September 5, 1979

MEMORANDUM FOR: S. Eilperin, OGC

FROM: J. T. Collins, Deputy Director, TMI-Support

THRU: R. H. Vollmer, Director, TMI-Support

SUBJECT: DRAFT RESPONSE TO INTERROGATORIES FROM THE CITY OF LANCASTER

In response to your request we have prepared and enclosed draft responses to interrogatories from the City of Lancaster dated May 24, 1979.

J. T. Collins, Deputy Director
TMI-Support

cc: R. Vollmer
R. Weller
TMI R/F

DISTRIBUTION:
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TMI-Support

JTCollins:jb
9/ /79

RESPONSE TO INTERROGATORIES FROM THE CITY OF LANCASTER

INTERROGATORY NO. 1

1. Has defendant permitted or approved the discharge of any water from Reactor No. 2 at the Three Mile Island ("TMI") nuclear generating plant referred to in plaintiffs' Complaint and Application herein since May 20, 1979?

RESPONSE:

Since May 20, 1979, the NRC ~~onsite support~~ staff has approved the processing through EPICOR-1 and subsequent discharge of some low-level* radioactive liquid waste originating in Three Mile Island (TMI) Unit 2.

INTERROGATORY NO. 2

2. If the answer to Interrogatory No. 1 is affirmative,

(a) State how much water (in gallons) was discharged and the origin within Reactor No. 2 of such water;

(b) State whether any analysis was performed with respect to that water prior to its discharge, and if so, state in detail:

(i) the exact analysis performed, the person(s) who performed the analysis, the employer(s) of such person(s), and the amount (in gallons) of water analyzed; and

(ii) the complete findings resulting from the analysis, including the designation of all radioactive isotopes, and the extent of their radioactivities, which were found in the water; and

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*Low-level radioactive liquid waste is waste in which, prior to processing, the highest concentration of any radionuclide is less than 1 uCi/ml.

(c) State the basis for defendant having given its permission or approval for the discharge of that water.

RESPONSE:

(a) As shown in enclosure 1, approximately 13,900 gallons of low-level radioactive waste from the Unit 2 contaminated drain tanks were discharged after processing through EPICOR-I. The waste water which collects in the contaminated drain tanks is from the secondary side of the plant.

(b) As indicated in enclosure 1, all water processed through EPICOR-1 for subsequent discharge was sampled and analyzed prior to transfer to EPICOR-1, during processing, and prior to discharge from the plant. The water was analyzed for radionuclide distribution and concentration, pH, conductivity, gross beta activity, and boron, as indicated, in Enclosure 2. The person/group performing the analysis and the amount of water analyzed is also listed in Enclosure 2. All analyses were performed by Metropolitan Edison or contractor personnel. The sample results, including the radionuclide distribution and concentration, are contained in Enclosure 2. The analyses and description of each release to the Susquehanna River are described in Enclosure 3.

(c) The NRC ~~onsite support~~ staff has approved the processing through EPICOR-1 and subsequent discharge of water originating in TMI Unit 2 which is exempted from the Commission's order of May 25, 1979, namely, low level radioactive liquid waste as defined in the response to Interrogatory No. 1.

INTERROGATORY NO. 3

3. Does defendant know of any discharge of water from Reactor No. 2 at TMI since May 20, 1979?

RESPONSE:

See response to Interrogatory No. 1.

INTERROGATORY NO. 4

4. If the answer to Interrogatory No. 3 is in the affirmative,

(a) State the amount of water discharged,

(b) State whether defendant was requested to take any action concerning such discharge, and

(c) If defendant received such a request, state what action defendant took, if any.

RESPONSE:

(a) See response to Interrogatory No. 2

(b) The NRC was not requested to take any actions concerning the discharge of waste made in accordance with the existing Technical Specifications and Federal regulations.

INTERROGATORY NO. 5

5. State whether there has been any construction or installation of water decontamination facilities, or any facilities related thereto, at TMI since May 20, 1979.

RESPONSE:

In relation to the operation of EPICOR-II, the licensee has begun construction of an engineered ~~storage~~ solid waste staging facility for the temporary storage of spent resin liners prior to shipment offsite to a licensed burial ground.

INTERROGATORY NO. 6

6. If the answer to Interrogatory No. 5 is in the affirmative,

(a) Describe in detail the construction or installation activities involved.

(b) State whether defendant has given approval for such construction or installation activities, and

(c) If defendant has given such approval, state whether defendant has granted an amendment to the Metropolitan Edison Company's operating licensing and/or construction permit.

RESPONSE:

Construction activities to date on the engineered solid waste ~~storage~~ staging facility included required excavation of soil, placement of the facility drain pipe and reinforcing steel for the slab, and the pouring of approximately 600 cubic yards of concrete for the facility base slab.

The NRC ~~onsite support~~ staff has provided design criteria for the facility and approval for its construction.

Concerning the construction of the engineered solid waste ~~storage~~ staging facility, the licensee did not provide an amendment to their operating license since a discussion of a facility for the storage of solid waste is already presented

in the Final Safety Analysis Report (Chapter 11)[1] on the operation of TMI Unit 2. The staff's safety evaluation of the facility provided for solid waste storage is contained in the Safety Evaluation Report[2] (Section 11.4) related to the operation of TMI Unit 2. The original storage facility and the facility under construction are designed to the same criteria and, thus, the construction of the new facility does not represent an unreviewed safety matter.

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1 Final Safety Analysis Report, Three Mile Island Nuclear Station, Unit 2, April 4, 1974.

2 Safety Evaluation Report Related to Operation of Three Mile Island Nuclear Station, Unit 2, NUREG-0107, U. S. Nuclear Regulatory Commission, September 1976.

INTERROGATORY NO. 7

7. Has defendant permitted or approved, or does defendant intend to permit or approve, the discharge of any water from Reactor No. 2 at TMI prior to the disposition of plantiffs' Application for a Preliminary Injunction filed herein on May 21, 1979?

RESPONSE:

With respect to water discharged from TMI Unit 2, see response to Interrogatory No. 1 and Interrogatory No. 2.

Concerning future discharges of TMI Unit 2 water, the processing and subsequent discharge of intermediate and high-level waste water is prohibited pending publication and resolution of ~~a~~ Environmental Assessments of the proposed actions, in accordance with the Commission's Order of May 25, 1979. The processing through EPICOR-I for subsequent discharge of low-level radioactive waste water which is exempted from the Commission's Order of May 25, 1979, will be approved, as necessary, to maintain needed surge capacity in Unit 2 auxiliary building tanks so long as the ~~con~~ total activity does not exceed 1 uCi/ml.

INTERROGATORY NO. 8

8. If the answer to Interrogatory No. 7 is in the affirmative,

(a) State the amount of water (in gallons) which defendant has approved and/or intends to approve for discharge,

(b) State whether any analysis has been performed of the water to be discharged prior to permitting or approving such a discharge, and if so, state in detail:

(1) The exact analysis performed, the person(s) who performed the analysis, the employer(s) of such person(s), and the amount (in gallons) of water analyzed;

(2) The complete findings resulting from the analysis, including the designation of all radioactive isotopes, and the extent of their radioactivities, which were found in the water to be discharged; and

(c) State the basis for defendant having given or intending to give its permission or approval for the said discharge.

RESPONSE:

(a) As stated in the response to Interrogatory No. 2, the NRC has approved the discharge of 13,900 gallons of processed Unit 2 water.

Concerning approval of future processing through EPICOR-I and subsequent discharge of low-level radioactive waste from Unit 2, the NRC will continue to approve those wastes exempted from the Commission's Order of May 25, 1979, namely, those wastes defined as low-level radioactive liquid waste (see response to Interrogatory No. 1).

(b) See response to Interrogatory No. 2.

(c) The basis for NRC approval for previous and future discharges of Unit 2 water is the guidance provided in the Commission's Order of May 25, 1979, permitting the processing through EPICOR-I and subsequent discharge of water other than intermediate and high-level radioactive liquid waste (i.e., water defined as low-level radioactive liquid waste).

INTERROGATORY NO. 9

9. State whether defendant expects that there will be any construction or installation of water decontamination facilities, or any facilities related thereto, from and after the date of these Interrogatories and prior to the disposition of plantiffs' Application for a Preliminary Injunction filed herein on May 21, 1979.

RESPONSE:

The NRC staff expects that construction of the engineered solid waste ~~storage~~ staging facility will be completed prior to the disposition of plantiffs' Application for a Preliminary Injunction filed on May 21, 1979.

INTERROGATORY 10

10. If the answer to Interrogatory No. 9 is in the affirmative, describe in detail the further construction or installation of water decontamination facilities contemplated; state whether defendant has given approval to the further contemplated construction or installation; and if such approval has been given, state whether defendant has granted to Metropolitan Edison Company an amendment to its operating license and/or construction permit.

RESPONSE:

Additional construction of the engineered solid waste ~~storage~~ staging facility will include the setting of the corrugated steel cells, placement of additional reinforcing steel, addition of a sump for the facility drainage system, pouring

of concrete for the walls and spaces between storage cells, and application of a decontaminable coating to facility surfaces which may come in contact with contaminated water.

The NRC staff has given approval for the construction of the solid waste staging facility and has not required a license amendment for the facility for the reasons stated in the response to Interrogatory No. 6.

ENCLOSURE 1

TMI UNIT 2 WATER PROCESSED
BY EPICOR I AND RELEASED

| TMI Unit 2 Source | Date of Transfer Unit 2 to 1 | Gallons Transferred | Samples Taken Prior to Transfer, During Processing, and Prior to Release | | TMI Unit 1 WECST Released From | Release Permit Number | Date of Release |
|---|---|---|---|---|---|---|---|
| Cont. Drain Tank (11B) | 5/21/79 | 1,600 | 5881 | 6452 | WECST 11B | 79-79-L | 5/24/79 |
| | | | 6425 | 6533 | | | |
| Cont. Drain Tank (11A) | 5/31/79 | 1,600 | 7687 | 8218 | WECST 11A | 85-79-L | 6/09/79 |
| | | | 7799 | 8219 | | | |
| | | | 8195 | 8258 | | | |
| | | | 8196 | | | | |
| Cont. Drain Tank (11B) | 6/06/79 | 2,000 | 8948 | 9439 | WECST 11A | 85-79-L* | 6/09/79 |
| | | | 9421 | 9463 | and | and | |
| | | | 9438 | 9503 | WECST 11B | 86-79-L* | 6/10/79 |
| Cont. Drain Tank (11A) | 7/16/79 | 2,100 | 13687 | 14247 | WECST 11A | 112-79-L* | 7/26/79 |
| and | and | and | 13688 | 14312 | and | and | and |
| Cont. Drain Tank (11B) | 7/17/79 | 2,000 | 13940 | 14354 | WECST 11B | 113-79-L* | 8/06/79 |
| | | | 13962 | 14360 | | and | and |
| | | | 13988 | 14378 | | 116-79-L* | 8/12/79 |
| | | | 14010 | 14388 | | | |
| | | | 14102 | 14412 | | | |
| | | | 14194 | 14499 | | | |
| | | | 14195 | 14501 | | | |
| | | | 14211 | 14424 | | | |
| | | | 14222 | 14465 | | | |
| | | | 14223 | 14499 | | | |
| | | | 14237 | 14501 | | | |
| | | | 15519 | 15431 | | | |
| | | | 15520 | 15432 | | | |
| | | | 15774 | 15775 | | | |

ENCLOSURE 1 (cont.)

| TMI Unit 2 Source | Date of Transfer Unit 2 to 1 | Gallons Transferred | Samples Taken Prior to Transfer, During Processing, and Prior to Release | | TMI Unit 1 WECST Released From | Release Permit Number | Date of Release |
|---|---|---|---|---|---|---|---|
| Cont. Drain Tank (11A) | 8/02/79 | 2,000 | 14662 | 15522 | WECST 11B | 116-79-L | 8/12/79 |
| | | | 15519 | 15543 | | | |
| | | | 15520 | 15544 | | | |
| | | | 15521 | 15773 | | | |
| Cont. Draink Tank (11B) | 8/07/79 | 2,400 | 15401 | 16004 | WECST 11A | 11-79-L | 8/14/79 |
| | | | 15986 | 16005 | | | |
| | | | 16003 | 16477 | | | |

* Mixing of water within tanks prevents identifying specifically during which release transferred water was sent to the river.

ENCLOSURE 3

TMI Unit 1 Waste Evaporate Condensate Storage Tanks (WECST A & B)

Liquid Releases

Applicable to TMI Unit II Water

Processed by Epicor I

| Release Number | Source of Unit 2 Water in Release | Unit 2 Water Released (Gallons) | Total* Gallons Released | Date Release Started | Date Release Stopped |
|---|---|---|---|---|---|
| 79-79-L | Cont. Drain Tank (11B) | 1,600 | 6,638 | 5/24/79 | 5/25/79 |
| 85-79-L | Cont. Drain Tank (11A0 | 1,600 | 6,638 | 6/09/79 | 6/10/79 |
| | Cont. Drain Tank (11B) | 2,000 | 5,798 | 6/10/79 | 6/11/79 |
| 86-79-L | Cont. Drain Tank (11B) | 2,000 | 5,798 | 6/10/79 | 6/11/79 |
| 112 79-L | Cont. Drain Tank (11A) | 2,100 | 3,993 | 7/26/79 | 7/26/79 |
| 113-79-L | Cont. Drain Tank (11B) | 2,000 | 6,228 | 8/06/79 | 8/07/79 |
| 116-79-L | Cont. Drain Tank (11B) | 2,200 | 6 403 | 8/12/79 | 8/13/79 |
| 117-79-L | Cont. Drain Tank (11B) | 2,400 | 4,370 | 8/14/79 | 8/15/79 |

* The difference between total gallons released and Unit 2 water released is water released from processing Unit 1 water and added to the WECST to accomplish a batch release.

ENCLOSURE II

Sample Results of Tanks
and Related Locations
Associated with Processing
and Releasing TMI Unit II
Water Processed by Epicor I

Note: The sample results are in numerical order. Refer to Enclosure 1 to determine which water transfer and release the sample relates to.

MMH

[redacted] CONTAMINATED DRAIN TK-WDLT-11B

Copy to S.F.

0800 5/19

[redacted] TIME
5/ 19/ 79

COUNT TIME
503 5/ 19/ 79

PRELIMINARY PEAK DATA

COUNT TIME = 33.3333 MINUTES
SAMPLE VOLUME = 1000 MILLILITERS

DECAY TIME = 223 MINUTES

| CENTROID CHANNEL | PEAK ENERGY(KEV) | FWHM (KEV) | PEAK AREA (COUNTS) | + OR - (1 SIG) |
|---|---|---|---|---|
| 158.73 | 79.6581 | 2.2849 | 3531.0 | 129.7 |
| 352.86 | 176.6369 | 1.8606 | 653.4 | 116.9 |
| 568.07 | 284.1422 | 1.6446 | 6344.4 | 120.5 |
| 680.42 | 340.2692 | 1.3196 | 584.0 | 78.0 |
| 728.58 | 364.3238 | 1.3607 | 69130.2 | 275.4 |
| 1005.60 | 502.7095 | 1.9513 | 225.9 | 46.0 |
| 1126.55 | 563.1295 | 2.4548 | 409.2 | 43.1 |
| 1138.73 | 569.2140 | 1.5741 | 814.4 | 46.8 |
| 1209.62 | 604.6268 | 1.5744 | 4678.8 | 78.7 |
| 1274.27 | 636.9224 | 2.0047 | 3563.6 | 68.6 |
| 1323.62 | 661.5750 | 1.5956 | 16934.8 | 133.8 |
| 1446.23 | 722.8243 | 2.0286 | 823.4 | 34.6 |
| 1592.27 | 795.7780 | 2.1122 | 3215.9 | 60.0 |
| 1604.61 | 801.9424 | 1.3186 | 278.0 | 23.6 |
| [redacted]50 | 810.8793 | 2.0629 | 189.4 | 19.2 |
| [redacted]62 | 813.4324 | 1.6342 | 634.5 | 28.9 |
| [redacted]10 | 1047.9637 | 2.1276 | 455.0 | 23.3 |
| 2471.68 | 1235.0836 | 2.4511 | 79.2 | 11.3 |
| 2923.00 | 1460.5386 | 1.7870 | 50.5 | 8.2 |

PRELIMINARY PEAK IDENTIFICATION

EFFICIENCY TABLE USED = 46

| NUCLIDE | OBSERVED ENERGY | LIBRARY ENERGY | GAMMAS PER MIN. | UCI PER ML. |
|---|---|---|---|---|
| K-40 | 1460.53 | 1460.00 | 1155.19 | 4.730E-06 |
| CO-58 | 810.88 | 810.60 | 2722.06 | 1.239E-06 |
| GA-72 | 810.88* | 810.20 | 3307.18 | 7.094E-05 |
| SB-122 | 563.13 | 564.07 | 4478.43 | 3.202E-06 |
| SB-124 | 722.82 | 722.76 | 10763.35 | 4.524E-05 |
| I-131 | 284.14 | 284.31 | 36624.52 | 3.055E-04 |
| I-131 | 364.32 | 364.49 | 495694.92 | 2.723E-04 |
| I-131 | 636.92 | 637.01 | 42316.61 | 2.803E-04 |
| I-131 | 722.82* | 722.92 | 10897.70 | 3.068E-04 |

| | | | | |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| CS-134 | 795.78 | 795.84 | 45446.79 | 2.326E-05 |
| CS-134 | 801.94 | 801.80 | 3953.58 | 1.979E-05 |
| CS-136 | 176.64 | 176.00 | 2614.10 | 8.722E-06 |
| CS-136 | 340.27 | 340.60 | 3905.00 | 3.953E-06 |
| CS-136 | 818.43 | 818.50 | 9255.27 | 4.169E-06 |
| CS-136 | 1047.96 | 1048.10 | 8081.04 | 4.522E-06 |
| CS-136 | 1235.08 | 1235.40 | 1599.16 | 3.657E-06 |
| CS-137 | 661.58 | 661.64 | 204871.70 | 1.073E-04 |
| PA-233 | 340.27* | 340.50 | 3887.08 | 4.490E-05 |
| BR-84 | 810.88* | 810.00 | 504060.53 | 2.523E-03 |

* PEAK HAS BEEN PREVIOUSLY MATCHED

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UNIDENTIFIED PEAKS

| ENERGY | GAMMAS/MIN. AT COUNT TIME |
|---|---|
| 79.66 | ++ |
| 502.71 | 2143.32 |

++ PEAK IS OUTSIDE CALIBRATED REGION

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*** FINAL SUMMARY OF NUCLIDES OBSERVED ***

DATE: 5/ 19/ 79

| NUCLIDE | WEIGHTED MEAN ACTIVITY | + OR - 1 SIGMA |
|---|---|---|
| K-40 | 4.730E-06 | 9.610E-07 |
| CO-58 | -1.239E-06 | 1.961E-07 |
| I-131 | 2.753E-04 | 3.948E-05 |
| CS-134 | 2.379E-05 | 2.936E-06 |
| CS-136 | 4.441E-06 | 6.842E-07 |
| CS-137 | 1.073E-04 | 1.308E-05 |

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*** MINIMUM DETECTABLE ACTIVITIES ***
*** BASIS: 99% C.L. AT COUNT TIME ***

| NUCLIDE | ENERGY (KEV) | ABS.EFF. | BR(%) | MDA (UCI/ML) |
|---|---|---|---|---|
| [illegible]-51 | 3.201E+02 | 4.787E-03 | 9.800E+00 | 3.854E-06 |
| [illegible]-54 | 8.348E+02 | 2.042E-03 | 1.000E+02 | 1.552E-07 |
| CO-57 | 1.221E+02 | 8.825E-03 | 8.700E+01 | 3.591E-07 |
| FE-59 | 1.099E+03 | 1.642E-03 | 5.640E+01 | 1.531E-07 |
| CO-60 | 1.173E+03 | 1.560E-03 | 1.000E+02 | 1.602E-07 |
| ZR-95 | 7.567E+02 | 2.213E-03 | 5.460E+01 | 2.600E-07 |

6425 HALLIBURTON #2 INFLUENT

#6425 5/23 0245

SAMPLE TIME
400 5/ 22/ 79

COUNT TIME
209 5/ 23/ 79

----------PRELIMINARY PEAK DATA----------

COUNT TIME = 16.6666 MINUTES DECAY TIME = 1329 MINUTES
SAMPLE VOLUME = 250 MILLILITERS

| CENTROID CHANNEL | PEAK ENERGY(KEV) | FWHM (KEV) | PEAK AREA (COUNTS) | + OR - (1 SIG) |
|---|---|---|---|---|
| 324.48 | 162.4583 | 1.1651 | 290.9 | 39.9 |
| 656.97 | 328.5538 | 1.6406 | 963.8 | 42.8 |
| 728.45 | 364.2598 | 1.3930 | 634.3 | 36.2 |
| 865.16 | 432.5508 | 2.5446 | 80.8 | 23.9 |
| 973.95 | 486.9003 | 1.6795 | 1504.4 | 46.0 |
| 994.11 | 496.9712 | 1.7531 | 989.8 | 30.5 |
| 1021.91 | 510.8571 | 2.6421 | 842.6 | 27.2 |
| 1074.53 | 537.1432 | 2.1994 | 865.8 | 27.9 |
| 1209.55 | 604.5918 | 1.5879 | 968.5 | 27.4 |
| 1323.70 | 661.6150 | 1.5716 | 895.5 | 33.9 |
| 1503.92 | 751.6431 | 1.5741 | 123.5 | 17.1 |
| 1531.32 | 765.3307 | 1.8710 | 127.5 | 18.0 |
| 1592.29 | 795.7880 | 2.1302 | 179.0 | 17.6 |
| 1621.78 | 810.5196 | 1.9132 | 330.6 | 25.4 |
| 1633.42 | 815.8348 | 1.7948 | 448.2 | 29.3 |
| 1736.38 | 867.7675 | 1.2800 | 106.7 | 15.5 |
| 1770.17 | 884.6472 | 1.7035 | 66.3 | 13.9 |
| 1851.25 | 925.1504 | 2.0020 | 134.5 | 16.6 |
| 3194.31 | 1596.0704 | 2.2655 | 1107.0 | 33.9 |

* PRELIMINARY PEAK IDENTIFICATION *

EFFICIENCY TABLE USED = 45

| NUCLIDE | OBSERVED ENERGY | LIBRARY ENERGY | GAMMAS PER MIN. | UCI PER ML. |
|---|---|---|---|---|
| CO-58 | 810.52 | 810.80 | 4352.28 | 7.921E-06 |
| GA-72 | 810.52* | 810.20 | 12898.99 | 1.107E-03 |
| GA-72 | 1596.07 | 1596.80 | 77013.35 | 3.186E-03 |
| NB-95 | 765.33 | 765.79 | 1605.01 | 2.921E-06 |
| RU-103 | 496.97 | 497.10 | 4089.86 | 8.188E-06 |
| AG-110M | 884.65 | 884.67 | 941.63 | 2.259E-06 |
| I-131 | 364.26 | 364.49 | 4029.52 | 8.054E-06 |
| CS-134 | 604.59 | 604.73 | 2665.38 | 4.900E-06 |
| CS-134 | 795.7* | 795.84 | 2297.21 | 4.704E-06 |
| CS-137 | 661.61 | 661.64 | 7498.06 | 1.571E-05 |
| LA-140 | 328.75 | 328.77 | 7510.55 | 6.268E-05 |
| LA-140 | 486.98 | 486.97 | 17751.73 | 6.874E-05 |
| LA-140 | 751.64 | 751.64 | 2305.15 | 8.821E-05 |
| LA-140 | 15.6 | 815.74 | 9542.07 | 6.413E-05 |
| LA-140 | 867.77 | 867.85 | 2179.59 | 6.894E-05 |
| LA-140 | 925.13 | 925.20 | 7916.59 | 7.843E-05 |
| LA-140 | 1596.0* | 1596.17 | 30401.72 | 7.133E-05 |
| BA-140 | 537.14 | 537.30 | 3415.21 | 1.810E-05 |

UNIDENTIFIED PEAKS

| ENERGY | GAMMAS/MIN. AT COUNT TIME |
|---|---|
| 102.46 | 866.29 |
| 432.55 | 567.21 |
| 510.86 | 2050.62 |

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* FINAL SUMMARY OF NUCLIDES OBSERVED *
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DATE: 5/ 23/ 79

| NUCLIDE | WEIGHTED MEAN ACTIVITY | + OR - 1 SIGMA |
|---|---|---|
| CO-58 | 7.921E-06 | 1.140E-06 |
| NB-95 | 2.921E-06 | 5.437E-07 |
| CS-134 | 4.807E-06 | 7.354E-07 |
| CS-137 | 1.571E-05 | 2.059E-06 |
| LA-140 | 6.953E-05 | 8.949E-06 |
| BA-140 | 1.810E-05 | 2.600E-06 |
| I 131 | 8.15 E-6 | |

