SBU  
584 — B. G. Orley, stores operation manager

#### 700 — E. F. Newland, manufacturing engineering director

700A — J. C. Flohr, senior engineering financial specialist  
702 — F. J. Markesi, senior sales specialist  
747 — R. S. Duell, copper apparatus development engineering, Bell Laboratories technical supervisor  
710 — H. C. Rhodes, manager, project management/vendor certification  
711-1 — R. K. Huffman, purchased material/vendor certification  
720 — G. S. Epp, manager, EW&C product and development engineering  
725 — M. L. Fuller, EW&C process and materials development engineering manager

740 — R. K. Swartz, manager, Copper Apparatus SBU engineering  
792/793 — L. B. Wells, products and process development engineering (PECC)/inside wire and cable test set design and automation systems engineering manager

780 — C. W. Recka, manager, engineering operations  
781 — D. G. Sheil, factory engineering manager  
782 — W. T. Krum, plant engineering and environmental health and safety manager

783 — G. L. Kahler, machine and tool design engineering manager  
785 — R. A. Dickmeyer, systems engineering and documentation engineering manager

790 — L. M. Boggs, department head, copper media, Bell Labs  
791 — W. A. Johnson, inside copper wire/cable products and process development engineering (PECC) manager

#### 800 — R. V. Barry, M.D., medical director

800-1 — M. T. VanWagoner, supervisor, nursing

#### Resident organizations

1130 — H. E. Davidson, manager, purchasing and transportation  
1131 — E. B. Schaefer, purchasing manager  
1332 — S. D. Mason, purchasing manager  
1720 — (Vacant), manager, information systems  
1722 — R. H. Brewer, information systems development and data services manager  
1723 — G. L. Taylor, information systems development manager  
2720 — K. J. McCarthy, manager, financial  
2722 — T. F. Vierk, accounting manager  
971D — K. K. West, supervisor, payroll, financial, accounts payable and employee accounts  
1036-1 — J. S. Muzic, branch manager, quality management and engineering  
1113 — P. E. Baumann, quality assurance manager  
2744-2 — T. N. Lathrop, senior internal auditor





*ESTHER WEGNER AND BOB BROWN... She works in the DSX area, a JIT cell in the connectors and electronic systems IBU, and he works in small-pair DIW production, the cable shop's first IBU work area to switch to JIT manufacturing.*



If just one  
person can  
make a  
difference...



# Look what a team can do!

**T**eamwork. Webster's defines it as "work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole."

The Omaha Works has its own interpretation of the teamwork definition. Here, it means the coming together of each and every employee to make dramatic improvements in the performance of the Omaha Works. It involves the sharing of ideas and the pooling of skills to reshape the Omaha Works, making it more competitive and a better place to work.

The stories that follow on some of the Works' individual business units (IBUs) and their application of Just-in-Time manufacturing principles illustrate how teamwork is more than just a password to do business: It's the very foundation of the Works' future.

\* \* \*

## A place they can call their own

Employees who make 841 repeater cases – a type of cabinet – are proud to show visitors around their "place of business." The dozen employees moved to their new quarters "between the walls" in Building 30 several months ago. They designed their floor plan from start to finish.

The employees comprise a JIT work cell within the outside plant cabinet fabrication IBU. Last fall they attended training sessions in which they learned about teamwork, communication and the dynamics of quality on the job.

Employees were skeptical at first about how serious management was about "getting us involved in the manufacturing process," recalled department employee Dan Pfeifer. When it became apparent that management was willing to listen, "we figured since we're the ones who use the area, we may as well design it the way we want it."

They came up with six floor plans in about three weeks, touching base with engineer Gary Cook on technical aspects of the job. The plans supported their functioning as a self-contained business unit with no inventories in the work area, and brought together operations that formerly were spread out in different shop locations.

The employees presented three of the plans to their line management and associated engineering and production control groups. "We got everything we wanted," Pfeifer said.

Today the IBU team can build repeater cases from beginning to end and pack the final product for shipping. Although there is still some concern about how certain aspects will work out, Pfeifer said employees are pleased with being able to exercise better control over product flow. Plus, their work is more interesting now.

"We know more about the product and its progress," he said. "We don't feel isolated. We really are a team."

Teamwork is one aspect about the change that production analyst Lloyd Gray really likes. "It's really drawn people together. You have to talk with each other a lot more now – become more involved," he said.

