

Systems & Services Division  
Johnson Controls, Inc.

# Monitoring *The Field*

July, 1981  
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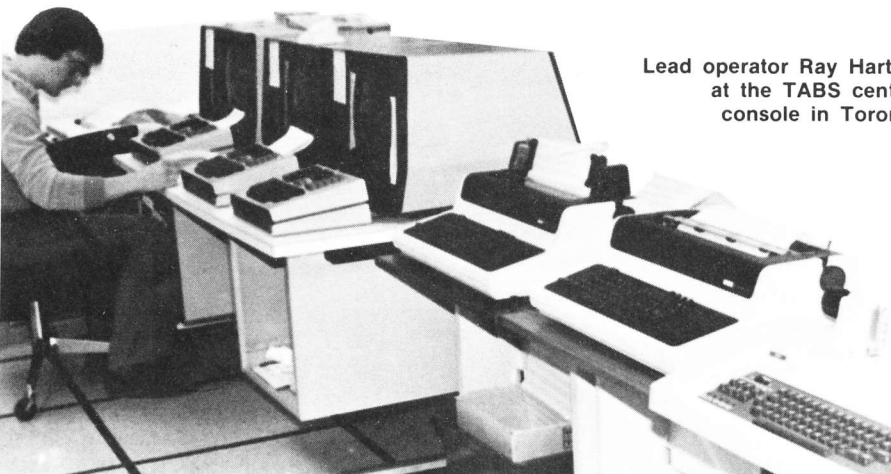
## TABS system expanded in Canada

Canada's Time-shared Automated Building Service (TABS) nerve center in Toronto has been upgraded from a JC/80/35 to JC/80/55. The additional capacity of the larger system will allow Canada to sell more TABS points to more customers. It also provides the ability to add more customers quickly. Incoming TABS

orders continue to increase and our customers are benefiting from the reduction in energy and operating costs. TABS-Canada in Toronto provides remote, leased telephone line monitoring of building operations in Toronto, Montreal, Hamilton and London. Expansion to other cities is planned in the near future.



Laurence Kerr, TABS operator, Doug Murray, system representative, and Reg Barsoum operations supervisor, observe the first operation of the new TABS system. The changeover to the JC/80/55 took place without a hitch.

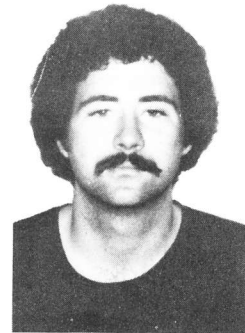


Lead operator Ray Hartley at the TABS central console in Toronto

## A Samaritan saves a life

It began as a normal work day and ended in the saving of a life.

Tom Hasty, an electrical foreman in our Philadelphia branch, was



running a JC/85/40 installation at the Penn Mutual Life Insurance building. All of a sudden he saw and heard a commotion. A man had collapsed. A

crowd gathered but appeared panic-stricken and did not seem to know what to do. Tom hollered for someone to call an ambulance. The man had no pulse and was not breathing.

Tom began attempts to get the man breathing and his blood flowing until paramedics arrived. The man was rushed to the hospital, stabilized and taken to the coronary care unit, where he later recovered.

Tom had received training in cardiopulmonary resuscitation (CPR), one of the most effective means through which a trained layman can sustain the life of a heart attack victim.

### *Inside this issue*

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## BOMA show exhibit draws good reaction

The Building Owners and Managers Association (BOMA) held their 74th annual convention June 21-24 at Vancouver, B.C. BOMA members who attended were reportedly impressed with the Johnson Controls demonstrations of our JC/85/10 and the EPAK programming package, designed to calculate energy savings potential.

While many other exhibitors were displaying low-end energy management systems offering limited fea-

tures and expandability, the JC/85 demonstration provided a refreshing alternative.

Using an operational system connected to a large screen auxiliary monitor, Johnson Controls product specialists from Milwaukee were able to show potential users the superiority of a closed-loop, full function system. The benefits of upward expandability and qualified local branch office service were also stressed.

Many owners of existing buildings were attracted to the EPAK demonstration because of the need to make their buildings more energy efficient. Most were unaware that such a sophisticated service was available to aid them in making wise equipment decisions.

