teleoperator

when the upper arm, forearm and wrist are moved through certain specific angles.

Both the RMS itself and its simulation facility present substantial challenges to the Canadian industrial team, but there is no reason to doubt that these challenges can be met successfully. Work is currently progressing under two contracts with the industrial team. One covers the development of the simulation facility and the other covers "Phase B" of the RMS project, that is, the preliminary design phase. Various possible design approaches will be reviewed and by the Fall of 1976, NRC and NASA will agree on a design. Final design (Phase C) and hardware development and manufacture (Phase D) will follow, with final delivery of the RMS scheduled for early 1979. The simulation facility must, for obvious reasons, be completed well ahead of this date, since the computer section for mathematical model investigations is needed early in the project while the complete facility could be ready for commissioning as early as March of 1977.

The program is an ambitious one that could raise the question of whether Canada can afford to indulge in such high-technology ventures. However, examination of direct and indirect benefits of the program shows that it is an eminently justifiable one. In terms of direct benefits, the NASA/NRC Memorandum of Understanding assures Canada preferred access to both the Space Shuttle for spacecraft launches and service missions and to the Spacelab for experiments and applications, and in the interim, to conventional launch facilities. Access to space is needed by Canada, not only to maintain viable research programs in the space sciences but also to exploit the expanding potential of satellite communications and sensing systems. In addition, the RMS program will improve the Canadian industrial capacity for the design and construction of space systems by providing direct program management experience in all facets of a space program.

It will also significantly expand employment in advanced technology occupations not only for the RMS development period (up to 1979) but also for the period of production of subsequent flight units. Canada then stands to reap a not inconsiderable benefit from its investment in a unique area of high technology.

A benefit more difficult to assess but one which could be of considerable long-term significance is the creation in Canadian industry of competence in the high-technology area of teleoperator design. Technology will be significantly advanced in such areas as control systems, real-time computer augmentation of human control functions, man-machine interaction with hardware and software systems, real-time simulations of complex man-machine tasks, and specialized materials technology. From this technological base, Canada could compete in the future global market for remote handling systems capable of operating in a variety of environments.

There are two unique features in Canada's RMS project – the organization of the industries involved and the National Research Council's role. It is noteworthy that the history of Canada's involvement with the RMS project really started with Canadian industries in the aerospace field who formed themselves into a consortium and took the first initiative with the proposal made to NRC and the Interdepartmental Committee on Space. The National Research Council is providing the industrial team with channels of communication between themselves and government and NASA, as well as cooperating with them to provide the basis of an organizational structure to manage this very complex project.

David Mosey

By mapping the ocean surface temperatures, earth resources satellites will provide oceanographers with valuable data on ocean current patterns. This, in turn, will enable fishing experts to predict fish movements. Ice movements can also be tracked from space.

En cartographiant les températures de la surface des océans, les satellites de détermination des ressources terrestres donneront aux océanographes des données précieuses sur les configurations des courants dans les océans. Ainsi, les experts des pêcheries pourront prévoir les migrations des poissons. Il est aussi possible, à l'aide de ces cartes, de déterminer le mouvement des glaces.



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