

PACKARD ELECTRIC

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Packard sets goals for 1986 model change

Packard Electric's model change increases in size and complexity each year, and this year's model change will continue that trend.

"For 1986 we've added the E-K and H-car programs," said Bill Dunham, manager, Industrial Engineering. "The content of the cars is increasing, as well as the number of models within each car family. That makes

coordination of the model change more difficult for us."

This requires Packard to adhere more strictly to time schedules, and makes it harder to regain lost time if deadlines are missed, Dunham pointed out.

"The complexity of the model change adds to the potential of making errors," he said. "We must make

sure the increasing demands don't hurt our quality."

As the division expands and increases in size, communication becomes more critical, Dunham added.

"Also, we are expanding our remote lead prep program," he added. "Implementation of this will change the product line being built in the Warren Operations."

Higher volumes for September production will necessitate that Packard find and resolve production problems more quickly than ever before, Dunham said.

The following is a plant by plant summary of model change activity in the North American Operations:



Dana Street Operations

Plants 3 & 5

Plant 3's plastic molding area will have 118 new part numbers for the 1986 model year, according to Ray Dolney, superintendent. These will consist of 71 terminal holding and 47 non-terminal holding parts.

"We supply these parts for all new car lines," he said. In August Dept. 360 installed 20 new 40- and 75-ton presses using the Path Finder controller for processing.

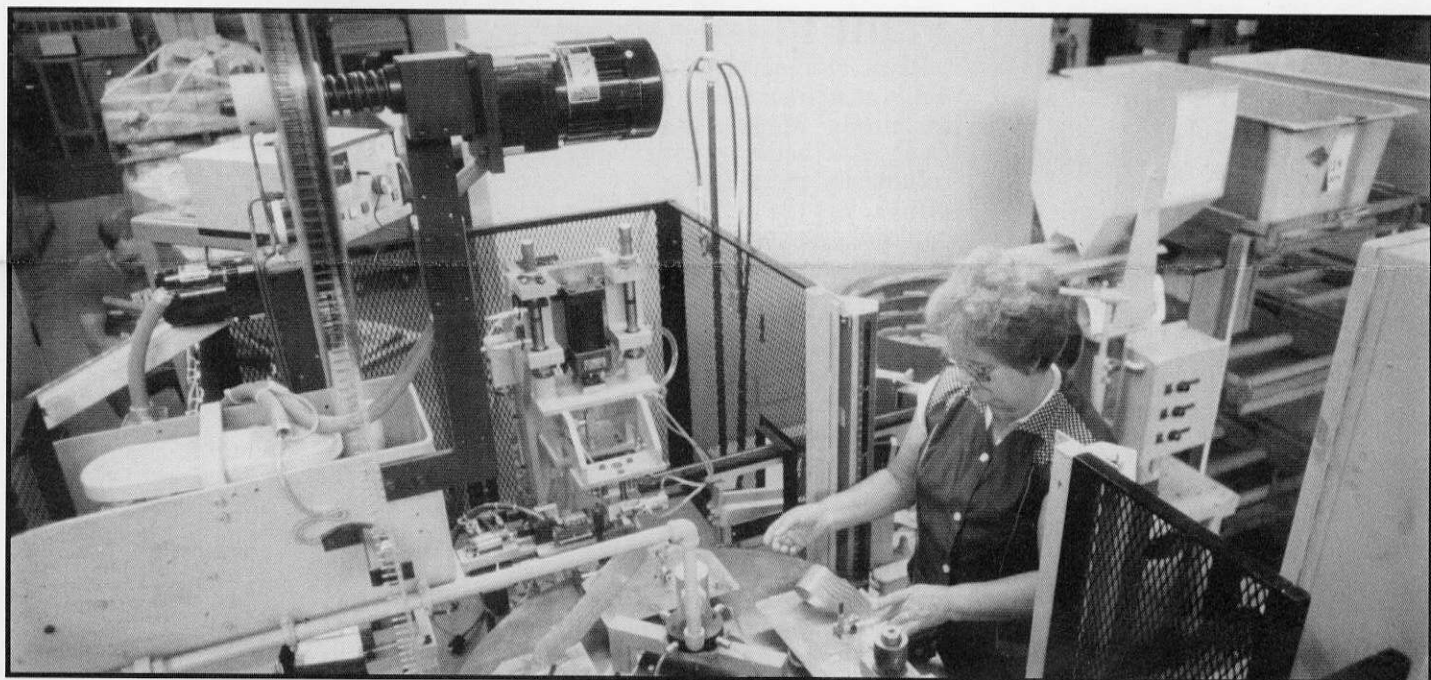
The High Energy Ignition area has a number of goals for the 1986 model year:

- to increase quality and customer satisfaction through elimination of material complaint notices due to lead integrity problems
- to improve monthly communications with hourly and salaried people
- implementation of a computerized scheduling aid
- attainment of a delivery standard of 95 percent

"Major remodeling and rearrangement of the ignition final assembly areas has taken place, with emphasis on dividing the traditional assembly area into three control areas," Dolney said. "While developing the new floor plan we also evaluated safety and material control procedures."

To create additional floorspace Plant 3 moved all existing wire storage to the cable extrusion area, controlled by I.M.S. computerized inventory. The ignition cutting area in Dept. 351 recently established a boot storage area, he added.

"This additional space was created by relocating Original Equipment Manufacture (OEM) business in Plant 8," he said.



Elizabeth Smith, Dept. 336, operates a 5 mm stitch flexible printed circuits machine for the 1986 Cadillac E-K car. The machine terminates and applies connectors on each end of six circuits

The OEM business located in Plant 3 has 83 part numbers, of which 10 are new for the 1986 model year. Plant 3 cycled the new part numbers in early August, Dolney said. OEM supplies all allied customers serving locations in California and Mexico.

"Changes in the quality system will have the greatest impact on the attitude of final assembly and cutting operators," he said.

Cutter operators have implemented control of crimp heights using SPC concepts. Final assembly operators have received training in self-inspection. Line part numbers have changed to incorporate on-line gauging. Progressive lines four and

five in the final assembly area no longer have final inspection, he said.

The Printed Circuits area will see expansion for the 1986 model year as it adds the Cadillac E-K car as a new customer. This business will require an increased workforce and the addition of four termination machines, three testers and direct packing.

"The assembly involved consists of six circuits paired into three sub-assemblies that will make up the complete E-K unit," Dolney said. "Volume will be 100,000 circuits per year."

S-10 truck circuits will undergo a complete retooling this year. All three circuits will change, and one will be produced in Dept. 334's Ro-

tary Hybrid area.

"The printed circuit lab is also working on a prototype for the new H-car multipiece circuit, which requires a preform, diodes, an eight-way connector and a robotic attachment," Dolney said.

"1986 is going to be a busy year in Printed Circuits. The new equipment and people will play a large role in this model year."

Plant 8

Plant 8 has established an Original Equipment Manufacture ignition set department for the 1986 model year. This department will build channelized ignition sets for Buick 3.0 and 3.8 liter engines, according to Ken Rambo, superintendent.

"The rubber/silicone molding area approaches the 1986 model year with no major product requirement changes," he said. "In this area we will continue working to achieve World-Class Quality."

Rambo said Plant 8 may experience various business movements later in the model year.

Packard's 'ACE' aids Warren high-tech

by Michael Hissam

Packard Electric's Alambrados y Circuitos Electricos (ACE) subsidiary in Mexico is the ace in making the lead prep strategy of the division work.