The convention ended on a cheerful note when the sun came out in Vancouver on the last day of the convention, after 57 consecutive days of rain.

## Fire symbol standards adopted

The National Fire Protection Association (NFPA) recently released Standard 172, symbol standard for commonly used fire protection equipment. NFPA 172 is the culmination of several years of work by a committee of U.S. and Canadian experts headed by Lou Davit of Central Installation Engineering, Milwaukee, and Arn Quakkelaar, formerly manager of CIE.

The NFPA symbol technique uses a building-block progression, with simple geometrics representing a device class. The symbols concur with International Standards Organization (ISO) symbol elements and were recently accepted by ASHRAE as the firesafety symbols for their Chapter 34 Standard.

## Students gain insight to multiple projects management



Harry Peddicord, Mid-Atlantic regional installation manager (left), discussed the practical aspects of multi-projects management with the six employees from Canada who attended a seminar in Milwaukee during June.

From left are, Harry Peddicord, guest instructor; Michel Lecuyer, project coordinator, Ottawa; Albert Horman, contract sales engineer, London; Win-on Yau, engineering manager, Edmonton; Doug Cross, project coordinator, Ottawa; Dave Harrison, service superintendent, Vancouver, and Andrew Mueller, application engineer, Toronto branch.

The seminar focused on efficient management of numerous average-sized projects, rather than one long-term large installation. Fifty branch people attended.

One of the prime benefits of the seminar resulted from the case study

homework assignments where groups of employees from the various branches were able to exchange ideas on how to organize material and labor for a number of smaller jobs.

## Hermans testifies for government

As a nationally recognized expert in the field of air and water balancing,



Darrel Hermans was called upon by the U.S. government to testify as an expert witness on behalf of the government. The case was heard at the Federal Courthouse in Honolulu, Hawaii. Darrel is manager of our Milwaukee-based Fluid Engineering Services Division. The outcome of the case has not yet been determined.

### Monitoring The Field

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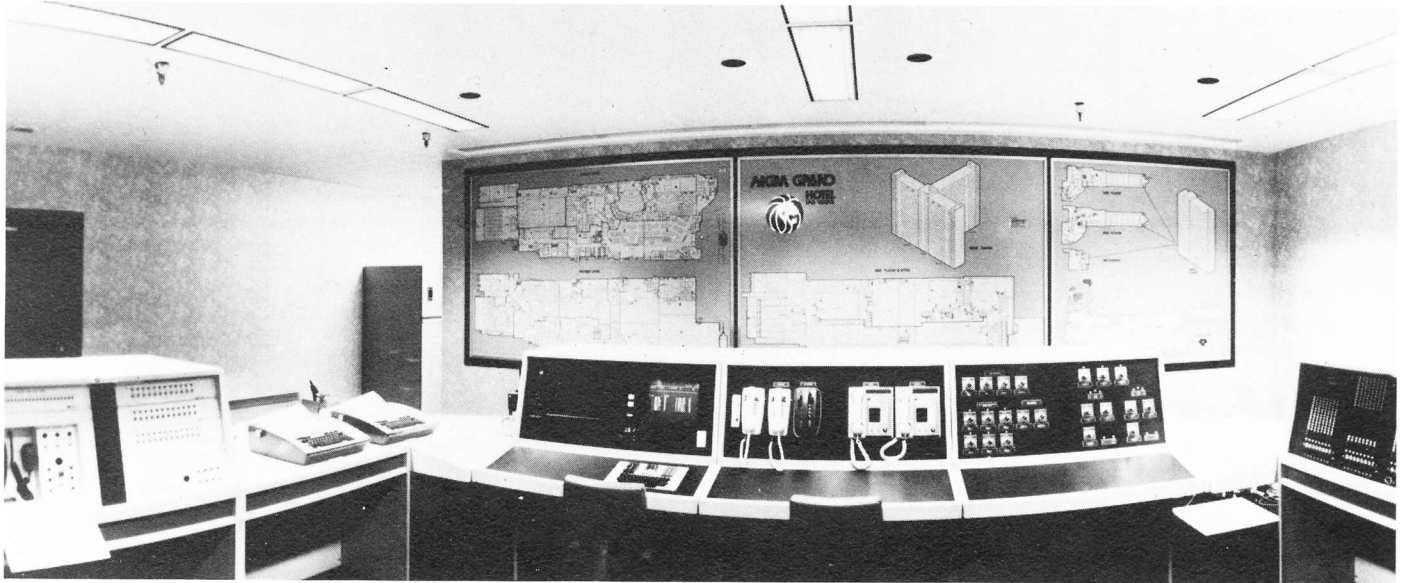
**Managing Editor, Mary Beth McKibbin**

