

DEC 15 1980

Docket No. 50-320

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Dr. Frank Parker, Chairman
School of Engineering
Vanderbilt University
Nashville, Tennessee 37203

Dear Dr. Parker:

The staff of the Three Mile Island Program Office (TMIPO) was pleased to meet with the members of the NCRP Task Group SC-38 on Disposal of Accident Generated Waste Water at the first meeting of the Task Group on November 20, 1980. To aid in the NCRP evaluation of the disposition of processed TMI-2 accident generated waste water, the TMIPO staff has provided the Task Group with copies of ORNL/TM-7448 (Evaluation of the Submerged Demineralizer System Flowsheet for Decontamination of High-Activity-Level Water at Three Mile Island Unit 2 Nuclear Power Station) and the report by the Nuclear Regulatory Commission Special Inquiry Group (Rogovin - Three Mile Island, A Report to the Commissioners and to the Public). Additionally, the Task Group requested the latest source term for processed water from auxiliary building tanks. Correspondingly, the radionuclide distributions of processed water contained in the borated water storage tank (BWST), condensate storage tank (COT-1-A), clean water receiver tank (CC-T-2), off-spec water receiver tank (CC-T-1), and condensate test tank (WDL-T-9B) are provided in Enclosure 1.

At your request, the next Task Group meeting is scheduled to be held on December 13, 1980 at the Three Mile Island Station and will include a tour of the site. The proposed agenda for the meeting is enclosed.

As discussed at the November 20 meeting regarding the schedule for the Task Group evaluation of the disposition of processed accident generated waste water, the TMIPO would appreciate submittal of a preliminary report of the Task Group evaluation by the end of January 1981. Consistent with our schedule for forwarding the Final Programmatic Environmental Impact Statement (FPEIS) to the Commission for their review, we would appreciate submittal of a final report of the Task Group evaluation by the end of February 1981 so that it can be forwarded to the Commission for their consideration along with the FPEIS.

If you have any questions, please contact R. Weller (301-492-8174) of my staff.

Sincerely,

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Bernard J. Snyder, Program Director
Three Mile Island Program Office
Office of Nuclear Reactor Regulation

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Enclosures:

1. Radionuclide Distribution of Auxiliary Building Water
2. Agenda for Dec. 13, 1980 Meeting of Task Group SC-38

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

Dr. Frank Parker

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cc: A. B. Brill
W. Grimes
D. Jacobs
B. Kahn
E. C. Watson
M. Eisenbud

Distribution:
√ Docket File 50-320
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TMIPO:NRB
RWeller/prf
12/15/80
TMIPO:NRB
BJ Snyder
12/15/80

ENCLOSURE 1

1) BWST Before addition of processed water
 1/23/79 Sample # 25569

ISOTOPE	CONC. ($\mu\text{Ci}/\text{ml}$)	% Error
H 3	1.44×10^{-2}	-
Cr 51	$< 2.997 \times 10^{-5}$	-
Co 57	2.96×10^{-6}	190
Co 58	6.534×10^{-4}	12.2
Co 60	4.155×10^{-5}	12.4
Zr 95	$< 4.812 \times 10^{-6}$	-
Nb 95	$< 2.865 \times 10^{-6}$	-
Ag 110m	6.039×10^{-6}	-
Sb 125	2.718×10^{-5}	161
Cs 134	5.066×10^{-4}	13.1
Cs 137	8.913×10^{-4}	12.2
Ce 141	$< 4.029 \times 10^{-6}$	-
Ru 106	8.565×10^{-4}	-
Gross $\beta\gamma$	1.6×10^{-3}	3.1

2) BWST After addition of processed water - originally 329,821 gallons
 processed water added to 129,781 gallons of existing water -
 see above sample - total in BWST 12/3/80 - 422,322 gallons.
 9/23/80 Sample # 49862 422,322 gallons

ISOTOPE	CONC. ($\mu\text{Ci}/\text{ml}$)	% Error	Total Counts	Total β Activity (Ci)
H 3	1.1×10^{-1}	-	175.834	} 9.721×10^{-1}
Cr 51	$< 1.373 \times 10^{-5}$	-	$< 2.195 \times 10^{-2}$	
Mn 54	1.484×10^{-6}	14.4	2.372×10^{-3}	
Co 57	9.66×10^{-7}	32.9	1.544×10^{-3}	
Co 58	1.40×10^{-5}	288	2.238×10^{-2}	
Co 60	1.695×10^{-5}	2.74	2.709×10^{-2}	
Zr 95	$< 1.283 \times 10^{-6}$	-	$< 2.051 \times 10^{-3}$	
Nb 95	$< 7.229 \times 10^{-7}$	-	$< 1.156 \times 10^{-3}$	
Ru 103	$< 1.706 \times 10^{-6}$	-	$< 2.727 \times 10^{-3}$	
Ru 106	$< 1.217 \times 10^{-5}$	-	4.945×10^{-2}	
Ag 110m	$< 1.504 \times 10^{-6}$	-	$< 2.404 \times 10^{-3}$	
Sn 113	$< 2.479 \times 10^{-6}$	-	$< 3.963 \times 10^{-3}$	
Sb 125	1.038×10^{-5}	15.26	1.659×10^{-2}	