That's to Gray's advantage as it relates to his job: "I can get the orders out much quicker now."

Engineer Cook, who used to be a shop operator, is glad to see more group involvement. While making changes and coming to agreement can be difficult, "when you have a bunch of people working on a problem you have more ideas and may solve it faster."

Also, with more involvement by shop personnel in handling day-to-day production activities, Cook said he is better able to concentrate on new products. "Planning is important for our future, too."

Shop supervisor Betty Brown likes the idea of her employees taking a more active role in "controlling

their successes and failures. They've become much more interested in assuring their successes," she said.

"It's made my job more fulfilling in that the employees are more concerned about satisfying the customer."

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## With change comes growth

Do you know what the real challenge is to make JIT manufacturing a success?

According to shop supervisor Mike Wenninghoff, it's not the planning, it's not redesigning the floor layout, it's not even "getting people to believe in it."

Instead, it's coming to grips with the fact that "it's harder to hide your problems," he said. JIT manufacturing is based on low inventories, shorter intervals and

(Continued)

*BEP FOR SHORT. . . Employees who make building entrance protectors (BEP) will work in a completely redesigned area this fall. They include (left row, front to back) Mo Grigsby, Sherlyn Hayes, Sandra Beckwith, Ethel Payton, Leo Hike, Wayne Andersen, Patsy Klement, Bobbie Bishop (middle row, front), Karen Israelson, Jim Carrell, Val Embrey (right row, front), Connie Dolleck, Sue Torpy, Eberto Leal and Peggy Parr.*







## Look! continued

interdependence of working teams. If there's a flaw in the process, there is no cushion to hide it.

Wenninghoff is a supervisor of a JIT work cell in the central office connectors and building entrance protectors IBU. The cell has been in a JIT manufacturing mode since February. "You have to really take hold of it and manage it – and work with each other constantly," he continued. Continued success means never letting up on working together as "just one team" – a slogan coined by engineer Scotty Scott that's now the work cell's motto.

Employees in the work cell, about 50 on two shifts who make the 307 central office connectors, have attended teamwork training courses and redesigned their area's floor layout and work flow. Their efforts have resulted in dramatic improvements in cycle times, order intervals and product defect rates.

They have adapted to cross-training and shared job responsibilities and for the most part, said shop employee Jerrie Hamlet, they rather like the versatility their jobs now afford. "And we can get the product out faster to the customer," she added.

Co-worker Sharon Kott said the redesigned floor layout has organized fragmented operations into balanced work stations that make it "easier to pick up on defects immediately ... and stop them at the source."

Employees responsible for different stages of production now work side by side and "seem to think of each other's needs more now," Kott said.

Master scheduler Bob Nebe has noticed an impact on his job since the area initiated JIT manufacturing. "When a customer comes in and requests an order in less than normal interval time, the JIT cell now has more flexibility to meet that customer's demand" without jeopardizing the work flow on other orders, he said.

Indeed, the new work environment encourages innovation and

thinking and rethinking a better way to do the job, said Wenninghoff, adding that employees continue to work at resolving their differences and problems.

For Wenninghoff, the best part of JIT manufacturing is "seeing people grow and develop – becoming true participants."

Summarized Scotty Scott, it's seeing "just one team" become reality.

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### 80-type cabinets: Biggest move yet

Can 111 employees with widely different job functions and contrasting work environments find happiness in JIT manufacturing?