**************************************
* MINIMUM DETECTABLE ACTIVITIES *
* BASIS: 99% C.L. AT COUNT TIME *
**************************************

| NUCLIDE | ENERGY (KEV) | ABS.EFF. | ERROR | MDA (UCI/ML) |
|---|---|---|---|---|
| CR-51 | 3.201E+02 | 1.159E-02 | 9.000E+00 | 4.762E-06 |
| MN-54 | 8.348E+02 | 4.472E-03 | 1.000E+02 | 2.147E-07 |
| CO-57 | 1.221E+02 | 2.222E-02 | 8.700E+01 | 1.394E-07 |
| FE-59 | 1.099E+03 | 3.477E-03 | 5.400E+01 | 1.401E-06 |
| CO-60 | 1.173E+03 | 3.287E-03 | 1.000E+02 | 8.116E-07 |
| ZR-95 | 7.567E+02 | 4.907E-03 | 5.400E+01 | 4.623E-07 |
| NB-24 | 1.369E+03 | 2.393E-03 | 1.000E+02 | 8.984E-07 |
| KR-85 | 5.140E+02 | 7.055E-03 | 4.700E-01 | 1.167E-04 |
| XE-133 | 8.100E+01 | 1.691E-02 | 3.500E+01 | 1.112E-05 |
| I-131 | 3.645E+02 | 1.023E-02 | 8.200E+01 | 1.120E-06 |
| I-133 | 5.295E+02 | 6.846E-03 | 8.500E+01 | 5.005E-07 |
| CS-136 | 8.185E+02 | 4.557E-03 | 1.000E+02 | 6.560E-07 |
| MO-99 | 7.403E+02 | 2.159E-03 | 9.500E+01 | 3.118E-07 |
| CE-141 | 1.456E+02 | 2.130E-02 | 4.300E+01 | 6.644E-07 |
| ZN-65 | 1.115E+03 | 3.432E-03 | 4.200E+01 | 1.155E-06 |

6452

6452 (GROSS)

1230.5/22

SAMPLE TIME
700 5 22 79

COUNT TIME
1150 5 22 79

-PRELIMINARY PEAK DATA-

COUNT TIME = 16,666.0 MINUTES
SAMPLE VOLUME = 50 MILLILITERS

DELAY TIME = 270 MINUTES

| CENTROID CHANNEL | PEAK ENERGY (KEV) | ±UNC (KEV) | PEAK AREA (COUNTS) | ± OF ± (1 SIG) |
|---|---|---|---|---|
| 624.34 | 162.3904 | 0.9005 | 229.0 | 40.4 |
| 657.18 | 308.6562 | 1.7521 | 805.7 | 40.8 |
| 728.72 | 364.3927 | 1.8646 | 585.1 | 36.0 |
| 864.20 | 432.0722 | 3.6629 | 124.0 | 27.8 |
| 974.01 | 486.9293 | 1.6450 | 1240.6 | 41.9 |
| 994.68 | 496.9567 | 1.6057 | 303.5 | 29.4 |
| 1022.19 | 510.9969 | 3.5105 | 310.8 | 30.9 |
| 1074.52 | 537.1302 | 2.4053 | 316.6 | 20.9 |
| 1209.74 | 604.6867 | 2.3670 | 303.2 | 28.5 |
| 1315.03 | 657.2839 | 1.3430 | 83.3 | 27.5 |
| 1324.03 | 661.7790 | 1.5804 | 509.2 | 36.1 |
| 1503.37 | 751.3684 | 1.6315 | 88.6 | 16.3 |
| 1530.43 | 764.8861 | 3.9944 | 148.2 | 19.5 |
| 1592.06 | 795.6731 | 2.1479 | 217.9 | 18.8 |
| 1622.07 | 810.6645 | 2.0087 | 617.0 | 30.3 |
| 1632.74 | 815.9956 | 2.0162 | 239.0 | 29.1 |
| 1736.55 | 867.8[illegible] | 1.1235 | 94.9 | 16.1 |
| 1770.17 | 884.64.2 | 2.1362 | 181.2 | 17.4 |
| 1851.24 | 925.1453 | 1.7115 | 145.0 | 15.9 |
| 1875.06 | 937.4442 | 1.7730 | 99.0 | 14.2 |
| 2342.97 | 1172.2048 | 2.0625 | 61.4 | 13.7 |
| 3193.95 | 1596.2805 | 3.1520 | 953.2 | 61.7 |

- PRELIMINARY PEAK IDENTIFICATION -

EFFICIENCY TABLE USED = 45

| NUCLIDE | OBSERVED ENERGY | LIBRARY ENERGY | GAMMAS PER MIN. | UCI PER ML. |
|---|---|---|---|---|
| CO-58 | 810.66 | 810.80 | 8066.21 | 1.468E-05 |
| CO-60 | 1173.28 | 1173.20 | 1119.02 | 2.016E-06 |
| GA-72 | 830.66* | 830.20 | 10112.80 | 8.677E-04 |
| GA-72 | 1595.88 | 1596.20 | 28315.99 | 1.160E-03 |
| NB-95 | 764.89 | 765.79 | 1837.62 | 3.344E-06 |
| RU-103 | 496.96 | 497.10 | 3161.20 | 6.329E-06 |
| AG-110M | 657.28 | 657.74 | 893.00 | 1.704E-06 |
| AG-110M | 884.65 | 884.67 | 3500.30 | 6.162E-06 |
| AG-110M | 937.44 | 937.48 | 1418.02 | 7.428E-06 |
| I-131 | 364.29 | 364.49 | 3490.20 | 7.669E-06 |
| I-134 | 438.67 | 433..4 | 35493.69 | 1.437E-03 |
| I-134 | 884.65* | 884.10 | 101799.80 | 2.361E-04 |
| CS-134 | 604.69 | 604.70 | 3808.22 | 5.531E-06 |
| CS-134 | 795.84 | 795.84 | 2742.30 | 5.718E-06 |
| CS-137 | 661.77* | 661.64 | 6754.20 | 1.301E-05 |
| LA-140 | 487.05 | [illegible] | 4633.53 | 2.865E-05 |
| LA-140 | 816.93 | 487.0 | 19901.03 | 4.105E-05 |
| LA-140 | [illegible] | 751.64 | 5167.21 | 4.66.E-05 |
| LA-140 | [illegible] | 815.74 | 1524.05 | 2.552E-05 |
| LA-140 | 867.[illegible] | [illegible] | 1424.31 | 4.502E-05 |
| LA-140 | [illegible] | [illegible] | 1333.80 | 5.278E-05 |
| LA-140 | 1596.8[illegible] | 1596.2 | 21410.05 | 4.559E-05 |
| BA-140 | 537.14 | 537.24 | 2840.05 | 1.505E-05 |
| [illegible] | 810.66* | 810.80 | 403170.21 | 6.942E-02 |

UNIDENTIFIED PEAKS

| ENERGY | GAMMAS/MIN. AT COUNT TIME |
|---|---|
| 162.39 | 681.79 |
| 511.00 | 2695.48 |

**********
* FINAL SUMMARY OF NUCLIDES OBSERVED *
**********

DATE: 5/ 22/ 79

| NUCLIDE | WEIGHTED MEAN ACTIVITY | + OR - 1 SIGMA |
|---|---|---|
| CO-58 | 1.468E-05 | 1.926E-06 |
| NB-95 | 3.344E-06 | 5.000E-07 |
| CS-134 | 5.620E-06 | 8.525E-07 |
| CS-137 | 1.331E-05 | 1.814E-06 |
| LA-140 | 4.195E-05 | 5.748E-06 |
| BA-140 | 1.505E-05 | 2.289E-06 |

GH = 5.37 B-490
CoD-3.17

**********
* MINIMUM DETECTABLE ACTIVITIES *
* BASIS: 99% C.L. AT COUNT TIME *
**********

| NUCLIDE | ENERGY (KEV) | ABS.EFF. | BR(%) | MDA (UCI/ML) |
|---|---|---|---|---|
| CR-51 | 3.201E+02 | 1.159E-02 | 9.800E+00 | 5.017E-06 |
| MN-54 | 8.348E+02 | 4.472E-03 | 1.000E+02 | 5.471E-07 |
| CO-57 | 1.221E+02 | 2.222E-02 | 8.700E+01 | 3.428E-07 |
| FE-59 | 1.099E+03 | 3.477E-03 | 5.640E+01 | 9.907E-07 |
| CO-60 | 1.173E+03 | 3.287E-03 | 1.000E+02 | 1.053E-06 |
| ZR-95 | 7.567E+02 | 4.907E-03 | 5.460E+01 | 9.702E-07 |
| NA-24 | 1.369E+03 | 2.893E-03 | 1.000E+02 | 7.463E-07 |
| KR-85 | 5.140E+02 | 7.055E-03 | 4.300E-01 | 1.409E-04 |
| XE-133 | 8.100E+01 | 1.692E-02 | 3.500E+01 | 1.158E-06 |
| I-131 | 3.645E+02 | 1.022E-02 | 8.200E+01 | 1.084E-06 |
| I-133 | 5.299E+02 | 6.846E-03 | 8.900E+01 | 6.008E-07 |
| CS-136 | 8.185E+02 | 4.557E-03 | 1.000E+02 | 6.722E-07 |
| MO-99 | 1.403E+02 | 2.159E-02 | 9.500E+01 | 3.098E-07 |
| CE-141 | 1.454E+02 | 2.130E-02 | 4.800E+01 | 6.822E-07 |
| ZN-65 | 1.115E+03 | 3.433E-03 | 4.900E+01 | 1.138E-06 |

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 5/22/79 Sample No.: 6533

Time: 2100 Results Date: _____

Sample ID: Unit No. Cap Gunn Halliburton #2 Effluent

Requestor: Cap Gunn Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ✓

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: _____ Date/Time: 5/22/79

Liquid Volume: 1500ml 1250ml Air Volume: _____ Time On: 1930

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ✓ PH ✓ Cond. ✓ B ✓

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: 5/22/79 2200

Counter's Signature: R. L. Fisher

Chem Results: $\alpha$ = 6.13 , $\beta$ = 10.35 , $\beta$ = 4.10

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

0030
5/23

SAMPLE TIME
1430 5/ 22/ 79

COUNT TIME
2236 5/ 22/ 79

PRELIMINARY PEAK DATA

COUNT TIME = 16.6666 MINUTES
SAMPLE VOLUME = 250 MILLILITERS

DECAY TIME = 186 MINUTES

| CENTROID CHANNEL | PEAK ENERGY(KEV) | FWHM (KEV) | PEAK AREA (COUNTS) | + OR - (1 SIG) |
|---|---|---|---|---|
| 657.08 | 328.6063 | 1.6527 | 472.5 | 36.0 |
| 728.52 | 364.2473 | 2.0829 | 335.2 | 31.6 |
| 854.42 | 427.1896 | 0.7986 | 59.0 | 23.8 |
| 973.91 | 486.8804 | 1.6610 | 742.0 | 35.5 |
| 994.20 | 497.0166 | 1.6867 | 241.0 | 26.6 |
| 1021.69 | 510.7472 | 2.2210 | 364.0 | 32.6 |
| 1074.14 | 536.9483 | 1.8980 | 110.4 | 22.0 |
| 1209.19 | 604.4120 | 2.1279 | 385.5 | 31.8 |
| 1314.50 | 657.0192 | 1.3825 | 169.2 | 29.1 |
| 1324.35 | 661.9397 | 1.6299 | 511.9 | 36.9 |
| 1529.60 | 764.1717 | 1.4874 | 52.0 | 17.6 |
| 1592.05 | 795.6681 | 2.1348 | 240.6 | 21.2 |
| 1621.97 | 810.6145 | 1.8794 | 868.5 | 32.7 |
| 1636.58 | 817.9129 | 1.9316 | 96.8 | 25.1 |
| 1736.46 | 867.9075 | 1.3460 | 51.4 | 12.7 |
| 1770.08 | 884.6822 | 1.7843 | 210.1 | 18.5 |
| 1851.13 | 925.0904 | 2.0734 | 62.5 | 11.7 |
| 1875.54 | 937.4842 | 1.6880 | 94.4 | 13.3 |
| 2347.75 | 1173.1749 | 2.3873 | 99.4 | 14.1 |
| 2923.78 | 1460.9282 | 3.5480 | 37.9 | 9.4 |
| 3194.31 | 1596.0704 | 2.6808 | 76.0 | 23.9 |

PRELIMINARY PEAK IDENTIFICATION

EFFICIENCY TABLE USED = 45

| NUCLIDE | OBSERVED ENERGY | LIBRARY ENERGY | CAMBRS PER MIN. | UC, PER ML. |
|---|---|---|---|---|
| K-40 | 1460.92 | 1460.90 | 809.01 | 1.325E-05 |
| CO-58 | 810.61 | 810.80 | 11047.06 | 2.065E-05 |
| CO-60 | 1173.17 | 1173.20 | 1814.34 | 3.269E-06 |
| GA-72 | 810.61* | 810.20 | 13287.05 | 1.140E-03 |
| GA-72 | 1596.07 | 1596.30 | 15033.42 | 6.275E-04 |
| RU-103 | 497.02 | 497.10 | 1904.80 | 3.974E-06 |
| AG-110M | 657.02 | 657.74 | 1812.00 | 3.466E-06 |
| AG-110M | 884.60 | 884.67 | 3090.71 | 7.415E-06 |
| AG-110M | 937.48 | 937.48 | 1411.03 | 7.395E-06 |
| I-131 | 364.20 | 364.49 | 1988.98 | 4.370E-06 |
| I-134 | 884.60* | 884.10 | 41177.62 | 1.1[illegible]E-04 |
| CS-134 | 604.11 | 604.70 | 3023.96 | 7.029E-06 |
| CS-134 | 795.07 | 795.84 | 3085.05 | 6.817E-06 |
| CS-136 | 817.91 | 818.50 | 1282.97 | 2.811E-06 |
| CS-137 | 661.94 | 661.64 | 5520.95 | 1.157E-05 |
| BA-140 | 537.61 | 537.27 | 2652.10 | 2.211E-05 |
| BA-140 | 1596.30 | 1597.04 | 6305.41 | 2.447E-05 |
| LA-140 | 487.1 | 487.0 | 75.21 | 2.024E-05 |
| LA-140 | 815.0* | 815.8 | 476.01 | 1.623E-05 |
| LA-140 | 1596.30* | 1596.2 | 11018.40 | 2.580E-05 |
| CE-144 | 696.4 | 696.5 | 1058.59 | 5.610E-06 |
| EE-64 | 810.61* | 810.80 | 732614.25 | 1.567E-02 |

* ITEM NOT USED FOR EFFICIENCY CALCULATION

| | |
|---|---|
| 437.19 | 403.39 |
| 510.75 | 3026.13 |
| 764.17 | 641.75 |

+ FINAL SUMMARY OF NUCLIDES OBSERVED +

DATE: 5/ 22/ 79

| NUCLIDE | WEIGHTED MEAN ACTIVITY | + OR - 1 SIGMA |
|---|---|---|
| | 0.735E-05 | |
| K-40 | 1.455E-05 | 3.674E-06 |
| CO-58 | 2.065E-05 | 2.630E-06 |
| CS-134 | 6.692E-06 | 9.495E-07 |
| CS-137 | 1.157E-05 | 1.636E-06 |
| BA-140 | 5.610E-06 | 1.247E-06 |
| I 131 | 4.37 E-6 | |

+ MINIMUM DETECTABLE ACTIVITIES +
+ BASIS: 99% C.L. AT COUNT TIME +

| NUCLIDE | ENERGY (KEV) | ABS.EFF. | BR(%) | MDA (UCI/ML) |
|---|---|---|---|---|
| CR-51 | 3.201E+02 | 1.159E-02 | 9.900E+00 | 6.992E-07 |
| MN-54 | 8.348E+02 | 4.472E-03 | 1.000E+03 | 8.318E-07 |
| CO-57 | 1.221E+02 | 2.[illegible]E-02 | 8.700E+01 | 2.052E-07 |
| FE-59 | 1.097E+02 | 3.477E-02 | 5.[illegible]E+01 | 3.594E-07 |
| CO-60 | 1.173E+03 | 3.287E-03 | 1.000E+02 | 1.118E-06 |
| ZN-65 | 2.567E+02 | 4.30[illegible]E-03 | 5.[illegible]E+01 | 9.[illegible]E-07 |
| NB-95 | 7.659E+02 | 4.852E-03 | 9.[illegible]E-01 | 8.115E-07 |
| NA-24 | 1.369E+03 | 2.903E-03 | 1.000E+02 | 6.715E-07 |
| LA-[illegible] | 5.146E+02 | 7.059E-03 | [illegible]E+01 | [illegible] |
| [illegible]E-133 | 8.100E+01 | 1.6[illegible]E+02 | 3.[illegible]E+01 | [illegible] |
| I-131 | 3.645E+02 | 1.023E-02 | 8.[illegible]E+01 | 1.04[illegible]E-06 |
| I-133 | 5.297E+02 | 6.84[illegible]E-03 | 2.000E+01 | 5.[illegible]E-07 |
| CS-136 | 3.818E+02 | 4.557E-03 | 8.[illegible]E+01 | 6.033E-07 |
| MO-99 | 1.403E+02 | 2.[illegible]E-02 | 1.[illegible]E+02 | 6.192E-07 |
| CE-141 | 1.451E+02 | 2.130E-02 | 9.500E+01 | 2.963E-07 |
| ZR-[illegible] | 1.115E+03 | 3.433E-03 | 4.[illegible]E+01 | 8.047E-07 |
| | | | 4.300E+01 | 1.099E-06 |

## SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 5/22/79 Sample No.: 6533

Time: 2100 Results Date: _____

Sample ID: Unit No. Cap Gun Halliburton No 2 Effluent

Requestor: Cap Gunn Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ✓

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: _____ Date/Time: 5/22/79

Liquid Volume: ~~1500ml~~ 1250ml Air Volume: _____ Time On: 1930

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ✓ PH ✓ Cond. ✓ B ✓

_____

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: May 22, 1979 2317

Counter's Signature: Mark II Portillo #4

Chem Results: _____

_____

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

5129
2145

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ✓ RMC ____ EG&G ____ NRC ____

Title U-2 CONTAMINATED DRAIN TANK LVDL-T-A Sample No. 7687

Time/Date Sample 5/24 1545 Time/Date Analysis 5/24 1936

Geometry 9451 Counting Time 1E3

Volume 500 ml Analyst CSHalamak

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | 1.89E-5 | | 3.3% |
| Cs-137 | 8.6E-5 | | 1.6% |
| Cs-134 | 2.2E-5 | | 3.3% |
| Co-58 | 1.3E-5 | | 4.6% |
| Co-60 | | < 4.0E-7 | |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1 Date: 5/29/79 Sample No.: 7687

Time: 1555 Results Date: _____

Sample ID: Unit No. 2 Contaminated Drain Tank WDL-T-1A

Requestor: Rad Waste Ext. No. _____

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ____

SAI ✓ RMS ____

NRC ____ EG&G ____ Other: _____

---

Name of Collector: Gordon Reider Date/Time: 1545 5/29/79

To be completed by Sample Collector

Liquid Volume: 500 ml Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ✓ PH _____ Cond. _____ B _____

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: 5/29 1936

Counter's Signature: C. Hudsnach

Chem Results: _____

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

5-29
2200

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1 Date: 5/29/79 Sample No.: 7687

Time: 1555 Results Date: _____

Sample ID: Unit No. 2 Contaminated Drain Tank WDL-T-11A

Requestor: Rad Waste Ext. No. _____

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ____

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

Met Ed Chem –

Name of Collector: Gordon Reider Date/Time: 1545 5/29/79

To be completed by Sample Collector

Liquid Volume: 500 ml Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ____ PH ✓ Cond. ✓ B _____

TDS

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: 6.46 on 7925

Chem Results: pH - 4.2 Cond 6.24

TDS 1378

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

7799
5/30
1400

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1 Date: 5-30-79 Sample No.: 7799

Time: 0845 Results Date: _____

Sample ID: Unit No. 2 Cont. Dr. Tk A

WDLT-11A

Requestor: RADWASTE Ext. No. _____

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ____

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: H F Date/Time: 5/30/79@0845

Liquid Volume: _____ Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ____ PH X Cond. ____ B ____

Resample for pH Only!

Signature: H E Chwalek

---

To be completed by Lab

Scan/Chem Completed: Date/Time: @ 5/30 0845

Counter's Signature: _____

Chem Results: PH 4.73

_____

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

#8195

0945 6/1

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 X B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title #8195 DEMIN #3 BOTTLE Sample No. 8195

Time/Date Sample 6-1-79 @ 0630 Time/Date Analysis 0914 6-1-79

Geometry 250 ml BOTTLE Counting Time 1000 SEC

Volume 250 ml Analyst ____

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | 2.06E-7 | |
| Cs-134 | | 2.16E-7 | |
| Cs-137 | | 3.10E-7 | |
| Co-58 | | 2.25E-7 | |
| Co-60 | | 2.04E-7 | |
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#8196
1030 6/1

GAMMA ANALYSIS SUMMARY SHEET

ME No.: 1 ____ No. 2 X B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title DENIN # 8 EFF Sample No. 8196

Time/Date Sample 730 6/1/79 Time/Date Analysis 937 6/1/79

Geometry 250 ml Bottle Counting Time 20005

Volume 250 ml Analyst DJ Schomb

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| K40 | 1.02 E-05 | | ± 1.9 E-6 |
| CS-137 | 3.86 E-07 | | ± 1.11 E-7 |
| I-131 | | 1.7E-7 | |
| CS-134 | | 1.6E-7 | |
| Co-58 | | 1.8 E-7 | |
| Co-60 | | 2.0 E-7 | |
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1315 6/1

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 6/1/79 Sample No.: 8218

Time: 1130 Results Date:

Sample ID: Unit No. Cap Gunn Demin #8 EFF

Requestor: Cap. Gunn Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ✓

SAI ____ RMS ____

NRC ____ EG&G ____ Other: ____

---

To be completed by Sample Collector

Name of Collector: ____ Date/Time: 6/1/79

Liquid Volume: (1) 500ml (1) 250ml

Air Volume: ____

Time On: ____

Other: ____

Flow Rate: ____

Time Off: 0830

Analysis Requested: ~~γ~~ Scan ✓ PH ✓ Cond. ✓ B ✓

Signature: ____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: 6/1/79 1300

Counter's Signature: CEH

Chem Results: pH = 6.42, COND = .76, B = <10 ppm

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

#8218
1320 6/1

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 X B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title #8 DEMIN EFF Sample No. 8218

Time/Date Sample 830 6/1/79 Time/Date Analysis 1220 6/1/79

Geometry bottle Counting Time 1000 s

Volume 250 ml Analyst RJ Schamber

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| K-40 | 1.07 E-5 | | ± 2.5 E-6 |
| Co-57 | | 8.9 E-8 | |
| Co-60 | | 3.1 E-7 | |
| I-133 | | 3.13 E-7 | |
| Cs-134 | | 2.3 E-7 | |
| Cs-137 | | 3.6 E-7 | |
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* Run First #8219
1315 6/1

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A* Date: 6/1/79 Sample No.: 8219

Time: 1130 Results Date: _____

Sample ID: Unit No. Cap Gunn Demin #8 Eff.

Requestor: Cap Gunn Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ✓

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: _____ Date/Time: 6/1/79

Liquid Volume: (1) 500ml (1) 250ml

Air Volume: _____

Time On: _____

Other: _____

Flow Rate: _____

Time Off: 1000

Analysis Requested: γ Scan ✓ PH ✓ Cond. ✓ B ✓

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: 6/1/79 1300

Counter's Signature: JFB

Chem Results: pH = 5.11 Cond. = 17 B = <10 ppm

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI 109 5/79

#8211
1235 6/1

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 X B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title DEMIN #8 Effluent Sample No. 8219

Time/Date Sample 1000 6/1/79 Time/Date Analysis 1200 6/1/79

Geometry 250ml bottle Counting Time 1000 s

Volume 250ml Analyst Carl Schmoker

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | 2.2 E-7 | - |
| CS-134 | | 1.99 E-7 | |
| CS-137 | | 4.1 E-7 | |
| CO-57 | | 8.7 E-8 | |
| CO-60 | | 2.3 E-7 | |
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6-2 61
0320 8258

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ✓ RMC ____ EG&G ____ NRC ____

Title Cap Stm Drain #8 EF Sample No. 8258

Time/Date Sample 6/1 1730 Time/Date Analysis 6/2 03:15

Geometry 5"x5" Counting Time 1000

Volume 500 Analyst D Holland

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | 3E-8 | | 45% |
| Cs-134 | 3E-8 | | 44.5 |
| Cs-137 | 4E-8 | | 33.7 |
| Co-58 | | <3E-7 | |
| Co-60 | 1E-7 | | 22.3 |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 6/5/79 Sample No.: 8948

Time: 1205 Results Date: _____

Sample ID: Unit No. U2 CONTAMINATED DRAIN TK B

Requestor: RADWASTE _____ Ext. No. _____

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ✓

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: _____ Date/Time: 6/5 ; 1540

Liquid Volume: 500 ml TO 1 L Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ✓ PH ✓ Cond. ✓ B ✓

( 715' 691 mR/hr 3² pr.