ACE specializes in final assembly of engine control, engine and power and forward lamp harnesses. It is 100 percent dependent upon Warren and Mississippi for production of needed cable, components, terminals and associated lead preparation activities, according to Jack Williams, managing director, Mexican Operations. He

added that start up of ACE during the last year "supports Packard's 'Lead Prep Strategy' for the Warren and Mississippi plants."

That strategy promotes higher technology (capital intensive) - based production of cable, connectors and terminals at Packard's United States locations. Final assembly (labor intensive) work of the components is done at cost-competitive locations such as Mexico.

Williams noted, "It is the most cost-effective final assembly option Packard has for its volume. It

(Continued on Page 4)

INFORMATION BRIEFS

A manageable mix

Can General Motors effectively juggle autos, data processing, defense contracting and robots in a well-run business?

GM Chairman Roger B. Smith thinks so, according to **U.S. News and World Report**. "You can't get to the future from the company of today," he said.

He intends for GM to integrate everything from design through production to customer delivery in a smooth, orderly fashion. The best means of doing this, Smith said, is to break tasks apart and put them together again in logical order.

Hughes to expand frontiers

Hughes Aircraft Company will explore the frontiers of its technologies and channel discoveries into applications in the defense, space and industrial markets.

Hughes researchers support this objective by devoting their efforts to areas that will advance the excellence of the products and services Hughes provides its customers.

They have emphasized microelectronics, microwave integrated circuits, information science and sensors.

Belt law working

Traffic deaths fell by a third in July — the first month under Michigan's new safety belt law, according to the Michigan State Police.

They reported 118 fatalities, compared with 175 in July of 1984.

Commenting on this trend, an official of the Michigan Coalition for Safety Belt use said, "While we recognize these figures are preliminary, we are optimistic that the trend toward fewer deaths will continue."

Domestic cars improve

A survey of U.S. fleet managers by Runzheimer & Co. indicated that the quality of domestic cars is improving.

Of 244 operators polled nationwide, 73 percent said their 1984 car quality was above that of 1983 models. Said Runzheimer, "the data show that today's domestically-made cars are steadily improving."

GMAC performance strong

Consolidated net income of General Motors Acceptance Corporation, which includes the results of financing and insurance operations, was \$238.9 million for the second quarter of 1984, reported Robert F. Murphy, GMAC president.

The improvement in earnings from insurance operations was due principally to higher investment income.

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North River Road Operations

Plant 10

For the 1986 model year Plant 10 will proliferate production of thin wall cable. Plant 10 will produce approximately 250 part numbers totaling nearly 200 million feet of cable per day using thin wall insulation, according to Scott Copeland, superintendent.

"Regular wall cable has an insulation wall thickness of .58 mm, while the new thin wall cable measures only .40 mm, which is a 29 percent reduction in volume," he said. "When several cables are bundled together as they are behind the instrument panel of most vehicles, the thin wall cable results in significant space savings."

Most customers regard this as an important advantage in using thin wall cable, Copeland added.

Manufacture of thin wall cable requires closer attention to processing parameters than regular wall cable. Brazed or cold welded splices replace twisted wire splices, and buncher tooling and practices require more precision. New extrusion dies and guiders are needed for production.

"We are adding two new extrusion lines to Plant 10," Copeland said. "These have been specifically designed for thin wall and small gage cables."

Plant 11

Plant 11's metal parts area boasts daily customer usage of 23 million terminals. Model change will see Dept. 1146 begin renovating its miscellaneous metal parts area to include the latest technologies, according to Larry Brown, superintendent.

"We must continue to meet the demand for more terminals and better quality," he said. "We have installed 10 and 30-ton pulsar presses and a 30-ton Minster Hummingbird to create a new module in Dept. 1146."

These presses can run at speeds from 1,000 to 1,500 strokes per minute. The 10-ton pulsar is coupled with a unique paper interleaving system which will lay an unbroken layer of paper between each wrap of terminals, Brown explained.

"This paper interleaving system will help solve the division's tangled terminal problem," he said.

Newly created Dept. 1105 was in its final stages of debug at the beginning of August. Dept. 1105 deals with the metal parts area's stretch wrap program.

"The stretch wrap program will ensure that all traverse-wound reels of terminals will be covered with a clear plastic wrap before being shipped to outside customers or within Packard," Brown stated. "This plastic wrap will keep the terminals from sagging during transportation, and it will provide a clean product package for our customers."

Model change for Plant 11 will also involve movement of Dept. 1155's fiber optic assembly area and Dept. 1125's molding area to Plant 8. This will create space for expansion of Dept. 1150's connector and seals area and Dept. 1156's metal insertion area.

"The connector and seals area in Dept. 1150 will add 19 machines and the metal insertion area in Dept. 1156 will add 10 machines," Brown said. "We will continue implementing Statistical Process Control in the component assembly area. We also will continue toward completing our QCC-POS videotraining program."

These programs will be nearly completed by the end of the 1986 model year, he added.

Plant 12

Plant 12's model change for the 1986 model year is a program with three elements of change, each with its own set of challenges, according to Bob Hocevar, superintendent. Changeover will begin with the traditional final assembly startups.

"For the 1986 model year we will supply 43 new harnesses, which represent approximately seven percent of the part numbers still assembled in Plant 12," he said. "With a majority of our 1986 startups already completed, we believe we are setting an example of 'excellence' in model change performance."

For the second consecutive year Plant 12 has been 100 percent "cycle reliable," meaning that the plant has built initial order quantities on all new part numbers when the customer wanted them, Hocevar noted.

"This accomplishment is a real tribute to the Plant 12 manufacturing and support group team," he said.

Remote lead prep represents the second element of Plant 12's model change activity. Last winter Plant 12 began supplying cut leads to seven outside harness assembly operations, Hocevar pointed out.

"Our first model change in this business requires that we revise 30 percent of our cut leads for 1986," he said. "To date, we have completed approximately 80 percent of this portion of our model change."

The third element of Plant 12's 1986 model change promises to be a most exciting one, Hocevar said. It involves the installation and startup of a new lead prep area as the sole manufacturer of "elementized" cut leads for the 1986 H-car.

"From a corporate perspective, the H-car program represents a sneak preview of future car manufacturing systems," he said. "This new car program features state of the art concepts such as composite body harness design, a computer based build-to-order scheduling system, Just-in-Time inventory systems and an SPC-based quality program."

A joint union-management design group consisting of representatives from Plant 12 and related support

groups developed Plant 12's manufacturing system to supply elementized cut leads for the H-car. Their design includes several innovative social and technical features, and promises to set trends in cut lead operations, Hocevar added.

"Utilizing the design team's concept, Plant 12 established Dept. 1241, which started up in July," he said. "It will employ approximately 50 people at full 1986 volumes."

Major equipment rearrangements and installations and several departmental relocations will occur for the 1986 model change. Automatic cutting capacity will increase 130 percent as Plant 12 becomes more quality and cost effective in its lead prep areas, Hocevar said.

"Our 1986 business plan indicates a need for a plant population of 697 people, which we should attain by Sept. 1," he said. "For Plant 12, the 1986 model year promises to be an exciting and challenging year!"

Plant 13

For 1986 model change Plant 13 will proliferate 1985 business packages. Two current packages have added volume for 1986, according to Bob Stassinis, superintendent.

"The fuel tank jumper area that supplies AC Spark Plug with fuel tank harnesses will see an approximate 25 percent increase in volume for the 1986 model year," he said. "A design change for this product will require an additional pre-mold, a molding application that will enhance the quality of the product by reducing the chance for electrical shorts."

Buick N-car POD business will see an approximate 20 percent increase in volume for 1986.