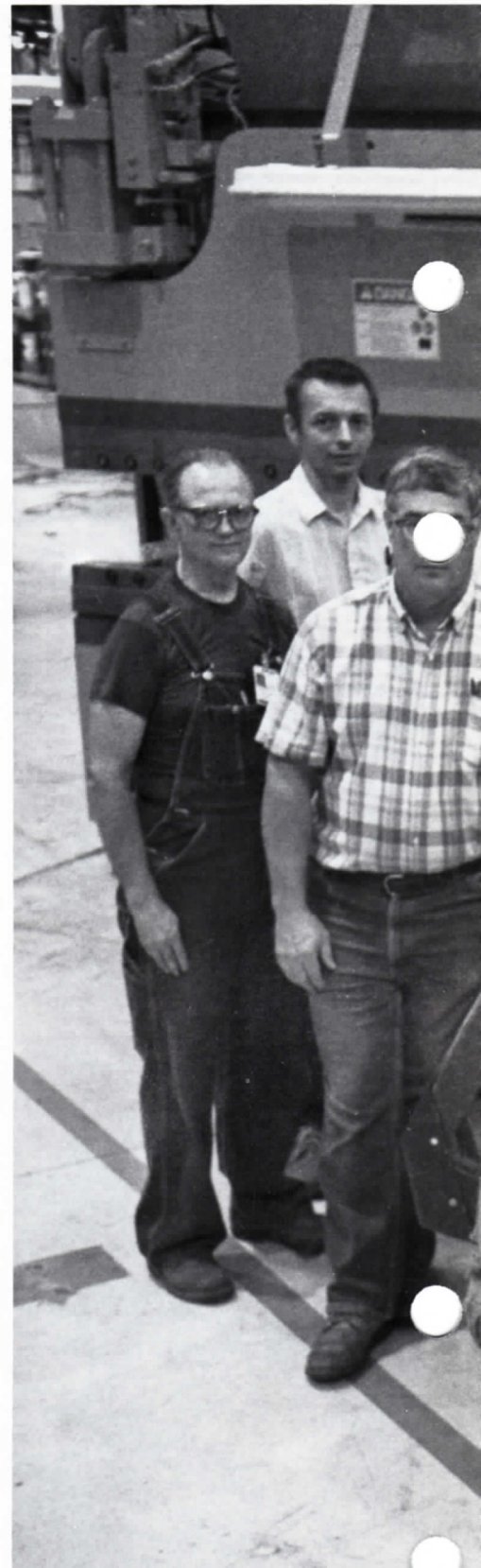
In general, the employees in the 80-type cabinet work cell would prefer to reserve judgment on that matter for a couple of months – not because they don't think it can work, but because their work area is in the midst of the most ambitious redesign effort since the Works began transforming its operations into a JIT mode.

"There's no other product that we make that is near the complexity of the 80-type cabinet," said engineer Jim Grabenbauer. The 80-type JIT cell, which is responsible for the final assembly of the cabinet, consists of cabinet assembly, equipment installation, 307 block wiring, DSX tie block wiring, Conecs activity, final testing and packing.

Outside vendors and internal Works suppliers provide literally thousands of parts to make the various codes of the 80-type cabinet, said cell employee Ron Schaaf. Schaaf ought to know. As a material handler he must keep track of all of those parts and work with scheduling specialist Steve Petersen to order parts as they are needed.