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: _____

_____

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

6-5
1720

GAMMA ANALYSIS SUMMARY SHEET

ME No.: T ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title U-2 CONT DRAIN TANK B Sample No. 8948

Time/Date Sample 1540 6/5/79 Time/Date Analysis 1906 6/5/79

Geometry 10 ml bottle Counting Time 1000S

Volume 10 ml Analyst RJ Schonahe

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| CS-137 | 4.5 E-04 | | 5.8 E-05 |
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#9421

0700 6/8

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ✓ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title Ip Conn; Gate 10 Area; Demin Eff #8 Sample No. 9421

Time/Date Sample 0330 6/8/79 Time/Date Analysis 0442 6/8/79

Geometry 250ml plastic bottle Counting Time 1000sec

Volume 250ml Analyst Peter Petrucci

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 2.934E-06 | | 7.254E-07 |
| Nb-95 | 6.289E-06 | | 9.728E-07 |
| Cs-134 | 5.086E-06 | | 8.167E-07 |
| Cs-137 | 1.951E- | | 2.577E-06 |
| La-140 | 1.307E-04 | | 1.639E-05 |
| Ba-140 | 3.809E-05 | | 5.010E-06 |
| I-131 | | 8.252E-07 | |
| Co-60 | | 1.015E-06 | |
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#9438

0830 6/8

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ✓ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title Demin #8 EFF (Gate 10 area) Sample No 9438

Time/Date Sample 0430 6/8/79 Time/Date Analysis 0621 6/8/79

Geometry 250ml bottle Counting Time 1000 sec.

Volume 250ml Analyst Peter Kolevatov

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Kr-85 | 7.414E-05 | | 9.553E-05 |
| Nb-95 | 6.262E-06 | | 9.581E-07 |
| Ru-103 | 9.464E-05 | | 1.044E-05 |
| Cs-134 | 3.559E-06 | | 8.143E-07 |
| Cs-137 | 1.513E-05 | | 2.041E-06 |
| La-140 | 1.785E-04 | | 2.196E-05 |
| Ba-140 | 9.149E-05 | | 5.430E-06 |
| I-131 | | 9.110E-07 | |
| Co-58 | | 1.099E-06 | |
| Co-60 | | 1.039E-06 | |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1 Date: 6-8-79 Sample No.: 9439

Time: 0430 Results Date: _____

Sample ID: Unit No. Demin #8 EFF _____

(Gate 10 area) _____

Requestor: Cap-Gun Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W X

SAI ____ RMS ____ CHEM

NRC ____ EG&G ____ Other: _____

---

Name of Collector: _____ Date/Time: 6/8 0430

To be completed by Sample Collector

Liquid Volume: 1000 ml Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: ✓ Scan _____ PH ✓ Cond. ✓ B ✓

_____

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: 6/8/79 0830

Counter's Signature: R. L Fisher

Chem Results: pH = 6.38, Cond = 2.46, B = 75

_____

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

1700
6/8

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ✓ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP GUN DEMIN #8 EFF Sample No. 9463

Time/Date Sample 1650 6/8/79 Time/Date Analysis 1215 6/8/79

Geometry bottle Counting Time 1000

Volume 250 Analyst PL Dorr

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| CO 58 | 2.9 E-06 | | ± 5.3 E-07 |
| NB-95 | 1.99 E-06 | | ± 4.3 E07 |
| CS-134 | 2.6 E-06 | | ± 4.8 E-07 |
| CS-137 | 8.3 5-06 | | ± 1.2 E-06 |
| LA-140 | 4.6 E-05 | | ± 6.1 E-06 |
| BA-140 | 9.5 E-06 | | ± 1.6 E-06 |
| I-131 | | 5.6 E-07 | |
| CO-60 | | 6.4 E07 | |
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6/8
1930

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ✓ B&W ~~3~~ SAI ____ RMC ____ EG&G ____ NRC ____

Title Cap - Gun Demin eff Sample No. 9503

Time/Date Sample 1100 6/8/79 Time/Date Analysis 1550 6/8/79

Geometry 250 Bottle Counting Time 1000 sec

Volume 250 ml Analyst P L. Doss

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co 58 | 2.94 E-06 | | ±5.4 E-07 |
| NB 95 | 2.33 E-06 | | ± 4.4E-07 |
| CS 134 | 2.83 E-06 | | ± 5.4 E-07 |
| CS 137 | 9.36 E-06 | | ± 1.3E-06 |
| La 140 | 4.28 E-05 | | ± 5.7E-06 |
| Ba 140 | 9.19E-06 | | ± 1.5 E-06 |
| I-131 | | 6.4E-07 | |
| Co 60 | | 7.2E-07 | |
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3804

13687
7/13
1425

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ✓ RMC ____ EG&G ____ NRC ____

Title U)DLT-11A CONT DRAIN TANK Sample No. 13687

Time/Date Sample 7/13 1420 Time/Date Analysis 7/13 ~~1420~~ 1620

Geometry 0451 Counting Time 1E3

Volume 500 Analyst CSH

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | 2.24E-6 | | 15.12 |
| Cs-134 | 2.85E-5 | | 2.3 |
| Cs-137 | 1.25E-4 | | 1.08 |
| Co-58 | 3.78E-6 | | 4.33 |
| Co-60 | 9.23E-7 | | 20.31 |
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3803

13688 7/13 2135

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ✓ RMC ____ EG&G ____ NRC ____

Title WDLT-1B Cont. Drain Tank Sample No. 13688

Time/Date Sample 7/13 1430 Time/Date Analysis 7/13 1615

Geometry 5451 Counting Time 1000 s

Volume 500 mL Analyst [illegible]

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | <7.46 E-7 | - |
| Cs-134 | 3.97 E-5 | | 2-8 |
| Cs-137 | 1.64 E-4 | | 1.39 |
| Co-58 | 4.02 E-6 | | 11.61 |
| Co-60 | 1.0 E-6 | | 35.9 |
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1945 7/17

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ✓ No. 2 ____ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title PRIMARY NEUT. FEED TANK Sample No. 13940

Time/Date Sample 7/12/79 @1453 Time/Date Analysis 7/17/79 @1305

Geometry 10 cm Counting Time 20 min

Volume 10cc Analyst D. Zuber

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| NB-95 | 7.407E-4 | | |
| Cs-134 | 4.557E-2 | | |
| Cs-137 | 1.992E-1 | | |
| LA-140 | 2.310E-2 | | |
| BA-140 | 2.361E-2 | | |
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REQUEST TAG

13940
7/17/79
1800

To be completed by Sample Coordinator

Priority: 1 Date: 7/17 Sample No.: 13940

Time: 1445 Results Date: _____

Sample ID: Unit No. 1 Neutralizer Feed Tank (WDLT-9)

Requestor: Marshall Ext. No. 360

Scan Sample Met-Ed No. 1 ✓ No. 2 ____ B&W ____

SAI ____ RMC ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: Met-Ed Date: _____

Liquid Volume: _____ Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: ✓ Scan ✓ PH ✓ Cond. ✓ B ✓

Signature: _____

---

To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: pH - 6.85 ; Cond - 530 ; B - 36

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 REV. 7-79

13962
7/18
0500

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Cap-Gun #1 Demin #9 Effluent Sample No. 13962

Time/Date Sample 0115 7/18 Time/Date Analysis 0200 7/18

Geometry 250 p bottle Counting Time 10^3 sec

Volume 250 ml Analyst D'Benedetto

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Nb-95 | 2.948E-05 | | 6.753E-06 |
| Cs-134 | 8.035E-05 | | 1.569E-05 |
| Cs-137 | 2.999E-04 | | 2.891E-05 |
| Ba-140 | 4.876E-04 | | 4.906E-05 |
| La-140 | 1.634E-03 | | 8.251E-05 |
| Co-60 | | 2.916E-05 | |
| Co-58 | | 3.830E-05 | |
| I-131 | | 1.415E-05 | |
| | | | |
| | | | |
| #13961 | results: | | |
| | pH 5.85 | | |
| | cond 2.1 | | |
| | boron 353 | | |
| | | | |

13986 13987 13989 1015 4016

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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ✓ RMC ____ EG&G ____ NRC ____

Title Cap Gun #1 Dimm #9 Effluent Sample No. 13988

Time/Date Sample 7/18 0300 Time/Date Analysis 7/18 0715

Geometry .5451 Counting Time 1000

Volume 500 Analyst TROY

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | <1.91E-6 | - |
| Cs-134 | 3.06E-5 | | 7.7 |
| Cs-137 | 1.06E-4 | | 2.8 |
| Co-58 | | <1.90E-6 | |
| Co-60 | | <3.29E-6 | |
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| | #13987 | | |
| | pH 5.91 | | |
| | cond 1.8 | | |
| | boron 342 | | |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 7/18 Sample No.: 14010

Time: 1200 Results Date: _____

Sample ID: Unit No. CAP GUN 1 U-1

Halliburton #2

Requestor: CAP-GUN (L. Burgess) Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ✓

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: CAP GUN Date/Time: 7/18/79 @ 1015

Liquid Volume: 250 ml Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ✓ PH _____ Cond. _____ B _____

Signature: Dave Hall

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To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: _____

_____ _____

_____ Please Phone Results to Sample Coordinator

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Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

14010

1750 7/18

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP-GON #1 Halliburton #2 Sample No. 14010

Time/Date Sample 1015 7/18/79 Time/Date Analysis 1503 7/18/79

Geometry Liquid/Plastic bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.570E-5 | | 5.993E-6 |
| Cs-137 | 5.238E-5 | | 6.743E-6 |
| BA-140 | 1.457E-4 | | 1.808E-5 |
| LA-140 | 6.725E-4 | | 3.889E-5 |
| Co-60 | | 1.382E-5 | |
| Co-58 | | 2.011E-5 | |
| I-131 | | 6.924E-6 | |
| | | | |
| pH | 5.52 | | |
| Cond | 3.2 | | |
| Boron | 215 | | |
| | | | |
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14102
7/19
2230

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ✓ No. 2 ____ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title WEST B Sample No. 14102

Time/Date Sample 7/19/79 @1742 Time/Date Analysis 7/19/79 1848

Geometry 0 cm Counting Time 50 min

Volume 3500 Analyst ____

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 3.672E-6 | | |
| Co-60 | 4.799E-6 | | |
| NB-95 | 1.259E-5 | | |
| Ru-103 | 2.167E-5 | | |
| Cs-134 | 1.482E-5 | | |
| LA-140 | 3.108E-4 | | |
| BA-140 | 1.033E-4 | | |
| Ce-141 | 1.504E-6 | | |
| AG-110M | 6.59E-6 | | |
| ZR-95 | 1.438E-6 | | |
| I-131 | — | 4.176E-7 | |
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(P) 14102

1600 7/20

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title WECST B Sample No. 14102

Time/Date Sample ____ Time/Date Analysis 7/20/79 1440

Geometry 7/19/79 @ 1742 Counting Time 20 min

Volume 100 ml Analyst K. H Frederick

Air ____ (1) Liquid X (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

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| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross β | 4.53E-04 | | 1.9E-08 |
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14194
7/20 1830

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ✓ No. 2 ____ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title Aux. Bldg Sump Unit I Sample No. ____

Time/Date Sample 1440 7/20/79 Time/Date Analysis 1729 7/20/79

Geometry 0 Cm Counting Time 20 Min

Volume 10 Analyst H. Zillon

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| MN-54 | 1.554E-4 | — | |
| Co-58 | 7.199E-3 | — | |
| Co-60 | 4.943E-4 | — | |
| Cs-134 | 2.139E-3 | — | |
| Cs-137 | 4.973E-3 | — | |
| | | | |
| | | | |
| pH | 7.3 | | |
| Cond | 700 μmhos | | |
| B | 648 | | |
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14195
4/21
0650

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1-A Date: 7-21-79 Sample No.: 14195

Time: 0400 Results Date: _____

Sample ID: Unit No. HALIBURTON #2 EFFLUENT

Requestor: _____ Ext. No. 341

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W X

SAI ____ RMC ____

NRC ____ EG&G ____ Other: _____

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To be completed by Sample Collector

Name of Collector: BRANDT Date: 7-21-79

Liquid Volume: 250 ml Air Volume: _____ Time On: 0330

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan ____ PH X Cond. X B X

CHEMistry

Signature: Roy Brandt

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To be completed by Lab

~~Scan~~/Chem Completed: Date/Time: 7/21/79 0555

Counter's Signature: James H. Smith

Chem Results: pH 5.65 COND 2.4 umhos/cm B-504 ppm

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 REV. 7-79

14195
7/21
0530

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title U-1 Halliburton #2 Effluent Sample No. 14195

Time/Date Sample 0530 7/21 Time/Date Analysis 0450 7/21

Geometry 250 ml Plastic Bottle Counting Time $10^3$ sec

Volume 250 ml Analyst D. Beneditti

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 1.079E-05 | | 2.525E-06 |
| Cs-134 | 1.643E-05 | | 4.732E-06 |
| Cs-137 | 4.604E-05 | | 5.813E-06 |
| Ba-140 | 1.921E-05 | | 6.901E-06 |
| La-140 | 1.652E-04 | | 1.602E-05 |
| Co-60 | | 1.136E-05 | |
| I-131 | | 4.386E-06 | |
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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Calcium #1 Hubbard #2 Sample No. 14211

Time/Date Sample 0700 7/24/79 Time/Date Analysis 1310, 7/24/79

Geometry Liquid/Plastic bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 1.301E-5 | | 3.187E-6 |
| Cs-134 | 3.192E-5 | | 6.521E-6 |
| Cs-137 | 1.009E-4 | | 1.050E-5 |
| La-140 | 2.204E-4 | | 1.574E-5 |
| Co-60 | | 1.338E-5 | |
| I-131 | | 5.449E-6 | |
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14222

1615 7/21

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP-CON #1 Halliburton #2 Sample No. 14222

Time/Date Sample 1130 7/21/79 Time/Date Analysis 1530 7/21/79

Geometry Liquid/Plastic Bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 6.041E-6 | | 2.495E-6 |
| Cs-137 | 2.016E-5 | | 3.801E-6 |
| LA-140 | 1.400E-4 | | 1.171E-5 |
| Co-60 | | 8.891E-6 | |
| Cs-134 | | 2.235E-5 | |
| I-131 | | 3.582E-6 | |
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14223 Wat 1500

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ GMC ____ EG&G ____ NRC ____

Title Cap Gun #1 (Log 217,220) Sample No. 14223

Time/Date Sample 1130hrs 7-21-77 Time/Date Analysis 1408 7-21-77

Geometry N/A Counting Time —

Volume N/A Analyst M. Sawtelle

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| | | | |
| Boron | 421 ppm | | |
| pH | 5.2 | | |
| Cond | 2.4 umhos/cm | | |
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4237
7/21 2300

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title U-1 Aux Bldg Sump Sample No. 4237

Time/Date Sample 1440 7/21 Time/Date Analysis 2057 7/21

Geometry flat 10cc Counting Time $10^3$ sec

Volume 1ml Analyst D'Benedetti

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-60 | | 1.363E-03 | |
| Co-58 | | 9.873E-04 | |
| Cs-137 | | 1.123E-03 | |
| Cs-134 | | 1.537E-03 | |
| I-131 | | 2.839E-04 | |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Rush  Date: 9-21-79  Sample No.: 14237

Time: 1915  Results Date: _____

Sample ID: Unit No. 1 Aux Bldg Sump

1:10 dilution

Requestor: U-1 CR  Ext. No. _____

Scan Sample  Met-Ed  No. 1 ____ No. 2 ____ B&W X

SAI ____ RMC ____

NRC ____ EG&G ____ Other: _____

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To be completed by Sample Collector

Name of Collector: _____  Date: 9/21

Liquid Volume: 1 cc in 10  Air Volume: _____  Time On: _____

Other: _____  Flow Rate: _____  Time Off: 1440

Analysis Requested: γ Scan X PH ____ Cond. ____ B ____

_____

Signature: _____

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To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: _____

_____

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 REV. 7-79

141247

7/21 2200

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title U-1 Aux Bldg Sump Sample No. 141247

Time/Date Sample 2135 7/21 Time/Date Analysis 2200 7/21

Geometry 10cc Counting Time $10^3$ sec

Volume 10ml Analyst D'Benedetto

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 1.169E-03 | | 1.231E-04 |
| Co-60 | 2.641E-04 | | 7.343E-05 |
| Cs-134 | 5.352E-04 | | 9.949E-05 |
| Cs-137 | 1.178E-03 | | 1.247E-04 |
| I-131 | | 5.963E-05 | |
| La 140 | | 2.38 E-4 | |
| Ba 140 | | 1.95 E-4 | |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Rush  Date: 7-21-79  Sample No.: 14247

Time: 2150  Results Date: _____

Sample ID: Unit No. 1 Aux Bldg Sump

Requestor: U-1 CR  Ext. No. _____

Scan Sample  Met-Ed No. 1 ____ No. 2 ____ B&W X

SAI ____ RMC ____

NRC ____ EG&G ____ Other: _____

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To be completed by Sample Collector

Name of Collector: _____  Date: 7/21

Liquid Volume: 10 ml  Air Volume: _____  Time On: _____

Other: _____  Flow Rate: _____  Time Off: 2135

Analysis Requested: ~~X~~ Scan X PH _____ Cond. _____ B _____

_____

Signature: _____

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To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: _____

_____

_____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 REV. 7-79

14312

2150 7/22

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title V-1 Halliburton #1 - Halliburton #2 Sample No. 14312

Time/Date Sample 1830 7/22 Time/Date Analysis 2050 7/22

Geometry 250 ml Counting Time $10^3$ sec

Volume 250 cc Analyst D. Bennett

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-58 | 8.663E-06 | | 2.498E-06 |
| Cs-134 | 1.509E-05 | | 4.273E-06 |
| Cs-137 | 2.846E-05 | | 4.628E-06 |
| Ba-140 | 2.984E-05 | | 6.451E-06 |
| La-140 | 1.005E-04 | | 1.233E-05 |
| Co-60 | | 1.112E-05 | |
| I-131 | | 3.610E-06 | |
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14354
093
23

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP-(U2)-Halliburton #1 Sample No. 14354

Time/Date Sample 0700 7/23/79 Time/Date Analysis 0934 7/23/79

Geometry Liquid/Plastic bottle Counting Time 10^5 sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.247E-5 | | 3.830E-6 |
| Cs-137 | 2.797E-5 | | 4.250E-6 |
| LA-140 | 7.280E-5 | | 7.406E-6 |
| Co-60 | | 9.993E-6 | |
| Co-58 | | 1.184E-5 | |
| I-131 | | 3.661E-6 | |
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1413

7/23

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP-GOM #1 Halliburton #2 Sample No. 1480

Time/Date Sample 1000 7/25/79 Time/Date Analysis 1337-7/23/79

Geometry Liquid/Glass bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.990E-5 | | 4.577E-6 |
| BA-140 | 5.183E-5 | | 6.908E-6 |
| LA-140 | 1.082E-4 | | 9.357E-6 |
| Co-60 | | 1.117E-5 | |
| Co-58 | | 1.408E-5 | |
| Cs-137 | | 1.991E-5 | |
| I-131 | | 3.771E-6 | |
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7-24
0900

GAMMA ANALYSIS SUMMARY SHEET

ME No..1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Cap Run 7 Demin Effluent Sample No. 14378

Time/Date Sample 1845 7/23/79 Time/Date Analysis 0800 7/24/79

Geometry Liquid 1 Plastic Bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.437E-5 | | 4.067E-6 |
| Cs-137 | 3.817E-5 | | 5.168E-6 |
| BA-140 | 3.009E-5 | | 6.504E-6 |
| LA-140 | 9.420E-5 | | 1.278E-5 |
| Co-60 | | 1.117E-5 | |
| Co-58 | | 1.306E-5 | |
| I-131 | | 4.278E-6 | |
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14388

7/24 0237

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ____ RMC X EG&G ____ NRC ____

Title UNIT NO.1 CAP-GUN DEMIN #9 EFF Sample No. 14388

Time/Date Sample 7/23@2330 Time/Date Analysis 7/24 @ 0137

Geometry 500ML PLASTIC Counting Time 1500 SEC.

Volume 5E2 CM$^3$ Analyst [signature]

Air ____ (1) Liquid W3003 (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

$\mu Ci/cm^3$

| Isotope | Concentration | MDA 95 | Uncertainty |
|---|---|---|---|
| I-131 | | <5.8E-7 | - |
| Cs-134 | 9.89E-6 | | ± 25% |
| Cs-137 | 3.13E-5 | | ± 25% |
| Co-58 | 3.81E-6 | | ± 26% |
| Co-60 | 2.53E-6 | | ± 28% |
| Ag-110M | 7.82E-6 | | ± 25% |
| BA-140 | 1.80E-5 | | ± 25% |
| LA-140 | 5.00E-5 | | ± 25% |
| RU-103 | 7.43E-6 | | ± 25% |
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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ✓ No. 2 ____ B&W ____ SAI ____ RMC ✓ EG&G ____ NRC ____

Title Cap Fleur I - Demin HGH Sample No. 14412

Time/Date Sample 24 Jul 0230 Time/Date Analysis 24 Jul 0833

Geometry 500 ml bottle Counting Time 1000 sec

Volume 500 ml Analyst [signature]

Air ____ (1) Liquid LW 3010 (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I 131 | | < 7.1 E-7 | - |
| Cs 137 | 1.0 E-5 | | 25% |
| Cs 134 | 3.1 E-5 | | 25% |
| Co 58 | 3.7 E-6 | | 25% |
| Co 60 | 2.4 E-6 | | 25% |
| Xe 131M | 8.2 E-5 | | 28% |
| Ag 110M | 9.5 E-6 | | 25% |
| Ru 103 | 6.8 E-6 | | 25% |
| Ba 140 | 1.8 E-5 | | 25% |
| La 140 | 5.5 E-5 | | 25% |
| Nb 95 | 4.4 E-6 | | 25% |
| Ce 144 | 4.4 E-6 | | 45% |
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1+499
7/25
1800

GAMMA ANALYSIS SUMMARY SHEET

ME No: 1 ✓ No. 2 ____ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title WECST "B" Unit 1 Sample No. 14499

Time/Date Sample 0505 7/25 Time/Date Analysis 0520 7/25

Geometry ____ Counting Time 50 min.