The thermoformer business is in the debug phase. Plant 13 plans to put four thermoformers and one sheet line into operation this year.

"Dept. 1305, the Sample Request area for prototype harnesses, will expand in September or October," Stassinis added. "It will add equipment to help meet current requirements, which have more than doubled in the last two years."



Mike Connolly, general foreman, and Norbet Bogdon, Dept. 1146, discuss the closed loop shut height system for a new Pulsar 30-ton Minster.

Plant 14

Model change in Plant 14 will emphasize continued expansion of the progressive pull-to-seat lines. In addition, the phasing out of final assembly operations will see Plant 14 focus entirely on remote lead prep, according to Merrie Lee Soules, superintendent.

"Our business continues to be supplying leads for engine and engine control packages," she said. "Our pull-to-seat, cutting and lead prep operations supply leads for outside suppliers, the branch plants and the Mexican Operations."

Pull-to-seat will double from 14 lines in 1985 to 28 in 1986. These lines will assemble 90-100 million leads with 30 million connectors this year.

"We will implement a significant amount of new technology in this area. We haven't seen the end of what is possible with pull-to-seat," Soules added. "Pull-to-seat technology is helping us lead the way in terms of what the Warren Operations can do to be competitive."

Model change will also involve complete rearrangement of the cutting areas and installation of new equipment. The new layout will contribute to effective use of that equipment.

"Striving for quality and customer satisfaction applies as much to our cutting operations as to anything else we do," she said. "Quality and customer satisfaction will help make us competitive, and those are our major goals for 1986."

Plant 14 has a number of ongoing process certification projects, including those in the sonic weld, diode index line and molding areas. All automatic pull-to-seat lines are currently certified.

"Operators on those lines perform and record their own quality checks and are responsible for their own work," Soules pointed out. "We are also taking steps with existing processes to define capabilities and implement controls."

Employee Participation Groups have contributed to Plant 14's success in the past, and will play a necessary role in helping to achieve the plant's goals for the 1986 model year.

"Plant 14's management will be challenged to continue to provide support for the EPG programs," she said. "I believe in tapping the brainpower of all our employees, and I'm pleased at the response of our people. They are helping us to solve some of the long-standing problems that would keep us from reaching our goals."

Plant 15

Plant 15 is undergoing significant change for the start of the 1986 model year, as direct hourly workforce increases from 220 to 300 employees, according to Jim Flanagan, superintendent.

Flanagan cited current volume levels and content increases as the reasons for a 33 percent capacity increase in floorspace and equipment requirements.

"An example of the increasing complexity of battery cable is the 1986 E-K harness," he said. "For the first time it requires an electrical ringout board. Final assembly work content runs more than six minutes per harness."

For the 1986 model year Plant 15 will have the use of a satellite toolroom, a computerized packout system for finished goods and a die crib, Flanagan stated.

"Delivery and quality are our top priorities for the battery line in 1986," he said. "We're expecting our greater capacity to reduce premium

freight penalties. Our goal is to meet customer schedule requirements and to eliminate premium shipping costs."

Plant 15 has made great strides in improving quality performance over the past year. Flanagan noted that Plant 15 began to integrate quality programs into its final assembly operations, resulting in dramatic quality improvements.

"The program that is least measurable over the short term, but will contribute the most to our success is the Employee Participation Group (EPG) process," he said. "This employee involvement program has the full support of both union leadership and management. It fosters employee awareness and concern about things such as quality, delivery, housekeeping and safety. It has contributed to our overall improvement this year."

Expansion of the EPG program will provide an employee involvement structure to the afternoon and midnight turns. Success in reaching Plant 15's long-term goals will depend on a high level of employee involvement, Flanagan added.

"Delivery, quality and cost will be our chief concerns in 1986," he said. "If we meet our schedule requirements on time, produce a quality product and draw upon the ideas of each employee, we will reduce the overall cost of the battery line."

"Plant 15 is looking forward to the challenge of meeting its goals and improving its performance in 1986," Flanagan concluded. "After all, you can't start without us!"

Plant 16

Plant 16 will undergo only a minor rearrangement for the 1986 model year, as it adds three cutters and 10 employees, said Bob Faulkner, superintendent.

"Our job is to supply leads for our customers - Mexico, outside suppliers and the branch plants - and at the same time to strive for World-Class Quality," he said. "With our customers in the Mexican interior it is imperative that our leads are correct, because we don't have enough turnaround time to ship new ones."

Approximately 70 percent of Plant 16's part numbers will carry over to the 1986 model year. The plant will continue to process leads for B, T, G and G-van engine wiring. In addition, Plant 16 will continue to prepare air conditioning leads for the A, C, G, N and P-cars, and the M-van. Plant 16 will also supply some leads

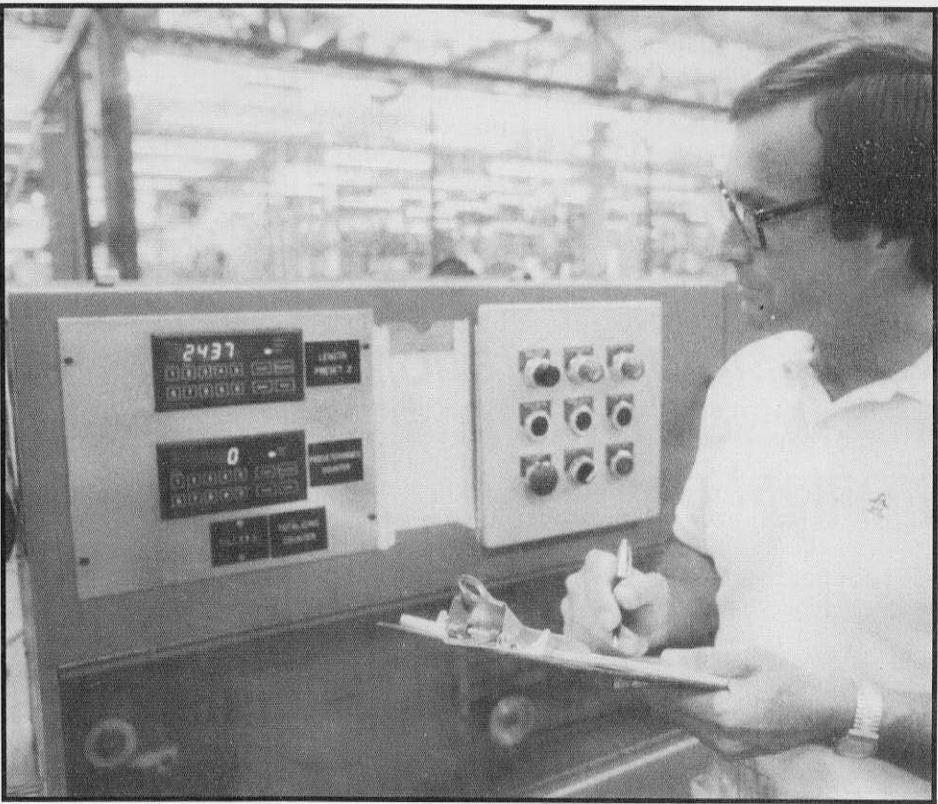


Photo: Reilly

Jim McGee, foreman, Dept. 1809, checks the control panel of one of the department's new LFT cutters.

for cross-over power and other miscellaneous assemblies.

"Our operations are fully integrated - meaning that the operators are directly responsible for their own work," he said. "We've also adopted some visual controls so operators can check to make sure their work is right."

Plant 16 has a number of its hourly and salaried people involved in Employee Participation Groups. These groups work on various projects to improve quality, productivity and safety.

