PULSE

EMR

The EMR-Telemetry News

Sarasota, Florida

Vol. III, No. 23 — 14 March 1969

NASA ORBITAL WORKSHOP CRITICAL DESIGN REVIEW HELD HERE THIS WEEK

Representatives of NASA, McDonnell Douglas Astronautics Company, Martin Marietta Corporation and EMR are meeting here this week for a Critical Design Review of the EMR telemetry instrumentation which will be part of a NASA "space station" called an Orbital Workshop.

The Critical Design Review, March 12-14, is to assure that the Engineering design of the EMR on-board telemetry system for NASA's Saturn I Workshop meets the requirements of this advanced space mission before actual production begins on the sophisticated EMR equipment. Plans for the NASA Orbital Workshop call for converting the spent-fuel stage of a launching rocket into a stabilized space station where several astronauts will live and work for up to two months in space in a "shirt sleeve" environment.

(Story continued on Page 4)

SOCIAL CLUB AND EMR ANNOUNCE NEW PLAN FOR SOCIAL EVENTS

Officers and representatives of the EMR Social Club recently met with O. W. Noble, Manager of Personnel and Services, to discuss the Social Club's plans for 1969 social activities.

As a result of this meeting, EMR-T will underwrite 100% of four events which will be open to all EMR-T employees with no charge for attending. The four events sponsored by the company will be the Children's Easter Party (first week in April), the Company Picnic, Children's Christmas Party, and the Christmas Dance.

The Social Club will be sponsoring other events for members that will be funded by the regular dues, admission fees and guest fees. These activities include the Spring Dance, Summer Golf League, the softball team and the Halloween Dance. Details about all the events will be posted on bulletin boards.

Attendees at Wednesday's session of the Airlock Critical Design Review held here are pictured at right. Seated: E. Sebestyen, MDAC, Calif.; A. J. Schmuck, MDAC, St. Louis; J. A. Rose, MDAC, St. Louis; H. M. Jory, MDAC Resident Engineering Representative. Second row: M. L. Scheer, MDAC, St. Louis; R. L. Kimmel, MDAC, Cape Kennedy; J. D. McCullough, MDAC, St. Louis; E. H. Reeves and B. M. Adair, both of NASA-MSFC, Huntsville, Ala. In the back row, B. A. Stillo, EMR-T; Paul Rezabek, MDAC, St. Louis; and from EMR-T, M. R. Everhart, R. L. Ritenour, W. H. Lockwood and John Willis.

ENGINEERING DATA PROCESSING LAB'S POWERFUL EMR 6130 COMPUTER IS WORKING FOR YOU

EMR-Telemetry's new EMR 6130 Digital Computer in the Engineering Data Processing Lab is working for you. As the Computer takes on more complicated tasks, it serves Engineering, Production, Systems and Marketing in many ways.

Designed and built at EMR's Computer facility in Minneapolis, the EMR 6130 Computer (known as the central processor) is a fast and powerful machine. It has a number of extras, called peripherals--line printer, magnetic tape, disc file, card reader, paper tape punch/reader, etc. The computer and its peripherals were installed in a special room at the East end of the Engineering Building, and are now being tied in with four racks of EMR-T's telemetry products, called the "telemetry front end."

"What can this powerful machine do for me," you ask?

If you work in Engineering, the 6130 Computer will help to design EMR products--filter designs, for example; it helps Engineers solve complex mathematical problems--doing approximately 500,000 calculations per second; it will conduct Engineering design statistical studies, such as probability studies for synchronization techniques; it provides the "lab" for creating and checking the "software packages" which accompany each EMR computer-controlled telemetry box.

(Computer hardware is the actual equipment. Software is the set of written instructions which tell the hardware what to do--start, stop, add, subtract, store, change the bit rate, etc.)

"I work in Production. How does the computer help me?" The computer will run wire lists more rapidly, to show you which wires go to which leads; it prints the tags to label each wire leading from the panels to the internal assembly; it produces the punched paper tapes to tell the numerically-controlled wire wrap positioning table (the "big finger") how to move for the intricate wire wrap operation.

Left: Programmers with EMR 6130 Computer peripherals are: Bill Doe at Card Punch; Jon Altenbernd behind Card Reader; Ted York (head of DPL group) and Barbara McGuire at Line Printer. Printer can zip out 600 lines per minute. Center: Technician Julian Cecio at Magnetic Tape Unit; Key Punch Operator Lillian Conway; Computer Operator Emilio Cardona is seated at teletypwriter and computer console, and part of EMR 6130 central processor is visible at left. Right: Associate Programmer Sara Hinkle and Programmer Roland Olson with Disc File Unit which can store 80 million bits of data.

"I'm in Marketing. How will it help me sell more EMR products and systems?" The computer-telemetry system in the Engineering Data Processing Lab is already in use as a demonstrator--showing customers EMR's extraordinary capability in computer-controlled telemetry and rapid telemetry data processing. It will evaluate feasibility of doing the tasks the customer says his automated telemetry system must do; it can demonstrate that the specific programs the customer wants to use will fit into his proposed telemetry-computer system.

"How about Systems--what does the computer do for us?" The in-house 6130 Computer with its fast peripherals can give you valuable lead time. It can evaluate and debug software for the computerized telemetry system the customer ordered even before the customer's computer is delivered to you for system integration; when your computer is down because you are connecting the various boxes in the system, the in-house 6130 can be working for you; the 6130's powerful card reader, line printer, etc., can also speed many operations if, for example, the system you're working on has only paper tape capability.