Volume 3500 ml. Analyst ____

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| H-3 | 4.26 E-3 | | |
| Mn-54 | 3.29 E-7 | | |
| Co-58 | 2.32 E-6 | | |
| Co-60 | 3.23 E-6 | | |
| Cs-134 | 8.85 E-6 | | |
| Cs-137 | 1.90 E-5 | | |
| I-131 | | < 2.22 E-7 | |
| Ba-140 | 1.88 E-5 | | |
| La-140 | 3.88 E-5 | | |
| Zr-95 | 9.36 E-7 | | |
| Nb-95 | 5.92 E-6 | | |
| Zr-97 | 3.67 E-7 | | |
| Ru-103 | 8.16 E-6 | | |
| Ag-110M | 5.46 E-6 | | |
| Ce-141 | 1.09 E-6 | | |
| Ce-144 | 1.07 E-5 | | |

14501
7/25
2200

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ✓ No. 2 ____ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title WPCST (A) Sample No. 14501

Time/Date Sample 1920 7/25/79 Time/Date Analysis 1927 7/25/79

Geometry () Counting Time (50)

Volume 3500 Analyst R. Litton

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | ~~Uncertainty~~ |
|---|---|---|---|
| MN-54 | 2.319E-7 | | |
| Co-58 | 2.471E-6 | | |
| Co-60 | 2.492E-6 | | |
| NB-95 | 1.961E-5 | | |
| Cs-134 | 7.276E-7 | | |
| LA-140 | 1.156E-5 | | |
| BA-140 | 5.159E-6 | | |
| Ce-141 | 1.504E-7 | | |
| C-144 | 3.697E-6 | | |
| I-131 | — | 1.59E-7 | |
| Cs-137 | | 6.619E-7 | |
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7-24
0900

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP-CON #1 Domin # 9 Effluent Sample No. 14424

Time/Date Sample 0600 7/24/79 Time/Date Analysis 0818, 7/24/79

Geometry Liquid / Plastic Bottle Counting Time 10^3 sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.174E-5 | | 3.322E-6 |
| Cs-137 | 2.801E-5 | | 4.505E-6 |
| BA-140 | 1.810E-5 | | 5.513E-6 |
| LA-140 | 6.272E-5 | | 7.080E-6 |
| Co-60 | | 9.347E-6 | |
| Co-58 | | 1.246E-5 | |
| I-131 | | 3.560E-6 | |
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14465

7/25 0330

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title U-1 Cap-Gun Domin Eff Sample No. 14465

Time/Date Sample 1730 7/24 Time/Date Analysis 2010 7/24

Geometry 250ml Plastic Bottle Counting Time $10^3$ sec

Volume 250ml Analyst D. Benedetti

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.205E-05 | | 3.462E-06 |
| Cs-137 | 4.140E-05 | | 5.231E-06 |
| Ba-140 | 2.064E-05 | | 5.308E-06 |
| La-140 | 4.470E-05 | | 5.416E-06 |
| Co-60 | | 7.354E-06 | |
| Co-58 | | 1.609E-05 | |
| I-131 | | 3.565E-06 | |
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UPDATE

14499

1130 7/2

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ____ RMC y EG&G ____ NRC ____

Title WECST B Sample No. 14499

Time/Date Sample 25 JUL 79 @ 0505 Time/Date Analysis 27 JUL 79 @ 0204

Geometry METAL PLANCHET Counting Time 500 SEC

Volume 100 ML EVAP Analyst [illegible]

Air ____ (1) Liquid ____ (2) Other F5105

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | <2.1E-7 | . |
| Cs-134 | 1.82E-4 | | ±2.5% |
| Cs-137 | 9.86E-4 | | ±2.5% |
| Co-58 | | <1.1E-6 | |
| Co-60 | | <7.9E-7 | |
| BA-140 | 1.50E-5 | | ±29% |
| LA-140 | 5.18E-5 | | ±25% |
| | | | |
| | | | |

Sum of Y 1.24 E-4

Loss 88

WECST B

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ____ RMC ✓ EG&G ____ NRC ____

Title WEST B Sample No. 14499

Time/Date Sample 25 Jul 79 595 Time/Date Analysis 27 Jul 79 2014

Geometry Metal Planchet Counting Time 500

Volume 100 mL EVAP Analyst LF Tuppen

Air 306 (1) Liquid ____ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | <2.13 | ± |
| Cs-134 | 1.32E-04 | | ±25 |
| Cs-137 | 9.86E-04 | | |
| Co-58 | | <1.09E-06 | |
| Co-60 | | <7.92E-07 | |
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14499
7/26
2200

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title WEST "B" Sample No. 14499

Time/Date Sample 0505 7/25 Time/Date Analysis 2040 7/26

Geometry Planchet Counting Time 60 sec

Volume 100ml Analyst D Benedetti

Air ____ (1) Liquid ✓ (2) Other ✓

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross $\alpha$+$\beta$ | 186/140 | d/m | |
| | | 8.38E-4 | $\mu$Ci/cc |
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14499
7/26
2200

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title WECST "B" Sample No. 14499

Time/Date Sample 0505 7/25 Time/Date Analysis 2100 7/26

Geometry Planchet Counting Time 10 min

Volume 100ml Analyst D Bennett

Air ____ (1) Liquid ____ (2) Other ✓

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross $\beta$ | 184,752 d/m | | |
| | | 8.32 E-4 $\mu$Ci/cc | |
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UPDATE

NRC- Bue Desig 390 7/27
MR Neely

14501

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ____ RMC X EG&G ____ NRC ____

Title WEST A Sample No. 14501

Time/Date Sample 25 JUL 79 @ 1115 Time/Date Analysis 27 JUL 79 @ 0220

Geometry METAL PLANCHET Counting Time 500 SEC

Volume 100 ML EVAP Analyst SJ96

Air ____ (1) Liquid ____ (2) Other F3106

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | <3.2E-7 | - |
| Cs-134 | 2.67E-5 | | ± 25% |
| Cs-137 | 1.33E-4 | | ± 25% |
| Co-58 | 3.36E-7 | | ± 35% |
| Co-60 | | <4.3E-7 | |
| BA-140 | 3.29E-6 | | ± 39% |
| LA-140 | 6.05E-6 | | ± 27% |
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14501
7/26
2200

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title WECST "A" Sample No. 14501

Time/Date Sample 1115 7/25 Time/Date Analysis 2045 7/26

Geometry Planchet Counting Time 60 sec

Volume 100 ml Analyst D. Benedetti

Air ____ (1) Liquid ____ (2) Other ✓

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross $\beta$ | 4166.55 dpm | | |
| | | 1.88E-4 pCi/cc | |
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7/26
2200

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title WECST "A" Sample No. 14501

Time/Date Sample 1115 7/25 Time/Date Analysis 2115 7/26

Geometry Planchet Counting Time 600 sec

Volume 100 ml Analyst DiBenedetto

Air ____ (1) Liquid ____ (2) Other ✓

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross $\beta$ | 39,475 | 1/m | |
| | | | |
| | | | |
| | 39,475 | | uCi/cc |
| | (2.22E6) | (100 ml) | |
| | | | |
| | | 1.78E-4 | |
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15431
8/5
0540

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title CAF-GUN #1 Halliburton #2 Sample No. 15431

Time/Date Sample 0300 8/5/79 Time/Date Analysis 0445 8/5/79

Geometry Liquid / Plastic Bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-137 | 2.653 E-5 | | 3.816 E-6 |
| Co-60 | | 5.765 E-6 | |
| Co-58 | | 6.935 E-6 | |
| Cs-134 | | 1.782 E-5 | |
| I-131 | | 2.369 E-6 | |
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# SAMPLE REQUEST TAG

To be com
by Sample
Coordinatc

Priority: 1A Date: 8-5-7 Sample No.: 15431

Time: 035 Results Date: _____

Sample ID: Unit No. HAL # 2-

CAP GUN I PAD

Requestor: CAP GUN I Ext. No. 341

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W X

SAI ____ RMS ____

NRC ____ EG&G ____ Other: _____

---

To be completed by Sample Collector

Name of Collector: Roger Brandt Date/Time: 85/0300

Liquid Volume: ~~500~~ 250 ml Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan X PH ____ Cond. ____ B ____

Signature: Roger Brandt

---

To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: _____

_____

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

15432
8/5
0930

Chem.
~~GAMMA~~ ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Halliburton #2 Cap Gen I Pad Sample No. 15432

Time/Date Sample 0300 8/5 Time/Date Analysis 0430 8/5

Geometry ____ Counting Time ____

Volume 250 ml Analyst JH Smith

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 6.07 | | |
| Conductivity | 4.5 umhos/cm | | |
| Boron | 298 ppm | | |
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| Bad Brown 100 ml sample on planchet | | | |
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15432
8/5
0930

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Halliburton #2 Cap Gun I Pad Sample No. 15432

Time/Date Sample 0900 8/5 Time/Date Analysis 0630 8/5

Geometry Planchet Counting Time 20 min

Volume 100 ml Analyst JH Smith

Air ____ (1) Liquid ____ (2) Other Bulldown

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross Counts | 353,225 | 20 | min count time |
| Activity | 1.13E-04 | uci/cc | |
| MDA | 3.86 E-8 | uCi/ml | 20 min count/100 ml |
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# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 8/5 Sample No.: 15432

Time: 0350 Results Date:

Sample ID: Unit No. HALIBURTON #2

CAP GUN I PAD

Requestor: CAP GUN I Ext. No.

Scan Sample Met-Ed No. 1 ___ No. 2 ___ B&W ___

SAI ___ RMS ___

NRC ___ EG&G ___ Other:

---

To be completed by Sample Collector

Name of Collector: R. Brandt Date/Time: 8-5/0300

Liquid Volume: ~~250~~ 500 mls mL Air Volume: Time On:

Other: Flow Rate: Time Off:

Analysis Requested: γ Scan ___ PH X Cond. X B X

boil 100 mls on Planchet → B&W Counting for Gross β, γ

Signature: Rogercel Brandt

---

To be completed by Lab

~~Scan~~/Chem Completed: Date/Time: 8/5 0540

Counter's Signature: James H. Smith

Chem Results: pH 6.07 conductivity 4.5 umhos/cm

Boron 298 ppm Boil down 100 ml sample onto planchet (Duplicate)

___ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

4787 15774 8/8 0015

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ____ SAI ✓ RMC ____ EG&G ____ NRC ____

Title Haliburton #2 EFF Sample No. 15774

Time/Date Sample 8/7 2145 Time/Date Analysis 8/7 2250

Geometry ϕ 457 Counting Time 1000

Volume 500 ml Analyst Roland

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| I-131 | | <2.9E-7 | |
| Cs 134 | 1.5E-5 | | 3.36% |
| Cs 137 | 5.1E-5 | | 1.92% |
| Co 58 | 2.8E-6 | | 9.21% |
| Co 60 | 2.3E-6 | | 10.22% |
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SAMPLE REQUEST TAG

DET 10

To be completed by Sample Coordinator

Priority: 1A Date: 8-7-79 Sample No.: 15774

Time: 2230 Results Date: _____

Sample ID: Unit No. HALLIBURTON #2 EFF

CAP GUN I

Requestor: CAP GUN I Ext. No. 340

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ____

SAI X RMS ____

NRC ____ EG&G ____ Other: _____

---

Name of Collector: R. Brandt Date/Time: 8-7/2145

To be completed by Sample Collector

Liquid Volume: 500 ml Air Volume: _____ Time On: _____

Other: _____ Flow Rate: _____ Time Off: _____

Analysis Requested: γ Scan X PH _____ Cond. _____ B _____

Signature: Ray Brandt

---

To be completed by Lab

Scan/Chem Completed: Date/Time: _____

Counter's Signature: _____

Chem Results: _____

_____

_____ Please Phone Results to Sample Coordinator

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Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Halliburton #2 Eff. Cap Gun I Sample No. 15775

Time/Date Sample 2148 8/7 Time/Date Analysis 2340 8/7

Geometry ____ Counting Time ____

Volume 500 ml Analyst JH Smith

Air ____ (1) Liquid ✓ (2) Other Boil Down

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 6.36 | | |
| conductivity | 12.0 umhos/cm | | |
| Boron | 315 ppm | | |
| | | | |
| Evaporate 10 ml sample onto planchet for gross BY | | | |
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15775
8/8
0215

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ FMC ____ EG&G ____ NRC ____

Title Haliburton #2 Eff. CapGun I Sample No. 15775

Time/Date Sample 3148, 8/7 Time/Date Analysis 0155 8/8

Geometry Planchet Counting Time** 10 min

Volume** 10 ml Analyst J H Smith

Air ____ (1) Liquid ✓ (2) Other Boil down

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross Counts | 17,975 | Counting time 10 min | |
| Activity | 1.12 E-04 uCi/cc | | |
| MDA | | 3.98 E-08 uCi/cc | 20 min count/100 ml |
| | | | |
| * Background count for calculation 83 cpm | | | |
| ** Higher activity sample; Procedure 1950 | | | |

# SAMPLE REQUEST TAG

To be completed by Sample Coordinator

Priority: 1A Date: 8-7-79 Sample No.: 15775

Time: 2230 Results Date:

Sample ID: Unit No. Halliburton # 2 EFF

Requestor: Cap Curl Ext. No. 348

Scan Sample Met-Ed No. 1 ____ No. 2 ____ B&W ____

SAI ____ RMS ____

NRC ____ EG&G ____ Other: ____

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To be completed by Sample Collector

Name of Collector: R Brandt Date/Time: 8-7 2148

Liquid Volume: 500 ml Air Volume: ____ Time On: ____

Other: ____ Flow Rate: ____ Time Off: ____

Analysis Requested: γ Scan ____ PH X Cond. X B X

100 ml gross Beta

Signature: Ron Brandt

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To be completed by Lab

Scan/Chem Completed: Date/Time: 8/8/79 0120

Counter's Signature: James H. Smith

Chem Results: pH 6.36 conductivity 12.0 μmhos/cm

Boron 315 ppm Evaporate 10 ml sample onto planchet for gross β

____ Please Phone Results to Sample Coordinator

---

Copy Description - White - Sample Coord.

Canary - With Sample

Pink - Pending

TMI-109 5/79

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1: ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Unit 2 Cont Drain Tank "A" Sample No. 14662

Time/Date Sample 1015 7-27-79 Time/Date Analysis 1700 7-27-79

Geometry ✓ Counting Time ✓ ($10^3$ sec)

Volume ✓ (250ml) Analyst [illegible]

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs 137 | 1.864E-5 | | 3.726E-6 |
| I 131 | | 3.036E-6 | |
| Cs 134 | | 9.054E-6 | |
| Co 58 | | 4.071E-6 | |
| Co 60 | | 4.977E-6 | |
| | | | |
| Gross $\beta^-$ | Scan 153 cpm | = 2.392E-06 uCi/ml | |
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| | | | |
| pH | 5.8 | | |
| Cond | 828 micromhos/cm | | |
| Boron | 10 ppm | | |

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Ul. Cap Gulf Helicopter #2 Sample No. 15519

Time/Date Sample 1230 8/5/91 Time/Date Analysis 2230 8/5

Geometry Plan Pot Counting Time 10 min

Volume 100 mL Analyst JH Smith

Air ____ (1) Liquid ____ (2) Other Blank Down

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross Beta | 131 | 4 | Two Sigma |
| Actinium | 3.87E- | - | |
| WIDA | 3.3 E- | | 100 mL |
| | | | |
| | use 4.45E-5 from | µCi/cc Gross ± 15520 | β, γ |
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15519
8/6
0015

# GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W / SAI ____ RMC ____ EG&G ____ NRC ____

Title VI Cap. Gross Helicopter #2 Sample No. 15519

Time/Date Sample 1830 8/5/79 Time/Date Analysis 1956 8/5/79

Geometry Liquid / Plastic Bottle Counting Time 10^3 sec

Volume 250 ml Analyst [illegible]

Air ____ (1) Liquid / (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 1.060 E-5. | | 3.048 E-6 |
| Cs-137 | 1.580 E-5 | - | 3.074 E-6 |
| Co-60 | | 5.397 E-6 | |
| Co-58 | | 7.682 E-6 | |
| I-131 | | 2.313 E-6 | |
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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W 1 SAI ____ RMC ____ EG&G ____ NRC ____

Title Halliburton #2 Cap Gun Sample No. 15519

Time/Date Sample 1830 8/5 Time/Date Analysis 2040 8/5

Geometry 250 ml Counting Time ____

Volume ____ Analyst JH Smith

Air ____ (1) Liquid 1 (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 6.13 | | |
| conductivity | 4.2 | micro mhos/cm | |
| Boron | 198 ppm | | |
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| Ba(Boron 100 ml | | onto planchet | |
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15520
8/6
0015

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W 1 SAI ____ RMC ____ EG&G ____ NRC ____

Title 1" Cap Gus Halliburton #2 Sample No. 15520

Time/Date Sample 1830 8/5/79 Time/Date Analysis 2300 8/5

Geometry Planchet Counting Time 20 min

Volume 100 mL Analyst T H Smith

Air ____ (1) Liquid ____ (2) Other Bud Brown

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross Counts | 140,065 | Count time 20 min | |
| Activity | 14.45 E-05 uCi/ml | | |
| MDA | 3.86 E-08 uCi/ml | 20 min count/100 ml | |
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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title [redacted] Cartridge #2 Sample No. 15520

Time/Date Sample 1830 8/5/79 Time/Date Analysis 2105 8/5/79

Geometry Liquid 1 Liter Can Counting Time 10^5 sec

Volume 250 ml Analyst Mahoney

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 7.615E-6. | | 2.607E-6 |
| Cs-137 | 1.503E-5 | | 2.979E-6 |
| Co-60 | | 4.501E-6 | |
| Co-58 | | 7.324E-6 | |
| I-131 | | 2.723E-6 | |
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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ [illegible] ✓ IAI ____ RMC ____ EG&G ____ NRC ____

Title Cap Gun Hollow #2 Sample No. 15520

Time/Date Sample 1830 3/5 Time/Date Analysis 2040 3/5

Geometry ____ Counting Time ____

Volume 500 ml Analyst J H Smith

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 6.00 | | - |
| conductivity | 2.1 | [illegible] mhos/cm | |
| Boron | 299 | ppm | |
| | | | |
| Boil down 100 ml | into | planchet | |
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15521
8/6
0015

# GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W V SAI ____ RMC ____ EG&G ____ NRC ____

Title CAP Gas Demin Effluent #10 Sample No. 15521

Time/Date Sample 8/5/2020 Time/Date Analysis 2325 8/5

Geometry Plastic Counting Time 20 min

Volume 100 ml Analyst JH Smith

Air ____ (1) Liquid ____ (2) Other Rad Gas (Duplicate analysis)

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross Counts | Trial 1 232,617 | | Count Time 20 min |
| | Trial 2 208,522 | | Count Time 20 min |
| Activity | Trial 1 7.42 E-05 | uCi/ml | |
| | Trial 2 6.65 E-05 | uCi/ml | |
| MDA | 3.86 E-08 | uCi/ml | 20 min Count/ 100 ml |
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Chem.

# ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Cap Cod Down Effluent #10 Sample No. 15521

Time/Date Sample 8/5 2020 Time/Date Analysis 8/5 2200

Geometry ____ Counting Time ____

Volume 500 ml Analyst JH Smith

Air ____ (1) Liquid ✓ (2) Other Boil down

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 5.60 | | |
| Conductivity | 3.34 mmhos/cm | | |
| Boron | 308 ppm | | |
| | | | |
| Boil down 100 ml sample onto planchet (Duplicate analysis) | | | |
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15522
S/6
0015

ME No. 1 ____ No. 2 ____ GAMMA ANALYSIS SUMMARY SHEET

B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Ul Chip-Gun Drum 2 7/10 Sample No. 15522

Time/Date Sample 2020 8/5/79 Time/Date Analysis 2150 8/5/79

Geometry Planchet Counting Time 20 min

Volume 250 ml Analyst M. Thomas

Air ____ (1) Liquid ✓ ____ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-137 | 1.173 E-5 | | |
| Co-60 | | 2.891E-6 | 2.00E0 |
| Co-58 | | 5.861E-6 | |
| Cs-134 | | 1.247E-5 | |
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15543
8/6
0720

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Halliburton #1 Effluent Sample No. 15543

Time/Date Sample 0200 8/6 Time/Date Analysis 0540 8/6

Geometry ____ Counting Time ____

Volume 500 ml Analyst JH Smith

Air ____ (1) Liquid ✓ (2) Other Boil down

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 6.34 | | |
| conductivity | 6.5 umhos/cm | | |
| Boron | 226 ppm | | |
| | | | |
| Boil down 100 ml sample onto planchet for gross B&D analysis | | | |
| | | | |
| 29051 | Gross Cpm | | MDA = 3.86 E-6 uci |
| 73 | Bkgd | | |
| 28978 | Net Cpm | | |
| .677 | Eff | | |
| 43457 | NET Dpm | | |
| $1.88 \times 10^{-2}$ uci | NET uci for 100 ml Sample | | |
| $1.87 \times 10^{-4}$ | uci/ml | | |
| | | | |

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title Ambient #1 Charcoal Sample No. 155444

Time/Date Sample 0200 2/4/93 Time/Date Analysis 0345 2/6/93

Geometry Round Cartridge Counting Time 10 min

Volume 250 cm³ Analyst ____

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Co-60 | | 7.537E-6 | - |
| Co-58 | | 6.371E-6 | |
| Cs-137 | 9.750E-6 | | 2.092E-6 |
| Cs-134 | | 1.350E-5 | |
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15773
8/8
0215

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ ANL ✓ SAI ____ IDNC ____ EG&G ____ NRC ____

Title Halliburton #1 Elb. Cap Gun 1 Sample No. 15773

Time/Date Sample 2148 8/7 Time/Date Analysis 0135 8/8

Geometry Planchet Counting Time * 20 min

Volume ** 10 ml Analyst TLSmith

Air ____ (1) Liquid ✓ (2) Other Bed Load

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Gross Counts | 12,108 | Counting time 20 min | |
| Activity | 3.40 E-05 uCi/cc | | |
| MDA | 3.98 E-08 uCi/cc | 20 min count/100 ml | |
| | | | |
| * Background count for calculation 83 cpm | | | |
| ** High activity sample; Procedure 1950 | | | |
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15401

1900 8/4

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title V-2 Contaminated Drain Tank 'B' Sample No. 15401

Time/Date Sample 1600 8/4 Time/Date Analysis 1845 8/4

Geometry plastic bottle Counting Time $10^3$ sec

Volume 250ml Analyst D'Benedetto

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs-134 | 9.687E-5 | | 1.278E-5 |
| Cs-137 | 4.224E-4 | | 3.771E-5 |
| Co-60 | | 4.561E-6 | |
| Co-58 | | 8.457E-6 | |
| I-131 | | 6.234E-6 | |
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15401

1900 8/4

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ EG&G ____ NRC ____

Title 2 "B" Contaminated Drain Tank Sample No. 15401

Time/Date Sample 1600 8-4-79 Time/Date Analysis 1800 8-4-79

Geometry ____ Counting Time ____

Volume 250 ml Analyst MDP

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| pH | 6.7 | | |
| Cond | 538 umhos/cm | | |
| Boron | 19 ppm | | |
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15986
3/10
.015

GAMMA ANALYSIS SUMMARY SHEET

ME No.: 1 X No. 2 ____ B&W ____ SAI ____ RMC ____ EG&G ____ NRC ____

Title WDL-T9 Unit 1 Neut Feed Tank Sample No. 15986

Time/Date Sample 8/9 1200 Time/Date Analysis ____

Geometry ____ Counting Time ____

Volume ____ Analyst ____

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | MDA | Uncertainty |
|---|---|---|---|
| Cs 134 | 9.6E-3 | | - |
| Cs 137 | 4.9E-2 | | |
| Ba 140 | 1.27E-3 | | |
| La 140 | 1.2E-3 | | |
| Xe 131m | 4.7E-3 | | |
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GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W 1 ____ SAI ____ RMC ____ NRC ____ Other ____

Title Down Effluent Cap Gun Sample No. 16003

Time/Date Sample 0109 8/10 Time/Date Analysis 0425 8/10

Geometry Planchet Counting Time 20 min

Volume 10 ml Analyst J H Smith

Air ____ (1) Liquid ____ (2) Other Boil down

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | LLD | Uncertainty |
|---|---|---|---|
| Gross Counts | 76,766 | Counting time 20 min | |
| Activity | $7.46E-05$ uci/cc | | |
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TMI-119 7-79

GAMMA ANALYSIS SUMMARY SHEET

ME No.: 1 ____ No. 2 ____ DRW ✓ SAI ____ RMC ____ NRC ____ Other ____

Title Cof Gwd Drain Effluent Sample No. 16004

Time/Date Sample 0100 5/10/79 Time/Date Analysis 0456 5/10/79

Geometry Plastic Bottle Counting Time $10^3$ sec

Volume 250 ml Analyst Chemtech

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

Liquid

| Isotope | Concentration | LLD | Uncertainty |
|---|---|---|---|
| I-131 | | 2.607E-06 | |
| Cs-134 | 1.542E-05 | | 4.015E-06 |
| Cs-137 | 7.849E-05 | | 5.101E-06 |
| Co-60 | | 5.159E-06 | |
| Co-58 | | 6.745E-06 | |
| La-140 | | 1.135E-05 | |
| Ba-140 | | 1.111E-05 | |
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TMI-119 7-79

GAMMA ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 . ____ B&W ____ SAI ____ RMC ____ NRC ____ Other ____

Title Co-Con Gam Dissolved Gas - Bldg Ambient Sample No. 16005

Time/Date Sample 0100 3/10/79 Time/Date Analysis 0516 4/10/79

Geometry 250 ml C Plastic Bottle Counting Time 10^5 sec

Volume 250 ml Analyst C. Hart

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

Liquid

| Isotope | Concentration | LLD | Uncertainty |
|---|---|---|---|
| Xe 131 m | 9.449E-04 | | 4.652E-04 |
| Cs-134 | 9.211E-03 | | 7.123E-04 |
| Cs-137 | 4.015E-02 | | 3.456E-03 |
| Ba-140 | 6.343E-04 | | 9.197E-05 |
| La-140 | 9.059E-04 | | 6.657E-05 |
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TMI-119 7-79

1547 11

0755 8/15

# Gamma ANALYSIS SUMMARY SHEET

ME No. 1 ____ No. 2 ____ B&W ✓ SAI ____ RMC ____ NRC ____ Other ____

Title Halliburton #2 Cap Gun 1 Sample No. 16477

Time/Date Sample 1745 8/14 Time/Date Analysis 0155 8/15

Geometry ____ Counting Time ____

Volume 750 ml Analyst JH Smith

Air ____ (1) Liquid ✓ (2) Other ____

1. Report MDA's for I-131 on charcoal cartridges and for Cs-134, Cs-137, Co-58 and Co-60 on particulate filters for those isotopes which are not detected in sample.