"I'm proud of our EPG program," Faulkner said. "They are responsible for some of the good things that have been happening in Plant 16. They are very active."

Faulkner also cited plans for more SPC involvement as employees receive additional quality training. "We're continuing to stress quality, delivery and training," he said.

Plant 17

Plant 17 will be comprised of three major areas for the 1986 model year, including Mechanized Front Body Assembly, Remote Front Body Lead Prep and the Conduit Regrind area. Dept. 1768's Front Body Remote Lead prep has undergone the most dramatic change, according to George Chestnut, superintendent.

"Dept. 1768 phased out the final assembly business during the spring and eventually occupied the floor-

space associated with Dept 1709 when it relocated its final assembly packages," he said. "This remote lead prep area provides leads for J, F and E-K Front Body assemblies which are assembled in our Mexico and Warren supplier operations."

Dept. 1768 also manufactures leads for the S-CK truck, EK POD and some heated rear window packages for the outside supplier programs.

Plant 17's model change also included the rearrangement of the Conduit area. Rearrangement of this area will increase the plant's convoluted conduit capacity with the same number of machines.

"The rearrangement also gave us the ability to pack profile conduit into nonreturnable containers," Chestnut said. "This will eliminate the cost of shipping the reusable containers back to Warren from Mexico and our outside suppliers."

Plant 18

Plant 18 continues to supply cut leads for power harnesses used in most General Motors car models. For the 1986 model year an increase of 975 part numbers will bring the plant's total to 2,483, according to Chuck Williams, superintendent.

Dept. 1809 was established to support the new E-K vehicle business. This accommodates the division's plan to align lead prep departments by customer, Williams explained. Plant 18 has dedicated 12 additional cutters to this department, including five LFTs, which represent new technology for the plant.

"We are proud of our tremendous quality record improvement over the past year," he said. "We have been able to make this gain because our hourly and salaried team has been relentless in its pursuit of World-Class Quality."

Plant 18 will strive for continuous quality improvements. Key elements of the plant's 1986 plans include training, equipment modernization and respect for the individual.

"We will further refine the division's first Just-in-Time lead prep area using Kanban," he said. "We will also implement numerous operational improvements."

Williams pointed out that Plant 18's business is complex, with more than 400 engineering changes and 2,000 lead code changes completed in 1985. For this reason, Plant 18 will place particular emphasis on ensuring smooth build out of 1985 parts and successful cycling of 1986 business.



Photo: Kearney

Jim Cosier, Dept. 1552, operates one of the two new rotary mold machines for the battery line.

McCart:

Mississippi Operations will strive to attain greatest potential

by Beth Magee

Patrick G. McCart, newly-appointed director, Mississippi Operations, expressed confidence in the Operations' potential for excellence. In an interview with the **Cablegram**, McCart discussed conversion, technology, quality and opportunities as they relate to the goals of the Mississippi Operations:

Cablegram: What changes have you noticed in the Mississippi Operations since you were a plant manager at Clinton?

McCart: The conversion from final assembly to lead prep and component operations is the most significant change. The technology is very different. The people are still hard-working and friendly.

Mississippi is well-positioned to become truly competitive in the lead prep and component businesses.

Cablegram: You have worked at Packard locations in Warren, Ireland and Mississippi. What sets the Mississippi Operations apart?

McCart: In one respect — managing people — the job is the same. Mississippi, however, is recognized as a highly spirited organization; it is one that is not afraid to try new things. Such an environment provides a laboratory for experimenting with new technologies.

Our Just-in-Time module is a good example.

This project has tremendous potential for improvements in quality, material control, inventory, floorspace, productivity — all the things which Packard needs.

I really believe this project will provide the road-map for the Mississippi Operations to follow.

Cablegram: What are the major challenges facing the Mississippi Operations?

McCart: The biggest challenge I see in Missis-

"We must be so good that our customers are not even tempted to go somewhere else."

sippi is to gain control of material. We need to implement practices which make sense when it comes to material.

In part, this will require a change in our attitude. We all tend to take material for granted. Because there is so much around, we think it is free. On the contrary, material has value, a lot of

Mexican Operations promote support role

(Continued from Page 1)

helps us meet volume and content increases and development of the new product programs that support our U.S. workforce."

Interior locations

ACE has locations in four interior cities in the State of Chihuahua: Nuevo Casas Grandes, Cuauhtemoc, Delicias and the City of Chihuahua. "We selected cities offering a more stable population, and that means a comparatively lower labor turnover," Williams explained. "We want to be good citizens doing good things with the communities. Other than in Chihuahua City, ACE is the largest manufacturer and first of the 'maquila' (in-bond) plants to locate there."

Packard's previous experience with a plant location in Villa Ahumada—80 miles south of Ciudad Juarez and the other Packard subsidiary locations across from the U.S. border—was the first indicator that interior locations would prove successful.

Quality during the start up

Dino de Falco, manufacturing manager, Mexican Operations, credited "superior quality" of the ACE products in each location to the combination of ACE start up teams and the selection of the respective workforces. "Start up team members had the experience of working in Mexican Operations assembly plants that were dependent upon Warren and Mississippi for lead prep work—remote lead prep.

"ACE plants are concerned with being good, credible customers for Packard's U.S. operations. The start up teams realize the importance of knowing what they have, and effectively communicating back to Warren and Mississippi. They also count on the materials they receive being the highest quality possible.

Remote lead prep challenge

ACE's dependency upon Warren and Mississippi for components results in a delivery challenge, especially in the last 150 to 250 miles from El Paso, Tex. to the plants in Mexico, de Falco said. "We are working to more effectively manage the transit time. We've learned much about it in this first year; the main challenge is to maintain a shipping pattern that will stabilize our operations. On-time delivery of our parts and cut leads from Warren and Mississippi is a must for us to deliver our finished products to our customers on time."

Challenges associated with the ACE-Packard U.S. relationship, de Falco interjected, also include the development of the customer/supplier relationship. "We need Warren and Mississippi to be understanding; it will take us time to be good customers. We also have to be flexible because our customers—the car plants—want us to make changes in our products. That means ACE must reduce its reaction time to customer-requested changes. We realize that type of situation may place additional challenges to Warren and Mississippi in their roles as our suppliers."

Photo: Courtesy of Mexican Operations



Margarito Rodriguez (left) and Daniel Cruz, check a power harness at the Alambrados y Circuitos Electricos plant in Nuevo Casa Grandes.

What is it like to work at ACE?

The most outwardly visible sign is the orange smocks assigned to all new operators. Once a certain level of proficiency is achieved, the individual operator will trade for a blue smock and join the ranks of the veterans.

However, as Armando Montes, ACE-Nuevo Casas Grandes plant manager pointed out, there is more to orientation than the color of the smock.

"On the very first day, we chat with employees about the entry process and procedures. We outline the benefits they will gain by working with ACE, and their responsibilities as employees. We then move into a discussion of who Packard and General Motors are, including their products and our role in supporting them.

"Beginning with the second day, each new employee is assigned to what U.S. employees call a 'big brother' or 'big sister.' The new employee learns very carefully about the job and the importance of quality, and begins to help construct a harness under careful supervision of the veteran employee to whom he or she has been assigned," he explained.

Development of the new employee is monitored. "When a certain level of proficiency is reached, the employee receives the blue smock."

Nightmares linger, but Packard people begin again

by Patricia Reilly

On May 31, Dolores Thomas stood transfixed in the parking lot of a Convenient food store in Niles, Ohio. Less than a mile away, a curious natural phenomenon advanced toward her. When the Dept. 949 employee realized the nature of that malignant black funnel, she gaped an instant longer before she fled to the apparent safety of the grocery store.