Over the July 4 holiday shut-down, the key operations involved

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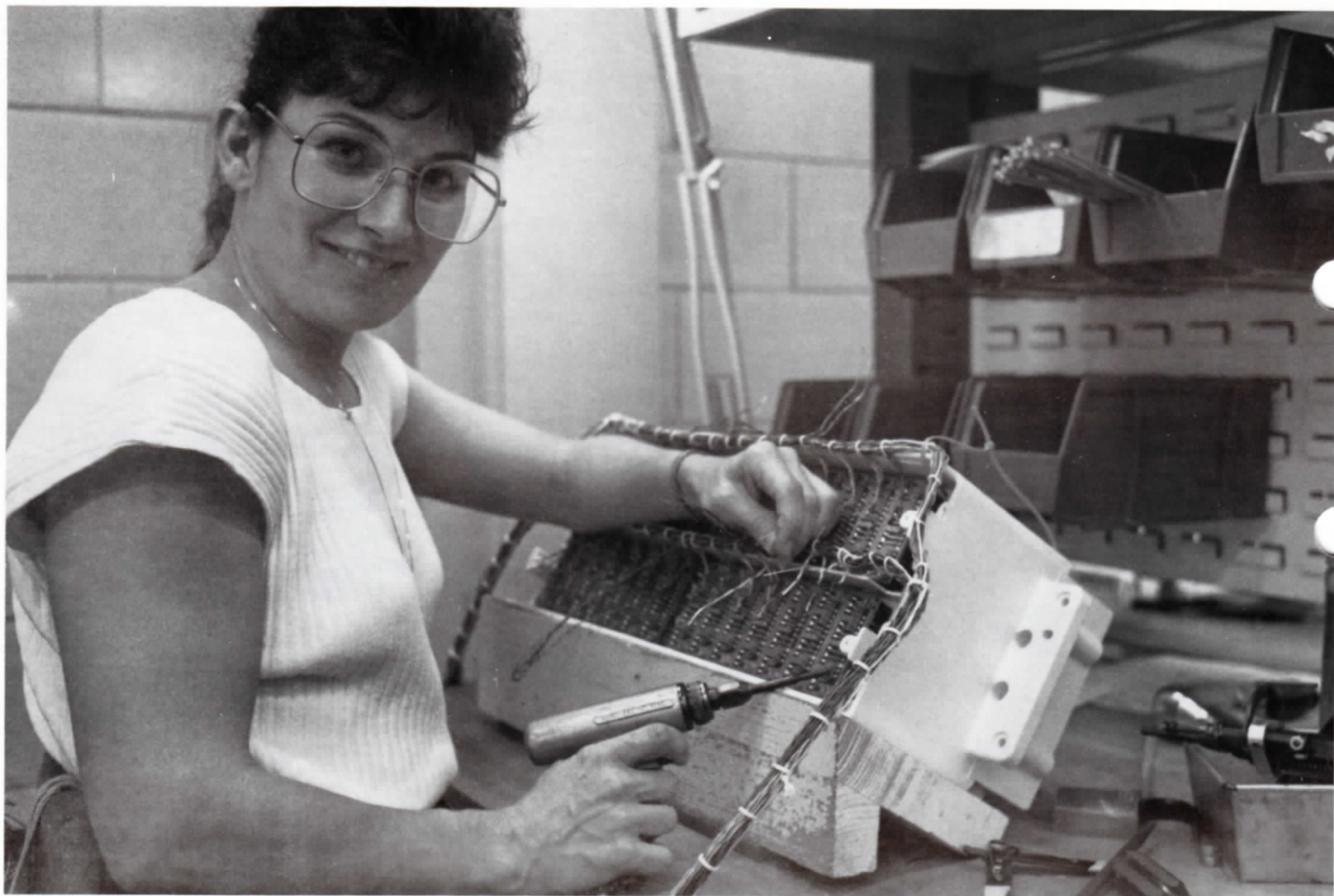






*COOPERATION IS A KEY... Members of the metal fab and DSX IBUs and supporting personnel make it a policy to share ideas and work together on problems. In the metal fab area of Building 50 are: front row, from left – Bob Smyser, Mike Craft, Linda Kros (DSX), Rick Windholz; seated in cart – Lou Kosmicki (DSX), Fran Schon (DSX); standing in back from left – Claude Welch, John La Pesh, Bill Campbell, Chuck Mann, Jim Norville, Al Jones, Ron Hartwig, Dick Runnells, Charlie Williams, Ron Schaupp and Gwen Hightshoe.*





*NOT ISOLATED ANYMORE... Members in the 841 repeater case JIT cell include Clara Hunt (top photo), Betty Brown and Lloyd Gray (left) and (above) Bob Gillam (left) and Dan Pfeifer.*



## Look! continued

In final cabinet assembly – which had been spread out in the factory – were brought together in one area. The purpose of the consolidation was to achieve “better communication, better control of inventory and quality, less material handling and better teamwork,” Grabenbauer said.

A noble effort but, as members of the outside plant cabinet fabrication IBU work cell will attest, enormously challenging.

Supervisor Dick Kusmierski said that prior to the move all employees from the affected areas attended weekly meetings to share ideas. Representatives attended teamwork training courses and a task force of employees – consisting of engineers, production control personnel, shop operators and supervisors – met to work out the nitty-gritty of floor plan changes.

Given the complexity of 80-type production and with “so many people and so many opinions” spanning two shifts, coming to an agreement has been more difficult than in some other JIT work cells, noted Kusmierski.

And now that the physical move has been made, “we’re fine-tuning a lot of the bugs out,” Grabenbauer said. The new work area will be less cramped when employees get caught up with back orders, parts for which are taking up more room than the layout allows in small-lot manufacturing.

At Westerner deadline time, the employees who make the 307 connectors and DSX tie blocks for the cabinets were working to improve their “sequencing” – making no more parts than required to meet the prescribed order of the day. Another “bug” to be worked out is

a more timely and corresponding delivery of parts from internal and external suppliers who are not yet operating on a JIT basis, Grabenbauer noted.

Not unexpectedly, the reactions of employees in the midst of such change range from opposed to the new setup to conditionally supportive. Schaaf thinks things will look better in a couple of months and suggested, “we’ll have to have patience and keep an open mind.”