**Contributing Editors:** Joe Bartoletti, TABS; Lou Davit, Installation/Engineering; Dale Hawley, Service; John Levenhagen, Counterline; Patricia Ludwig, BAS; Terry Meinholdt, APS; Bob Stahl, ATC; Diane Wagner, Quality Assurance; Richard Walker, Federal Energy Programs.

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JOHNSON  
CONTROLS

# MGM Grand Hotel — Las Vegas: Johnson Turns Job Around in Five Months



On November 21, 1980, a tragic, early morning fire ravaged the MGM Grand Hotel in Las Vegas. But by the end of July, the 2,165-room hotel is scheduled to reopen as the safest hotel in Las Vegas.

A Johnson Controls fire management system will be monitoring and controlling the entire complex (see MTF, March, 1981). The JC/81/35 (Underwriters' Laboratories listed model of the JC/80) was installed as a joint venture by the Los Angeles and Sacramento branches. Since February, personnel from the two branches have been working at least 12 hours a day on the job site, with support from the regional office.

Nine pipefitters from Las Vegas, Los Angeles and Denver installed more than 150,000 feet of tubing. They completely renovated all fan systems serving public areas and installed temperature controls in more than 300 zones, an impressive number of zones for a hotel.

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#### Who's Who on the MGM-Las Vegas project:

Project Manager: Scott Grill, Los Angeles  
Project Engineer: Reon Onstine, Sacramento  
Regional Coordinator: Larry Teague, PCRO  
Appl. Engineer: Dana Johnson, Los Angeles  
Appl. Engineer: Larry Deputy, Phoenix  
System Rep: Tom Hoffman, Los Angeles  
Project Accountant: Dorothy Colburn  
Draftsperson: Camille Bornkamp  
Pneumatic Foreman: Jim Rollans, Las Vegas

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More than one-and-a-half million feet of wire were installed with such precise uniformity that it is difficult to believe there were 180 electricians working on the site.

"It's one of the best installations I've seen, and I've seen hundreds," said Ed Adamczak from Milwaukee's System Integrity Department. Ed was in Las Vegas to verify the installation and operation of the system and fire alarm display panels.

#### Thorough testing

In mid-June, the Clark County (Nevada) Fire Department began testing the JC/81 system. They were very impressed with the operation of the system, especially the clean, neat wiring of the equipment and expertise demonstrated by Johnson Controls personnel. One fireman was overheard saying, "They have one helluva system here." In spite of the torturous testing by the fire department, the system responded with surgical dexterity.

#### Work to continue

After the hotel opens on July 30, our work will continue because Johnson Controls has been awarded the contract to expand the JC/81/35 system to include the new hotel tower which was under construction at the time of the fire. A similar system will be installed by the Sacramento branch at the 986-room addition to the MGM Hotel in Reno.



Film star Gene Kelly will star on a closed circuit TV show at the MGM Grand when it reopens this month. But he won't be dancing — he will be telling guests about the hotel's \$5 million computer that detects and reacts to fire, smoke and ventilation problems. He is shown here rehearsing for the program with the JC/81.

A major press conference was held at the hotel on July 1st to unveil the new system. With representatives from all three major TV networks watching intently, Reon Onstine, project engineer, Sacramento branch, and John Taylor, regional technical supervisor, demonstrated the JC/81 for the media. Segments of the film were shown on network TV news the weekend of July 4th.

## PNB plugs into Johnson Controls

When the Philadelphia National Bank was told it would be cheaper to buy an entire new EMS system rather than expand their old one, they decided to "pull the plug" on their IBM System 7 and investigate other means of control.

