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PDR-WM-10 (2)

✓ DC/9/11/87

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SEP 18 1987

MEMORANDUM FOR: B. Joe Youngblood, Chief
Operations Branch
Division of High-Level Waste Management, NMSS

FROM: Ronald L. Ballard, Chief
Technical Review Branch
Division of High-Level Waste Management, NMSS

SUBJECT: INFORMATION SUMMARY OF THE REPORT "DATA COMPILATION:
IODINE-129 IN HANFORD GROUNDWATER"

A summary of the report "Data Compilation: Iodine-129 in Hanford Groundwater" is attached. From the information in this report, the HLTR Branch makes no judgement about the acceptability or unacceptability of the Hanford site for a high-level waste repository. No such judgement can be made for these reasons: First, the information and analysis contained in this report constitute a small portion of the information that should be considered in evaluating site acceptability. Second, evaluations in this report do not draw definitive conclusions about groundwater movement. The report recommends collecting additional information to help resolve this issue. Third, the data in the report come from sampling at subsurface elevations some distance above the proposed repository formation. Extrapolation would thus be required to use the data to evaluate the repository formation. Such extrapolation would be uncertain because of limited radionuclide transport data and hydrogeologic characteristics of both the contaminated formations and the deeper repository formation.

In general, even if vertical movement of groundwater in the Grande Ronde basalts was determined to exist, it would not necessarily disqualify the site as a repository. Other factors concerning the natural system must also be considered in accordance with 10 CFR 60.1136.

ORIGINAL SIGNED BY *Joe Cherry*

Ronald L. Ballard, Chief
Technical Review Branch
Division of High-Level Waste Management,
NMSS

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WM-10

Attachment:
As stated

WM Record File 101 WM Project 10
Docket No. _____
PDR ✓
XPDR ✓ (B)

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WM Project: WM-10
PDR w/enc1
(Return to WM, 623-SS)

WM Record File: 101
LPDR w/enc1

Distribution: _____

(Return to WM, 623-SS)

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Information Summary of the Report:

"DATA COMPILATION: IODINE-129 IN HANFORD GROUNDWATER (WHC-EP-0037)"*

This report, prepared by Westinghouse Hanford Company for the U.S. Department of Energy (DOE), summarizes all data and information about I-129 in the Hanford site groundwater that could be gathered from various sources. The data in the report were collected from approximately 1959 through the recent drilling and sampling activities completed in 1986. About 210 wells were sampled for I-129, including about 35 in the confined aquifer system. More than 700 sampling events are represented in the data bases for the confined and unconfined aquifer system beneath the Hanford site. These data, some of which were previously unpublished, are summarized in the appendices of the report.

The following points were discussed in the report:

1. Most confined aquifer sampling was conducted before 1980 and was focused on the Mabton interbed. As a result of this sampling, I-129 was detected above background levels in the confined aquifer system to a depth of about 1500 ft.** Within this aquifer system, occurrence of the I-129 appears to be localized in the vicinity of geologic fracture zones.
2. Most I-129 data from the unconfined aquifer appear to be valid; however, some of the confined aquifer I-129 data were acquired with questionable drilling and sampling techniques. There is an insufficient quantity of reliable I-129 data from the confined aquifer to draw definitive conclusions about I-129 movement. It was recommended that existing monitoring programs collect additional information in addressing this issue.
3. There were conjectures that I-129 in the Hanford groundwater resulted from possible injection of liquid nuclear waste into the confined aquifer system. The report stated that no evidence could be found to support this hypothesis.
4. All recent onsite measurements of I-129 are below the U.S. Department of Energy (DOE) Derived Concentration Guide (DCG) of 500 pCi/L. All recent offsite measurements are below the U.S. Environmental Protection Agency (EPA) Drinking Water Standard of 1 pCi/L.

* Intercontractor Working Group, Westinghouse Hanford Company, PO Box 1970, Richland, WA 99352, August 1987.

** Data in Appendix C of report shows I-129 above background in a confined aquifer at depths from ground surface of 1973 to 2053 feet, well DDH-03.

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5. I-129 levels in well samples located offsite east of the Columbia River are comparable to levels found in wells, rivers, and at locations 50 to 200 miles from Hanford. Therefore, I-129 in these wells may be attributed to localized Hanford rainout/fallout rather than the hypotheses of aquifer transport. Further detailed studies are needed to confirm pathways and sources of detected I-129.
6. Recent radiochemical sampling at well DC-18 also shows evidence of interconnection between surface sources of tritium contamination and deeper zones in the Wanapum formation.
7. It was recommended that future I-129 sampling be accompanied by sampling for other constituents such as H-3, Tc-99, and nitrates to fully document source terms and local fallout versus aquifer transport.

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FROM: Ronald L. Ballard, Chief
 Technical Review Branch
 Division of High-Level Waste Management, NMSS

SUBJECT: INFORMATION SUMMARY OF THE REPORT "DATA COMPILATION:
 IODINE-129 IN HANFORD GROUNDWATER"

DATE: SEPTEMBER , 1987

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