Cs 134	1.59×10^{-4}	0.76	2.542×10^{-1}
Cs 137	3.588×10^{-4}	0.51	5.735×10^{-1}
Ce 141	$< 2.372 \times 10^{-6}$	-	$< 3.792 \times 10^{-3}$
Ce 144	$< 1.061 \times 10^{-5}$	-	$< 1.696 \times 10^{-2}$
Gross $\beta\gamma$	3.01×10^{-4}	0.59	4.811×10^{-1}

3) COT-1-A
9/22/80

Sample # 49860

240,341 gallons

<u>ISOTOPE</u>	<u>CONC. ($\mu\text{Ci}/\text{ml}$)</u>	<u>% ERROR</u>	<u>Total Curies</u>	<u>Total Activity (Ci)</u>
H-3	1.8×10^{-1}	-	163.744	} 8.302×10^{-3}
Cr 51	$< 9.009 \times 10^{-7}$	-	$< 8.195 \times 10^{-4}$	
Mn 54	$< 4.003 \times 10^{-9}$	-	$< 3.641 \times 10^{-5}$	
Co 58	$< 3.82 \times 10^{-8}$	-	$< 3.475 \times 10^{-5}$	
Co 60	8.42×10^{-8}	20.9	7.66×10^{-5}	
Zr 95	$< 5.934 \times 10^{-8}$	-	$< 5.398 \times 10^{-5}$	
Nb 95	$< 4.043 \times 10^{-8}$	-	$< 3.678 \times 10^{-5}$	
Ru 103	$< 9.414 \times 10^{-8}$	-	$< 8.564 \times 10^{-5}$	
Ru 106	$< 6.874 \times 10^{-7}$	-	$< 6.253 \times 10^{-4}$	
Aq 110m	$< 4.048 \times 10^{-7}$	-	$< 3.682 \times 10^{-4}$	
Sn 113	$< 1.418 \times 10^{-7}$	-	$< 1.29 \times 10^{-4}$	
Sb 125	$< 3.083 \times 10^{-7}$	-	$< 2.805 \times 10^{-4}$	
Cs 134	6.997×10^{-7}	6.43	6.365×10^{-4}	
Cs 137	4.593×10^{-6}	2.44	4.178×10^{-3}	
Ce 141	$< 1.857 \times 10^{-7}$	-	$< 1.689 \times 10^{-4}$	
Ce 144	$< 8.487 \times 10^{-7}$	-	$< 7.721 \times 10^{-4}$	
Gross $\beta\gamma$	3.78×10^{-6}	35.4	3.439×10^{-3}	

4) CC-T-1
10/22/80

Sample # 51331

25,489 gallons

<u>ISOTOPE</u>	<u>CONC. ($\mu\text{Ci}/\text{ml}$)</u>	<u>% ERROR</u>	<u>Total Curies</u>	<u>Total Activity (Ci)</u>
H 3	66×10^{-2}	-	6.367	} 2.098×10^{-3}
Cr 51	$< 3.184 \times 10^{-6}$	-	$< 3.072 \times 10^{-4}$	
Mn 54	$< 3.239 \times 10^{-7}$	-	$< 3.125 \times 10^{-5}$	
Co 58	$< 3.188 \times 10^{-7}$	-	$< 3.076 \times 10^{-5}$	

Co60	$< 4.9 \times 10^{-7}$	-	$< 4.727 \times 10^{-5}$
Zr95	$< 5.443 \times 10^{-7}$	-	$< 5.251 \times 10^{-5}$
Nb95	$< 3.034 \times 10^{-7}$	-	$< 2.927 \times 10^{-5}$
Ru103	$< 3.612 \times 10^{-7}$	-	$< 3.485 \times 10^{-5}$
Ru106	$< 2.563 \times 10^{-6}$	-	$< 2.473 \times 10^{-4}$
Ag110m	$< 6.633 \times 10^{-7}$	-	$< 6.399 \times 10^{-5}$
Sn113	$< 6.17 \times 10^{-7}$	-	$< 5.953 \times 10^{-5}$
Sb125	$< 1.314 \times 10^{-6}$	-	$< 1.268 \times 10^{-4}$
Cs134	1.02×10^{-6}	19.69	9.841×10^{-5}
Cs137	6.773×10^{-6}	6.28	6.534×10^{-4}
Ce141	$< 6.39 \times 10^{-7}$	-	$< 6.165 \times 10^{-5}$
Ce144	$< 2.634 \times 10^{-6}$	-	$< 2.541 \times 10^{-4}$
Gross $\beta\gamma$	5.29×10^{-6}	17.2	5.104×10^{-4}