2. Report MDA's for I-131, Cs-134, Cs-137, Co-58 and Co-60 for those isotopes which are not detected in sample.

| Isotope | Concentration | LLD | Uncertainty |
|---|---|---|---|
| pH | 5.87 | | - |
| Conductivity | 33.6 micromho/cm | | |
| Boron | 654 ppm | | |
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TMI-119 7-79

HPP 1621

RELEASE NUMBER: 79-79-L

(1) DATE 5-23-79 TIME 0805 REQUESTED BY [illegible] / RWB'd by [illegible]

(2) [ ] WDL-T-11A TANK A
[X] WDL-T-11B TANK B
[ ] WDT-T-12 LAUNDRY
[ ] OTHER

(3) [X] TANK ISOLATED & "DO NOT OPERATE" TAGGED DATE 5-23
TANK LEVEL 11.8 ft. VOLUME 7568 gal. TIME 0555
SIGNED [signature]

(47) 30 gpm FR MAX (5-30 gpm) 250 min minimum Estimated time for RELEASE

(48) ESTIMATED CURIES TO BE DUMPED .0037 x40 = .1484 % OF QUARTERLY LIMIT
CURIES DUMPED TO DATE THIS QTR. — x40 = 4.398 % OF QUARTERLY LIMIT
79-78L LAST RELEASE # INCLUDED TOTAL 4.542 % OF QUARTERLY LIMIT

(49) [X] RELEASE RECOMMENDED BY [signature] RADIATION PROTECTION SUPERVISOR
[ ] RELEASE RECOMMENDED BY [signature] for Bruce Dr SUP OF RAD PROT & CHEM
[X] RELEASE APPROVED BY [signature] SHIFT SUPERVISOR 2345

(50) RELEASE DATA:
RM-L6 Setpoint Hi Alarm 37,200 CPM: Alert 12601 CPM: [ ] Initials
FR-84 ALARM SET POINT AT 30 GPM: [X] INITIALS
WARNING SIGN ("CAUTION UNIT 1 HOLDING LIQUID RELEASE") HUNG ON MDL-93 KEY SWITCH IN UNIT II AUX. BLDG. [X] INITIALS
FR-146 ALARM SETPOINT AT 37,200 GPM: [X] DEK INITIALS
VALVES MDL-V124 MDL-V125 LOADED TO 27 GPM RELEASE RATE 29 [illegible] INITIALS

(51) TIME RELEASE STOPPED 0035 TIME 5/25/79 DATE
TIME RELEASE STARTED 1755 TIME 5/24/79 DATE
TOTAL TIME OF RELEASE 400 MINUTES

Tank Level at Start of Release 11.8 ft. 7568
Tank Level at End of Release 1.5 ft. 930
Tank Volume Released 11.3 ft. 6638
MDCT EFFLUENT TOTALIZER AT STOP 794816 GAL
MDCT EFFLUENT TOTALIZER AT START 794229 GAL
TOTAL DILUTION FLOW 587 GPM

(52) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:
RM-L6 Source Check Sat. Before Rel. [X]
RM-L6 Alarm Returned to: Hi-Alarm = 3600 CPM [ ]
Alert Alarm = 1800 CPM [ ]
AT BEGINNING OF RELEASE [X]
AT END OF RELEASE [X] FLOW [illegible]
RM-L6 FLOW [X] CORRECT

INSTRUMENT READINGS:

| | EXPECTED READING | READING AT START | READING AFTER ¼ COMPLETE | READING AFTER ½ COMPLETE | READING AFTER ¾ COMPLET. | READING AFTER RELEASE |
|---|---|---|---|---|---|---|
| FR-84 | 27 gpm | 25 | 16 | 17 | 17 | 0 |
| RM-L6 | 14,002 cpm | 900 | 14K | 20K | 20K | 25,000 |
| FR-146 | 34,200 cpm | 34,000 | 38K | 39K | 39K | 38,000 |
| RM-L7 | 421.5 cpm | 350 | 400 | 450 | 350 | 400 |

(53) IF CHANGES IN FLOW FROM THE MDCT (OR CHANGES IN THE RELEASE RATE (V124/V125 from) DEVELOP DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINTS MUST BE MADE. THE NEW CALCULATIONS WILL BE COMPUTED ON PAGE 2 OF THIS FORM AND THE FOLLOWING TABLE WILL BE COMPLETED

| | START TIME | STOP TIME | TOTAL TIME | *ACTUAL RELEASE RATE | FR-84 SET POINT | FR-146 SET POINT | APPROVAL SHIFT SUP. |
|---|---|---|---|---|---|---|---|
| ORIGINAL | | | | | | | |
| 1st CHANGE | | | | | | | |
| 2nd CHANGE | | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM. MDCT CANNOT BE <5000 or >[illegible] cpm.

(54) RELEASE DATA COMPLETED BY [signature] INITIALS.
ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED. [signature]
SHIFT SUPERVISOR

SPECIAL OPERATION CALCULATIONS

FOR UNEXPECTED CHANGES IN THE MDCT FLOW OR ACTUAL RELEASE RATE THE FOLLOWING CALCULATIONS MUST BE RE-COMPUTED BY THE SHIFT SUPERVISOR. THIS NEED ONLY BE DONE IF THE MDCT FLOW IS REDUCED.

1. MAXIMUM RELEASE RATE = (FR-84 SETPOINT)

   $RR - MAX = \frac{\text{NEW MDCT FLOW GPM} \times (0.9)}{\text{REQUIRED D.F.}} =$ [ ] GPM

2. ACTUAL RELEASE RATE + (RR MAX) x (0.9) = [ ] GPM

3. MINIMUM FLOW FROM MDCT (FR-146 SETPOINT) = NEW MDCT FLOW x (0.9) = [ ] GPM

USE THIS AREA FOR CALCULATIONS:

25 CHEMISTRY PARAMETERS

26 Sample Obtained By: KB Analysis Performed By: KB
Date/Time: 5/23/79 @ 1000 Date/Time: 5/23/79 @ 1150

Dilution Factor Required Based on Boron (From Note 3) [523]

| | RESULT | LIMIT | |
|---|---|---|---|
| pH | re-anal 6.1 @2100 / 4.5 | 4.5 - 9.5 | (1) |
| Conductivity | 22 | <10 μmho | (2) |
| Boron | 366 | PPM | (3) |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.
2. Must be <10 μmho to consider water with a pH less than 6 or greater than 9. If conductivity is >10 μmhos, release must be approved by Chemistry Supervisor or his designee with a written evaluation attached to release form.
3. 0.7 PPM at final discharge. DF based on Boron is $\frac{\text{Result (in PPM)}}{0.7 \text{ PPM}}$

☐ WDL-T-11A (5)
☒ WDL-T-11B
☐ WDL-T-12
☐ OTHER

SAMPLE COLLECTED BY KB (5)
DATE 5/23/79 TIME 1600
RAD ANAL. Perf. by: KB (7)
APPROVED BY: [illegible]

DATE & TIME OF ANALYSIS (8)
ALPHA —
BETA —
GAMMA 5/23/79 @1030
TRITIUM 5/23/79 @1400

(9) VOLUME IN TANK 754.5 gal × 3785 = 2.86E6 ml
(10) ACTUAL VOLUME RELEASED ml
Composite Sample Collected By: KB

| | (10) COUNT METHOD (Procedure Number) | (11) VOLUME OF SAMPLE USED (ml) | (12) SAMPLE COUNT TIME (MIN) | (11) GROSS COUNTS | (12) BKG COUNT TIME (MIN) | (13) BKG COUNTS | (14) NET SAMPLE COUNT RATE (cpm) | (15) % ERROR 2σ | (16) GAMMA ABUNDANCE @ KEV | (17) SPECIFIC ACTIVITY μCi/ml | (18) MPC 10D μCi/ml | (19) SPECIFIC ACTIVITY / MPC 10D | (20) EST QTY TO BE RELEASED CURIES | (21) ACTUAL QTY RELEASED CURIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROSS β | | | | | | | | | N.A. | | | | | |
| GROSS α | | | | | | | | | N.A. | | | | | |
| H-3 | TRT CAB | | | | | | | | N.A. | 8.75E-2 | 3E-5 | 2993.3 | | |
| Cr-51 | | | | | | | | | .0094320 | 6.628 | 2E-5 | 0.3 | 1.96 E-4 | |
| Mn-54 | | | | | | | | | 1.0009835 | 1.637 E-6 | 1E-6 | 1.6 | 46° E-5 | |
| Co-58 | | | | | | | | | .9994810 | 3.053 E-5 | 9E-7 | 33.9 | 8.74 E-4 | |
| Co-60 | | | | | | | | | 1.0001332 | 1.033 E-5 | 3E-7 | 34.4 | 2.95 E-4 | |
| Zn-65 | | | | | | | | | .4781115 | | 1E-6 | | | |
| Cs-134 | 1 | | | | | | | | .9980605 | 1.009 E-5 | 9E-8 | 112 | 2.89 E-4 | |
| Cs-137 | 1 | 1000 | 30 | | | | | | .8500662 | 1.594 E-5 | 2E-7 | 79.1 | 4.57 E-4 | |
| I-131 | 1 | | | | | | | | .8200364 | 4.5C E-6 | 3E-9 | 1520 | 1.31 E-4 | |
| Ba-140 | | | | | | | | | .5100537 | 8.333 E-6 | 2E-7 | 41.7 | 2.39 E-4 | |
| La-140 | | | | | | | | | .9001596 | 2.321 E-5 | 2E-7 | 116 | 6.65 E-4 | |
| Xe-133 | | | | | | | | | .370081 | | 3E-8 | | | |
| Xe-135 | | | | | | | | | .9100250 | | 3E-8 | | | |
| Ag-110m | | | | | | | | | | 1.125-5 | 3E-7 | 37.3 | 3.21 E-4 | |
| Nb-95 | | | | | | | | | | 5.776E-6 | 1E-6 | 5.8 | 1.65 E-4 | |
| Zr-95 | | | | | | | | | | 1.195 E-6 | 6E-7 | 2 | 3.42 E-5 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | *4978 | 3.71 ~~2.3~~ E-3 | |

(22) ☐ FOR WDL-T-12; IF GROSS β SPECIFIC ACTIVITY > [illegible] ANALYSIS CANNOT BE DUPLICATED AND MUST BE PROCESSED THROUGH [illegible]

ACCEPTED BY (23) | COMMENTS (24)

17.0

NAME OF SHIFT SUPERVISOR CONTACTED

(35) CONTACT SHIFT SUPERVISOR FOR FOLLOWING DATA Crouse

a) PRESENT MDCT FLOW [ 39,000 ] gpm.
b) MAX MDCT FLOW WHICH CAN BE MADE AVAILABLE [ 39,000 ] gpm.
c) TIME AVAILABLE FOR RELEASE [ 1200 ] min (200 to 1200 min)
d) MDCT Flow to use for CALCULATIONS [ 38,000 ] gpm (must be >5000; <38000)

(36) MINIMUM MDCT = FR-146 ALARM SETPOINT = (0.9) (MDCT Flow From (35d) ) = 34,200

(37) Deleted

(38) Deleted

(39) REVISED CALCULATIONS FOR MPC/10:

{D.F. FROM (23) 4978 / 10 } = 497.8

D.F. FROM (34) ~~651~~ 1084 MAXIMUM = ~~651~~ 1084 / 14

D.F. FROM (26) 523

(40) MAX. RR = {MIN MDCT 34,200 } (36) 1084 / {REQUIRED D.F. FROM (39) ~~651~~ 651 } = 31,577 / 38,063 = R.R. GO TO (41)

(41) RR MAX. = 30 GPM (5.55 to 30 GPM) = FR-84 Alarm Setpoint

(42) RR Actual = (0.9) (RR MAX) = 27 GPM (5 to 27 GPM)

(43) If RR Actual is based on MPC/10, Liquid Waste can be released at a rate greater than or equal to 5 GPM, but less than (42) . Use this range of rates in (47) .

(44) Estimated time of dump = {Est. Vol. to be dumped from (3) 7568 gal} / {27 GPM-RR-Actual} (42) = 280.3

(45) Estimated Reading of RM-L6
13202 CPM (From (32) ) + 800 CPM (Background) = 14002 CPM

(46) Estimated Reading of RM-L7
{14002 CPM (Est. Reading of RM-L6)} + 400 CPM (RM-L7) = 421.5
{Required D.F. From (39) } 651

800

400 18.0

| (28) Isotopes Identified by Analysis (Exclude H-3) | (29) Specific Activity (From 19 ) µCi/ml | (30) Sensitivity of RM-L6 to Each Isotope (From Table 1621-1) | (31) Monitor Response (CPM) |
|---|---|---|---|
| Cr-51 | 6.828E-6 | 1.18 E7 | 81 |
| MN-54 | 1.637E-6 | 8.8 E7 | 144 |
| Co-58 | 3.053E-5 | 1.17E8 | 3572 |
| Co-60 | 1.033E-5 | 1.72E8 | 1777 |
| Cs-134 | 1.009 E-5 | 1.99E8 | 2008 |
| Cs-137 | 1.594 E-5 | 7.74E7 | 1234 |
| I-131 | 4.56 E-6 | 1.06E8 | 483 |
| Ba-140 | 8.333E-6 | 7.7E7 | 642 |
| La-140 | 2.321E-5 | 7.7E7 | 1787 |
| Ag-110M | 1.12 E-5 | 7.7E7 | 862 |
| NB-95 | 5.776E-6 | 8.8E7 | 508 |
| ZR-95 | 1.195E-6 | 8.72E7 | 104 |

(32) Σ= 13202
Estimated Reading of RM-L6 above background

(33) RM-L6 Setpoints

A. Background Limitations

1. If either the estimated monitor response or Bkg <3600 cpm, go to (33) B.

2. If RML-6 Bkg >3600 cpm, and 3600 cpm < Bkg < 27,000 cpm, calculate "e" in A4.

3. If Bkg > 27,000 cpm, Decon RML-6 liner and return to (33) A.

4. $e = 3 \times \frac{\sqrt{(\text{Monitor Response } 13202) + (2 \times (\text{Bkg } 300))}}{(\text{Monitor Response } 13202)} = 0.03$

NOTE: If e >0.2, flush and/or decon RML-6 liner and return to (33) A. If e ≤0.2 go to (33) B.

B. High Alarm Setpoint

2 x { (Monitor Response 13202) + (Bkg 800 ) } = 27202

C. Alert Setpoint

$\frac{(\text{High Alarm } 27202)}{2} = 13,601$

(34) Dilution Factor Based on RML-6

D.F. = $\frac{(\text{RML-6 High Alarm } 27202)}{21.5 \text{ cpm}} = 1265$

RELEASE NUMBER 85-79-L

DATE 6/8/79 TIME 1900 OPERATOR [illegible]

(2) ☑ TANK ISOLATED & "DO NOT OPERATE" ☐ WDT T12 LABORATORY ☐ OTHER

TANK LEVEL 11.8 ft. VOLUME 7568 gal. 6/5/79 1835

SIGNED [illegible]

(3) 9.6 SETPOINT MAXIMUM 870 min 14.5 hr MINIMUM ESTIMATED TIME TO RELEASE

(4) ESTIMATED CURIES TO BE DUMPED 5.723 × 40 = 0.143 % OF QUARTERLY LIMIT

CURIES DUMPED TO DATE THIS QTR. — × 40 = 4.728 % OF QUARTERLY LIMIT

LAST RELEASE INCLUDED — TOTAL 5.871 % OF QUARTERLY LIMIT

(5) RELEASE RECOMMENDED BY [illegible] RADIATION PROTECTION SUPERVISOR

RELEASE RECOMMENDED BY [illegible] GROUP OF RAD PROT & CHEMISTRY SUPERINTENDENT

RELEASE APPROVED BY [illegible] SHIFT SUPERVISOR

(6) RAD MONITOR DATA

R-12 DOWNSTREAM ☑ Alarm 76,396 CPM ☐ Alert 38,193

FR-54 SETPOINT AT 9.6 GPM ☐ DTC

WASTING STEM POSITION ☐ ☐ DTC INITIALS

FR-54 SETPOINT AT 34,200 GPM ☐ ☐ ENTERED

WDT LEVEL LOWERED TO 8.1 GPM RELEASE RATE ☐ DTC

TIME RELEASE STOPPED 0330 TIME 6/10/79 DATE Tank Level at Start of Release 11.8 ft. 7568 gal

TIME RELEASE STARTED 1215 TIME 06/09/79 DATE Tank Level at End of Release 1.5 ft. 930 gal

TOTAL TIME OF RELEASE 915 MINUTES Tank Volume Released 11.3 ft. 6638 gal

WDCT EFFLUENT TOTALIZER AT START 804234

WDCT EFFLUENT TOTALIZER AT END 803888

TOTAL DILUTION 804234 → 346 gal

(7) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:

FR-LO ☑ ON 60 Check Sat. Before Rel. ☐ AT BEGINNING OF RELEASE ☑

IGI-LO Alarm Returned to: FR-Alert = 3600 CPM ☐ AT END OF RELEASE ☑

INSTRUMENT READINGS Alert Alarm = 1000 CPM ☐ FR-LO FLOW ☑

| | EXPECTED READING | READING AT START | READING AFTER 1/3 COMPLETE | READING AFTER 2/3 COMPLETE | READING AFTER RELEASE | |
|---|---|---|---|---|---|---|
| FR-54 | 8.7 GPM | 6.5 | 6.5 | 6.5 | 6.5 | 0 |
| R-12 | 38,193 CPM | 15,000 | 29,050 | 32,000 | 35000 | 30,000 |
| FR-48 | 46,000 CPM | 38,000 | 38,550 | 38,000 | 38000 | 38,000 |
| WDT LEVEL | 161 IN | 125 | 170 | 170 | 150 | 175 |
| | | 11.8 | 8.9 | 6.0 | 3.1 | 0.5 |

(8) IF CHANGES IN FLOW FROM THE WDCT OR CHANGES IN THE RELEASE RATE [illegible] DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINT MUST BE [illegible] TIONS WILL BE COMPUTED ON FACE 2 OF THIS FORM AND THE FOLLOWING TABLE [illegible]

| | START TIME | STOP TIME | TOTAL TIME | *ACTUAL RELEASE RATE | FR-54 SET POINT | FR-48 |
|---|---|---|---|---|---|---|
| CHANGE | | | | | | |
| 2ND CHANGE | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM WHEN [illegible]

(9) RELEASE DATA COMPLETED BY [illegible] INITIALS

ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED [illegible]

[illegible]

[illegible] CALCULATIONS MUST BE RE-CHECKED BY THE SHIFT SUPERVISOR. [illegible] IF THE NDCT FLOW IS REQUIRED.

1. MAXIMUM RELEASE RATE - (11-04 SETPOINT)

   48 - MAX = [illegible] x (0.8) = _____ GPM

2. ACTUAL RELEASE RATE = (RR MAX) x (0.9) = _____ GPM

3. MINIMUM FLOW FROM NDCT (11-14L SETPOINT) = NEW NDCT FLOW x (0.9) = _____ GPM

[illegible] CALCULATIONS:

2. [illegible]

Sample Obtained By: DJE Analysis Performed By: [illegible]
Date/Time: 6-28-79 / 0945 Date/Time: 6-29-79 / 1107 [illegible]

Dilution Factor Required Based on Boron (From Note 1) 36

| | RESULT | [illegible] |
|---|---|---|
| pH | 5.57 @ 6.27 at 1125 RE | 6.5 - 8 |
| Chlorine | 4.0 | [illegible] |
| Iron | .25 | [illegible] |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.

2. Must be [illegible] to consider water with a pH less than 6 or greater than 9 [illegible] conductivity is pH [illegible]. release must be approved by Chemistry [illegible] [illegible] with a written evaluation attached to release form.

3. 0.7 ppm at final discharge. If based on Boron is [illegible] 2.5 ppm / 0.7 ppm

☑ WOLF-111A
☐ WOLF 113
☐ WOLF 112
☐ OTHER

SAMPLE COLLECTED BY: DE
DATE: 6-7-79 TIME: 2040
BACKGROUND: KE
APPROVED BY: [illegible]

DATE & TIME OF ANALYSIS
ALPHA
BETA
GAMMA 6-12-79 / 0400
IODINE 6-9-79 / 0453

VOLUME OF TANK 2563 INCHES 2.164
ACTUAL VOLUME
COLLECTED
Composite Sample Collected By: DE

| | COUNT METHOD (Planchet No.) | VOLUME OF SAMPLE USED (ml) | SAMPLE COUNT TIME (min) | GROSS COUNTS | BKG COUNT TIME (min) | BKG COUNTS | NET SAMPLE COUNT RATE (cpm) | % ERROR 2σ | GAMMA ANALYSIS DATE & TIME | SPECIFIC ACTIVITY (μCi/ml) | MDA (μCi/ml) | RADIOACTIVITY (pCi) | ESTIMATED DISCREPANCY (pCi) | ERROR (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROSS α | | | | | | | | | N.A. | | | | | |
| GROSS β | | | | | | | | | N.A. | | | | | |
| H-3 | TRI-CARB 1954 | | | | | | | | N.A. | 4.40E-3 | 2E-5 | 215 | | |
| Cr-51 | | | | | | | | | | | 2E-6 | | | |
| Mn-54 | | | | | | | | | | 2.31E-6 | 1E-7 | 3 | 7.20E-5 | |
| Co-57 | | | | | | | | | | 1.38E-5 | 9E-7 | 14 | 3.59E-4 | |
| Co-60 | | | | | | | | | | 4.43E-5 | 3E-7 | 55 | 4.72E-4 | |
| Zn-65 | | | | | | | | | | | 1E-6 | | | |
| Sr-90 | | | | | | | | | | 2.42E-6 | 9E-8 | 105 | 2.35E-4 | |
| Cs-134 | | | | | | | | | | 1.20E-5 | 2E-7 | 35 | 4.22E-4 | |
| Cs-137 | | | | | | | | | | 8.36E-7 | 3E-8 | 310 | 2.71E-5 | |
| I-131 | | | | | | | | | | 7.00E-6 | 2E-7 | 32 | 2.00E-4 | |
| Ba-140 | | | | | | | | | | 2.62E-5 | 8E-7 | 131 | 7.62E-4 | |
| Ce-144 | | | | | | | | | | | 3E-8 | | | |
| U-235 | | | | | | | | | | | 9E-8 | | | |
| U-238 | | | | | | | | | | | | | | |
| Am-241 | | | | | | | | | | 3.10E-6 | 3E-7 | 10 | 8.99E-5 | |
| Pu-239 | | | | | | | | | | 3.48E-6 | 1E-6 | 4 | 1.00E-4 | |
| K-40 (1.3%) | | | | | | | | | | 2.44E-5 | 4E-7 | 7410 | 5.60E-4 | |
| Counts | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | 8379 | 3.32E-3 | |

CANCELLED DUPE

Rev.
Revision 14
02/06/79

NAME OF SHIFT SUPERVISOR COMPLETED

(35) CONTAINMENT ISOLATION FOR [illegible] DATA H112

a) PRESENT MAKE FLOW [illegible] GPM.

b) MAX MAKE FLOW WHICH CAN BE [illegible] 40,000 GPM.

c) TIME AVAIL REC FOR RELEASE [illegible] (1200 to 1200 min)

d) MAKE Flow to use for CALCULATIONS 51,000 GPM (must be >5000; <33000)

(36) MINIMUM MAKE - FR-146 ALARM SETPOINT = (0.0, (MAKE Flow From (35)) = 34200

(37) Deleted

(38) Deleted

(41) RELEASE CALCULATIONS FOR WHOLE BODY:

(39) 8369 / 10 = 837

D.F. FROM (41) 3553 MAXIMUM = 3553

D.F. FROM (39) 36

(45) MAX. RR = (MIN MAKE 34,200 (36)) / (RECOGNIZED D.F. FROM (39) 3553) = 9.6 = R.R. GPM

(42) RR Max = 9.6 GPM (5.55 to 30 GPM) = FR-84 Alarm Setpoint

(43) RR Actual = (0.9) (RR MAX) = 8.7 GPM (5 to 27 GPM)

(44) If RR actual is based on MPC/10, Liquid Waste can be released at a rate greater than or equal to 5 GPM, but less than (42). Use this range of rates in (47).

(47) Estimated time of dump = (Est. Vol. to be dumped from (3) 7563 gal.) / (5.7 GPM-RR-Actual (42)) = 1870 / 14.5 HR

(48) Limiting Reading of RM-L6

13193 CPM (From (32)) + 25000 CPM (Background) = 38,193

(46) Estimated Reading of RM-L7

38,193 CPM (Est. Reading of RM-L6) + 150 CPM (RM-L7) = 1761 CPM

(Required D.F. From (32) 3553

| (32) Isotopes Identified by Analysis (Exclude K-3) | (34) Specific Activity (From 19) uCi/ml | (35) Sensitivity of RM-11 to Each Isotope (From Table 32.1-1) | (37) Contribution per Isotope (CPM) |
|---|---|---|---|
| MN - 54 | 2.51E-6 | $8.8 \times 10^7$ | 221 |
| CO - 58 | 1.24E-5 | $1.17 \times 10^8$ | 1451 |
| CO - 60 | 1.64E-5 | $1.72 \times 10^8$ | 2821 |
| CS - 134 | 9.48E-6 | $1.99 \times 10^8$ | 1886 |
| CS - 137 | 1.71E-5 | $7.74 \times 10^7$ | 1325 |
| I - 131 | 9.36E-7 | $1.06 \times 10^8$ | 99 |
| BA - 140 | 7.06E-6 | $7.7 \times 10^7$ | 543 |
| LA - 140 | 2.63E-5 | $7.7 \times 10^7$ | 2025 |
| AG - 110 | 3.10E-6 | $7.7 \times 10^7$ | 239 |
| NB - 95 | 3.48E-6 | $8.8 \times 10^7$ | 306 |
| XE - 131m | 2.46E-5 | $9.7 \times 10^7$ | 2279 |

(38) = 13,193
Estimated Reading of RM-11 above background

(33) RML-6 Setpoints

A. Background Limitations

1. If either the estimated monitor response or Bkg <3600 cpm, go to (33) B.

2. If RML-6 Bkg >3600 cpm, and 3600 cpm < Bkg < 27,000 cpm, calculate "e" in A4.

3. If Bkg > 27,000 cpm, Decon RML-6 liner and return to (33) A.

4. $e = \frac{3 \times \{(\text{Monitor Response } 13,193) + 2 \times (\text{Bkg } 25000)\}}{(\text{Monitor Response } 13,193)} = .0572$

NOTE: If e >0.2, flush and/or decon RML-6 liner and return to (33) A. If e ≤0.2 go to (33) B.

