



1968



Fielding B. Hills



James M. Weaver



Ed Brady

Karl F. Wenz, Jr., formerly Manager of Instrumentation Support Engineering, has been appointed Engineering Manager



1969 Ray Walter



D.L. Hill



1969

Donald N. Partyka



1968

Ron Blackburn



Andrew J. Roy



Leon M. Hayes



Paul D. Birdwell.



1970 Drafting

R.L. Cumberland



J. A. Castanes



F. C. Minning



Russell K. Forsyth

1970



Eugene Kociuba



1971

James J. Kibling

## Data Processing On The Range

When testing was started at the Air Force Missile Center there was no computer operation. Data obtained during the early tests was forwarded to Washington, D. C. where a SEAC (Southwestern Automatic Computer) at the National Bureau of Standards performed data reduction.

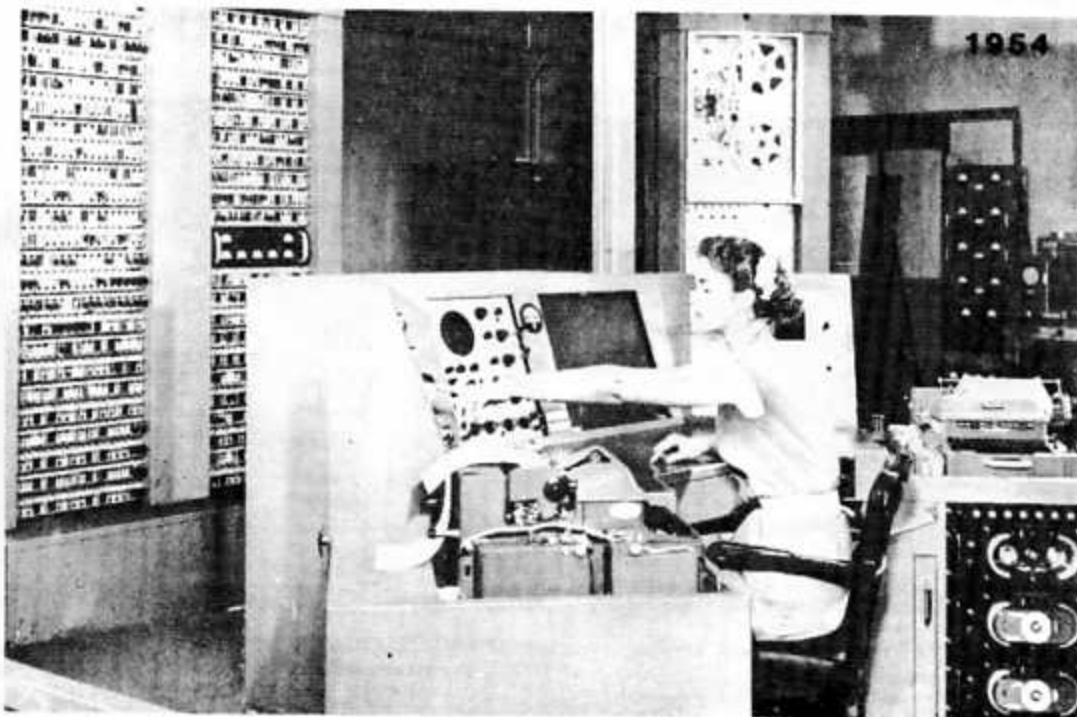
When it was found that there was no computer on the market that could provide the data reduction required at AFMTC, Air Force engineers designed the FLAC I (Florida Automatic Computer). The FLAC I began operations in 1954 with a second FLAC II computer added in 1956. Each had a 512 word acoustic delay memory. In 1957 RCA MTP Engineering personnel enlarged the memory to almost 5000 words in order to accommodate the increased volume of missile data from range activities.

The computers were used during flight operations for impact prediction and to collect all data during flight and covert it into standard units of metric measurement.

