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Nathan H. Woodruff, Director
Division of Operational Safety
Headquarters
J. E. Travis, Manager
Richland Operations Office

APR 2 1963

STATEMENT FOR CONFERENCE ON POLLUTION OF THE UPPER COLUMBIA RIVER

RS:RDW

The main body of the subject statement was transmitted to you by memorandum dated February 13, 1963. The attached appendages to the statement have been revised and updated.

A survey of the temperature regime in the Columbia River is being conducted by the General Electric Company. Preliminary data collected during November and December indicate that precise measurements of the river water temperatures above and below the Hanford reactors can be used with readily available, unclassified figures to calculate the total power level of the reactors with a reasonable degree of accuracy. Therefore, we do not believe that the exact amount of temperature increase due to Hanford operations can be released on an unclassified basis. We do believe, however, that the combined result of cooling the water by releases from the bottom of the Grand Coulee reservoir and heating the water by the reactors can and should be made public. We have revised the statement on temperatures accordingly.

Enclosures:

1. Draft "Hanford's Contribution to River Water Temperatures" (4 cys)
2. Draft "Pasco and Richland Water Treatment Plants" (4 cys)

cc: F. P. Baranowski, Production, Headquarters, w/enclosures

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HANFORD'S CONTRIBUTION TO RIVER WATER TEMPERATURES

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National security interests preclude our providing information on the amount of water pumped from the Columbia River at Hanford, the temperature of the returning water, and the exact effect of this returning water on Columbia River gross temperatures. Several allegations have been made by certain groups as to the amount of rise in Columbia River temperatures which results from AEC operations at Hanford. We are unable to comment on these claims.

At this time, we can state only that the combined result of cooling the river water by releases from the bottom of the Grand Coulee reservoir and heating the water through the operation of the production reactors would be an increase in the river water temperature of less than 1° F during the critical months of August and September.

Since our total heat contribution to the river and the exact effect of this contribution on the river water temperature are classified and are of interest to those state and federal agencies who are responsible for controlling the pollution of our streams in the Northwest, several representatives of the Washington State Pollution Control Commission, the Washington State Department of Health, the Oregon State Sanitary Authority and the U. S. Public Health Service have been cleared for access to this information. From time to time these people have been provided

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the results of our temperature investigations so that their organizations can be fully aware of the impact of the Commission's operations.

~~SECRET~~

Prepared by: R.D. Wildman
Radiation Sciences Branch
Civilian Reactor Development
and Research Division
Richland Operations Office

U. S. ATOMIC ENERGY COMMISSION
Richland Operations Office

PASCO AND RICHLAND WATER TREATMENT PLANTS

The municipal water system of Pasco is typical in design to that employed by many other cities of similar size. Water is pumped from the river, and chemicals are added to form a flocculent precipitate of aluminum hydroxide which removes sediments and particulate matter by agglomeration and settling. After the chemicals are added to the water and mixed, the water passes through large settling basins. The floc settles to the bottom of these basins, carrying the silt with it. Skimmers remove water from the basins over notched weirs and carry the water to the filter beds. These filters, which provide the final cleanup of solids from the water, are backwashed periodically, and the waste water with its burden of backwash solids is returned to the river.

The filtered water is collected in a clear well, where additional analyses are performed and the final chlorine adjustment is made as the water is pumped to reservoirs. The combined capacity of the system including clearwell storage is 6 million gallons.

Through the courtesy of Pasco city officials, Hanford personnel obtain samples for radiochemical analysis from various locations. Raw water is sampled regularly at both the river pump house and at the water plant. In addition, the water is sampled after it has passed through the purification process. The efficiency of the water treatment plant in reducing the radio-nuclides, which contribute to the exposure resulting from drinking the water, can be determined from the data collected in this sampling program.

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Although the efficiency varies throughout the year as a result primarily of differences in water usage rates, there is an average annual reduction of 70 percent in the exposure levels to the gastrointestinal tract as a result of passing the water through the plant. The average annual exposure to the gastrointestinal tract of persons drinking water which has passed through the Pasco water plant for the past several years has been less than 6 percent of the maximum permissible dose of that established by the Federal Radiation Council and the National Committee on Radiation Protection and Measurement.

The City of Richland is building a water treatment plant which will be comparable in design to the Pasco plant and will also utilize Columbia River water. The Richland plant is designed to treat 15 million gallons per day and in addition will have a reservoir capacity of 20 million gallons. This plant is expected to begin operation late this summer.

Since the level of radioactivity in the river decreases with time as the water moves downstream from the reactors mainly due to radioactive decay, the Richland water plant, being 12 miles upstream from the Pasco plant, is expected to receive water containing somewhat higher levels of radioactivity. We estimate that the exposure levels to people due to use of treated water from the Richland plant may be as much as 50 percent higher than those at Pasco. In terms of exposure to the gastrointestinal tract, which is the critical organ in this situation, this would amount to less than 10 percent of the maximum permissible dose (MPD) as established by

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the Federal Radiation Council and the National Committee on Radiation
Protection and Measurement.

Prepared by:
Robert D. Wildman
Radiation Sciences Branch
Civilian Reactor Development
and Research Division

**DATE
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8 / 17 / 94

END