All the bank wanted to do was add a remote building with 300 points, to be connected to the original 250 points on the bank's operations center. This would have required hard-wiring to tie the remote points back to the minicomputer.

When the new system was put out for bids, the bank decided to invest in a JC/80 from Johnson Controls. By using existing interface and wiring, the JC/80 system cost only \$20,000 more than the original IBM System 7, and it controls more than twice the number of points that the IBM system originally had controlled. And of course the JC/80 is totally expandable.

### ... so does the BOC

A similar situation occurred in Seattle, Washington where Robertshaw had installed an MLS 400 in the Bank of California building. The system was unplugged in early 1981 and replaced with a Johnson Controls JC/85/10, reportedly because of what was characterized as "unacceptable Robertshaw support services."

## Everything you ever wanted to know about the BAS competition

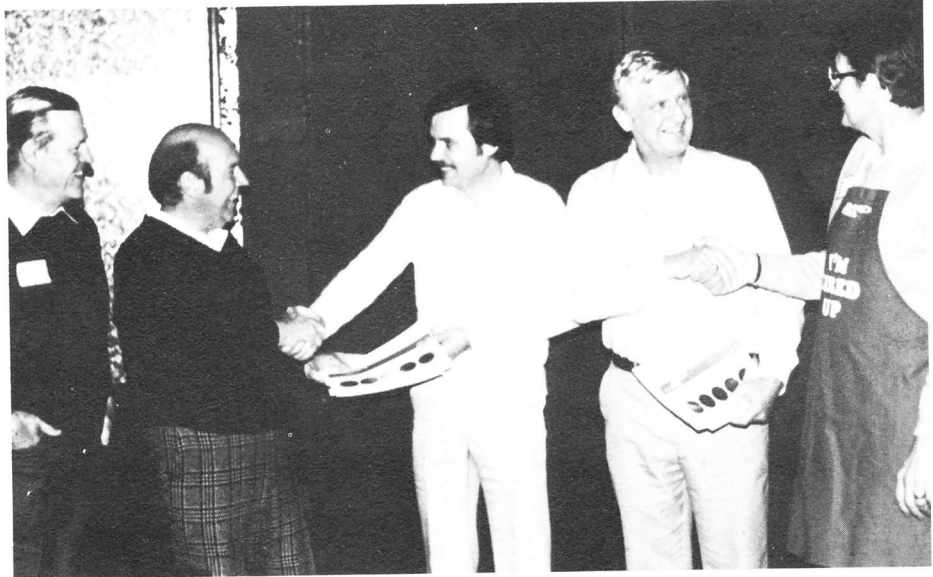
The **BAS Competitive Reference Manual** has been distributed to the field, one copy to each U.S. and Canada branch and regional office.

The main purpose of the manual is to enable you to use your time more productively. It can serve as a convenient, quickie reference to the total capabilities and specific system/product offerings of our BAS and energy management competitors. In addition, it can also serve as a training tool for new employees and as an aid in writing specs or proposals.

Our traditional competitors, Honeywell, MCC Powers, Robertshaw and Barber-Colman, along with approximately forty "other" competitors are analyzed from both corporate and technical viewpoints.

The information contained in this manual is a compilation of data collected from various sources: specs,

## Northeast region presents sales goals achievement awards



Two branches in the Northeast region, Boston and Buffalo, achieved an outstanding five sales goals during 1980. Those present at the award presentations were, from left, Bruce Ashenfelter, vice president and assistant sales manager; Jim Wilson, Northeast regional manager; Bob Galdys, Buffalo branch manager; Gene McNally, Boston branch manager, and Ron Caffrey, vice president, Marketing.

In the course of attaining five sales goals each, both branches contributed greatly to the total Northeast regional effort which resulted in their being 43% higher in total sales than during the previous year. Boston, the top U.S. branch for 1980, was number one in the country for total sales, total service sales, TABS (number of points sold), number of JC/85's sold, and Counterline total volume.

proposals, sales and technical literature, D&B credit reports, and internal correspondence. Your input and assistance will insure its current credibility. Maintenance will be the responsibility of the BAS Marketing department. We feel confident that this manual offers a solid base of competitive information. Use it and let us know if it meets your needs. Look for it in your branch. It's sure to be on this summer's "best seller" list.

