

Peace prize for Pierre Trudeau

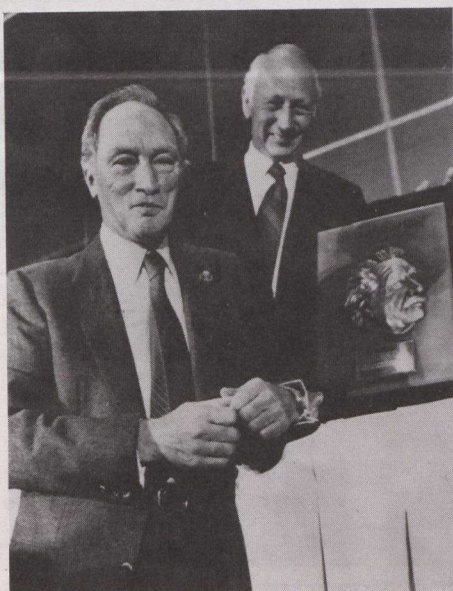
Former Prime Minister Pierre Trudeau, named the 1984 peace laureate by the Albert Einstein Peace Prize Foundation, was presented with the foundation's \$50 000 international peace prize on November 13.

The Einstein Foundation, set up in 1979, awards a peace prize annually to show that individuals can and do make a difference to world peace.

In his acceptance speech, Mr. Trudeau renewed his plea for better East-West relations and urged world leaders to pursue the "politics of peace" more vigorously.

One of Mr. Trudeau's principal suggestions called for the North Atlantic Treaty Organization (NATO) to be transformed "into a vital political alliance, as had been intended in the beginning".

If NATO wants to show its desire for peace and its political maturity, Mr. Trudeau said, the organization should: adopt a policy prohibiting the first use of nuclear weapons, once NATO and the Soviet-dominated Warsaw Pact reduce their forces to 900 000 troops each; urge those negotiating a balanced reduction in West-East forces to respond more constructively to Soviet proposals made last year; get its nuclear force members to sit down for five-power nuclear summit talks sponsored by the United Nations; ban testing and deployment of anti-satellite systems designed to operate at high altitude; and announce a temporary moratorium on the deployment of intermediate nuclear force weapons in Europe, making it clear the Soviets are expected to respond in kind and resume negotiations.



Pierre Trudeau with Einstein Peace Prize and foundation chairman, Norman Cousins.

Software spells success for shuttle

The software program that was used by payload engineers at the Johnson Space Centre in Houston to plan payload operations during the October 5-13 United States space shuttle mission that included Canada's first astronaut, Marc Garneau, was developed by UX Software Inc. of Toronto, Ontario.

It was the first time a microcomputer and its associated software program was used at mission control to manage important experiments and the firm is credited with the successful outcome of many of the complex experiments conducted during the mission.

Special requirements

The UX-Basic software program developed by the Canadian firm was selected by the National Aeronautics and Space Administration (NASA) for its programs and they had to be designed to handle the unique requirements of the eight-day mission of *Challenger*.

The particular micro used by NASA's payload engineers, the MC-500 supermicro, was developed by Masscomp Corp. of Westford, Massachusetts. It is capable of data acquisition and control, high speed computation and analysis, and communications and graphics.

Maurice Kennedy, head of the attached payload operations at the Johnson Space Centre, said the system performed flawlessly during the flight and this mission was one of the few times that "we had no hardware or software problems with this or any other computer critical to the success of a shuttle mission". He further stated that "the UX and Masscomp systems were a key element to the success of this mission".

New technology

The microcomputer and software program were also the first use of Unix technology by NASA for spacecraft operations. Unix is an operating system for micro- and minicomputers originally developed by the Bell Laboratories of American Telephone and Telegraph Co. of New York.

UX Software of Toronto is a software house specializing in Unix programming languages for scientific and commercial applications. The company was started in December 1983 by president Frank Hsu and research and development vice-president Thomas Brand to market the UX-Basic program, developed originally for NASA and Masscomp.

The advantages of the software is that

it is a sophisticated C language package that controls all the programs and input/output at high speeds. Because the system language is translated into Basic, payload engineers can program their computer with relative ease.

"That alone is a departure for mission control specialists because all other engineers program their systems with Fortran language," said Mr. Kennedy.

Important for experiments

NASA's UX-Basic program developed by UX Software was used on the mission to control and manage four important experiments: the Shuttle Imaging Radar (SIR-B) package, the Large Format Camera, the Measurement of Air Pollution from Satellites (MAPS) package and Feature Identification and Location Experiments.

The computer program had 14 000 lines of code that were used to manage more than 6 000 files of data variables.

Two functions

The software program involved two basic functions. First the program generated all the commands and instructions that were transmitted by satellite to the personal computers aboard the space shuttle to operate complicated experiment payloads and integrated the commands from the different programs for each experiment into one steady stream. It then acquired and processed all the data received from the experiment packages and put them into the appropriate files throughout the flight.

As one experiment alone could have as many as 6 000 commands that must be sent to the shuttle's computers and payload specialists, this number translates into 50 pages of computer script to be processed on each day of the mission.

Saving of work and time

Many of the tasks performed on the system were previously done manually. Some of the programs were reduced to a running time of eight minutes, compared with 20 minutes on other systems.

"We had a number of terminals and operators to split up the jobs. One operator was responsible for running the terminal that executes the command program that transmits the instructions to the shuttle. Another person programmed the commands for the next day's operations when the crew was asleep and, all the time, data was being acquired," said Mr. Kennedy.