To get the computer to perform these and many other tasks, you need someone who can "speak" the computer's language. Information and instructions must be given to the machine in a very special way. The people who communicate with the machine are called Computer Programmers.

Generally, Programmers need an intimate knowledge of how each piece of computer equipment operates and its capabilities. In addition, our Programmers must also be able to understand the complex problems which need solution--problems brought to the Engineering Data Processing Lab by people in various Departments.

What special talents does it take to be a Computer Programmer? A working knowledge of math; an appreciation for detail; analytical ability; and the ability to communicate--with the machine and with the people who have the problems to solve via the computer.

Frank Bost, Manager of Digital Products Engineering, sums up: "A Programmer must have the ability to understand the problem brought to him, expressed in general terms; find a way to solve the problems, and then put the instructions in a specific form for the computer. Without this human link (the Programmer), the machine would be useless."

Accompanying photos show our Engineering Data Processing Lab personnel and equipment -- at your service.

PULSE - The EMR-Telemetry News
M. E. Herbst, Editor
Permission to reprint material herein may be obtained from the Editor, Pulse
COPYRIGHT © 1969 EMR DIVISION OF WESTON INSTRUMENTS, INC.

TEACHING PCM COURSE

Product Marketing Engineers Ron Gadway and John McQueen are teaching an EMR course on PCM Theory at Sandia Corporation, Albuquerque, New Mexico, this week. Systems Engineer Barry Barton joined them Wednesday to handle part of the teaching responsibility. Among the 54 Sandia "students" were engineers and technicians brought in from Sandia field posts for the course.

AUTO TESTING SYSTEM TO USE OUR TELEMETRY

More of our customers are discovering that EMR telemetry equipment has many uses in addition to aerospace applications. For example, another large auto manufacturer recently ordered an EMR 11-channel constant bandwidth telemetry system for vehicle profile testing. In this application, EMR equipment will be used for vehicle testing under simulated road conditions while the vehicle undergoes structural load tests and severe environmental stress at the auto manufacturer's research facility.

EMR-Telemetry products involved are 300-series "airborne" equipment, plus a Model 246B RF Transmitter and 11 Model 4150 Discriminators. The system is expandable to 21 channels, according to Tom Antzack, EMR-Telemetry District Sales Manager in Dayton, Ohio.

NASA ORBITAL WORKSHOP CRITICAL DESIGN REVIEW

(Continued from Page 1)

EMR was awarded a several million dollar contract last year by McDonnell Douglas Astronautics Company, St. Louis, to supply a PCM (Pulse Code Modulation) Data Transmission System for the Airlock portion of the NASA Saturn I Workshop. The EMR telemetry system will monitor and encode measurements of internal and external spacecraft environments and on-board experiments for transmission to earth.

EMR's Engineering Design phase of the Airlock PCM Data Transmission System is now 95% complete. Work on the production, testing, and system integration phases of the EMR Airlock telemetry system is scheduled to continue through 1970, according to Mel Everhart, Manager of Major Programs.

The complex EMR telemetry system includes airborne telemetry hardware and two EMR ground computer-controlled test sets. The latter combine EMR-T 2700 series digital telemetry modules with two EMR 6130 Digital Computers, designed and manufactured at the EMR-Computer facility, Minneapolis.

Attending the Critical Design Review are: R. M. Hargrove, Systems Integration, NASA George C. Marshall Space Flight Center, Huntsville, Ala.; D. F. Mullin, NASA-MSFC Program Office, and NASA-MSFC Engineers B. M. Adair and E. H. Reeves.

Representatives from McDonnell Douglas Astronautics Company's Eastern Division, St. Louis, are: J. D. McCullough, Program Coordinator, Airlock; M. L. Scheer, Group Engineer, and the following Engineers: Paul Rezabek, J. A. Rose, A. J. Schmuck. Also attending are R. L. Kimmel, MDAC-Cape Kennedy; H. M. Jory, MDAC Resident Engineering Representative, and W. R. Wollenberg, MDAC Resident Quality Assurance Representative.

VISITING STUDENTS LEARN HOW EMR USES CHEMISTRY

Riverview High School chemistry students and lab assistants visited EMR-Telemetry on March 5 and learned about the many practical uses of chemistry in the design and manufacture of electronics products at EMR. Jim Adams, head of Materials and Processes Engineering, is pictured in the Lab (at right) with the group. Adams demonstrated the use of encapsulating materials and lab equipment, and introduced the visitors to the Printed Circuits and Microelectronics Labs. In our Engineering Environmental Lab, Bob Mohrfeld briefed the students on altitude, temperature, shock and vibration testing.

Among the visiting students were Linda Brackett (center, with dark hair), daughter of Clyde Brackett, of our Microelectronics Lab, and Andy Van Bueren (standing beside Linda, at center-left), son of A. S. Van Bueren, of Major Programs. Riverview Chemistry Instructors Badger Langford and W. A. Smith accompanied the group.

NASA ORBITAL WORKSHOP (Cont'd)

Engineer E. Sebestyen represents MDAC-Western Division, Huntington Beach, Cal., at the meetings, and Staff Engineer W. M. Van Beek represents Martin Marietta Corporation, Huntsville.

EMR-Telemetry personnel participating in the meetings include: Mel Everhart, Bruno Stillo, Ray Ritenour, Bob Richter, Wayne Lockwood, Bob Hines, John House and John Willis.