Even Margie Hecker, who admitted she’s not sold on JIT manufacturing, conceded, “with a few cogs out of the wheel, I suppose it could work. You all have to work together and in this area that’s really hard to do.”

Most, like scheduling specialist Steve Petersen, are looking forward to the time when the kinks have been worked out. “In the long run it will make my job a lot easier,” he said, but first he must adjust to doing his ordering “on a scaled-down basis.”

“We’re going to make a lot of mistakes,” commented Jackie Gilreath,

“but I think it can be worked out.”

She summed up what she thinks are the important steps to assure the success of any JIT work cell project in the plant: First, “supervisors must really know their people – not just their (job skills) but how they relate to one another.” Second, “we as employees have to keep an open mind. Then we can deal with anything.”

Third, “management must be totally honest with us – say one thing and mean it.” And finally, “we have to keep the channels of communication open between each of us.”

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### DSX is already a jump ahead

The DSX area may be ahead of its time when it comes to JIT.

The area is a JIT work cell in the connectors and electronic systems IBU. Employee teamwork training and JIT-related floor plans won’t take effect until this fall. However,

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*“Supervisors must really know their people . . . and we all have to keep an open mind. Then we can deal with anything.”*

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*COMPLICATED MOVE... Members of the 80-type JIT cell are adapting to a transformed way of doing business. Among them are (top photo, from left) Bi Nguyen, Dick Kusmierski, Larry Finley and Margie Hecker, and (left photo) Jackie Gilreath and Jim Grabenbauer.*



## Look! continued

The group won't be starting from square one because operators in the area already have experience in redesigning floor plans. In fact, members of the area's QWL circle ("Quality Cross Connect") helped to restructure the area in January 1987.

Operator Trudy DeKeuster thinks department members were more than happy to work on the improved design with factory and product engineers. "We were constantly walking and walking and carrying units," she said. "We asked for a conveyer belt or a push belt of some kind." A conveyer system is now an important part of the floor plan.

The challenge is to improve the product flow, become more efficient and reduce inventory levels by using JIT principles. That's a tall order, considering the diversity of

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*"We want to show we're sincere and doing something more than just talk."*

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the area's three product lines – ranging from the series 3/4 DSX to patch cords, test sets and protectors.

Employees also are breaking new ground when it comes to communication between IBUs.

Each Monday, DSX operators Lou Kosmicki, Linda Kros and Fran Schon go to Building 50 to attend a metal fabrication JIT cell team meeting. The sheet metal fab shop produces subassemblies for the DSX units. The two JIT cells are working to improve time schedules and communication.

"They don't give us a look like 'Here they come again!'" said Kosmicki. "They also come over to our area every once in a while to see how things are going."

"It's important for the circle and the operator to go to the area where the problem originates," Schon believes. She's also working with QWL circle members to design a form that would accompany problem parts back to those Works areas that supplied them. The forms are to be filled out and returned to the DSX area reporting actions taken to correct defects.

"We want to show we're sincere and doing something more than just talk," said Schon.

"The metal fab QWL wants an operator to discuss the defects, not a section chief," noted supervisor Stan Scebold. "We don't have too much trouble working across the courtyard."

The components in these products also require special handling during the manufacturing process to prevent damage from electrostatic discharge (ESD). "We work with such small components and

we have to buy in quantity," mentioned supervisor David Svendgaard. "Some of these parts just can't be handled like most piece parts."

Because the printed wiring boards are particularly sensitive to ESD, some products are very susceptible to damage. Engineering and shop personnel are working on a plan to prevent ESD by using wrist bands, special tote pans and anti-static floor mats.

This fall, all 67 operators are scheduled to participate in the three-day adventure-based "Accomplishment Through Teamwork" training at Trailridge, followed by extensive classroom training in JIT theory. In the meantime, a small group of operators is holding informal meetings to lay the foundation for what's to come.

Operator Harvey Kriz believes he's part of a group that is extraordinarily conscious of quality – something that's essential for Just-in-Time manufacturing to be successful. Now he and his co-workers are "asking (questions about the quality of a unit) instead of letting something unusual go by," he said. "There's no more 'should we or shouldn't we?'"

\* \* \*

## DIW's vertical slice is catalyst

The small-pair DIW production area was the first IBU work area in the cable shop to switch to a JIT manufacturing process in September 1988.

What changes have come after 11 months as a result of JIT?