That building was not safe enough as the tornado continued its dance of destruction through the area.

Halfway down an aisle of the store, Dolores Thomas turned to see the windows shatter and the roof blow off. Then the remainder of the roof collapsed; the tornado departed.

Most of the store's debris sparkled with a layer of broken glass. Dolores Thomas leaned heavily against a shelf, her leg pinned under the ruins. Her mother, only a few feet away, was dead.

A couple of the store's coolers lay on top of the debris, preventing rescuers from reaching the victims. Cranes eventually freed them from the rubble.

Forty-five minutes after the tornado hit, Dolores Thomas found herself in Warren General Hospital with a fractured knee and fractured ribs. After a 10-day hospital stay, she returned home.

At that point the Packard Electric/IUE Local 717 disaster relief team stepped in to help.



The Phillips family lost its home in the May 31 tornado. See how work is progressing as their home is rebuilt.

value. We need to treat it that way.

We also need to get back to the basics. For example, rapid expansion of the supplier program required an enormous effort on everyone's part. During periods of rapid expansion, fundamentals of the business sometimes get neglected. We need to re-evaluate how well we are handling the basics.

Cablegram: What prospects do you see for joint union-management cooperation within the Mississippi Operations in light of the new local contract in Clinton?

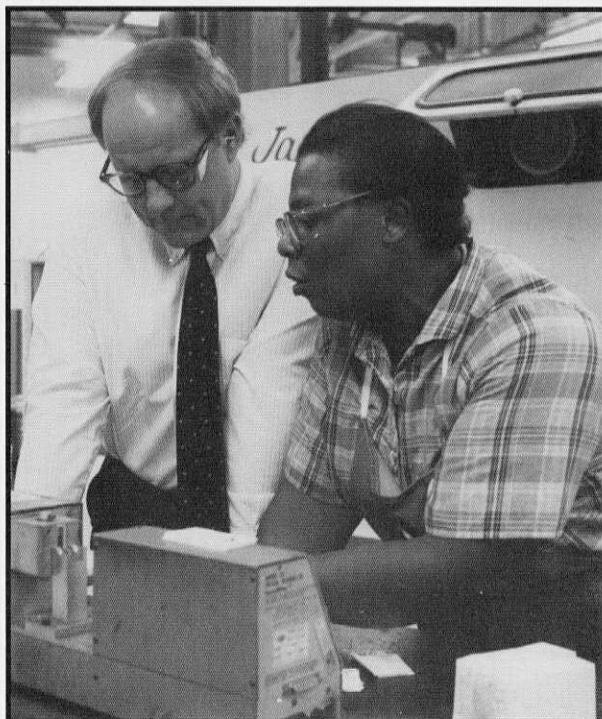
McCart: I think the prospects are exceptional. I look forward to the flexibility we have gained to jointly do the things we must do to provide quality products and deliver them on time to our customers.

Cablegram: What is management's job?

McCart: Management has a serious responsibility to represent the people who produce a product to the people who buy the product. Our job is to make sure that what our people produce is perceived to be of superior value.

Our responsibilities include providing the facilities, the equipment, the tools and the environment where a person really feels that his or her effort makes a difference.

Cablegram: What part does the individual employee play in the business?



Ruby Bell (right), wire mill operator, Dept. 2234, shows Pat McCart, director, Mississippi Operations, her job responsibilities.

Photo: Magee

McCart: The fact is that individual employees in our plants and offices make more decisions every day that affect the future of this business than anyone in this office could ever hope to make. It's the combined effect of those thousands of everyday decisions that really counts.

Cablegram: What is the role of quality in the Mississippi Operations?

McCart: Quality improvement is an absolute necessity. We just have to get better, although we're pretty good. However, the day of shipping the customer a defect is gone. That's a fact.

As consumers, we do not appreciate buying a defective product. Our customers feel the same way. They do not want to pay good money for a bad product any more than you or I.

Our quality goal should be to never send a customer a bad part — not one, even if we send him a million parts.

Cablegram: How will the Mississippi Operations support the division's drive to achieve excellence?

McCart: Packard's Mississippi Operations have great potential to excel. If we can not only meet, but consistently exceed our customers' expectations, then we can call ourselves excellent. We must be so good that our customers are not even tempted to go somewhere else — that is excellence to me.

Burgner looks at quality and Packard: It isn't magic!

Names describing Japanese manufacturing concepts include Quality Circles, Kanban and Just-in-Time inventory. Abracadabra is not one of them.

Dave Burgner demystifies Japanese manufacturing success in his recently-published book, IT ISN'T MAGIC.

Burgner, Packard's program manager for the GM-Toyota joint venture in California, New United Motor Manufacturing, Inc. (NUMMI) over the past 18 months, visited Japan a number of times to discuss and solve production problems. He based his book on his experiences while working with and observing the Japanese.

"My goal was to write a book that would describe the manufacturing concepts used in Japan, and to do that in a way that would be perfectly understood by the reader," he said. "When writing a book you can't do a poor job of communicating because you don't have the luxury of asking the audience if they understand."

Burgner began the book last fall in order to retain for Packard Electric what he had learned from Toyota and Tokai Electric, according to Dale Johnson, manager, Reliability and Quality Assurance. Johnson, a chief supporter of the project, said Burgner's personal experience with the concepts he describes and his use of an easy-to-read format strengthen the impact of the book.

"We make copies of the book available to Packard employees who have attended the accompanying slide presentation and discussion," Johnson said. "We want to stimulate enough interest to have people do something about the ideas covered in the book."

Burgner stressed that Japanese success rests on more than one or two ideas, which is why he offers no quick-fix solutions in his book.

"The ideas in the book are intended to be thought starters," he said. "Japanese success stems from a combination of several concepts."

All of the book's suggestions evolve from the "customer is king" philosophy, which is the introductory chapter to IT ISN'T MAGIC.

"Customer satisfaction, is, without a doubt, a key success factor at Toyota, Tokai Electric and other well-regarded Japanese firms," he said. "With this attitude it is easy to understand why many of these firms have been so successful outside the Japanese market."

Burgner's book also covers topics including:

- people power
- visual controls
- the Toyota kanban system
- up-front quality planning
- keeping it simple

Paying attention to detail was an overriding theme of the book.

"I'm hoping that people who read IT ISN'T MAGIC can learn from my experience," Burgner said. "If I could transfer some of the knowledge I've gained, that would be most gratifying."

Johnson pointed out that the book will help Packard plan its future by taking Japanese methods into account.

"We didn't want to give people a cookbook to follow step by step," he said. "Some of their concepts will work for us; some won't. Others we can improve upon. We want to get people to take what they read in the book and experiment with it."

Burgner concluded that authoring the book was a satisfying, yet trying experience.

"But there is a saying 'without rigor there is no reward,' and I've had a bit of both."

IT ISN'T MAGIC



Tornado contact workers kept in close touch to ensure she would get the help she needed.

"I don't know what I would have done if they hadn't been there," Thomas said. "The worst part was getting home and knowing I couldn't take care of myself. I'm used to being independent."

The Packard/Local 717 tornado relief fund provided for round-the-clock nursing care, which gradually lessened as she became more self-sufficient.

"I can't think of a way to thank people enough for the help I received," Thomas said.

Dolores Thomas is on the road to recovery.

But it is a long road, and many Packard people are still traveling it.

