

6. What will be the capital cost of the satellite sounding system once it is completely installed and operational?

7. What will be the annual operating cost of the satellite sounding system?

8. On what date will the satellite sounding system become completely operational?

9. (a) Is the satellite sounding system a proto-type system (b) are there systems of similar function elsewhere in North America and, if so (i) where are they located (ii) how do they vary from the system to be installed on the west coast?

10. On what date was the satellite sounding system project originally undertaken and what was the anticipated cost of the research and of the actual system at that time?

11. (a) How many persons are employed in the operation of the weather ships and ancillary functions (b) how many will be employed in the operation of the satellite sounding system once it is in place and fully operational?

Mr. Yvon Pinard (Parliamentary Secretary to President of the Privy Council): I am informed by Environment Canada and Transport Canada as follows:

1. Yes. Present plans call for complete termination of the *Papa* weather ship program in the summer of 1981. That date is contingent on the availability of data from other sources to assure the adequacy of weather services to the citizens of British Columbia.

2. Undepreciated value for the two vessels: \$17,122,461 (book value as of March 31, 1978).

Depreciated value for the two vessels: \$10,477,822 (depreciation to March 31, 1978).

There has been no decision made regarding the role of the vessels after withdrawal from the ocean weather station *Papa*. Possible roles in the fields of ocean research and mapping, training, offshore surveillance and search and rescue will be considered.

3. (a) 9 years old.

(b) Scrap value, estimated for the two vessels: \$350,000.

(c) The price at which the vessels could be sold "as is" would be based on market demand for vessels of the weather ships type at that time. This price would only be known when bids for the vessels are received. The price should vary directly with the market demand and may be equal to scrap value if there are no roles for the vessels.

(d) If the vessels are to be disposed of, they would be turned over to the Crown Assets Disposal Corporation which would offer them for public sale in compliance with the Surplus Crown Assets Act.

4. Fiscal year 1977-78—\$3,974,001.

5. For part 5, it is assumed that "satellite sounding systems" is not restricted to "sounding". A number of satellite-borne systems will function as some of the alternate sources of weather data; visible and infra-red imagery, imagery from microwave sensors, and a variety of other systems including one for atmospheric sounding will make significant contributions to the data that will be available. United States figures are quoted since Canada benefits directly from U.S. work.

(a) Since 1967, it is estimated that the United States has funded the meteorological satellite program to approximately 1.25 billion dollars, over 40 per cent through civil-

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ian channels (National Oceanic and Atmospheric Administration). Almost 60 per cent of the total was devoted to operations, and the balance to research and development.

In Canada since 1963, 5 million dollars have been spent by the AES on meteorological satellite programs, about 40 per cent on research and development, and 60 per cent on operations.

On the sounding program specifically, it is estimated that about 20 per cent of the total U.S. expenditure is directly related, while in Canada, less than \$90,000 can be so identified.

(b) Canadian research remaining will be small since we benefit directly from the U.S. work. Once the Tiros Operational Vertical Sounder (TOVS) now carried on the TIROS-N Satellite has been proven, Canadian research should total about \$500,000 spread over several years.

6. Capital spending within Canada to utilize the sounding data will not exceed \$500,000. This amount will provide the readout capability at three locations to assure adequate coverage for all of Canada.

7. The annual operating cost of the satellite sounding system will be about \$250,000, including continuing research and development, after implementation. This will provide coverage for all of Canada.

8. The sounding system will be operational by 1981, with its potential increasing through the 1980s with follow-on systems on new satellites.

9. (a) No.

(b) Yes.

(i) In Washington, D.C. and Madison, Wisconsin (also in Sydney, Australia); research systems are in operation at a number of NASA sites in the U.S. as well as in the United Kingdom, France and other European countries.

(ii) The systems noted above are used to support large-scale global or hemispheric forecasts. The Canadian system will support such activities in this country to supplement similar data received from the U.S., but will also support regional forecasts.

10. Work in the United States began in the late 1960s. In Canada, no work has been undertaken to date other than keeping informed of developments in the U.S. Present plans call for a research, acquisition and operational program totalling \$1.25 million for the TIROS-N satellite system over the life of that satellite. Further projections cannot be made until the nature of follow-on systems becomes known.

11. (a) One hundred sixty-four officers and unlicensed personnel.

(b) Across Canada, a small portion of the time of each of 15 persons (five at each of three locations) will be devoted to the reception and processing of the data, plus a few for equipment maintenance. The data will be used, along with other forms of data, by many meteorologists and support staff across the country.