(Continued)



## Look! continued

Employee involvement is the rule, not the exception. Insulating line operator Bill Harlow thinks "that's the only way you're going to get the full benefit of JIT."

Truck driver Pat Moreno thinks JIT "is an improvement. It's going in the right direction but we still have bugs to work out." Activities are under way to introduce a certification program soon, designed to provide quality improvements.

Physical changes in DIW manufacturing are not as readily noticeable as in other JIT areas, however. The insulate, twisting, jacketing, reelex/rewind machines and packaging areas, located in five different areas of the cable shop, haven't been moved. Moving them into one area would not have been cost effective.

Instead, portions of those areas and the DIW area are dedicated exclusively to the production of small-pair DIW products under the JIT system. There is no centralized JIT work area and material handlers still move work-in-process between areas.

The working environment is a vertical slice, including employees from each of the processes required to make small-pair DIW wire. DIW operations and engineering manager Linda Dembowski said the vertical slice has "added to the visibility of the group... and has served as a catalyst for other departments" to work toward similar goals.

But physical changes alone are just one aspect of JIT manufacturing. Other factors contribute to significant changes in production.

Since last September, small-pair DIW inventory has been cut by two-thirds, resulting in a cost reduction of nearly \$750,000 in work-in-process inventory. The order interval has been reduced to three weeks. Shipping performance is up to 95 percent from 70 percent. Scrap is down significantly.

People "can't be afraid to take criticism" under the total employee involvement concept, said product engineer Dean Schwery. We must "do what helps the whole system and try to improve what we're doing."

Improvements have resulted from a number of changes, like the change in the job of Donald Lamb Sr. Lamb has worked on the twist-ers for 18 years, and now for the first time he is doing his own product testing. "The inspectors pick up two samples each night and we do the rest," he said. Similarly, other operators on twisting and

jacketing lines now do more of their own testing of the product.

Other improvements from changes include the following:

- Tooling changeover time on the jacketing lines has been reduced to less than 10 minutes.

- A level III operator has been assigned on each shift to oversee both jacketing and packaging, which allows for greater coordination and communication.

- Wasted footage at the end of cable reels has been eliminated to reduce the amount of scrap at packaging.

- A new signaling system on the insulating lines helps to improve response to "pull" requirements of the twisting lines.

While there have been successes in the small-pair DIW product line, most agree that there's always room for improvement.

Supervisor Chuck Meyers said,  
(Continued)