During the data reduction process, all camera film records and tape records from radar and telemetry are forwarded to data reduction for interpretation by trained personnel. Skilled film readers and mathematicians analyze and develop requirement solutions and routines for reduction.

After the data has been reduced to usable form, tabulations and graphs of precise position, velocity, acceleration and attitude of the missile's flight are presented to the Air Force and the missile manufacturer as a flight test report for use in the continued development, design and testing of future missiles.

The FLAC I and II computers were replaced by an IBM 709 computer in the late 50's that had a larger memory, computed much faster and was more compatible with other missile contractor computing systems. A big 7094 and three smaller 1401's were added later.



THE FLORIDA AUTOMATIC COMPUTER (FLAC)

A milestone of such was reached in the early 60's when raw data obtained at Ascension Island, 5000 miles downrange, was transmitted in code to Cape Canaveral, fed into a computer, reduced and retransmitted via commercial teletype and then received at the Air Research and Development Command's National Space and Surveillance Control Center, in Cambridge, Mass. All this within a period of thirty seconds.

This was all accomplished by CODIT (Computer Direct To Telegraph) a transceiver system designed and developed by RCA MTP engineers for direct connection to the high speed computer that eliminated the need for punching paper tapes or converting paper tapes to cards or other computer form.

Every piece of instrumentation on the Range and Ships relies on mathematics to transform its raw data into vital questions and answers. Skilled mathematicians and programmers create programs or routines to reduce this raw data to usable information. In writing a program, the programmer must include every step and command in an operation. Instructions must be specific or the machine won't perform.

In the 60's still more sophisticated equipment was introduced to meet the ever increasing data acquisition and data processing requirements imposed by the inexorable progress of ETR missions from relatively simple flights to interplanetary voyages embracing almost inconceivably intricate maneuvers. In late 1964 the RTCS Facility was introduced on the ETR in response to the Range's needs.

Prime use of the RTCS was for the vital Range Safety function, replacing the impact prediction system introduced in the early years of the Range. However it was to be used also in final impact designation, orbital determination and orbital support.

The RTCS still in use today operates in the same fashion as the old impact predictor, where it takes instrumentation inputs, then processes and displays the data for Range Safety Officers in central control within a instant of when the information was gathered. But the RTCS is faster and has a larger memory that can accept inputs from all ETR's radars, both pulsed and CW.



MATHEMATICIANS ANALYZE requirements and develop solutions and routines for reduction.

