
DETROIT EDISON FERMI-2 POWER PLANT

2-MAR-1994 17:13:53.34

RADIATION PROTECTION DEPARTMENT

GAMMA SPECTROSCOPY ANALYSIS REPORT

Sample ID Number: LLD1000


Acquisition Time: 2-MAR-1994 16:57:09.09

Storage file: LLD1000.rnf

REMARKS Drinking Fountain water - 1 l Marinelli - LLD
verification of detector 1 - 1000 sec count

PERFORMED BY:

SIGNATURE

REVIEWED BY:
 3/3/94
SIGNATURE/DATE

Sample ID : LLD1000

Acquisition date : 2-MAR-1994 16:57:09

Fermi 2 Radiation Protection Gamma Spectroscopy Report

***** Sample Parameters *****

Sample ID Number: LLD1000
Sample collection start date: 2-MAR-1994 16:57:00.00
Sample collection end date : 2-MAR-1994 16:57:00.00
Type of sample : 1 Liter Marinell
Sample quantity : 1.00610E+03 ml
Sample geometry : MILL Operator: BFB

***** Acquisition Parameters *****

Detector number : DET1 Acquire date : 2-MAR-1994 16:57:09.09
Preset live time : 0 00:16:40.00 Elapsed live time : 0 00:16:40.00
Elapsed real time : 0 00:16:40.12 Percent dead time : 0.00 %

***** Calibration Parameters *****

Detector number : DET1 Yearly cal date : 2-MAR-1994 13:47:45.33
Kev/channel : 4.99924E-01 Zero offset: 3.28084E-01
Daily cal date : 2-MAR-1994 13:47:45.33

***** Peak Search Parameters *****

Start channel : 100 End channel : 4096
Height sensitivity : 5.00000 Shape sensitivity : 10.00000
Maximum number of iterations to resolve multiplets : 5

***** Nuclide Identification Parameters *****

Energy tolerance : 1.25000 Half-life ratio : 10.00000
Abundance limit : 75.00000 Library : dacmaster.nlb
Efficiency file : EFFD1_m111 Efficiencies at : Peak energy

No peaks were found

• Minimum Detectable Activity Report

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/#1)
BE-7	1.	477.59	2.1881E-07
F-18	6.	511.00	2.5289E-08
NA-22	0.	1274.54	2.0559E-08
NA-24	1.	1368.53	6.0054E-08
MO-27	1.	1014.44	2.8740E-07
CL-38	0.	1642.42	9.1982E-08
K-40	2.	1460.81	7.4587E-07
AR-41	2.	1293.64	7.6116E-08
SC-46	2.	889.25	5.2154E-08
CR-51	1.	320.08	1.7942E-07
MN-54	2.	834.83	4.8824E-08
CO-56	3.	1238.25	1.1861E-07
MN-56	0.	1810.69	1.0634E-07
NI-56	1.	158.38	9.8107E-09
CO-57	3.	122.06	1.7358E-08
CO-58✓	1.	810.76	3.7752E-08
FE-59✓	1.	1099.22	8.6735E-08
CO-60✓	3.	1332.49	8.5282E-08
CU-64	0.	1345.90	7.0277E-06
NI-65	0.	1481.84	1.0390E-07
ZN-65✓	2.	1115.52	1.2325E-07
ZN-69M	1.	438.63	2.2414E-08
SE-75	4.	136.00	2.6042E-08
AS-76	1.	559.10	5.8875E-08
BR-82	0.	776.49	1.5886E-08
BR-83	0.	529.64	1.3510E-06
BR-84	0.	881.50	4.2896E-08
BR-85	2.	802.41	7.7892E-06
KR-85	2.	513.99	7.1403E-06
KR-85M	3.	151.18	1.8473E-08
SR-85	2.	513.99	2.0931E-08
RB-86	1.	1076.63	5.4016E-07
KR-87	2.	402.58	5.3831E-08
SR-87M	1.	308.40	2.3872E-08
KR-88	3.	196.32	6.3223E-08
RB-88	2.	1382.39	1.4030E-05
Y-88	1.	1836.01	7.7167E-08
KR 89	4.	220.90	3.7930E-07
RB-89	1.	1031.88	1.1487E-07
KR 90	0.	1118.69	1.2863E-06
RB-90	0.	831.69	3.9642E-07
RB-90M	0.	824.23	5.5270E-07
Y-90M	2.	202.51	1.6109E-08
SR-91	0.	1024.30	5.2918E-08
Y-91	2.	1204.90	2.2245E-05
Y-91M	2.	555.60	3.8657E-08
SR-92	2.	1383.94	8.7533E-08
Y-92	0.	934.46	1.1722E-07
SR-93	4.	590.28	1.3505E-07
Y-93	4.	266.90	3.2059E-07
NB-94	3.	702.63	4.7349E-08
NB-95	1.	765.79	3.5473E-08