### Software agreement

It is important that all branch personnel who work with JC/85/40 software be aware of the requirements of our software license agreement with Texas Instruments. BEIMS standard 44-1.08, "Owner Acceptance," explains the use of Form 6473 (BAS Software Agreement).

## VIP Financing

The next time you need a **financial expert to support your sale**, and are unable to immediately contact your JCFS representative, try using **Vendor Information Point (VIP)** service. The JCFS VIPs handle a variety of financial transaction functions to help support your sale, such as:

- Supplying pricing information.
- Initiating the qualification process.
- Referring callers to experts in the areas of tax and government transactions.
- Expediting final financing approval.
- Supplying status reports on financing in process.

Our branches **east** of the Mississippi River can call Barbara Evans at (415) 772-4674.

Our branches **west** of the Mississippi River can call Linda Wanegar at (415) 772-4675.

# Product Application

## PIC points you should know

- A second **PIC videotape training film** (#129) has been sent to each branch office. The film includes information on installation, cabinet, rough-in, verifying system operation, and the factory computerized test panel. The first PIC training tape (#128) covered computer ordering.

- **VAV can be done with PIC!** Some "not so obvious" and "hard to conform" PIC system configurations are covered in Section VIII of the PIC technical manual (a new section). VAV control, sequencing, cascading switchover, outside air reset of discharge, outside air reset of mixed air and humidity, as well as  $\Delta T$  settings for floating differential switchover are included. The information was sent to the person in each branch who attended the PIC training seminars in Milwaukee, and it should be shared with others in the branch.

- **Velcro attachment** . . . . located on lower back of PIC . . . . **peel off** cover layer to expose the sticky area of of velcro patches on back of unit **just prior to mounting**, not before. Press firmly on bottom when mounted.

- **New connection instruction** . . . if you recently designed a PIC system and asked for "low limit protection of the cooling coil," you might end up looking for connection instruction, Page 13 in Section VI of the PIC technical manual. Page 13 shows how the piping is executed on the PIC system to perform this function. It was recently distributed to the branch PIC representative.

- **Doors with windows** are now available from Milwaukee to fit the ENC-1000 cabinets. The code number for these 20" x 20" doors is ENC-1000-105, part number 24-3512-7.

### RIGHT:

Cora Perkins used a computerized test panel to perform final PIC system calibration in Milwaukee. She is adjusting minimum outside air setting and reading pressure on the CRT. Adjustments are set according to branch order requirements and the computer does not allow any PIC system to "pass inspection" without meeting the requirements.

## Calibration tips for T-9110, T-9111

### Do not . . .

. . . **do not** attempt to calibrate the T-9110/T-9111 on the T-9000 series calibration kit.

. . . When connected to an operational system, **do not** adjust the set point regulator to bring the output pressure of the controller to the mid-point of the controlled device spring range.

. . . **do not** use a T-9000 series controller as an input to the T-9110/T-9111.

. . . **do not mistake** reset wind-up or wind-down for output drift. If the system is shut off, the output of the controller will continue to integrate down to 0 psig or up to 20 psig in an attempt to return the controlled variable to its set point

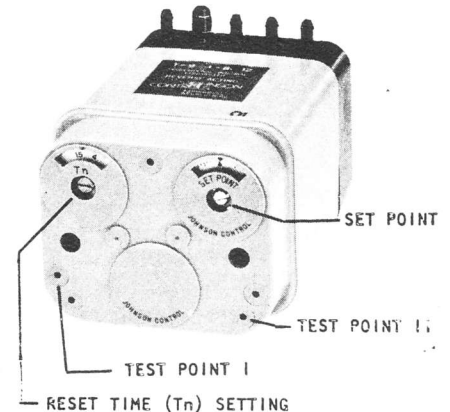
### Do . . .

. . . **adjust the set point chamber pressure** (hypodermic needle test point No. I for T-9111 or direct acting T-9110, or test point No. II for reverse acting T-9110), to the output pressure of the transmitter when it is at set point.