1954



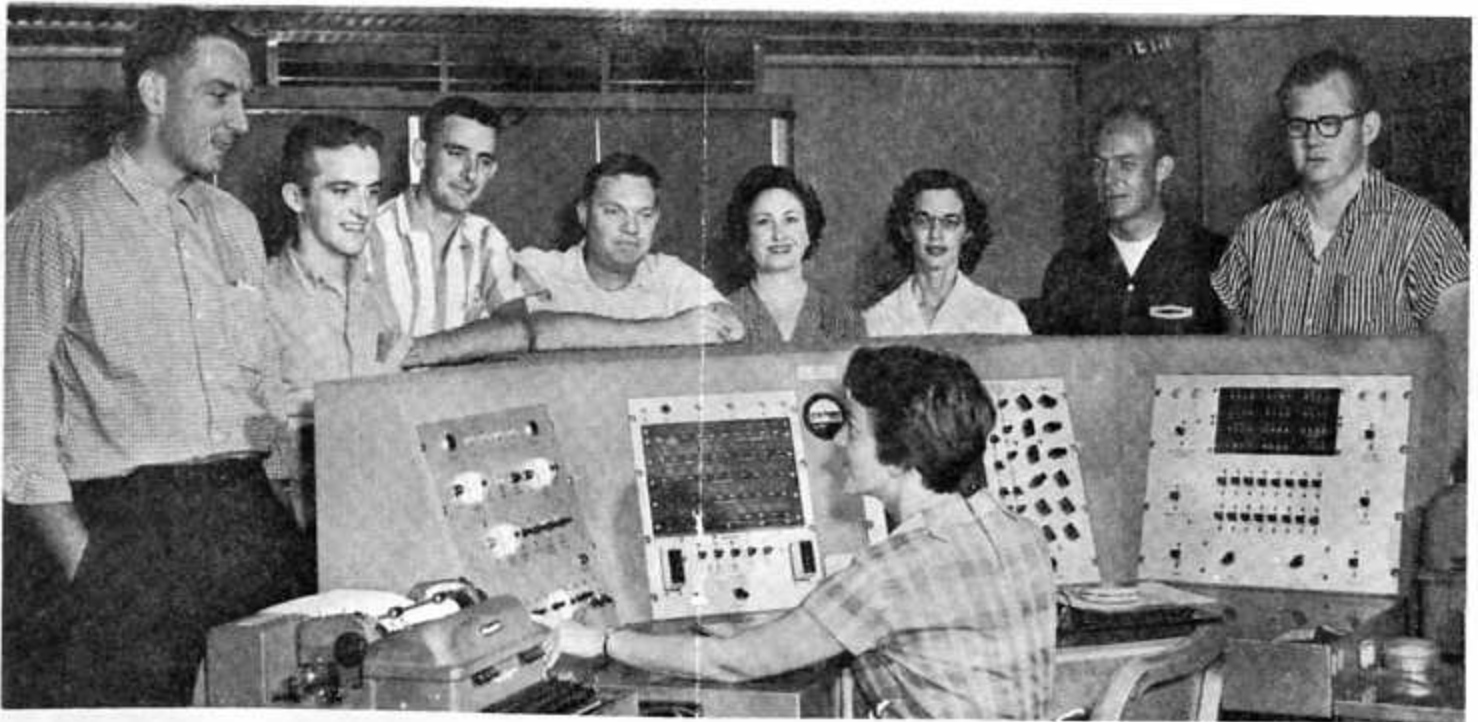
SKILLED FILM READERS use precision reading equipment to extract and record data from optical film records.



H.N. MORRIS



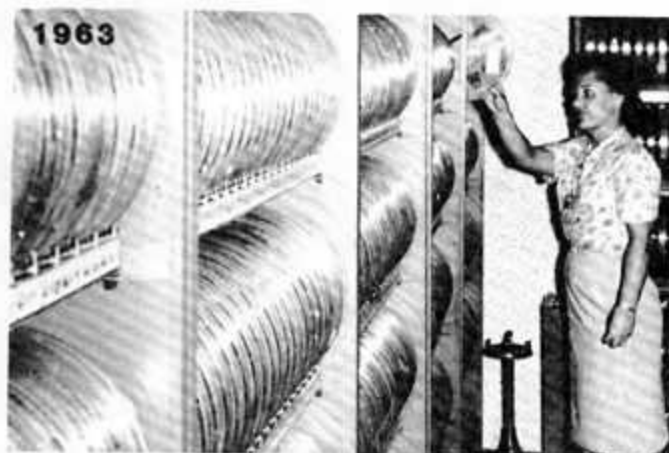
1959  
FLAC operators Earl Finley (left) and James Ayres



Nell Hathaway, Leader, Computer Operators, operates the FLAC II on its last mission, as other FLAC personnel watch. Left to right (standing): Bruce Flickinger, Leader, Computer Operators; Jackie Saunders, Data Preparation Clerk; Earl Finley, Computer Operator; Richard Arnett, Computer Operator; Dorothy Clark, Leader, Data Processing and Reports; Lee Moore, Data Preparation Clerk; and James Ayres.



CHARLES R. SCOTT



Computer Operator Danese Sledge selects a data-filled magnetic tape from Mathematical Services' library.



Secretaries Hilda Cobb (left) and Helen Corley. 1965