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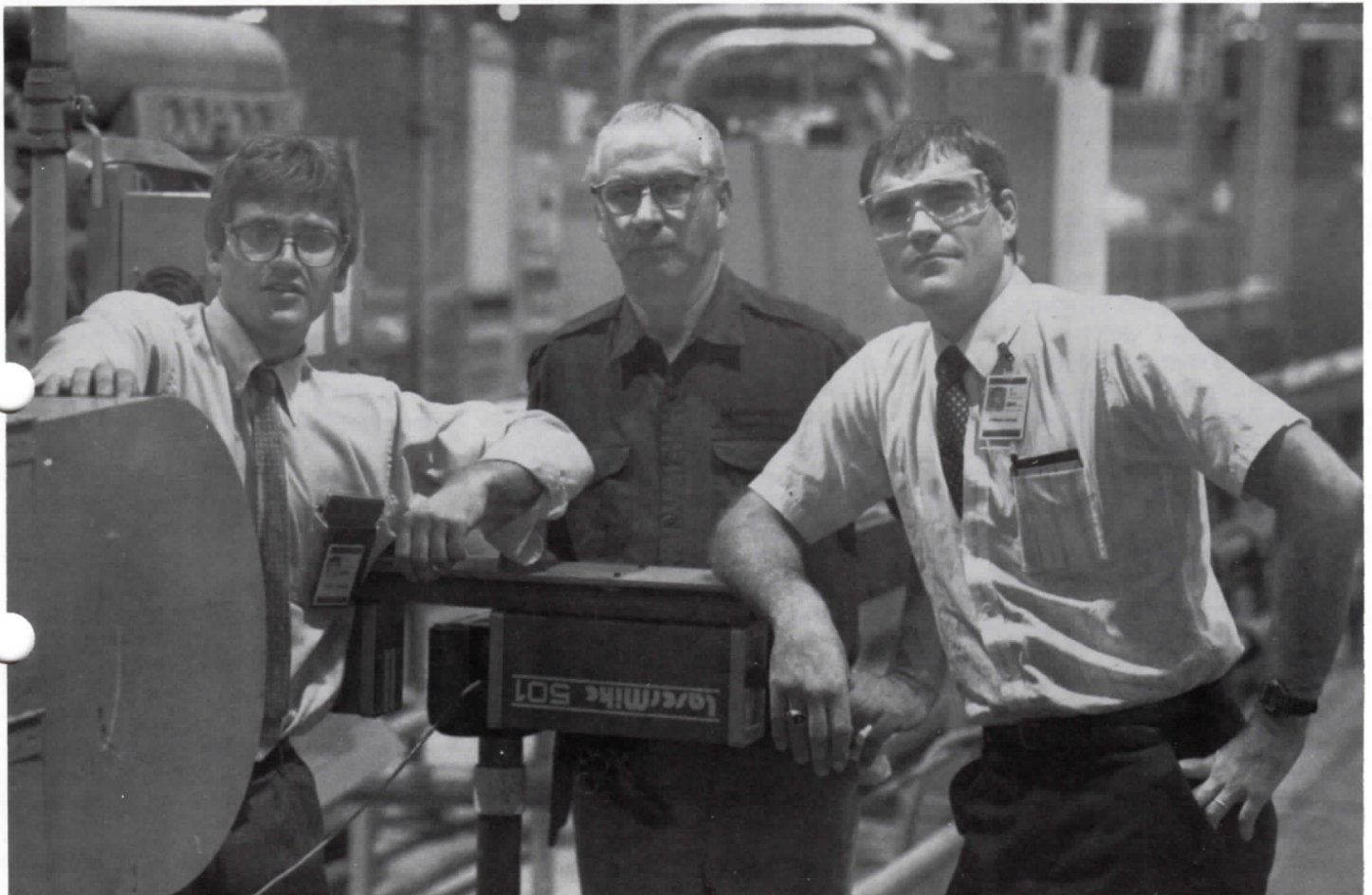
*The goal is "to do what helps the whole system and try to improve what we're doing."*

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*TEAM WORKERS... Jerrie Hamlet and Deb Palma (left and right) are part of the 307 central office connectors JIT team while (below, from left) Dean Schwery, Paul Shomshor and Chuck Meyers work together in small-pair DIW manufacturing.*





## Look! continued

"If I had to give a letter grade, I'd give us a 'B'. We can do much better, yet we're much better than average."

Reelx/rewind operator Millie Johnson said quality improvements on the jacketing lines indeed have made her job easier. Now she has fewer product tests to conduct.

Meanwhile, jacketing and packaging layout operator Steve Marasco thinks "feedback to the jacketing line from the reelx area is much faster because of JIT," and gives his personal endorsement of the plan.

"I'm a firm believer in it."

\* \* \*

### Metal fab people have their say

One person, one vote. That's the philosophy of Building 50 employees who belong to a JIT work cell in the metal fabrication and custom fabrication IBU.

Operators volunteered to participate in the IBU's first JIT cell. Eleven of those volunteers were selected by a vote of all IBU employees to be in the cell. The cell members have been challenged to improve quality, efficiency and productivity through an innovative JIT floor design that was due for completion by the end of August.

Senior engineer Chuck Mann said participation by shop employees is critical because operators "understand the process and have a better feel for the day-to-day problems."

The wide range of products made in the area – combined with small lot sizes and a variable stream of

orders – often makes for an uneven production flow. The workload can be unpredictable and scheduling of the large machinery to meet deadlines is sometimes difficult. Material handling takes considerable time and energy.

Solving the problem with all of its variables requires the input of skilled operators, engineers and managers, Mann remarked.

The sheet metal shop serves both in-house and outside customers. Two product lines were selected to be part of the JIT cell. Included are fabrication products used in the 800 and 900 series and series 3/4 DSX units manufactured in Building 30. The cell also makes shelves for 3B2 computer cabinets manufactured under the U.S. Air Force contract recently awarded to AT&T. Once this cell becomes operational, other cells are planned within the IBU, Mann said.

The cell team has called on Dr. Fred Choobineh, a University of Nebraska at Lincoln engineering professor, and Merle Seaman, a UNL graduate student, to serve as consultants in developing and introducing the plan. Works engineers Rick Windholz and Dick Runnels Sr. are responsible for drawing up the specifications required to accommodate the floor plan the team has developed.