. . . **adjust the reset action time** ( $T_n$  setting) to between 4 to 15 minutes per repeat.

. . . **start system.**

. . . If output response is sluggish, **gradually increase response time**



(lower  $T_n$  setting) until cycling occurs. Reverse the procedure until cycling stops. Stop, then restart the system to insure that the system will be stable at startup.

. . . **check transmitter output.** If not equal to the desired output, note the difference. Then change the set point pressure on a one-to-one basis to make up the difference.

**Example:** If transmitter output is 1/2 psi below the required output, increase the set point pressure 1/2 psi.

### Remember . . .

. . . the T-9110/T-9111 proportional-integral receiver-controllers are some of the simplest devices currently being manufactured. Simplicity means easy calibration, reliability and easy troubleshooting.

Additional information about these devices can be found in engineering reports 367A and 447, section I, supplement V.

## Equipment cross reference

Did you know that the Counterline Catalog contains a cross reference guide that lists substitutions for almost any device you may encounter? Beginning on Page 184, the 31-page list includes all competitive devices, both present models and, in many cases obsolete devices. The Johnson replacement is then listed. **Obsolete Johnson devices and their replacements are also listed.** In most cases a complete Johnson code number is listed for the replacement device.



## Service Notes

PROFESSIONAL SERVICE SELLS MORE . . . this fact was again proved by **Sam Traughber**, service foreman in the **Fort Wayne** branch. Sam sold a \$51,000 contract for ATC and IC<sup>2</sup> to the business manager of the local school district . . . due to Sam's conscientious service work in the past, the contract for a school addition was awarded at a VERY NICE PREFERENCE. Relationships such as this that our field service personnel build with owners and managers substantiate the importance of their sales contributions, which are significant to the branch success.

\* \* \*

*CPM Agreement Schedule #21 for AIR FILTERS is now available from the Milwaukee Stationery Department. Ask for Form 7021.*

\* \* \*

Branch orders for **COPPER TUBING** . . . the policy of branch direct to designated vendor ordering began in 1972 and is intended to maintain standardization and maximize company benefit from the total Johnson purchases represented. Branch offices are to order copper tubing only from the sources listed in sales memo 295 (6-1-81). A chart listing copper tubing weights and lengths is included in the sales memo.

\* \* \*

*An article published in Club Management magazine tells how a country club saved 15-20% a year in utility costs after contracting for a CPM with Johnson Controls, Denver. The article tells what we do for the club and quotes the club manager who stresses the importance of regular service. You can order article reprints (#81-55AR) from Milwaukee, 19-4201.*

\* \* \*

The Service Sales department in Milwaukee has negotiated a **master service agreement** with **Service Merchandise Company**. SMC is a chain of 110 catalog merchandise showroom stores, with headquarters in Nashville, Tennessee. The agreement involves separate accounts for thirteen SSD branch offices. One of the selling points when negotiating this agreement is the fact that scheduling and executing CPM work is standard practice in Johnson Controls branch offices.

## Service Standards

The following new or revised branch service standards were distributed to the field in June.

- Manual contents
- 49-1.1-1, CPM agreement forms, listing
- 49-2.1, Use of CPM estimating summary sheet, Form 6259
- 49-2.1-1, Use of applicable tax on estimating summary sheet
- 49-2.3-1, Cost data, JC/85 CPM agreement cost factors
- 49-4.1-1, Introduction to service agreement management
- 49-4.1-2, Use of CPM agreement planning worksheet, Form 6257
- 49-4.1-3, Use of CPM agreement summary, Form 6023
- 49-4.1-4, Use of service assignment planning sheet, Form 6026
- 49-4.1-6, Use of CPM SMV report, Form 6024

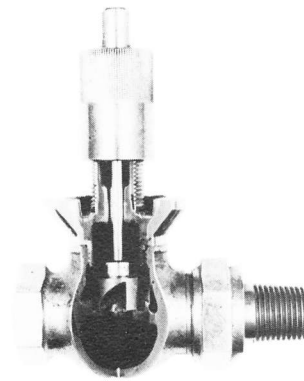
## Cliches come true in Boston

There are many cliches associated with commencement, such as it being a very pregnant time and a time of beginning. Kathleen O'Loughlin confirmed the cliches.