5) CC-T-2
11/27/80

Sample # 52969

44,791 gallons

<u>ISOTOPE</u>	<u>CONC (uCi/ml)</u>	<u>% Error</u>	<u>Total Curies</u>	<u>TOTAL ACTIVITY (Ci)</u>
* H 3	6.4×10^{-2}	-	10.85	} $< 2.109 \times 10^{-3}$
Cr51	$< 2.35 \times 10^{-6}$	-	$< 3.984 \times 10^{-4}$	
Mn54	$< 3.239 \times 10^{-7}$	-	$< 5.491 \times 10^{-5}$	
Co58	$< 3.188 \times 10^{-7}$	-	$< 5.405 \times 10^{-5}$	
Co60	$< 4.9 \times 10^{-7}$	-	$< 8.307 \times 10^{-5}$	
Zr95	$< 5.441 \times 10^{-7}$	-	$< 9.224 \times 10^{-5}$	
Nb95	$< 3.032 \times 10^{-7}$	-	$< 5.14 \times 10^{-5}$	
Ru103	$< 2.325 \times 10^{-7}$	-	$< 3.942 \times 10^{-5}$	
Ru106	$< 2.563 \times 10^{-6}$	-	$< 4.345 \times 10^{-4}$	
Ag110m	$< 3.931 \times 10^{-7}$	-	$< 6.664 \times 10^{-5}$	
Sn113	$< 3.562 \times 10^{-7}$	-	$< 6.039 \times 10^{-5}$	
Sb125	$< 8.178 \times 10^{-7}$	-	$< 1.386 \times 10^{-4}$	
Cs134	$< 3.624 \times 10^{-7}$	-	$< 6.144 \times 10^{-5}$	
Cs137	8.032×10^{-7}	17.96	1.362×10^{-4}	
Ce141	$< 4.653 \times 10^{-7}$	-	$< 7.888 \times 10^{-5}$	
Ce144	$< 2.115 \times 10^{-6}$	-	$< 3.586 \times 10^{-4}$	
Gross $\beta\gamma$	4.86×10^{-6}	18.66	3.239×10^{-4}	

* Sample # 51739 10/31/80

6) WDL-T 9B

NO SAMPLE AVAILABLE, USING DATA FROM #4 - CC-T-1 (initial source)
9,834 Gallons

<u>ISOTOPE</u>	<u>TOTAL CURIES</u>	<u>TOTAL γ ACTIVITY (ci)</u>
H-3	2.457	
Cr 51	$< 1.195 \times 10^{-4}$	} $< 8.095 \times 10^{-4}$
Mn 54	$< 1.206 \times 10^{-5}$	
Co 58	$< 1.187 \times 10^{-5}$	
Co 60	$< 1.824 \times 10^{-5}$	
Zr 95	$< 2.026 \times 10^{-5}$	
Nb 95	$< 1.129 \times 10^{-5}$	
Ru 103	$< 1.344 \times 10^{-5}$	
Ru 106	$< 9.54 \times 10^{-5}$	
Aq 110m	$< 2.469 \times 10^{-5}$	
Sn 113	$< 2.297 \times 10^{-5}$	
Sb 125	$< 4.891 \times 10^{-5}$	
Cs 134	3.797×10^{-5}	
Cs 137	2.521×10^{-4}	
Ce 141	$< 2.378 \times 10^{-5}$	
Ce 144	$< 9.804 \times 10^{-5}$	
Cross $\beta\gamma$	1.969×10^{-4}	

7) Processed Water Inventory

Overall curie totals:

H-3	-	359.252
γ	-	$< 9.854 \times 10^{-1}$
Cross $\beta\gamma$	-	4.861×10^{-1}

ISOTOPETOTAL CXLIESAVERAGE CONCENTRATION (uci/ml)