B. High Alarm Setpoint

2 x { (Monitor Response 13,193) + (Bkg 25000) } = 76,386

C. Alert Setpoint

$\frac{(\text{High Alarm } 76,386)}{2} = 38,193$

(42) Dilution Factor Based on RML-6

D.F. = $\frac{(\text{RML-6 High Alarm } 76,386)}{21.6 \text{ cpm}} = 3523$

6-79-L

6-8-79 2350 F Bryan Ojeda PAP

X X MAN ISOLATED / DO NOT ENTER TANK 10' VOLUME 6511

5413 447

SS 79-1

Shift Supervisor

SEPTIC 2350 1442 1121 2432 413 GAS RELEASE RATE: MAX

TIME RELEASE STOPPED 0125 TIME 6/11/79 DATE

TIME RELEASE STARTED 1641 TIME 6/10/79 DATE

TOTAL TIME OF RELEASE 524 MINUTES

Tank Level at Start of Release 10'3" 60256

Tank Level at End of Release .6 430.0

Tank Volume Released 9'-8" 5798.8

VOCT EFFLUENT TOTALIZER AT START 804771

VOCT EFFLUENT TOTALIZER AT END 804566

TOTAL GAL 211

| | EXPECTED | READING AT START | READING AFTER COMPLETE | READING AFTER COMPLETE | | |
|---|---|---|---|---|---|---|
| FROM | 413 | 10.5 | 11 | 10.5 | | 10 |
| | 25555 | 28,000 | 34,000 | 40,000 | 41 K | 45 K |
| FROM | 38621 | 40,000 | 40,000 | 40,000 | 39 K | 39 K |
| | 121 | 200 | 120 | 200 | 120 | 100 |
| | | 10'2" | 7.2 | 4.8 | 2.4 | .5 |

IF DATA SHOWN FLOWS FROM THE VOCT ICR CHANGES IN THE RELEASE RATE

DURING RELEASE CALCULATION OF A NEW RATE AND SETPOINTS MUST

THOSE RELEASE CONDITIONS ENTER PAGE 2 OF THIS FORM AND USE THE FOLLOWING TABLE

| | START TIME | STOP TIME | TOTAL TIME | ACTUAL RELEASE RATE | FROM SET POINT |
|---|---|---|---|---|---|
| FROM | | | | | |
| TO | | | | | |
| FROM | | | | | |
| TO | | | | | |

IF ADDITIONAL SECTIONS OF THIS VOCT CAN NOT BE ENTERED ON THIS FORM

RELEASE COMPLETED BY MH INITIALS

ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED. B C Smith

[illegible] OPERATION CALCULATIONS

FOR THIS RELEASE CHANGE IN DWST FLOW (RELEASE FLOW RATE) SHOULD BE MADE ONLY AFTER CALCULATIONS MUST BE RECOMPUTED BY THE SHIFT SUPERVISOR. THIS MAY ONLY BE DONE IF THE MOST FLOW IS CHANGED.

1. MAXIMUM RELEASE RATE - (FR-64 SET POINT)

RR - MAX = [illegible] x (0.3) = _____ GPM

2. ACTUAL RELEASE RATE = (RR MAX) x (0.3) = _____ GPM

3. NEW DWST FLOW FLOW POST (FR-136 SETPOINT) = NEW DWST FLOW x (0.3) = _____ GPM

USE THIS VALUE FOR CALCULATIONS

[illegible] PARAMETERS

26 Grab Obtained by: DWE Analysis Performed by: DWE
Date/Time: 6-2-29 / 0015 Date/Time: 6-2-29 / 11:7 shift

Dilution Factor Required Based on Boron (From Note 3) 36

| | RESULT | LIMIT |
|---|---|---|
| pH | 5.61 | 6.5 - 9.5 |
| Conductivity | 3.7 | < 10 mmhos |
| Boron | 25 | ppm |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.

2. Must be <10 mmhos to consider water with a pH less than 6 or greater than 9 acceptable. If conductivity is >10 mmhos, release must be approved by Chemistry Supervision before release with a written evaluation attached to release [illegible].

3. 0.7 ppm at final discharge. DF based on Boron is Result (in ppm) / 0.7 ppm.

[ ] VOLT 11A
[x] VOLT 11B
[ ] VOLT 12
[ ] OTHER

SAMPLE COLLECTED BY: DE

DATE 6-7-79 TIME 0445

FAD ANAL. Ref. No. 5DE

APPROVED BY:

DATA REVIEWED BY:

ALPHA

BETA

GAMMA 6-10-79-0530

DATE 6-9-79 0240

VOLUME IN TANK 611 m³ 2.161E7

ACTUAL VOLUME RELEASED

Composite Sample Collected By: DE

| | COUNT METHOD (Number) | VOLUME OR SAMPLE USED L or g | SAMPLE COUNT TIME (min) | GROSS COUNTS | BKG COUNT TIME (min) | BKG COUNTS | % COUNT ERR | GAMMA NUCL DETECTED (Y/N) | SPECIFIC ACTIVITY µCi/ml | MDC for Count | SPECIFIC ACTIVITY pCi/ml | EST DEV'D DETERMINATE COUNTS | ACTUAL QTY RELEASED Curies |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SR90 | | | | | | | | N.A. | | | | | |
| CS137 | | | | | | | | N.A. | | | | | |
| H3 | Re-Count | | | | | | | N.A. | | | | | |
| C14 | 175 | | | | | | | | 5.73E-3 | | 191 | | |
| MN54 | | | | | | | | | | | | | |
| CO58 | | | | | | | | | | | | | |
| CO60 | | | | | | | | | 3.24E-6 | | 4 | 7.19E-5 | |
| FE55 | | | | | | | | | 1.55E-4 | | 5 | 3.32E-5 | |
| SR89 | | | | | | | | | | | | | |
| SR90 | | | | | | | | | 3.46E-6 | | 44 | 9.72E-5 | |
| I131 | | | | | | | | | 1.034E-5 | | 52 | 2.247E-4 | |
| CS134 | | | | | | | | | | | | | |
| CS137 | | | | | | | | | 1.69E-5 | | 54 | 2.66E-4 | |
| BA140 | | | | | | | | | 5.15E-5 | | 258 | 6.01E-3 | |
| RU103 | | | | | | | | | | | | | |
| RU106 | | | | | | | | | | | | | |
| CE144 | | | | | | | | | | | | | |
| ZR95 | | | | | | | | | 5.98E-6 | 1E-6 | 3 | 7.09E-5 | |
| NB95 | | | | | | | | | 1.34E-5 | 9E-5 | — | 3.42E-4 | |

611 2.417E-3

(35) CONTACT SHIFT SUPERVISOR FOR FOLLOWING DATA T. Clouse NAME OF SHIFT SUPERVISOR 38000 38000 150 CONTACTED

a) PRESENT MDCT FLOW ( 32000 ) GPM.
b) MAX MDCT FLOW WHICH CAN BE MADE AVAILABLE ( 38000 ) GPM.
c) TIME AVAILABLE FOR RELEASE ( 1200 ) MIN (600 - 1200 MIN)
d) MDCT Flow to use for CALCULATIONS 38000 GPM (Must be ≤38000; ≤32000)

(36) MINIMUM MDCT = FR-146 ALARM SETPOINT = (0.9) (MDCT Flow from (35)) = 34200

(37) Deleted

(38) Deleted

(39) REVISED CALCULATIONS FOR MPC/10:
D.F. FROM (35) 611 = 61.1
D.F. FROM (34) 2354 D.F. = 2359
D.F. FROM (28) 36

(40) MAX. RR = (MIN MDCT 34200) (36) = 19.49 = MAX. RR TO (REQUIRED D.F. FROM (39) 2359)

(41) RR MAX. = 19.49 GPM (0.55 to 30 GPM) = MAX. ALLOWABLE RR

(42) RR Actual = (0.9) (RR MAX) = 13 GPM (5 to 27 GPM)

(43) If RR Actual is based on MPC/10, Liquid Waste can be released at a rate greater than or equal to 5 GPM, but less than (42). Use RM range for rates < (47).

(44) Estimated time of dump = (Est. Vol. to be dumped from (3) 6511 gal.) = 501
(13 GPM-RR-Actual) (42)

(45) Estimated Reading of RM-L6
2555 CPM (From (32)) + 17000 CPM (Background) = 25355

(46) Estimated Reading of RM-L7
(25355 CPM (Est. Reading of RM-L6)) + 150 CPM (RM-L7) = 161
(Required D.F. From (39) 2359

| (28) Isotopes Identified by Analysis (exclude H-3) | (29) Specific Activity (from 10 µCi/ml) | (30) Sensitivity of RM-L6 to Each Isotope (from Table 3.1-1) | (31) DAC Spec (CPM) |
|---|---|---|---|
| CO-58 | 3.24E-6 | 1.17E8 | 379 |
| CO-60 | 1.35E-6 | 1.22E8 | 267 |
| NB-95 | 2.35E-6 | 3.8E7 | 253 |
| RU-103 | 1.39E-5 | 7.7E7 | 1070 |
| CS-134 | 3.95E-6 | 1.94E8 | 785 |
| CS-137 | 1.034E-5 | 7.24E7 | 350 |
| LA-140 | 5.15E-5 | 7.7E7 | 3456 |
| GA-140 | 1.08E-5 | 7.7E7 | 832 |

(32) T = 8355
Estimated Reading of RM-L6 above Background

(33) RM-L6 Setpoints

A. Background Limitations

1. If either the estimated monitor response or Bkg <3600 cpm, (33) b.

2. If RML-6 Bkg >3600 cpm, and 3600 cpm < Bkg < 27,000 cpm, calculate "e" in A4.

3. If Bkg > 27,000 cpm, Decon RML-6 liner and return to service.

4. $e = \frac{3 \times \text{Monitor Response } (8355) + \text{Bkg } (17000)}{\text{Monitor Response } (8355)} = .0734$

NOTE: If e >0.2, flush and/or decon RML-6 liner and return to service.
(33) A. If e ≤0.2 go to (33) B.

B. High Alarm Setpoint

2 x [(Monitor Response 8355) + (Bkg 17000)] = 50710

C. Alert Setpoint

$\frac{\text{(High Alarm } 50710)}{2} = 25355$

(34) Dilution Factor Based on RML-6

D.F. = $\frac{\text{(RML-6 High Alarm } 50710)}{21.5 \text{ cpm}} = 2359$

# LIQUID RELEASE PERMIT
HPP 1621

RELEASE NUMBER (4) 112-79L

(1) DATE 7-25-79 TIME 0055 REQUESTOR D. Pilsit Hole RP (SHIFT SUPERVISOR)

(2) ☐ WDL-T-11A TANK A
☒ WDL-T-11B TANK B
☐ WDT-T 12 LAUNDRY
☐ Other

(3) ☒ TANK ISOLATED & "DO NOT OPERATE" Tagged DATE 7-25-79
TANK LEVEL 11.5 ft. VOLUME 7390 gal. TIME 0020
SIGNED T. R. Barnhill

(47) ~~18.2~~ 11.8 gpm RR MAX (5-30 gpm) ~~429.2~~ 697 minimum Estimated time for RELEASE

(46) ESTIMATED CURIES TO BE DUMPED 3.48E-3 x 40 = 0.1392 % OF QUARTERLY LIMIT
CURIES DUMPED TO DATE THIS QTR. [ ] x 40 = 1.0633 % OF QUARTERLY LIMIT
111-79L LAST RELEASE = INCLUDED TOTAL 1.2025 % OF QUARTERLY LIMIT

(49) ☑ RELEASE RECOMMENDED BY [signature] RADIATION PROTECTION SUP/Foreman
☑ RELEASE RECOMMENDED BY [signature] SUP OF RAD PROT & CHEM/UNIT SUPERINTENDENT
☑ RELEASE APPROVED BY L. Noll SHIFT SUPERVISOR

(50) RELEASE DATA:
RM-L6 Setpoint Hi Alarm ~~62270~~ CPM: Alert ~~31135~~ CPM: [ ] Initials PR
FR-84 ALARM SET POINT AT ~~11.2~~ 11.8 GPM: ☑ INITIALS
WARNING SIGN ("CAUTION UNIT 1 MAKING LIQUID RELEASE") HUNG ON WDL-99 KEY SWITCH IN UNIT 1 AUX. BLDG. ☑ INITIALS
FR-146 ALARM SETPOINT AT 34,200 GPM: ☑ INITIALS
VALVE WDL-V124 / WDL-V125 LOADED TO ~~11.2~~ 11.8 GPM RELEASE RATE ☑ INITIALS

(51) TIME RELEASE STOPPED 1505 DATE 7/26/79
TIME RELEASE STARTED TIME 0655 DATE 7/26/79
TOTAL TIME OF RELEASE 590 MINUTES

Tank Level at Start of Release 11.5 ft. 7390 gal
Tank Level at End of Release 4.7 ft. 3397 gal
Tank Volume Released 6.8 ft. 3993 gal
MDCT EFFLUENT TOTALIZER AT STOP ~~[illegible]~~ 8315 gallons
MDCT EFFLUENT TOTALIZER AT START 831383 gallons
TOTAL DILUTION FLOW 186 gallons

(52) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:
RM-L6 Source Check Sat. Before Rel. ☑ AT BEGINNING OF RELEASE ☑
RM-L6 Alarm Returned to: Hi-Alarm = 3600 CPM ☐ AT END OF RELEASE ☐ FLOW SURVEY
INSTRUMENT READINGS: Alert Alarm = 1000 CPM ☐ RM-L6 Flushed [ ] RELEASE PUMP

| | EXPECTED READING | READING AT START | READING AFTER ¼ COMPLETE | READING AFTER ½ COMPLETE | READING AFTER ¾ COMPLETE | READING AFTER RELEASE COMPL. |
|---|---|---|---|---|---|---|
| FR-84 | 106 ~~17.2~~ gpm | 10.0 | 8.7 | 10.2 | Terminated | Terminated |
| RM-L6 | ~~27135~~ cpm | 15000 | 40,000 | 40,000 | | |
| FR-146 | 38000 gpm | 47000 | 38,000 | 38,000 | | |
| RM-L7 | ~~7165~~ 7.1 cpm | 750 | 800 | 800 | | |

31135 < RM-L6

(53) IF CHANGES IN FLOW FROM THE MDCT (OR CHANGES IN THE RELEASE RATE (V124/V125 position) DEVELOP DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINTS MUST BE MADE. THE NEW CALCULATIONS WILL BE COMPUTED ON PAGE 2 OF THIS FORM AND THE FOLLOWING TABLE WILL BE COMPLETED

| | START TIME | STOP TIME | TOTAL TIME | *ACTUAL RELEASE RATE | FR-84 SET POINT | FR-146 SET POINT | APPROVAL OF SHIFT SUPV. |
|---|---|---|---|---|---|---|---|
| ORIGINAL | 0655 | 1505 | 490 min | 9.6 gpm | 10.6 | 34,200 | |
| 1st CHANGE | | | | | | | |
| 2nd CHANGE | | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM. MDCT CANNOT BE <5000 or >25000 gpm.

(55) RELEASE DATA COMPLETED BY [signature] INITIALS.
ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED. P. L. Rose

## SPECIAL OPERATION CALCULATIONS

FOR UNEXPECTED CHANGES IN THE MDCT FLOW OR ACTUAL RELEASE RATE THE FOLLOWING CALCULATIONS MUST BE RE-COMPUTED BY THE SHIFT SUPERVISOR. THIS NEED ONLY BE DONE IF THE MDCT FLOW IS REDUCED.

1. MAXIMUM RELEASE RATE = (FR-84 SETPOINT)

   $$RR - MAX = \frac{\text{NEW MDCT FLOW GPM} \times (0.9)}{\text{REQUIRED D.F.}} = \boxed{\phantom{000}} \text{ GPM}$$

2. ACTUAL RELEASE RATE + (RR MAX) x (0.9) = [illegible] GPM

3. MINIMUM FLOW FROM MDCT (FR-146 SETPOINT) = NEW MDCT FLOW x (0.9) = [illegible] GPM

USE THIS AREA FOR CALCULATIONS:

25 CHEMISTRY PARAMETERS

26 Sample Obtained By: KB Analysis Performed By: KB
Date/Time: 7/25/79 @ 2025 Date/Time: 7/25/79 @ 2030

Dilution Factor Required Based on Boron (From Note 3) 524

| | RESULT | LIMIT | |
|---|---|---|---|
| pH | 6.30 | 4.5 - 9.5 | (1) |
| Conductivity | 2.8 | <10 μmho | (2) |
| Boron | 367 | PPM | (3) |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.
2. Must be <10 μmho to consider water with a pH less than 6 or greater than ). If conductivity is >10 μmhos, release must be approved by Chemistry Supervisor or his designee with a written evaluation attached to release form.
3. 0.7 PPM at final discharge. DF based on Boron is $\frac{\text{Result (in PPM)}}{0.7 \text{ PPM}}$ $\frac{524}{0.7}$

☐ WDL-T-11A (5)
☒ WDL-T-11B
☐ WDL-T-12
☐ OTHER

SAMPLE COLLECTED BY KB (6)
DATE 7/25/12 TIME 0525

RAD. ANAL. Perf. by: KB (7)
APPROVED BY: [signature]

DATE & TIME OF ANALYSIS (8)
ALPHA
BETA
GAMMA 7/25/12 @ 0530
TRITIUM 7/27/12 @ 0530

(9) VOLUME IN TANK 7390 gal x 3785 = 27.98 L
(9a) ACTUAL VOLUME RELEASED ML
Composite Sample Collected By: KB

| | (10) COUNT METHOD (Procedure Number) | (11) VOLUME OF SAMPLE USED (ml) | (12) SAMPLE COUNT TIME (MIN) | (13) GROSS COUNTS | (14) BKG COUNT TIME (MIN) | (15) BKG COUNTS | (16) NET SAMPLE COUNT RATE (cpm) | (17) % ERROR 2σ | (18) GAMMA ABUNDANCE @ KEV | (19) SPECIFIC ACTIVITY µCi/ml | (20) MPC 10D µCi/ml | (21) SPECIFIC ACTIVITY / MPC 10D | (22) EST QTY TO BE RELEASED CURIES | (22a) ACTUAL QTY RELEASED CURIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROSS β | | | | | | | | | N.A. | | | | | |
| GROSS α | | | | | | | | | N.A. | | | | | |
| H-3 | Tritium | 1.0 | 10 | | | | | | N.A. | 4.31E-3 | 3E-5 | 142 | | |
| Cr-51 | | | | | | | | | .09 320 | | 2E-5 | | | |
| Mn-54 | | | | | | | | | 1.000835 | 3.29E-7 | 1E-6 | 0.3 | 9.21E-6 | |
| Co-58 | | | | | | | | | .99 810 | 2.32E-6 | 9E-7 | 2.6 | 6.5 E-5 | |
| Co-60 | | | | | | | | | 1.0001332 | 3.23E-6 | 3E-7 | 10.8 | 9.04 E-5 | |
| Zn-65 | | | | | | | | | .47 1115 | | 1E-6 | | | |
| Cs-134 | 1.5 | 3500 | 30 | | | | | | .98 605 | 8.45E-6 | 9E-6 | 98.3 | 2.48E-4 | |
| Cs-137 | | | | | | | | | .850662 | 1.90E-5 | 2E-7 | 95 | 5.32E-4 | |
| I-131 | | | | | | | | MDA | .82 [illegible] | 2.22E-7 | 3E-9 | 74 | 6.22E-6 | |
| Ba-140 | | | | | | | | | .34 0517 | 1.88E-5 / 2.80E-5 | 2E-7 | 94 | 5.26E-4 | |
| La-140 | | | | | | | | | .90 1596 | 3.88E-5 | 2E-7 | 194 | 1.09E-3 | |
| Xe-133 | | | | | | | | | .37 081 | | 3E-8 | | | |
| Xe-135 | | | | | | | | | .91 0250 | | 3E-8 | | | |
| Zr-95 | | | | | | | | | | 9.36E-7 | 6E-7 | 1.6 | 2.62E-5 | |
| Nb-95 | | | | | | | | | | 5.92E-6 | 1E-6 | 5.9 | 1.66E-4 | |
| Zr-97 | | | | | | | | | | 3.67E-7 | 2E-7 | 1.8 | 1.03E-5 | |
| Ru-103 | | | | | | | | | | 6.16E-6 | 8E-7 | 10.2 | 2.28E-4 | |
| Ag-110m | | | | | | | | | | 5.46E-6 | 3E-7 | 18.2 | 1.53E-4 | |
| Ce-141 | | | | | | | | | | 1.08E-6 | 9E-7 | 1.2 | 3.02E-5 | |
| Ce-144 | | | | | | | | | | 1.07E-5 | 1E-7 | 107 | 3.0E-4 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | correct → | 856.9 | 3.48E-3 |

REQUIRED (23) QT | CURIES (23a)

(24) IF ON WDL-T-12, IF GROSS β SPECIFIC ACTIVITY > 1 x 10⁻⁷ µCi/ml, LAUNDRY TANK CANNOT BE DUMPED AND MUST BE PROCESSED THROUGH RADWASTE SYSTEM

17 A

38,000

(35) CONTACT SHIFT SUPERVISOR FOR FOLLOWING DATA — NAME OF SHIFT SUPERVISOR CONTACTED: A Wheeler

a) PRESENT MDCT FLOW [ 42000 ] gpm.
b) MAX MDCT FLOW WHICH CAN BE MADE AVAILABLE [ 42000 ] gpm.
c) TIME AVAILABLE FOR RELEASE [ 1200 ] min (200 to 1200 min)
d) MDCT Flow to use for CALCULATIONS [ 38,000 ] gpm (must be >5000; <38000)

(36) MINIMUM MDCT = FR-146 ALARM SETPOINT = (0.9) (MDCT Flow From (35d)) = 34,000

(37) Deleted

(38) Deleted

(39) REVISED CALCULATIONS FOR MPC/10:

{D.F. FROM (23) 856.9 / 10} = 85.69

D.F. FROM (34) ~~1780 mc~~ 2896 MAXIMUM = ~~1780 mc~~ 2896

D.F. FROM (26) 524

(40) MAX. RR = {MIN MDCT 34,200} (36) / {REQUIRED D.F. FROM (39) ~~1780 mc~~ 2896} = ~~19.2 mc~~ 11.8 = R.R. MAX. GO TO (41)

(41) RR MAX. = ~~19.2 mc~~ 11.8 GPM (5.55 to 30 GPM) = FR-84 Alarm Setpoint

(42) RR Actual = (0.9) (RR MAX) = ~~17.3 mc~~ 10.6 GPM (5 to 27 GPM)

(43) If RR Actual is based on MPC/10, Liquid Waste can be released at a rate greater than or equal to 5 GPM, but less than (42). Use this range of rates in (47).

(44) Estimated time of dump = {Est. Vol. to be dumped from (3) 7370 gal} / {~~17.3 mc~~ 10.6 GPM-RR-Actual} (42) = 697 ~~427.2 mc~~ MIN.

(45) Estimated Reading of RM-L6 ~~11,135~~ 11135 CPM (From (32)) + ~~16,000 mc~~ 20000 CPM (Background) = 31135 ~~27135 mc~~ CPM

(46) Estimated Reading of RM-L7

31135 ~~27,135 mc~~ CPM (Est. Reading of RM-L6)} + 700 / ~~250 mc~~ CPM (RM-L7) = 711 ~~715 mc~~ CPM

{Required D.F. From (39)} ~~1780 mc~~ 2896

| | | | |
|---|---|---|---|
| | 1.88E-5 | 7.7E7 | 1447.6 |
| 140 | 3.88E-5 | 7.7E7 | 2987.6 |
| [redacted]5 | 9.36E-7 | 8.72E7 | 81.6 |
| Nb-95 | 5.92E-6 | 8.8E7 | 521 |
| ZR-97 | 3.67E-7 | 8.19E7 | 30.1 |
| Ru-103 | 8.16E-6 | 7.7E7 | 628.3 |
| Ag-110m | 5.46E-6 | 7.7E7 | 420.4 |
| Ce-141 | 1.08E-6 | 7.7E7 | 83.2 |
| Ce-144 | 1.07E-5 | 7.7E7 | 823.9 |
| | | | 11135.43 |

7-31-79 0450

(1) X MDCT A TANK A / MDCT B TANK B / MDCT 12 LAUNDRY / OTHER

(2) X TANK ISOLATION VALVE OPENED — TANK LEVEL 11.8 ft. VOLUME 7569 gal. SIGNED [signature] 113-79-L

(3) 30 LINEAR MAX (5.00 gpm) 280 gal (41 ml)

(4) ESTIMATED DOSE TO BE DUMPED 1.336-3 x 10 = .0412 % OF QUARTERLY LIMIT
CURIES DUMPED TO DATE THIS QTR. x 10 = 1.2225 % OF QUARTERLY LIMIT
112-79-L LAST RELEASE #INCLUDED TOTAL 1.2637 % OF QUARTERLY LIMIT

(5) ✓ RELEASE RECOMMENDED BY Velez, P-Tel. CRT RADIATION PROTECTION SUPERVISOR
✓ RELEASE RECOMMENDED BY D. L. Tullius CHEMIST OF RAD PROT & CHEMISTRY SUPERINTENDENT
✓ RELEASE APPROVED BY A B Chapman 8/1/79 SHIFT SUPERVISOR

(6) RELEASE DATA:
RM-LG Setpoint at Alarm 15,148 CPM; Alert 7574 CPM; ✓ DIG
FR-64 ALARM SET POINT AT 30 GPM; ✓ GRS
ALARM SIGN (CAUTION LIGHT) ENERGIZED (RELEASE) ✓ MDR INITIALS
IN UNIT 2 AUX. BLDG.
FR-146 ALARM SET POINT AT 34,200 GPM; ✓ TCPK INITIALS
VALVE HDL-V124 HDL-V125 LOADED TO 27 GPM RELEASE RATE 24 GRS INITIALS

(7) TIME RELEASE STOPPED 1155 TIME 8-7-79 DATE
TIME RELEASE STARTED 2158 TIME 8/6/79 DATE
TOTAL TIME OF RELEASE 837 MINUTES

Tank Level at Start of Release 11.8 ft 7569
Tank Level at End of Release 1.2 1341.4
Tank Volume Released 10.6 ft 6228.5
MDCT EFFLUENT TOTALIZER AT END 838816
MDCT EFFLUENT TOTALIZER AT START 835469
TOTAL DILUTION FLOW 347 gpm

(8) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:
RM-LG Source Check Sat. Before Rel. ✓ AT BEGINNING OF RELEASE ✓
RM-LG Alert Returned to: ✓ Hi-Alarm = 3600 CPM ✓ AT END OF RELEASE ✓ FLOW RATE
Alert Alarm = 1000 CPM ✓ RM-LG Flu... ✓ D...