Kathleen is the wife of **Steve O'Loughlin**, service mechanic in our **Boston** branch. Instead of attending his wife's commencement as the top graduate from the Tufts University School of Dentistry, Steve spent the day June 12th getting to know his new-born son.

There was to be no marching in triumph at the commencement ceremony for Kathleen. She was at the hospital giving birth to her first child. Although she missed the academic highlight (she was class president and valedictorian) she said "it was the best day of my life."

Kathleen's mother stood in for her daughter at the commencement ceremony, accepting Kathleen's diploma and a \$1,000 prize from the alumni association, the highest honor bestowed on a graduate. A university vice president read Kathleen's valedictory address to the 163 other graduates.



## Mini Valve Tool Kit

A number of branches have asked for more information about the mini valve tool kit. The kit is currently being used in about 30 branches. Mechanics who have already used it have found it to be extremely useful and much less cumbersome than the large valve reseating kit.

It can be used with standard Johnson cutters to cut the seat on all small Johnson valves up to 3/4" seat (cutters are not included in the kit).

The kit uses the valve stuffing box as a guide and has a feed screw feature that applies pressure on the cutter.

To obtain more information or to order the kits, contact NBH DEVELOPMENT, N79-W16188 Community Drive, Menomonee Falls, Wisconsin 53051, phone (414) 251-9073.

The price list is \$59.95 (one to four kits); \$53.95 (5 to 9 kits); \$47.95 (10 or more kits). Prices do not include shipping charge. The kits are in stock and can be shipped immediately.



**Kathleen O'Loughlin and her one-day-old son. She donned her graduation cap for the photo.**

## CPM/MIS Phase I complete

At the beginning of April, all existing CPM contracts were converted from an accounting/management system originally designed for construction work to a new automated system designed specifically for CPM. This event marked the completion of the first phase of a multi-year project to provide the branches with the tools necessary to sell, manage and execute CPM contracts.

**The objective of the Phase I project** was to create a base of data about CPM contracts that can be used for future enhancements and provide more meaningful information immediately.

The new **Management Information System** incorporates established "Business Information Codes" and "Product/Service Codes." Repair service is reported separately from scheduled maintenance service. In order to build this new base of data, new Contract Information Summary and Estimating Summary Sheet forms have been designed. The automatic renewal feature has been eliminated to ensure that all contracts will be renewed with the information needed for the new system.

### Immediate benefits to the field are:

- 60-day holding period, after the renewal date, to capture late-charges which were formerly applied to the new contract year.
- 60-day delay in printing the Complete Job Report to include late charges and provide better job analysis.
- Ability to request the frequency of printing the Contract Detail Report which assists in identifying improper charges.
- 90-day notice to inform the branches of upcoming renewals.
- Redesigned reports which show estimated and actual costs in the new CPM categories.

To assist the branch offices in complying with the requirements of the new MIS, **new SPI's have been issued.** (SPI 41-300 is an index which identifies the SPIs for CPM.) Each branch office has been supplied with a CPM Phase I training manual for reference when using the new forms and reports. Questions about CPM Phase I should be directed to the regional service sales managers or the CPM "hot line" in Milwaukee, extension 4721.

## D.R. CUATT has his own operating room



Don R. Cuatt, BAS specialist in the Systems Integrity Department, Milwaukee, had his own private "operating room" while working at Immanuel Medical Center in Omaha, Nebraska. Don was making repairs to a JC/80/45 fixed head disc. An absolutely clean atmosphere is required when working on these discs. There can be no contamina-

tion from any small particles, especially cigarette smoke. The reason for such stringent precautions is that the heads literally "fly" on an air cushion created by the spinning disc. This air cushion "space" is only 80 to 100 micro-in. Any small particle will disrupt the cushion layer and the disc will become a "\$20,000 anchor."

## R. D. Wilson speaks out on EBM

*Heating/Piping/Air Conditioning* magazine estimated that the installed value of nonresidential air conditioning will surpass \$5 billion in 1981. *HPAC* presented the market forecasts for 1981 for various segments of the industry by presidents and top executives of leading manufacturers. The five people interviewed included Richard D. Wilson, vice president and general manager of SSD, who commented on the automatic controls industry. Following is an excerpt from his interview.