Packard, 717, GM help

Over the past three months Packard Electric, IUE Local 717 and General Motors have combined efforts to help more than 250 Packard tornado victims. An outpouring of generosity by Packard employees and retirees enabled the disaster relief team to provide tornado victims with financial assistance, storage of household goods, debris removal, use of temporary vehicles and counseling.

The tornado relief fund has received more than \$182,000 to date, and is expected to top \$225,000, according to Dave Hofius, divisional auditor. Packard employees and retirees donated more than \$72,000 of that figure. Employee contributions from all Ohio GM locations to the GM Care and

Share fund totaled more than \$196,000. General Motors doubled the employee contributions with a matching donation.

Tornado Relief Steering Committee co-chairmen Larry L. Haid, assistant Personnel director, and Harold E. "Nick" Nichols, IUE Local 717 shop chairman, praised Packard Electric employees and retirees who donated their time, energy and money to work together in helping provide assistance to Packard's tornado victims.

"When dealing with a natural disaster, people are called upon to give with resources they never thought they had — that includes our employees and retirees affected by the storm who had the fortitude to begin rebuilding their lives right away, and those who gave of themselves to help them. As co-chairmen we have seen that even a tragedy such as this tornado could not defeat Packard Electric people."

Many tornado victims felt strongly about the support they received, including Bill Stocker, Dept. 902, and his wife Kay: "The three words, 'thank you everyone' can never be enough to express the deepest feelings we have for all of the Packard people who helped us out during our time of greatest need. We will never forget your brotherly love."

"May 31, 1985, was the darkest day some of us in this valley have ever lived through. This ordeal shows that when the chips are down, we will be there for each other."



Photo: Reilly

Dept. 4214, daughter Jenny and son Jimmy check to



Warren Branch Operations

Plant 41

Recognizing the need to improve its quality performance and become a world-class supplier, Plant 41 has drafted a plan for integrating the quality responsibility with the manufacturing operators during the 1986 model year, according to Tom Flak, superintendent.

Plant 41 will experience a carryover year in its production of J-car harnesses, with the exception of beautification sleeving, according to Tom Flak, superintendent. This sleeving process addition to the J 2.8 and 2.0-liter assemblies will cause the relocation of every HIPS (Hybrid Integrated Production System) conveyor at Thomas Road.

"When relocations are complete we will have five conveyors - three on the left side of the plant and two on the right," he said. We have completed the J 2.8 harness changes for 1986, so we will implement rubber sleeving on that package first. We expect the first four sleeving machines toward the end of September, and we hope to begin the sleeving process on the J 2.8 in early October."

Thomas Road will replace at least two of its Moslo molds with Newbury mold machines. This change will reduce maintenance problems associated with the older Moslos, and should improve output, Flak said.

Plant 42

Plant 42 in Hubbard supplies engine control wiring for the Chevrolet Corvette, Chevrolet Camaro, Pontiac Firebird, Cadillac Fleetwood and a number of truck and van models.

According to Superintendent Paul Romer, Plant 42 has added engine and air conditioning circuitry to its Corvette engine control assemblies, which have created a 50 percent increase in work content. Two sub-assemblies are being built and then combined at the final stationary board building operation.

"Other changes for the Corvette package include the replacement of the molded-on firewall grommet with a new injectable hard-shell grommet," Romer said. "We have also added several greased connectors."

The volume of Cadillac engine control business has decreased for the 1986 model year, causing transition of final assembly from the HIPs conveyor to stationary boards. Sub-assemblies for the Camaro/Firebird 6-cylinder package have been converted from HIPs support to the stationary board classification, Romer added.

"These changes have decreased the number of paced-line jobs and increased the number of non-paced jobs," he said. "We're expecting this to result in reduced operator turnover and improvements in quality performance and operating costs."

Plant 43

Plant 43 at Thacher Lane has begun 1986 production as one of the division's larger plants, with more than 700 people employed at the plant, according to Chuck Sop, superintendent. For the 1986 model year 14 assembly lines will produce engine control and engine "combo" harnesses.

"Plant 44 supplies us with 98 percent of the half million leads we use daily," he said. "The leads get here

one shift prior to use. We also keep a one-day supply of components, which are routed to us through Plant 44."

New product lines and constant construction present a quality challenge to the plant, Sop added.

"Our people are making that quality happen," he said. "I'm very confident that 1986 will be an even better year for our quality."

Plant 44

Model change at Plant 44 in Austintown will involve movement of the Cadillac C and Buick N-car packages from the Victoria Road building to the new Thacher Lane facility. Rearrangement of the cutting and lead prep areas at Victoria Road will occur after Sept. 1 as a result of later buildout dates for some Cadillac, Oldsmobile and Buick lines, according to John Sefcik, superintendent.

"Model change is proceeding on schedule," he said. "Because of high summer volumes, we have had to build the 1985 and 1986 model year wiring assemblies simultaneously for periods of time. This has posed a challenge to all of us."

In July Victoria Road installed cutting and lead prep equipment in temporary locations to help meet this challenge. The rearrangement should be completed by mid-November, Sefcik added.

Upon completion of model change, the Victoria Road facility's assembly business will consist solely of the Pontiac N-car combo wiring assembly. The rest of the facility will be devoted to cutting and lead prep operations subdivided in three separate modules.

These modules will support the following final assembly packages:

- 1) N-car module: Pontiac N at Victoria Road and Buick N at Thacher Lane
- 2) Combo module: Chevy A/X port fuel injection and Cadillac C at Thacher Lane
- 3) C-3 module: All C-3 business at Thacher Lane

"There will be approximately 484 production hourly employees working at the Victoria Road facility," Sefcik said. "We are projecting a very sparse midnight turn as we work toward a two-shift operation."

In accordance with the business shifts, Victoria Road will have fewer final assembly jobs available, but more cutting and lead prep opportunities. Some of these jobs include machine taping, molding, automatic cutting, regular cutting, stand-up splice, dip soldering and P.P. Baird.

Plant 45

Model change at the Cortland main plant will undergo a 100 percent rearrangement in its transition from final assembly to cut lead supplier. Plant 45 has completed approximately 70 percent of this rearrangement, according to Jon Ferguson, superintendent.

"The bulk of the transition took place from April through July of 1985, with 130,000 of the 150,000 square feet rearranged," he said. "We began supporting two Mexican assembly plants, started up the Fowler Street facility and cycled into the 1986 model year almost simultaneously."

Cortland will complete the current transition in December, with L-car installation beginning in January or February, Ferguson said.



Regina Kwlecinski, Dept. 4433, inspects terminals as they come off the conveyor. Plant 44 installed new cutting machines for the 1986 model change.

Plant 45's four major lead prep units include:

- Fowler Street
- Rio Bravo (Olds/Buick C and H-cars)
- A.C.E. (Pontiac A 2.5 electronic fuel injection)
- L-car (future)

"Our goal is to become the best cut lead supplier," Ferguson said. "We want to be used as the yardstick for measuring World Class Quality."

Plant 46

Although recently designated Plant 46, the Fowler Street facility will remain a part of the Cortland plant unit. It will become one of the four final assembly plants supplied by the Cortland main unit, said Jon Ferguson, superintendent.

"Fowler Street will utilize non-paced assembly for 100 percent of its products," he said. "It will use a daily pull 'material delivery system' from the Cortland main plant."

Fowler Street will complete its rearrangement in October. This will involve approximately 50 percent of the facility's floorspace.

"Fowler Street's goals for 1986 are to perfect the zero reject philosophy and to establish a personal relationship with each of its customers," Ferguson added.