INSTRUMENT READINGS:

| | 1.44 EXPECTED READING | READING AT START | READING AFTER ¼ COMPLETE | READING AFTER ½ COMPLETE | READING AFTER ¾ COMPLETE | READING AT END OF RELEASE |
|---|---|---|---|---|---|---|
| FR-64 | 40,000 gpm | 42,000 | 42,000 | 43,500 | 38,000 | 38,000 |
| RM-LG | 7574 cpm | 2200 | ~~10,000~~ | 10,000 | 13,000 | 15,000 |
| FR-146 | 27 gpm | 10 | 9 | 9 | 9 | 5 |
| RM-L7 | 211 cpm | 200 | ~~200~~ | 200 | 200 | 300 |
| | | 11.8 | 9.08.75 | ~~6.5.9~~ | 3.42.85 | .5 |

(9) IF CHANGES IN FLOW FROM THE MDCT OR CHANGES IN THE RELEASE RATE (VALVE POSITION) ARE MADE DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINTS MUST BE MADE. THESE CALCULATIONS WILL BE COMPUTED ON PAGE 2 OF THIS FORM AND THE FOLLOWING TABLE SHALL BE COMPLETED.

| | START TIME | STOP TIME | TOTAL TIME | *ACTUAL RELEASE RATE | FR-64 SET POINT | FR-146 SET POINT | RM-LG SET POINT |
|---|---|---|---|---|---|---|---|
| ORIGINAL | | | | | | | |
| 1st CHANGE | | | | | | | |
| 2nd CHANGE | | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM. MDCT CANNOT BE <5000 or >35000 GPM

(10) RELEASE DATA COMPLETED BY ___ INITIALS
ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED. A B Chapman 8/2/79 SHIFT SUPERVISOR

SPECIAL OPERATION CALCULATIONS

FOR ANY CHANGES IN THE MDCT FLOW OR ACTUAL RELEASE RATE THE FOLLOWING CALCULATIONS MUST BE RE-COMPUTED BY THE SHIFT SUPERVISOR. THIS NEED ONLY BE DONE IF THE MDCT FLOW IS REDUCED.

1. "NEW" RELEASE RATE = (FR-84 SETPOINT)

FR - NEW = $\frac{\text{NEW MDCT FLOW GPM} \times (0.9)}{\text{REQUIRED D.F.}}$ = _____ GPM

2. ACTUAL RELEASE RATE = (RR MAX) x (0.9) = _____ GPM

3. MINIMUM FLOW FROM MDCT (FR-146 SETPOINT) = NEW MDCT FLOW x (0.9) = _____ GPM

USE THIS AREA FOR CALCULATIONS:

25 CHEMISTRY PARAMETERS

26 Sample Obtained By: E.E. Analysis Performed By: E.E.
Date/Time: 7/31/79 1105 Date/Time: 7/31/79 1115

Dilution Factor Required Based on Boron (From Note 3): 25.1

| | RESULT | LIMIT |
|---|---|---|
| pH | 6.42 | 4.5 - 9.5 |
| Conductivity | 35 | <10 μmho |
| Boron | 176 | PPM |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.

2. Must be <10 μmho to consider water with a pH less than 6 or greater than 9. If conductivity is >10 μmhos, release must be approved by Chemistry Supervisor or his designee with a written evaluation attached to release form.

3. 5.7 PPM at final discharge. DF based on Boron is $\frac{\text{Result (in PPM)}}{5.7 \text{ PPM}}$

[ ] WDL-T-117
[ ] WDL-T-118
[ ] WDL-T-12
[ ] OTHER

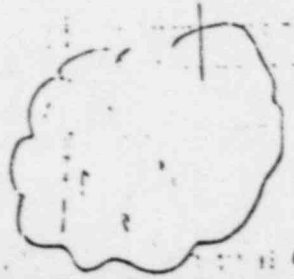
SAMPLE COLLECTED BY: E.E. DATE: 7/25 TIME: 1105
READ AND L. BY: KB
APPROVED BY:

DATE ANALYZED
GAMMA 7/31/79 @ 1525
TRITIUM 7/31/79 7/25

VOLUME RELEASED: 7569 ACTUAL VOLUME

Composite Sample Collected By: E.E. Eglinton

| | COUNT APPLIED (Procedure Number) | VOLUME OF SAMPLE USED (ml) | SAMPLE COUNT TIME (MIN) | GROSS COUNTS | BKG COUNT TIME (MIN) | BKG COUNTS | COUNT RATE (cpm) | % ERROR 2σ | GAMMA NUCLIDE ANALYZED | SPECIFIC ACTIVITY μCi/ml | MPC WW μCi/ml | STACK ACTIVITY Ci/yr | CURIES RELEASED | CURIES RELEASED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROSS A | | | | | | | | | N.A. | 4.68 E-5 | | | | |
| GROSS B | | | | | | | | | N.A. | 2.46E-3 | | 82 | | |
| H-3 | To Carb | 10 | 10 | | | | | | | | | | | |
| Cr-51 | | | | | | | | | Mn-54 | 2.589 E-7 | 1E-6 | 0.2 | 6.833 E-6 | |
| Mn-54 | | | | | | | | | Co-58 | 2.471 E-6 | 6E-7 | 2.7 | 7.067 E-5 | |
| Co-58 | | | | | | | | | Co-60 | 2.492E-6 | 3E-7 | 8.3 | 7.127 E-5 | |
| Co-60 | | | | | | | | | Zn-65 | | 1E-6 | | | |
| Zn-65 | | | | | | | | | Sr-89 | 7.276 E-6 | 9E-6 | 80.8 | 2.021 E-4 | |
| Cs-134 | | | | | | | | | Sr-90 | | 2E-7 | | | |
| Cs-137 | 1058 | 3500 | 50 | + | | | | | Cs-134 | 1.59 E-7 | 3E-6 | 53 | 4.547 E-6 | |
| I-131 | | | | | | | | | Cs-137 | 5.859 E-6 | 2E-7 | 29.3 | 1.676 E-4 | |
| Ba-140 | | | | | | | | | I-131 | 1.156 E-5 | 2E-7 | 57.8 | 3.306 E-4 | |
| I-133 | | | | | | | | | Ba-140 | | 3E-8 | | | |
| Xe-133 | | | | | | | | | La-140 | | 2E-7 | | | |
| Xe-135 | | | | | | | | | | 1.962 E-5 | 1E-6 | 19.7 | 5.622 E-4 | |
| Nb-95 | | | | | | | | | | 1.504 E-7 | 9E-7 | 0.2 | 4.301 E-6 | |
| Ce-141 | | | | | | | | | | 3.697 E-6 | 1E-7 | 37 | 1.057 E-4 | |
| Ce-144 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | 371 | 1.532 E-3 | |



(36) CONTACT SHIFT SUPERVISOR FOR FOLLOWING DATA — SHIFT SUPERVISOR CONTACTED

a) PRESENT MDCT FLOW 40,000 GPM.

b) MAX MDCT FLOW WHICH CAN BE MADE AVAILABLE 40,000

c) TIME AVAILABLE FOR RELEASE 280 Min (200 to 1200 Min).

d) MDCT Flow to use for CALCULATIONS 38,000 GPM (must be ≤ 40,000)

(38) MIN. MDCT = FR-146 ALARM SETPOINT = (0.9) (MDCT Flow From (36)) = 34,200

Gross β D.F.

(37) Deleted.

(33) Deleted D.F. From (100) 468

(39) REVISED CALCULATIONS FOR MPC/10:

D.F. FROM (23) 371 / 10 = 37.1

D.F. FROM (34) 704 MAXIMUM = 704

D.F. FROM (26) 251

(40) MAX. RR = {MIN MDCT 34,200} (36) / {REQUIRED D.F. FROM (39) 704} = 48 = R.R. MAX. UP TO (41)

(41) RR MAX. = 30 GPM (5.55 to 30 GPM) = FR-84 Alarm Setpoint

(42) RR Actual = (0.9) (RR MAX) = 27 GPM (5 to 27 GPM)

(43) If RR Actual is based on MPC/10, Liquid Waste can be released at a rate greater than or equal to 5 GPM, but less than (42). Use this range of rates for (47). BY 251 SPECIFICATION

(44) Estimated time of dump = {Est. Vol. to be dumped from (3) 7569 Gal.} / {27 GPM-RR-Actual (42)} = 280 Min

(45) Estimated Reading of RM-L6: 5574 CPM (From (32)) + 2000 CPM (Background) = 7574 CPM

(46) Estimated Reading of RM-L7: {7574 CPM (Est. Reading of RM-L6)} ÷ {Required D.F. From (39) 704} = 200 CPM (RM-L7) = 211 CPM

| (22) Isotopes Identified (Exclude H-3) | (23) Specific Activity (From 19.0) µCi/ml | (30) Sensitivity of RML-6 to Each Isotope (From Table 16.21-1) | (31) Monitor Response (CPM) |
|---|---|---|---|
| Mn-54 | 2.389 E-7 | 8.8 E7 | 21 |
| Co-58 | 2.471 E-6 | 1.17 E8 | 289 |
| Co-60 | 2.492 E-6 | 1.72 E8 | 429 |
| Cs-137 | 7.276 E-6 | 1.99 E8 | 1448 |
| I-131 | 1.59 E-7 | 1.06 E8 | 17 |
| Ba-140 | 5.859 E-6 | 7.7 E7 | 451 |
| La-140 | 1.156 E-5 | 7.7 E7 | 890 |
| Nb-95 | 1.968 E-5 | 8.8 E7 | 1732 |
| Ce-141 | 1.504 E-7 | 7.7 E7 | 12 |
| Ce-144 | 3.697 E-6 | 7.7 E7 | 285 |

(32) Z= 5574
Estimated Reading of RML-6 above background

(21) RML-6 Setpoints

A. Background Limitations

1. If either the estimated monitor response or Bkg <3600 cpm, go to (33) B.
2. If RML-6 Bkg >3600 cpm, and <27,000 cpm = Bkg < 27,000 cpm, calculate "e" in A4.
3. If Bkg > 27,000 cpm, Decon RML-6 liner and return to (21) A.
4. e = 3 x [(Monitor Response 5574) - 2 x (Bkg 2000)] / (Monitor Response 5574) = 15,148 VCH

NOTE: If e >0.2, flush and/or decon RML-6 liner and return to (33) A. If e ≤0.2 go to (33) B.

B. High Alarm Setpoint

2 x [(Monitor Response 5574) + (Bkg 2000)] = 15,148

C. Alert Setpoint

(High Alarm 15,148) / 2 = 7574

(34) Dilution Factor Based on RML-6

D.F. = (RML-6 High Alarm 15,148) / 21.5 cpm = 704

Sheet re-worked due to Procedure change

# LIQUID RELEASE PERMIT

HPP 1521

RELEASE NUMBER (3) 116-79-L

DATE: 8-10-79 TIME: 0930 REQUESTOR: [illegible] (SHIFT SUPERVISO

- [ ] WDL T-11A TANK A
- [X] WDL-T-11B TANK B
- [ ] WDT-T-12 LAUNDRY
- [ ] Other

(3) [X] TANK ISOLATED & "DO NOT OPERATE" Tagged DATE: 8-10-79

TANK LEVEL 11.4 ft. VOLUME 7330 gal. TIME: 0215

SIGNED [illegible]

(47) 15. gpm RR ~~MAX~~ (5-30 gpm) 437 min minimum Estimated time for RELEASE

(45) ESTIMATED CURIES TO BE DUMPED 1.25E-3 x 40 = 0.0500 % OF QUARTERLY LIMIT

CURIES DUMPED TO DATE THIS QTR. [ ] x 40 = 1.3382 % OF QUARTERLY LIMIT

115-79-L LAST RELEASE # INCLUDED TOTAL 1.3882 % OF QUARTERLY LIMIT

(49) [X] RELEASE RECOMMENDED BY Joe Dean RADIATION PROTECTION SUPERVISOR 2220 8/11/79

[X] RELEASE RECOMMENDED BY Dick Dubiel SUPT. OF RAD PROT & CHEM 2140 8/11/79

[X] RELEASE APPROVED BY [illegible] SHIFT SUPERVISOR (FINAL APPROVAL) UNIT SUPERINTENDENT

(50) RELEASE DATA:

RM-L6 Setpoint Hi Alarm 30,502 CPM: Alert 15,151 CPM: [X] Initial BWS

FR-84 ALARM SET POINT AT 17 CPM: [X] INITIALS

WARNING SIGN ("CAUTION UNIT I MIXING LIQUID RELEASE") HUNG ON WDL-99 KEY SWITCH IN UNIT II AUX. BLDG. [X] INITIALS

FR-146 ALARM SETPOINT AT 34,200 GPM [X] 1,825 INITIALS

VALVE WDL-V124 WDL-V125 LOADED TO 15 GPM RELEASE RATE [X] INITIALS

(51) TIME RELEASE STOPPED 0940 TIME 8-13-79 DATE

TIME RELEASE STARTED ~~0400~~ 1050 TIME 8-12-79 DATE

TOTAL TIME OF RELEASE 1370 (1370) MINUTES

Tank Level at Start of Release 11.4 ft. 7333.8

Tank Level at End of Release .5 ft. 930

Tank Volume Released 10.9 ft. 6403.8

MDCT EFFLUENT TOTALIZER AT STOP 842377 gallons

MDCT EFFLUENT TOTALIZER AT START 841776 gallons

TOTAL DILUTION FLOW 601 gallons

(52) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:

RM-L6 Source Check Sat. Before Rel. [X] AT BEGINNING OF RELEASE [X]

RM-L6 Alarm Returned to: Hi-Alarm = 3600 CPM [X] AT END OF RELEASE [X] Flow Setpo

Alert Alarm = 1000 CPM [X] RM-L6 Flushed [X] Returned to

INSTRUMENT READINGS:

| | EXPECTED READING | READING AT START | READING AFTER % COMPLETE | READING AFTER % COMPLETE | READING AFTER % COMPLETE | READING AFTER RELEASE COM |
|---|---|---|---|---|---|---|
| FR-84 | 15 cpm | 8 | 7 | 6 | 6 | 0 |
| RM-L5 | 15,151 cpm | $1.8 \times 10^4$ | 18000 | 16000 | 16,000 | $1.6 \times 10^4$ |
| FR-146 | 44,000 cpm | 48,000 | 44,000 | 44,000 | 46,000 | 41,000 |
| RM-L7 | 308 cpm | 300 | 250 | 300 | 300 | 220 |
| | | 11.4 | 8.5 | 5.7 | 2.8 | .5 |

(53) IF CHANGES IN FLOW FROM THE MDCT (OR CHANGES IN THE RELEASE RATE (V124/V125 position) DEVELO DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINTS MUST BE MADE. THE NEW CALCUL TIONS WILL BE COMPUTED ON PAGE 2 OF THIS FORM AND THE FOLLOWING TABLE WILL BE COMPLETED

| | START TIME | STOP TIME | TOTAL TIME ⊖ | *ACTUAL RELEASE RATE | FR-84 SET POINT | FR-146 SET POINT | APPROVAL SHIFT SUPV |
|---|---|---|---|---|---|---|---|
| ORIGINAL | | | | | | | |
| 1st CHANGE | | | | | | | |
| 2nd CHANGE | | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM. MDCT CANNOT BE <5000 ~~and >50,000 gpm~~

# LIQUID RELEASE PERMIT

HFP 1621

RELEASE NUMBER (4) 116-79-L

(1) DATE 8-10-79 TIME 0731 REQUESTOR [illegible] SHIFT SUPERVISOR

(2) [ ] WDT-T1A TANK A
[X] WDT-T1B TANK B
[ ] WDT-T2 LAUNDRY
[ ] Other

(3) [X] TANK ISOLATED & "DO NOT OPERATE" Tagged DATE 8-10-79
TANK LEVEL 11.4 ft. VOLUME 7,333 gal. TIME: 0215
SIGNED [illegible]

(47) 19 gpm RR MAX (5-30 gpm) 4.29 MIN (1.1 HR) minimum Estimated time for RELEASE

(48) ESTIMATED CURIES TO BE DUMPED 1.25E-3 x 40 = 0.0500 % OF QUARTERLY LIMIT
CURIES DUMPED TO DATE THIS QTR. [ ] x 40 = 1.3382 % OF QUARTERLY LIMIT
#115-79-L LAST RELEASE # INCLUDED TOTAL 1.3882 % OF QUARTERLY LIMIT

(49) [X] RELEASE RECOMMENDED BY [illegible] RADIOLOGICAL PROTECTION SUPERVISOR 8/10/79 2220 GAK
[X] RELEASE RECOMMENDED BY Dick DUBOIS Plant Tilson 8/10/79 2140 GAK
[X] RELEASE APPROVED BY [illegible] SHIFT SUPERVISOR

(50) RELEASE DATA:
RM-L6 Setpoint Hi Alarm 50,302 CPM: Alert 15,151 CPM: [ ] Initials ___
FR-84 ALARM SET POINT AT 79 GPM: [ ] INITIALS
WARNING SIGN ("CAUTION UNIT 1 RELEASING LIQUID RELEASE") HUNG ON WDL-S2 KEY SWITCH IN UNIT 2 AUX. BLDG. [ ] INITIALS
FR-146 ALARM SETPOINT AT 34,200 GPM: [ ] INITIALS
VALVE WDL-V124 / WDL-V125 LOCKED TO 17.1 GPM RELEASE RATE [ ] INITIALS

(51) TIME RELEASE STOPPED ___ TIME ___ DATE
TIME RELEASE STARTED ___ TIME ___ DATE
TOTAL TIME OF RELEASE ___ MINUTES
Tank Level at Start of Release ___ ft. ___ g
Tank Level at End of Release ___ ft. ___ g
Tank Volume Released ___ g
MDCT EFFLUENT TOTALIZER AT STOP ___ 00000
MDCT EFFLUENT TOTALIZER AT START ___ 00000
TOTAL DILUTION FLOW ___ 00000

(52) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:
RM-L6 Source Check Sat. Before Rel. [ ]
RM-L6 Alarm Returned to: Hi-Alarm = 3600 CPM [ ]
Alert Alarm = 1000 CPM [ ]
AT BEGINNING OF RELEASE [ ]
AT END OF RELEASE [ ]
RM-L6 Flushed [ ]

INSTRUMENT READINGS:

| | EXPECTED READING | READING AT START | READING AFTER ¼ COMPLETE | READING AFTER ½ COMPLETE | READING AFTER ¾ COMPLETE | READING AFTER RELEASE COMP |
|---|---|---|---|---|---|---|
| FR-84 | 44,000 cpm | | | | | |
| RM-L6 | 15,151 cpm | | | | | |
| FR-146 | 17.1 gpm | | | | | |
| RM-L7 | 308 cpm | | | | | |

(53) IF CHANGES IN FLOW FROM THE MDCT (OR CHANGES IN THE RELEASE RATE (V124/V125 position) DEVELOP DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINTS MUST BE MADE. THE NEW CALCULATIONS WILL BE COMPUTED ON PAGE 2 OF THIS FORM AND THE FOLLOWING TABLE WILL BE COMPLETED

| | START TIME | STOP TIME | TOTAL TIME | *ACTUAL RELEASE RATE | FR-84 SET POINT | FR-146 SET POINT | APPROVAL BY SHIFT SUPV. |
|---|---|---|---|---|---|---|---|
| ORIGINAL | | | | | | | |
| 1st CHANGE | | | | | | | |
| 2nd CHANGE | | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM. MDCT CANNOT BE <5000 or >25000 cpm.

(54) RELEASE DATA COMPLETED BY ___ INITIALS.

ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED. ___ SHIFT SUPERVISOR

Rev 40 Procedure Revision

SPECIAL OPERATION CALCULATIONS

FOR UNEXPECTED CHANGES IN THE MDCT FLOW OR ACTUAL RELEASE RATE THE FOLLOWING CALCULATIONS MUST BE RE-COMPUTED BY THE SHIFT SUPERVISOR. THIS NEED ONLY BE DONE IF THE MDCT FLOW IS REDUCED.

1. MAXIMUM RELEASE RATE = (FR-84 SETPOINT)

   $$RR - MAX = \frac{\text{NEW MDCT FLOW GPM} \times (0.9)}{\text{REQUIRED D.F.}} = \boxed{\quad} \text{ GPM}$$

2. ACTUAL RELEASE RATE = (RR MAX) x (0.9) = [ ] GPM

3. MINIMUM FLOW FROM MDCT (FR-146 SETPOINT) = NEW MDCT FLOW x (0.9) = [ ] GPM

USE THIS AREA FOR CALCULATIONS:

25 CHEMISTRY PARAMETERS

26 Sample Obtained By: DZ
Date/Time: 8-10-79 @ 1337

Analysis Performed By: DZ
Date/Time: 8-10 79 7:3

Dilution Factor Required Based on Boron (From Note 3) [ ]

| | RESULT | LIMIT | |
|---|---|---|---|
| pH | 6.20 | 4.5 - 9.5 | (1) |
| Conductivity | 5.5 | <10 umho | (2) |
| Boron | 217 | PPM | (3) |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.

2. Must be <10 umho to consider water with a pH less than 6 or greater than 9. If conductivity is >10 umhos, release must be approved by Chemistry Supervisor or his designee with a written evaluation attached to release form.

3. 0.7 PPM at final discharge. DF based on Boron is $\frac{\text{Result (in PPM)}}{0.7 \text{ PPM}}$

☐ WDL-T-11A ⑤
☒ WDL-T-11B
☐ WDL-T-12
☐ OTHER

SAMPLE COLLECTED BY DZ ⑥
DATE 8-10-79 TIME 1337
RAD. ANAL. Perf. by: ⑦
APPROVED BY:

DATE & TIME OF ANALYSIS ⑧
ALPHA —
BETA —
GAMMA 8-10-79 @ 1550
TRITIUM

⑨ VOLUME IN TANK 1333 gal × 3785 = 2.77×10⁷ cc

⑨a ACTUAL VOLUME RELEASED ML

Composite Sample Collected By:

| | ⑩ COUNT METHOD (Procedure Number) | ⑪ VOLUME OF SAMPLE USED (ml) | ⑫ SAMPLE COUNT TIME (MIN) | GROSS COUNTS | ⑭ BKG COUNT TIME (MIN) | BKG COUNTS | ⑯ NET SAMPLE COUNT RATE (cpm) | ⑰ % ERROR ± 2σ | ⑱ GAMMA ABUNDANCE & KEV | ⑲ SPECIFIC ACTIVITY μCi/ml | ⑳ MPC 10⁻⁷ μCi/ml | ㉑ SPECIFIC ACTIVITY / MPC 10⁻⁷ | ㉒ EST QTY TO BE RELEASED CURIES | ㉓ ACTUAL QTY RELEASED CURIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROSS β | | | | | | | | | N.A. | | | | | |
| GROSS α | | | | | | | | | N.A. | | | | | |
| H-3 | | | | | | | | | N.A. | 4.91E-3 | 3E-3 | 164 | | |
| Cr-51 | | | | | | | | | .09 320 | | 2E-6 | | | |
| Mn-54 | | | | | | | | | 1.00 835 | 3.94E-7 | 1E-6 | 0.4 | 1.09E-5 | |
| Co-58 | | | | | | | | | .99 810 | 3.70E-6 | 9E-7 | 4.1 | 1.02E-4 | |
| Co-60 | | | | | | | | | 1.00 1332 | 4.44E-6 | 3E-7 | 14.8 | 1.23E-4 | |
| Zn-65 | | | | | | | | | .47 1115 | | 1E-6 | | | |
| Cs-134 | | | | | | | | | .98 605 | 9.11E-6 | 9E-8 | 101.2 | 2.52E-4 | |
| Cs-137 | | | | | | | | | .85 662 | 1.79E-5 | 2E-7 | 89.5 | 4.96E-4 | |
| I-131 | | | | | | | | | .82 364 | 2.44E-7 | 3E-9 | 81.3 | 6.76E-6 | |
| Ba-140 | | | | | | | | | .31 537 | 2.14E-6 | 2E-7 | 10.7 | 5.93E-5 | |
| La-140 | | | | | | | | | .90 1596 | 3.55E-6 | 2E-7 | 17.8 | 9.83E-5 | |
| Xe-133 | | | | | | | | | .37 81 | | 3E-8 | | | |
| Xe-135 | | | | | | | | | .91 250 | | 3E-8 | | | |
| ~~AG-108M~~ | | | | | | | | | | 3.67E-6 | 3E-7 | 12.2 | 1.01E-4 | |
| ~~LA-140~~ | | | | | | | | | | | | | | |
| ~~BA-140~~ | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

496

㉔ ☐ FOR WDL-T-12; IF GROSS β SPECIFIC ACTIVITY > 1 × 10⁻⁷ μCi/cc, LAUNDRY TANK CANNOT BE DUMPED AND MUST BE PROCESSED THROUGH RAD WASTE SYSTEM

REQUIRED QTY ㉓ | CURIES ㉕

(32) INITIAL VALVE LINEUP FOR RCL. MIXING DATE: Mahler

E. RECIRC MIXING FLOW 44,000

F. MIXING FLOW WHICH CAN BE MADE WITH PUMP 44,000 GPM

G. MAXIMUM FLOW FOR RELEASE 1200 GPM

H. MIXING FLOW to be used for CALCULATIONS 38,000 GPM (must be ≥8000 GPM)

(34) MINIMUM MIXING FLOW = 90% HIGH ALARM SETPOINT = (0.9) (MIXING FLOW From (32)) = 34,200

(37) Deleted

(38) Deleted

(39) REVISED CALCULATIONS FOR MPC/10:

(D.F. FROM (39) 496) = 49.6

D.F. FROM (34) 1409 MAXIMUM = 1800

D.F. FROM (28) 310

DF FROM (100) 1800

(41) MIN. RR = (MIN. MIX 34,200 (34)) / (REQUIRED D.F. FROM (39) 1800) = 19 - RR Actuation Set Point (42)

(42) RR MAX. = 19 GPM (5.55 to 30 GPM) = RR Actuation Set Point

(43) RR Actuation = (0.9) (RR MAX) = 17.1 GPM (5 to 27 GPM)

(43) If RR Actuation is based on MPC/10, Liquid Waste can be released at a rate greater than or equal to 5 GPM, but less than (42). Use this range of rates to (41).