## Conservation is best source; controls are key



By **RICHARD D. WILSON**,  
Vice President and General Manager,  
Systems & Services Div.,  
Johnson Controls, Inc.,  
Milwaukee, Wis.

... The control business has long been recognized as a highly cyclical business because of its major dependence on new construction. This is no longer so. "Repair, replacement, and retrofit" in existing buildings now has taken dominance over "design and install" in new buildings. Inflation in the costs of construction, financing, and energy has assured this fact.

In summary, the world is in readiness for great strides forward in energy conservation disciplines in 1981. Building owners and operators recognize the need, governments support it, and control companies are ready to respond. With no relief in sight for high costs of energy, we at Johnson Controls see the coming year as one of growth well in excess of inflation for our industry.

# What's New

## in Milwaukee

**JIM DOWEIKO** has transferred to Central Installation Engineering in Milwaukee. He works on computer related systems, especially TABS support. Jim joined the company in 1965 and has been with Control Center Systems Group and BAS Marketing in Milwaukee.



**DON WINBLAD** is also new in CIE and handles pneumatic/electric installation matters. He came to Milwaukee from the Chicago branch where he was a project engineer. He joined the company in 1976 as an electrical superintendent in the Los Angeles branch.



**JIM BOTIC** is manager of Software Engineering, with responsibilities for software design, maintenance, and revision levels. Jim joined our company in 1972 and has participated in advanced development groups which resulted in the JC/80/45 and /55 and JC/85/40 systems. He is currently completing his thesis for his doctorate in computer engineering.



**GEORGE DAVIS**, SSD staff accountant, has assumed responsibility for monitoring the branch bonus accrual, records and reconciliation. George will interface with branch operations regarding accounting problems. He joined Johnson Controls in 1963 and has held various positions within the Accounting department since then.



## in Canada

**DICK GEE** has been appointed BAS marketing manager for Canada. In addition to his previous responsibilities as BAS marketing manager, he has assumed the APS marketing responsibilities formerly held by Mark Fairley. This change is in keeping with the recently announced merger of BAS and APS in Milwaukee.



**MARK FAIRLEY** has been appointed BAS engineering manager for Canada. He has assumed the "system integrity" duties that were formerly part of technical services in Canada. Mark and his group can be contacted by Canada branches that need assistance with hardware or software after an order has been obtained.



**ASHRAF ALI** has been named manager of software development for Canada, with responsibility for managing the production of software. He joined the company in 1975 and his most recent position was that of supervisor of software development.



**HARRY PEDDICORD** is the regional installation manager for the Mid-Atlantic region. He succeeds Scott O'Gorman who was appointed sales manager for the Washington, DC branch. Harry joined the company in 1975 and has been a project engineer and project manager.



## in the Regions

**BOB HASMAN** is the BAS manager for the Mid-Atlantic region. He succeeds Mike Shehadi who resigned from the company. Bob joined Johnson Controls in 1968 in Rochester and was a sales engineer in Harrisburg before being promoted to BAS manager.



**NORMAN MACLEAN** was appointed BAS manager for the Northeast region. He had been the Northeast region's APS manager and will continue to perform those duties. Prior to that he worked for Standard Electric Time Corp.



**PETE HENKLE** has been appointed systems sales manager for the Pacific Coast region. He is responsible for all contract sales marketing for ATC, BAS and APS. Pete joined the company in 1963. In addition to positions as regional engineer for the Mid-Atlantic and Pacific Coast regions, he was San Diego branch manager.



**ERIC KARL** has been appointed APS manager for the Central region. He joined Johnson Controls in 1977 after graduating from DeVry Institute. He had been APS application engineer for the Central region.



**BILL HOFFMEISTER** will be the regional installation manager for the Southeast region, replacing Ron Kent who transferred to the Miami branch. Bill joined the company in 1964 in the Denver branch. He came to Central Installation Engineering in Milwaukee in 1979 and was appointed manager last November. His replacement has not been announced.