Toolrooms

Model change for Packard's tool rooms will be directed toward improving customer service through better quality, cost and delivery. Developing quantifiable, objective measurement criteria in each of these areas will be a first step in that direction, according to Dave Bishoff, superintendent.

"Our engineering support groups will be working toward further development of CAD/CAM (computer aided design/computer aided manufacture) and other computer-based equipment to help reduce costs and improve our quality," he said.

Rearrangement will continue in Dept. 952, with completion expected

by January. Dept. 958's High Technology Toolroom is moving into Phase II of its four-part project, with an estimated equipment and facility investment of almost \$2 million in 1986 alone, Bishoff noted.

"The machine centers and related equipment will truly be state-of-the-art, and will involve a high level of computer sophistication," he said. "Also, the Dept. 956 tool room, located in the Engineering and Research building, will undergo extensive layout revisions."

Twenty-four apprentices began their programs in June; the tool rooms also hired 12 new journeymen tool and die makers.

"We anticipate adding more people in 1986 as the Warren Operations continues its transition to lead prep and component manufacturing," Bishoff said.

Maintenance and Construction

Maintenance and Construction support of the model change effort has involved the completion of 783 new boards by Dept. 515's board building area. Dept. 515 also provided manpower and material to revise 175 boards in the Warren Branch Operations, in addition to building 175 carrier boards for branch plant line relocations, according to Jim Love, manager, Maintenance and Construction.

"All board line starts for the Warren Operations took place on schedule, although customer demands required many starts to begin early," he said. "The board building areas worked closely with the Methods Lab and the individual plants to assure timely build of all board requests."

The machine build area readied 320 pieces of equipment for model change, including: automatic cutters, LFT CS-21 cutters, a regular cutter, auxiliary equipment, lo-profile splice stands, lo-profile solder pots, grease machines, tape dispensers, Orimprer power supplies and SOM presses, Love said.



Mexican Operations

The 1986 model change presented several challenges to Packard Electric's Mexican Operations, according to Jack Williams, director. Extreme volume increases throughout the 1985 model year combined with vehicle content increases and new vehicle programs necessitated the addition of production facilities in Chihuahua, Casas Grandes, Delicias and Cuauhtemoc.

Each of these facilities required the establishment of management teams, operating philosophies and operations procedures capable of maintaining production in Mexico's interior.

"In line with our divisional forward plan, all of these interior plants are final assembly only, with all lead preparation done in Warren, Ohio and Brookhaven, Mississippi," Williams said.

In addition to the facility additions, the Mexican Operations engineering group took responsibility for preplanning all forward lamps, rear bodies, engines and power assemblies for the 1986 model change. Instrument panel and engine control preplanning was provided by the divisional Methods Lab in Warren, Williams said.

"After model change, the Mexican Operations methods lab, industrial engineering and process engineering will have full responsibility for plant support, model change and engineering change coordination," he added.

Conductores

Plant 3100, Conductores, supplies nearly 100 percent of all allied General Motors rear body assemblies. Model change for 1986 centered around the addition of several lines to produce N and H-car rear body wiring, according to Luis Baca, manager.

"Currently we plan to rearrange the cutting and lead preparation areas to incorporate a centralized operation, including the installation of a MRP store for improved machine utilization and inventory control," he said. "We are also planning to install a methods lab in Conductores, which will have responsibility for coordinating the model change activities in Conductores, Villa Ahumada and Casas Grandes."

All of these facilities produce rear body and/or power harnesses.

Rio Bravo I

Plant 3200 is undergoing a major change in its product line. For 1985 Rio Bravo I was the primary source for corporate forward lamp harnesses. In order to meet the divisional forward plan of building engine control harnesses in Mexico, the decision was made to establish Rio Bravo I as the center of operations for engine controls, according to Haven Jenkins, plant manager.

"Based on this, we set in motion a plan to relocate all forward lamp business to two new facilities in the interior of Mexico in the cities of Delicias and Cuauhtemoc," he said. "Upon completing this transition, Rio Bravo I will house 16 lines of engine control harnesses and six lines of crossover power harnesses."

These six lines will produce the E-K car crossover power harnesses, which are the largest assemblies produced in the Mexican Operations. They involve more than 5,000 seconds of work content per harness. The Warren Operations will provide all lead preparation for Rio Bravo I, Jenkins said.

Rio Bravo II & V

This model year will bring a major change to the manufacturing facilities and processes in Rio Bravo II and V. The product will undergo changes for quality improvement and the introduction of new option content, according to Chuck Cunningham, plant manager.

"For the second year of Volkswagen Golf production, VW will introduce power mirror, door lock and window options in October," Cunningham said. "In January they will introduce a 'Promo' model. The power business represents additional work content for Rio Bravo V, while the Promo harness designs are minor variants of existing harnesses with no total volume impact."

Relocation of the VW business to a new facility will provide sufficient floorspace to consolidate all operations in one location. In 1985 the VW business utilized four separate facilities to meet customer requirements, Cunningham said.

"Rio Bravo V is currently a partially-completed facility in the Antonio J. Bermudez Industrial Park near Conductores (Plant 31)," he said. "It will eventually encompass 130,000 square feet and will house nine HAC lines, three or four slots of stationary boards and a full process lead prep area."

Currently all lead prep is done on regular cutters and presses. By March all but 17 percent of the wire will be automatically processed with CS26-SG111 cutters, Cunningham said.

"We have increased harness assembly capacity to provide reaction capability compatible with VW's history of frequent engineering and schedule changes," he added.

Rio Bravo III

Rio Bravo III will be the only non-allied facility to go through the 1985-86 model change without a new facility or major process change. The plant has made extensive internal revisions to accommodate product changes, package consolidation and material flow improvement, according to Armando Puentes, plant manager.

"Product changes include: introduction of a new 50-way booted wedge lock bulkhead connector system for IP and headlamp dash, sealed in-line connections between the engine and head lamp dash harness and incorporation of a fuel tank jumper into the Chrysler LeBaron body harnesses," he said. "We will change all 16 through 20-gauge leads in the IP to thin wall cable. This change impacts about 90 percent of IP leads and will require introduction of new cable specs, terminal part numbers and revalidation."

Chrysler has a full process lead prep area containing OTP automatic cutters, presses, molds and die cast.

"Our major program for 1986 is to improve material flow through better utilization of our cutter capability," Puentes said. "We will do this through additional cutter die availability, better planning and methods within the press, mold and die cast areas and utilization of an MRP store."

All packages are currently up and running, with excellent quality results based on internal audits, Puentes said. RBE III currently produces battery and engine harnesses for Chrysler E, K, and H body styles, and IPs for the K-car as well as body and head lamp dash harnesses for H-cars.

Rio Bravo IV

Rio Bravo IV will occupy new floorspace for 1986 because the NUMMI business has exceeded current capacity.

"We have leased an additional facility known as Rio Bravo IV-B to provide us with 42,000 additional feet of floorspace," said Jim Walker, plant manager. "The new facility will house final assembly only, with the lead prep operations in Rio Bravo IV-A. This situation provides new challenges for the production and material control and manufacturing organizations to operate remote lead prep under a Japanese Kanban system."

A similar change has taken place in the lead prep operations. After starting with three automatic OTP cutters, Rio Bravo IV-A is now equipped with 22 OTP Japanese-style machines, Walker said.

"Sumitomo Electric and the cutter manufacturer provided significant operator training assistance," he said. "We are planning for final assembly to match the legal output capacity of the NUMMI plant (250,000 vehicles per year) on a two shift, five day basis."

Adoption of Japanese processing and operating principles with much attention to detail has been a significant learning experience for all involved.