The plan itself reflects a significant change in manufacturing philosophy, employee team members have pointed out. It used to be that machines were grouped together by operation. The punch presses were all together as were the spot welders and drill presses, for example.

As work is under way to put the new floor plan in place, emphasis switches from grouping by operations to grouping by process. The JIT cell's floor plan calls for 10 machines necessary to complete the entire manufacturing process of two product lines only. Operators will be cross-trained to operate all machines in the cell.

Sharon Foster, a spot welder in the department, said one of the biggest improvements the JIT team hopes to make involves "getting the parts to the right place at the right time." Under the old floor plan, a sheet metal product had to pass through more than 25 routing sequences before it could be shipped to a customer or to another department. Under the new plan the routing sequence remains within the 10-machine JIT cell.

"Cell members will have a lot of freedom and independence" to respond promptly to changes, predicted supervisor Alvertus Jones. The one-person, one-vote philosophy encourages interaction, planning and communication, and gives new meaning to the concept of operator responsibility, she said.

Employees in the JIT cell plan to share equally in their successes and failures. Because they will be doing both production scheduling and production, they also will assume responsibility if a deadline isn't met. Cross-training employees so they will know how to operate all 10 machines in the work cell will help to meet deadlines. The employee

(Continued)





*CAN WE TALK?... Betty Snodgrass (below) of the 80-type cabinet JIT cell shares an idea with Larry Bailey. At right in the metal fab area are Sue Dellinger and Sharon Foster.*





team also will have the authority to change and adjust, to alter and fine-tune manufacturing operations.

Just how team members plan to carry out their responsibilities is quite simple, said Amada press operator Ron Hartwig: "We discuss and then we decide on the best idea."

Welder Bill Campbell thinks employees are both ready and eager to have more responsibility in making important decisions. "For better or worse, we'll have a say-so."

\* \* \*

## BEP plan brings people together

Employees in the JIT work cell that makes building entrance protectors (BEP) could probably give quite a few "how-tos" on redesigning a shop floor layout.

They have redesigned their layout. Twice.

The plans had to be redone not because of any human error, but rather, because of some good news: Employees received word that their production schedule is being increased considerably due to growing customer demand. The employees' work cell is part of the central office connectors and building entrance protectors IBU.

Plans had to include more work stations and equipment in the same work area to accommodate personnel to be added – about dou-

ble the number of employees – said supervisor Wayne Andersen.

Equipment in on order and the new floor plan should be in place by early October, Andersen said.

"Overall, I think everyone is excited about (the new floor plan), said Linda Chollett, who works in the wiring area of the production line. Chollett is a member of the work cell's project team that drew up the plan. The team consists of six hourly workers who volunteered to be on the team and six management and engineering staff members. Membership on the team will rotate with others from the cell as JIT manufacturing continues, she said.

Although the project team worked on the floor plan directly, the final design reflected input from all of the cell's employees, Andersen said. All employees have attended team-work training workshops at Trailridge and on Works premises.

Agreement on issues was reached democratically: "We talk it out and take a vote," noted engineer Tony David.

The key goal in the plan is to "save a lot of product handling time," Chollett said.

Andersen agreed, explaining that various functions involved in making the building entrance protectors are spread out in Building 30, which "creates a lot of work-in-process and excessive material handling."

The new plan will consolidate

functions and introduce a conveyor system to move product parts to their next stage of production. Assembling, wiring and testing positions will be arranged adjacent to each other in an L-shape form. Chollett said the plan should be conducive to checking product quality throughout the manufacturing process rather than just at final testing.

Andersen is optimistic that the new floor plan will result in a "big decrease in work-in-process – maybe 50 percent or better." Investments in supplies will be cut and he is hopeful that outside vendors will comply with requests for daily deliveries.

Tony David expects to see an impressive cut in lead time – "at least cut it in half or maybe to a third of what it is today."

"Now people basically do their own thing – work at their own pace, their own speed," noted Chollett. Under the new floor plan, "there's going to be a lot of changes. Individuals will become a part of a team. No more going it on your own."

With employees working together as a team, the challenge will be to learn to resolve personality conflicts which inevitably arise, she said.

"But I think it's all going to be more beneficial. I think it will result in improved product quality, better work attitudes, quicker problem solving and certainly it's going to improve productivity."



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