(44) Estimated time of dump = (Est. Vol. to be dumped from (3) 7333 gal) / (17.1 GPM-RR-Actuation (42)) = 429 min / 7.1 HR

(45) Est. Final Reading of RM-L6

5151 CPM (From (32)) + 10,000 CPM (Background) = 15,151

(46) Est. Final Reading of RM-L7

15,151 CPM (Est. Reading of RM-L6) - 300 CPM (RM-L7) = 308

(Equivalent D.F. From (39)) 1800

E.0

| (28) Isotopes Identified by Analysis (Exclude H-3) | (29) Specific Activity (From 19 ) µCi/ml | (30) Sensitivity of RM-L6 to Each Isotope (From Table 1621-1) | (31) Monitor Response (CPM) |
|---|---|---|---|
| MN-54 | 3.44E-7 | $8.8 \times 10^7$ | 35 |
| CO-58 | 3.70E-6 | $1.17 \times 10^8$ | 435 |
| CO-60 | 4.44E-6 | $1.72 \times 10^8$ | 764 |
| AG-110M | 3.61E-6 | $7.1 \times 10^7$ | 283 |
| CS-134 | 9.11E-6 | $1.97 \times 10^8$ | 1813 |
| CS-137 | 1.77E-5 | $7.14 \times 10^7$ | 1385 |
| LA-140 | 3.55E-6 | $7.7 \times 10^7$ | 273 |
| BA-140 | 2.14E-6 | $7.7 \times 10^7$ | 165 |
| | | | |

(32) r= 5151
Estimated Reading of RM-L6 above background

(33) RM-L6 Setpoints

A. Background Limitations

1. If either the estimated monitor response or Bkg <3600 cpm, go to (33) B.

2. If RML-6 Bkg >3600 cpm, and 3600 cpm < Bkg < 27,000 cpm, calculate "e" in A4.

3. If Bkg > 27,000 cpm, Decon RML-6 liner and return to (33) A.

4. $e = \dfrac{3 \times \sqrt{(\text{Monitor Response } 5151) + (2 \times (\text{Bkg } 10{,}000))}}{(\text{Monitor Response } 5151)} = 1.092$

NOTE: If e >0.2, flush and/or decon RML-6 liner and return to (33) A. If e ≤0.2 go to (33) B.

B. High Alarm Setpoint

2 x { (Monitor Response 5151 ) + (Bkg 10,000 ) } = 30,302

C. Alert Setpoint

$\dfrac{(\text{High Alarm } 30{,}302)}{2} = 15151$

(34) Dilution Factor Based on RML-6

D.F. = $\dfrac{(\text{RML-6 High Alarm } \_\_\_\_)}{21.5 \text{ cpm}} = 1409$

# LIQUID RELEASE PERMIT
HPP 1521

RELEASE NUMBER (3) 117-79-C

8-11-79 TIME: 0240 REQUESTOR Mahler (SHIFT SUPERVISC

DATE: 8-11-79
TIME: 0240

(3) ☑ TANK ISOLATED & "DO NOT OPERATE" Tagged

☐ WDL-T-11A TANK A
☐ WDL-T-11B TANK B
☐ WDT-T-12 LAUNDRY
☐ Other

TANK LEVEL 7.9 ft. VOLUME 5300 gal.

SIGNED [illegible]

(45) 27 gpm RR [illegible] (5-30 gpm) [illegible] minimum Estimated time for RELEASE

(48) ESTIMATED CURIES TO BE DUMPED [illegible] x 40 = .0090 % OF QUARTERLY LIMIT

CURIES DUMPED TO DATE THIS QTR. [illegible] x 40 = [illegible] % OF QUARTERLY LIMIT

[illegible] LAST RELEASE # INCLUDED TOTAL [illegible] % OF QUARTERLY LIMIT

(49) ☑ RELEASE RECOMMENDED BY [illegible] RADIATION PROTECTION SUP/Foreman
☑ RELEASE RECOMMENDED BY [illegible] SUP OF RAD PROT & CHEM/UNIT SUPERINTENDENT
☑ RELEASE APPROVED BY [illegible] SHIFT SUPERVISOR (FINAL APPROVAL)

(50) RELEASE DATA:
RM-L6 Setpoint Hi Alarm [illegible] CPM: Alert [illegible] CPM: ☐ Initials
FR-84 ALARM SET POINT AT [illegible] GPM: ☑ OK INITIALS
WARNING SIGN ("CAUTION UNIT 1 MAKING LIQUID RELEASE") HUNG ON WDL-99 KEY SWITCH
IN UNIT II AUX. BLDG. ☐ INITIALS
FR-146 ALARM SETPOINT AT [illegible] GPM ☑ INITIALS
VALVE WDL-V124 WDL-V125 LOADED TO [illegible] GPM RELEASE RATE ☑ OK INITIALS

(51) TIME RELEASE STOPPED 1205 TIME 8/14/79 DATE
TIME RELEASE STARTED 2125 TIME 8/14/79 DATE
TOTAL TIME OF RELEASE 580 MINUTES

Tank Level at Start of Release 5300 ft. 7.9
Tank Level at End of Release 930 ft. 0.6
Tank Volume Released 4370 ft. 7.4
MDCT EFFLUENT TOTALIZER AT STOP 84 3677 ooo
MDCT EFFLUENT TOTALIZER AT START 8432 92 ooo
TOTAL DILUTION FLOW 387 ooo

(52) FLOW AND RADIATION MONITORING RECORDER CHARTS MARKED:
RM-L6 Source Check Sat. Before Rel. ☐
RM-L6 Alarm Returned to: Hi-Alarm = 3600 CPM ☐ Alert Alarm = 1000 CPM ☐
AT BEGINNING OF RELEASE ☑
AT END OF RELEASE ☐ Flow Setpo
RM-L6 Flushed ☑ Returned to

INSTRUMENT READINGS:

| | EXPECTED READING | READING AT START | READING AFTER % COMPLETE | READING AFTER % COMPLETE | READING AFTER % COMPLETE | READING AFTER RELEASE CON |
|---|---|---|---|---|---|---|
| FR-84 | [illegible] gpm | 15* | 6.0 | 6 | 6 | 6 |
| RM-L6 | 7029 cpm | 6100 | 9,000 | [illegible] | 10^4 | 10^4 |
| FR-146 | 4000 cpm | 43000 | 44000 | [illegible] | 44 x 10^4 | 44 x 10^4 |
| RM-L7 | 261 cpm | 400 | 400 | 400 | 400 | 400 |
| | | | 10 min. interval | 6.05 | 4.20 | 2.35 |

* set back to 7 gpm OK

(53) IF CHANGES IN FLOW FROM THE MDCT (OR CHANGES IN THE RELEASE RATE (V124/V125 position) DEVELOP DURING THE RELEASE, CALCULATION OF A NEW RATE AND SETPOINTS MUST BE MADE. THE NEW CALCUL TIONS WILL BE COMPUTED ON PAGE 2 OF THIS FORM AND THE FOLLOWING TABLE WILL BE COMPLETED

| | START TIME | STOP TIME | TOTAL TIME | *ACTUAL RELEASE RATE | FR-84 SET POINT | FR-146 SET POINT | APPROVAL SHIFT SUPV |
|---|---|---|---|---|---|---|---|
| ORIGINAL | | | | | | | |
| 1st CHANGE | — | — | — | | | | |
| 2nd CHANGE | | | | | | | |

*RELEASE RATE CANNOT BE LESS THAN 5 GPM, MDCT CANNOT BE <5000 ~~[illegible]~~ gpm

(55) RELEASE DATA COMPLETED BY [illegible] INITIALS.

ALL DATA REQUIRED ON THIS FORM HAS BEEN COMPLETED. [illegible] SHIFT SUPERVISOR

# SPECIAL OPERATION CALCULATIONS

FOR UNEXPECTED CHANGES IN THE MDCT FLOW OR ACTUAL RELEASE RATE THE FOLLOWING CALCULATIONS MUST BE RE-COMPUTED BY THE SHIFT SUPERVISOR. THIS NEED ONLY BE DONE IF THE MDCT FLOW IS REDUCED.

1. MAXIMUM RELEASE RATE

$$(RR\ MAX) = \frac{\text{NEW MDCT FLOW GPM} \times (0.9)}{\text{REQUIRED D.F.}} = \boxed{\phantom{00}} \text{ GPM } (40)$$

2. The Actual Release Rate shall be between 5 GPM and [0.9 X (40)] = [ ]; FR 84 SET POINT = 0.9 X (40)
FR84 = [ ]

3. The lesser of: { New MDCT FLOW
38000 GPM
is new FR-146 SETPOINT [ ] GPM

USE THIS AREA FOR CALCULATIONS:

25 CHEMISTRY PARAMETERS

26 Sample Obtained By: cdm
Date/Time: 1700 E-11-79

Analysis Performed By: cdm
Date/Time: 2200 E-11-79

Dilution Factor Required Based on Boron (From Note 3) 128 (26)

| | RESULT | LIMIT | |
|---|---|---|---|
| pH | 6.75 | 4.5 ± 9.5 | (1) |
| Conductivity | 41 | <10 µmho | (2) |
| Boron | 90 | PPM | (3) |

1. Limit at tank to insure not exceeding limit of 6 - 9 pH at plant discharge.

2. Must be <10 µmhos to consider water with a pH less than 6 or greater than 9. If conductivity is >10 µmhos, release must be approved by Chemistry Supervisor or his designee with a written evaluation attached to release form.

3. 0.7 PPM at final discharge. DF based on Boron is $\frac{\text{Result (in PPM)}}{0.7}$

(5) ☑ WDL-T-11A ☐ WDL-T-11B ☐ WDL-T-12 ☐ OTHER

(6) SAMPLE COLLECTED BY: Edi
DATE: 8-11-79 TIME: 1700
(7) RAD. ANAL. Perf. by: K. Myers
APPROVED BY: RND

(8) DATE & TIME OF ANALYSIS
ALPHA
BETA
GAMMA 1710 8-11-79
TRITIUM

(9) VOLUME IN TANK: 5300 gal x 3785 [illegible] x 10

(56) ACTUAL VOLUME RELEASED [illegible] ML

6a Composite Sample Collected By: Edi

| | (10) COUNT METHOD (Procedure Number) | (11) VOLUME OF SAMPLE USED (ml) | (12) SAMPLE COUNT TIME (MIN) | (13) GROSS COUNTS | (14) BKG COUNT TIME (MIN) | (15) BKG COUNTS | (16) NET SAMPLE COUNT RATE (cpm) | (17) % ERROR 2σ | (18) GAMMA ABUNDANCE @ KEV | (19) SPECIFIC ACTIVITY μCi/ml | (20) MPC 10CFR20 μCi/ml | (21) SPECIFIC ACTIVITY / MPC 10CFR20 | (22) EST QTY TO BE RELEASED CURIES | (57) ACTUAL QTY RELEASED CURIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROSS β | | | | | | | | | N.A. | 2.3E-5 | | | | |
| GROSS α | | | | | | | | | N.A. | | | | | |
| H-3 | | | | | | | | | N.A. | 1.07x10⁻³ | 3E-5 | 35.7 | | |
| Cr-51 | | | | | | | | | .009@320 | | 2E-5 | | | |
| Mn-54 | | | | | | | | | 1.00@835 | | 1E-6 | | | |
| Co-58 | | | | | | | | | .99@810 | 1.04E-6 | 9E-7 | 1.2 | 2.08E-5 | |
| Co-60 | | | | | | | | | 1.00@1332 | 5.01E-7 | 3E-7 | 1.7 | 1.00E-5 | |
| Zn-65 | | | | | | | | | .47@1115 | | 1E-6 | | | |
| Cs-134 | | | | | | | | | .98@605 | 3.00E-6 | 9E-8 | 33.3 | 6.00E-5 | |
| Cs-137 | | | | | | | | | .85@662 | 7.01E-6 | 2E-7 | 35 | 1.40E-4 | |
| I-131 | | | | | | | | | .82@364 | 8.33E-8 | 3E-9 | 27.8 | 1.66E-6 | |
| Ba-140 | | | | | | | | | .34@537 | | 2E-7 | | | |
| La-140 | | | | | | | | | .96@1596 | | 2E-7 | | | |
| Xe-133 | | | | | | | | | .37@81 | | 3E-8 | | | |
| Xe-135 | | | | | | | | | .91@250 | | 3E-8 | | | |
| NB-95 | | | | | | | | | | 6.17E-8 | 1E-6 | 0.1 | 1.23E-6 | |
| AG-110M | | | | | | | | | | 7.24E-7 | 3E-7 | 2.4 | 1.45E-5 | |
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| | | | | | | | | | | | | 137 | 2.43E-4 | |
| | | | | | | | | | | | | (23) REQUIRED D.F. | (24) CURIES | |

(27) ☐ FOR WDL-T-12: IF GROSS β SPECIFIC ACTIVITY > 1 x 10⁻⁷ μCi/cc, LAUNDRY TANK CANNOT BE DUMPED TO AND MUST BE PROCESSED THROUGH RAD WASTE SYSTEM

NAME OF SHIFT SUPERVISOR CONTACTED: Acker

(33) CONTACT SHIFT SUPERVISOR FOR FOLLOWING DATA

a) PRESENT MDCT FLOW [ 70000 ] gpm.
b) MAX MDCT FLOW WHICH CAN BE MADE AVAILABLE [ 75000 ] gpm.
c) TIME AVAILABLE FOR RELEASE [ 1200 ] min (200 to 1200 min)
d) MDCT Flow for CALCULATIONS [ 35000 ] gpm (must be >5000; <38000) (35d) = FR-146 ALARM SETPOINT

(35) Minimum MDCT Flow for Calculations = (0.9 X MDCT Flow from (35d)) = [ 34200 ] (36)

(37) Deleted

(38) Deleted

(39) REVISED CALCULATIONS FOR MPC/10:

{D.F. FROM (23) [ 1.37 ] / 10} = [ 1.37 ]
D.F. FROM (34) [ 7.28 ]
D.F. FROM (26) [ 1.25 ]
D.F. FROM (25) [ 31.35 ]

(39) MAXIMUM = [ 738 ]

(40) MAX. RR = {MIN MDCT [ 34200 ] (36) / {REQUIRED D.F. FROM (39) [ 738 ]} = [ 46 ] = R.R. MAX (40) GO

(41) FR-84 Alarm Setpoint = (0.9 X (40)) = [ 27 ] (41)

(42) RR Actual is greater than 5GPM and less than (41) As established by Shift Supervisor/Shift Foreman record as (43) [ ]

(43) Deleted

(44) Estimated time of dump = {Est. Vol. to be dumped from (3) [ 5300 ] gal} / 10{ [ 2500 ] GPM-RR-Actual} (42) = [ 530 ] MIN

(45) Estimated Reading of RM-L6 [ 929 ] CPM (From (32)) + [ 7000 ] CPM (Background) = [ 7929 ] CPM

(45) Estimated Reading of RM-L7 {[ 7929 ] CPM (Est. Reading of RM-L6)} + [ 250 ] CPM (RM-L7) = [ 267 ] CPM

| (28) Isotopes Identified by Analysis (Exclude H-3) | (29) Specific Activity (From 19 ) µCi/ml | (30) Sensitivity of RM-L6 to Each Isotope (From Table 1621-1) | (31) Monitor Response (CPM) |
|---|---|---|---|
| CO-58 | 1.04E-6 | $1.17 \times 10^6$ | 122 |
| CO-60 | 3.01E-7 | $1.72 \times 10^8$ | 810 |
| NB-95 | 6.17E-8 | $3.8 \times 10^7$ | 5 |
| CS-134 | 3.00E-6 | $1.99 \times 10^8$ | 597 |
| CS-137 | 7.01E-6 | $7.74 \times 10^7$ | 54 |
| I-131 | 8.33E-8 | $1.06 \times 10^8$ | 9 |
| AG-110M | 7.24E-7 | $7.7 \times 10^7$ | 56 |

(32) $\Sigma$ = 929
Estimated Reading of RM-L6 above background

(33) RM-L6 Setpoints

A. Background Limitations

1. If RM-L6 ESTIMATED READING > 3600 cpm, and 3600 cpm < Background < 27,000 cpm, calculate "e" in 33.A.4

2. If Background > 27,000 cpm, Decontaminate the RM-L6 Lines and return to (33) A 1

3. If either the RM L6 ESTIMATED READING or background < 3600 go to (33) B

B. High Alarm Setpoint

15855

2 x { (Monitor Response 929 ) + (Bkg 7000 ) } = 15858

C. Alert Setpoint

$$\frac{\text{(High Alarm 15858)}}{2} = \boxed{7929}$$

(34) Dilution Factor Based on RML-6

$$\text{D.F.} = \frac{\text{(RML-6 High Alarm 15858)}}{21.5 \text{ cpm}} = \boxed{737}$$

(9.1)

Ltr. to Cohen

9 pages

Arent, Fox, Kintner, Plotkin & Kahn

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HAND DELIVERY

May 24, 1979

William Cohen, Esquire
Jose Uranga, Esquire
United States Department of Justice
9th Street and Pennsylvania Avenue, Room 2621
Washington, D.C. 20530

Re: City of Lancaster, et al. v. the U.S. Nuclear Regulatory Commission, Civil Action No. 79-1368

Dear Messrs. Cohen and Uranga:

With this letter we are sending to you Plaintiffs' First Set of Interrogatories to Defendant Pending Hearing on Plaintiffs' Motion for Preliminary Injunction. You have agreed that you will answer these Interrogatories prior to the expiration of the 30-day period provided by Rule 33, Federal Rules of Civil Procedure, and as soon as reasonably possible.

We appreciate your willingness to expedite your client's answers to these Interrogatories. However, we notified you during our discussions yesterday afternoon that our clients are gravely concerned because of the present uncertainty as to whether there will be continued construction of decontamination facilities at the Three Mile Island plant and whether there has been or will be a discharge of water from the buildings at the plant site prior to disposition of Plaintiffs' application for preliminary injunction. Therefore, we notified you that we would be obliged to move the Court for a temporary restraining order on Friday afternoon, May 25, 1979, unless we have received in writing either

(a) an order by the Nuclear Regulatory Commission guaranteeing that no water will be discharged from any of the buildings associated with Reactor No. 2 at Three Mile Island and that no

b

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

| | |
|---|---|
| CITY OF LANCASTER, CITY OF LANCASTER AUTHORITY and ALBERT B. WOHLSEN, JR., Plaintiffs, v. UNITED STATES NUCLEAR REGULATORY COMMISSION, Defendant. | Civil Action No. 79-1368 (Gasch, J.) |

PLAINTIFFS' FIRST INTERROGATORIES TO DEFENDANT PENDING HEARING ON PLAINTIFFS' APPLICATION FOR PRELIMINARY INJUNCTION

Plaintiffs, CITY OF LANCASTER, CITY OF LANCASTER AUTHORITY and ALBERT B. WOHLSEN, JR., require that Defendant, UNITED STATES NUCLEAR REGULATORY COMMISSION, answer the following Interrogatories fully, in writing and under oath, in accordance with Rule 33 of the Federal Rules of Civil Procedure. These Interrogatories shall be deemed continuing so as to require supplementation by separate answer if defendant or its attorneys or anyone on behalf of defendant or its attorneys obtains further information between the time the answers hereto are served and the time of any hearing held on plaintiffs' Application for Preliminary Injunction. In answering the following interrogatories defendant is required to file full and complete answers based upon its personal knowledge as well as upon the personal knowledge of any of its agents, attorneys, employees or investigators.

By prior agreement of counsel for the parties in this action, answers to these Interrogatories will be served in less than thirty days and as soon as reasonably possible.

INTERROGATORY NO. 1

1. Has defendant permitted or approved the discharge of any water from Reactor No. 2 at the Three Mile Island ("TMI") nuclear generating plant referred to in plaintiffs' Complaint and Application herein since May 20, 1979?

INTERROGATORY NO. 2

2. If the answer to Interrogatory No. 1 is affirmative,

(a) State how much water (in gallons) was discharged and the origin within Reactor No.2 of such water;

(b) State whether any analysis was performed with respect to that water prior to its discharge, and if so, state in detail:

(i) the exact analysis performed, the person(s) who performed the analysis, the employer(s) of such person(s), and the amount (in gallons) of water analyzed; and

(ii) the complete findings resulting from the analysis, including the designation of all radioactive isotopes, and the extent of their radioactivities, which were found in the water; and

(c) State the basis for defendant having given its permission or approval for the discharge of that water.

INTERROGATORY NO. 3

3. Does defendant know of any discharge of water from Reactor No. 2 at TMI since May 20, 1979?

INTERROGATORY NO. 4

4. If the answer to Interrogatory No. 3 is in the affirmative,

(a) State the amount of water discharged,

(b) State whether defendant was requested to take any action concerning such discharge, and

(c) If defendant received such a request, state what action defendant took, if any.

INTERROGATORY NO. 5

5. State whether there has been any construction or installation of water decontamination facilities, or any facilities related thereto, at TMI since May 20, 1979.

No

INTERROGATORY NO. 6

6. If the answer to Interrogatory No. 5 is in the affirmative,

(a) Describe in detail the construction or installation activities involved,

(b) State whether defendant has given approval for such construction or installation activities, and

(c) If defendant has given such approval, state whether defendant has granted an amendment to the Metropolitan Edison Company's operating license and/or construction permit.

INTERROGATORY NO. 7

7. Has defendant permitted or approved, or does defendant intend to permit or approve, the discharge of any water from Reactor No. 2 at TMI prior to the disposition of Plaintiffs Application for a Preliminary Injunction filed herein on May 21, 1979?

No water from U-2 will be discharged until the NRC has issued for public comment an Environmental Assessment dealing with such discharge as required by the Commission Order issued May 25, 1979.

INTERROGATORY NO. 8

8. If the answer to Interrogatory No. 7 is in the affirmative,

(a) State the amount of water (in gallons) which defendant has approved and/or intends to approve for discharge,

(b) State whether any analysis has been performed of the water to be discharged prior to permitting or approving such a discharge, and if so, state in detail:

(1) the exact analysis performed, the person(s) who performed the analysis, the employer(s) of such person(s), and the amount (in gallons) of water analyzed;

(2) The complete findings resulting from the analysis, including the designation of all radioactive isotopes, and the extent of their radioactivities, which were found in the water to be discharged; and

(c) State the basis for defendant having given or intending to give its permission or approval for the said discharge.

INTERROGATORY NO. 9

9. State whether defendant expects that there will be any construction or installation of water decontamination facilities, or any facilities related thereto, from and after the date of these Interrogatories and prior to the disposition of plaintiffs' Application for a Preliminary Injunction filed herein on May 21, 1979.

Let's check w GPU/Met-Ed on this.

INTERROGATORY NO. 10

10. If the answer to Interrogatory No. 9 is in the affirmative, describe in detail the further construction or installation of water decontamination facilities contemplated; state whether defendant has given approval to the further contemplated construction or installation; and if such approval has been given, state whether defendant has granted to Metropolitan Edison Company an amendment to its operating license and/or construction permit.

Donald E. LeFever
Christopher W. Mattson
James A. Humphreys, III

Counsel for Plaintiffs
City of Lancaster,
City of Lancaster
Authority and
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Washington, D.C. 20006
(202) 857-6000

May 24, 1979

By: _____
Arthur E. Wilmarth, Jr.
Reed L. von Maur

CERTIFICATE OF SERVICE

I, ARTHUR E. WILMARTH, JR., hereby certify that on this 24th day of May, 1979, I caused copies of Plaintiffs' First Set of Interrogatories to Defendant Pending Hearing on Plaintiffs' Application for Preliminary Injunction to be served by hand delivery upon William Cohen, Esquire, and Jose Uranga, Esquire, United States Department of Justice, 9th Street and Pennsylvania Avenue, N.W., Washington, D.C. 20530, counsel for Defendant.

ARTHUR E. WILMARTH, JR.
Counsel for Plaintiffs