"Quality harnesses for our customer have resulted from adherence to plant rules, and attention to detail," Walker said.

Cableados

Cableados is involved in a major product realignment for the 1986 model year. For the 1985 model year Cableados housed 40 assembly lines: 20 produced instrument panel harnesses for the J, F, and A-car, and 20 produced various engine and power harnesses, according to Jim Rase, plant manager.

"For 1986 we have relocated the engine and power business to a new facility in the city of Casas Grandes. This makes room for the installation of the N-car instrument panel lines and the M elementized base dash harness lines, as well as the MRP store for cut leads and components," he said.

Brookhaven supplies all of Cableados' cut leads for the 1986 model year, he added.

Interior

The Mexican Operations are experiencing much growth in the number of facilities being operated.

"In December of 1984 we opened a new facility in the city of Chihuahua, manufacturing engine control harnesses for A-car 2.5 liter engines, J-car 1.8 liter engines and S-truck 2.5 and 2.8 liter engines," said Dino de Falco, manufacturing manager, Cableados and the interior operations. "In February we began production in a pilot facility, followed by a new plant in May in the city of Casas Grandes, producing power and engine harnesses as well as front body harnesses for 1986."

In April Rio Bravo I transferred forward lamp harness manufacturing to a new facility in Delicias. In late May a new plant in Cuauhtemoc opened to produce forward lamp harnesses previously manufactured in Rio Bravo I.

"By December of 1985, Chihuahua will house 14 lines of engine controls, Casas Grandes will have 26 lines of engine and power and Delicias will have 24 lines of forward lamps," de Falco said, and Cuauhtemoc will have 13 lines of forward lamps, and additional capacity for nine more lines of forward lamps and/or IPs."

Reliability and QC

The Mexican Operations intends to provide customers with the best quality product built in the world. In accordance with this, the Mexican Operations has established an operating philosophy encompassing all functional areas of the organization, according to Jim Albrecht, manager, Reliability and Quality Control.

"By the end of the 1985 calendar year, 100 percent of all products produced in the Mexican Operations will be electronically tested to ensure circuit integrity," he said. "Feedback systems incorporating on-line repair and continuous operator training are in effect to ensure that we do not pass any defective material from one operation to another."

The overall plan also includes repair by replacement of entire circuits. Electronic test fixtures incorporate making part functional test holders, where feasible, as well as air operated scribes which positively identify any harness which has passed the final assembly test.



Mary Carmen Hernandez, utility operator, Cableados, uses the ALRO (At Line Ring Out) system to perform a full-function electronic test on a 1986 Oldsmobile C-H Instrument panel harness.



Mississippi Operations

Plants 21 & 24

"The 1986 model year promises to be exciting and challenging for us," said Bob Morlan, superintendent, Plants 21 and 24.

Plant 21 in Clinton, Miss., completed initial cutting for all except one 1986 package by the end of July. The 7,386 lead codes for the 1986 model year represent a 16.5 percent increase over 1985.

"We have experienced not only an increase in the quantity of leads, but the 1986 C and E-K programs have increased in complexity as well," Morlan said. "These packages have increased our use of seals, pull-to-seat terminals, thin wall cable and fuseable link molding."

A training program will prepare cutter operators for Plant 21's first year with all cutting departments integrated. This year Plant 21 must relocate portions of its cutting operations into Plant 24.

"This will be one of our biggest challenges as the component business pushes its way in our back door," Morlan said. "One of those cutting departments in Plant 24 will be our first attempt to utilize Just-in-Time concepts for lead manufacturing in Clinton."

Plant 22

For the 1986 model year Dept. 2240's tool room will add an RBI inspection machine as the high speed

punch press area converts to automated inspection, according to Gary Thrush, superintendent.

"We're in the process of trying to get another one," he said. "By Sept. 1 we will be totally control charting critical dimensions on all terminals we have requirements for, and we will be able to make die adjustments accordingly."

Plant 22 also plans to implement additional SPC programs.

Plant 23

Model change for Plant 23 in Brookhaven will be significant this model year with the addition of over 1,000 new lead codes for 1986, bringing

the total lead codes to over 7,000, according to Ed Zuga, Plant Manager.

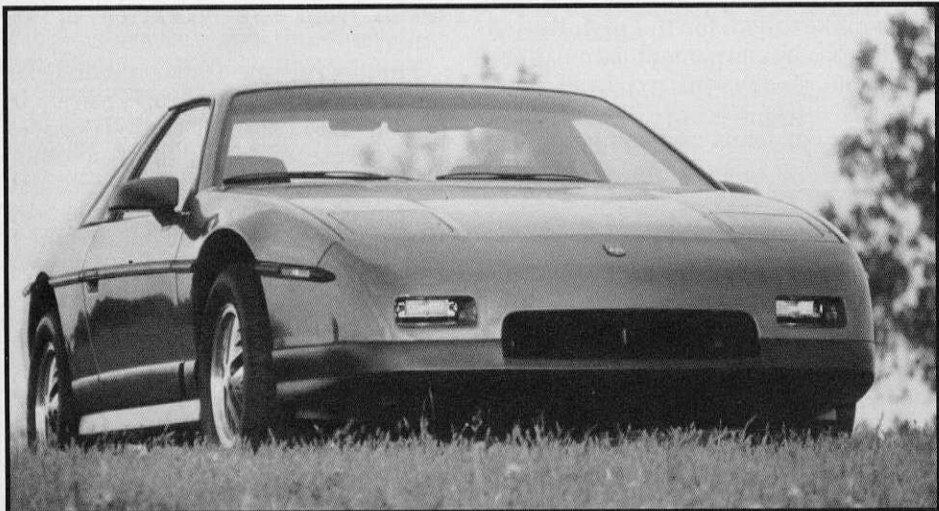
"For 1986 we're adding the H-car business," he said. "Our production will also involve two stage crimping, thin wall cable, and cut leads for port fuel injection." Brookhaven will also add six additional "Cutter Bank" cutters to the operation for 1986 requirements.

Brookhaven will supply cut leads for 90 percent of the division's forward lamp harnesses and 40 percent of the division's instrument panel business, Zuga added. Brookhaven currently cuts leads for 72 packages representing 351 part numbers in nine locations requiring approximately 3.5 million leads per day.

Pontiac 1986 lineup features sporty new styles



GRAND AM



FIERO



TRANS AM

Pontiac's lineup will be sportier than ever with the introduction of 1986 models. Some of the offerings include:

Grand Am - the popularity of Pontiac's highly-successful Grand Am may increase with the addition of a sporty four-door model, introduction of a sophisticated SE series and a host of new desirable features throughout the line. The all-new SE series will be the Grand Am's premier attraction, and it promises to be a distinctive cut above competing entries. Available in sedan or coupe body styles, the SE is a sports enthusiast's model.

Upgrading of new models, new levels of performance, and fresh looks increase Firebird appeal for 1986. Once again in 1986 there are three models from which to choose: the highly-styled, good handling and fuel efficient Firebird; the highly-contented, sophisticated Firebird SE; and the legendary American performance car, Trans Am.

The Pontiac Sunbird has a fresh look and a new GT model for 1986. There are three series from which to choose: the four-door sedan and wagon body styles, the Sunbird SE two-door coupe, hatchback or convertible styles; and the sporty Sunbird GT trim can outfit all models except the wagon.

Pontiac Fiero - the best-selling two-seat sport car in America, is making evolutionary changes, including a host of exterior and mechanical updates as well as an expanded list of comfort features throughout the line. For 1986 Fiero is available in three models - Coupe, Sport Coupe and SE Coupe.



SUNBIRD