H3	359.252	1.278×10^{-1}
Cr51	< 2.36×10^{-2}	< 8.394×10^{-6}
Co57	1.544×10^{-3}	5.492×10^{-7}
Co58	< 2.251×10^{-2}	< 8.007×10^{-6}
Co60	< 2.732×10^{-2}	< 9.718×10^{-6}
Zr95	< 2.27×10^{-3}	< 8.074×10^{-7}
Nb95	< 2.18×10^{-3}	< 7.754×10^{-7}
Ru103	< 2.9×10^{-3}	< 1.032×10^{-6}
Ru106	< 2.076×10^{-2}	< 7.384×10^{-6}
Aq110m	< 2.928×10^{-3}	< 1.041×10^{-6}
Sn113	< 4.235×10^{-3}	< 1.506×10^{-6}
Sb125	< 1.718×10^{-2}	< 6.111×10^{-6}
Cs134	< 2.55×10^{-1}	< 9.07×10^{-5}
Cs137	5.752×10^{-1}	2.046×10^{-4}
Ce141	< 4.125×10^{-3}	< 1.467×10^{-6}
Ce144	< 1.844×10^{-2}	< 6.559×10^{-6}
Mn54	< 2.507×10^{-3}	< 8.917×10^{-7}
Gross BX	4.861×10^{-1}	1.729×10^{-4}

results from SAI

	BWST	COT-1A
Co 57	$1.9 \pm 0.7 \times 10^{-6}$	<LLD
Sb 125	$7.7 \pm 1.2 \times 10^{-6}$	$< 5.8 \times 10^{-7}$
Cs 134	$1.5 \pm 0.1 \times 10^{-4}$	$5.1 \pm 0.3 \times 10^{-7}$
Cs 137	$3.0 \pm 0.1 \times 10^{-4}$	$3.3 \pm 0.1 \times 10^{-6}$
Co 58	$1.2 \pm 0.1 \times 10^{-5}$	$< 2.9 \times 10^{-8}$
Mn 54	$1.2 \pm 0.3 \times 10^{-6}$	$< 5.4 \times 10^{-8}$
Zn 65	$8.5 \pm 6.0 \times 10^{-7}$	$< 1.3 \times 10^{-7}$
Co 60	$1.4 \pm 0.3 \times 10^{-5}$	$6.5 \pm 2.4 \times 10^{-8}$

after Cs removal

	BWST	
Sb 125	$9.6 \pm 0.2 \times 10^{-6}$	
Ru 106	$8.9 \pm 6.7 \times 10^{-7}$	
Ag 110m	$1.2 \pm 0.9 \times 10^{-7}$	
CE -144	$< 2.1 \times 10^{-7}$	$< 1.5 \times 10^{-7}$

Transuranics

	BWST	COT-1A
Pu 239/240	$5.1 \pm 0.6 \times 10^{-10}$	$< 2.1 \times 10^{-11}$
Am 241	$7.5 \pm 0.8 \times 10^{-10}$	$2.8 \pm 1.3 \times 10^{-10}$
Pu 238	$6.2 \pm 1.5 \times 10^{-10}$	$< 7.1 \times 10^{-10}$
Cm 242/243	$1.2 \pm 0.4 \times 10^{-10}$	$< 1.4 \times 10^{-10}$
Cm 244	$1.4 \pm 0.4 \times 10^{-10}$	$< 1.2 \times 10^{-10}$

Fe SS

No

91

Pr 147

Te

1/2 1000

0.18

12.5

ENCLOSURE 2

PROPOSED AGENDA

NATIONAL COUNCIL ON RADIATION PROTECTION

TASK FORCE MEETING AT TMI

DECEMBER 18, 1980

Morning: Tour of TMI

0845 Meet at TMI Observation Center R. Weller/R. McGoey

0900 Commence Tour by Met Ed Bus R. Weller/R. McGoey

- Tour Items:
- Over North Bridge Past Unit 1
 - Provide Unit 1 and 2 Orientation
 - Travel to Unit 2 Providing Building Layout Orientation
 - Point Out Condensate Storage Tanks
 - Travel to East Side Pointing Out BWST, EPICOR II
 - Travel to Release Point (RML 7, Mech. Draft Cooling Towers)
 - Travel to Unit 2 Entry Point
 - Tour SDS (FHB)
 - Tour EPICOR II (Control Room)
 - Travel to TMI 2 Administration Building

1200 Box Lunch at TMI 2 Administration Building, Conference Room 209 R. McGoey

1300 Commence Meeting/Presentation

1300 "Welcome to TMI" G. Hovey

1315 Summarize Source Term Data R. Weller/R. McGoey

1430 Review TMI Analytical Capability (Geli Detectors, Accuracy, Library) K. Hofstetter

1500 Site Description (Hydrology, Meteorology) W. Riethle

1615 Summary/Conclusion R. Weller

1630 Additional Topics as Necessary NRC/NCRP