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Nuclide	Bckgnd sum	Energy (keV)	MDA (uCi/ml)
NB-95M	1.	235.69	5.1056E-08
ZR-95	0.	756.72	3.9022E-08
NB-97	3.	657.90	4.8947E-08
ZR-97	2.	743.36	4.4475E-08
MO-99	0.	739.58	9.8241E-08
TC-99M	6.	140.50	2.1095E-08
TC-101	1.	306.81	2.5783E-08
RU-103	2.	497.08	3.3497E-08
TC-104	3.	357.99	3.9558E-08
RH-105	3.	318.90	1.2800E-07
RU-105	2.	724.50	8.8017E-08
RU-106	0.	621.84	1.0798E-07
CD-109	5.	88.03	6.1253E-07
AG-110M	1.	937.48	1.2639E-07
SN-113	0.	391.69	1.0825E-08
SN-117M	1.	158.56	1.1217E-08
SB-122	1.	563.93	3.7480E-08
SB-124	1.	602.71	2.4912E-08
SB-125	1.	427.89	7.0411E-08
TE-125M	6.	109.28	7.2544E-06
TE-127	1.	417.90	2.0639E-06
TE-127M	9.	57.60	2.8913E-05
XE-127	1.	202.84	1.6981E-08
TE-129	1.	459.60	3.3722E-07
TE-129M	0.	695.88	3.5691E-07
XE-129M	3.	196.56	3.3550E-07
I-130	3.	536.09	3.7616E-08
BA-131	2.	123.00	4.5923E-08
I-131	1.	364.48	2.2163E-08
TE-131	3.	140.70	2.4092E-08
TE-131M	0.	773.67	3.4535E-08
XE-131M	5.	163.93	9.0958E-07
I-132	1.	667.69	3.2463E-08
TC-132	3.	228.16	2.0619E-08
BA-133	1.	302.84	9.0898E-08
BA-133M	2.	276.09	9.4830E-08
I-133	1.	529.87	2.6059E-08
TE-133M	3.	912.58	7.8965E-08
XE-133	1.	81.00	4.1048E-08
XE-133M	4.	233.22	2.0839E-07
CS-134	1.	604.70	2.8788E-08
I-134	0.	884.09	2.5809E-08
TE-134	3.	210.47	8.8420E-08
BA-135M	3.	268.24	1.3192E-07
I-135	1.	1260.41	1.9600E-07
XE-135	2.	249.79	1.8806E-08
XE-135M	0.	526.56	1.6159E-08
CS-136	1.	818.50	3.6881E-08
I-136	2.	1313.02	9.4262E-07
CS-137	0.	661.65	1.3147E-08
XE-137	2.	455.49	2.8998E-07

Minimum Detectable Activity Report (continued)

Sample ID : LLD1000

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Acquisition date : 2-MAR-1994 16:57:09

Nuclide	Bkgnd Sum	Energy (keV)	MDA (uCi/ml)
CS-138	0.	1435.86	3.5744E-08
XE-138	1.	258.31	7.0119E-08
BA-139	3.	1420.50	3.2755E-05
CE-139	7.	165.85	2.4928E-08
CS-139	0.	1283.23	5.1914E-07
BA-140	3.	537.32	1.4813E-07
LA-140	0.	1596.49	2.6257E-08
BA-141	5.	190.22	5.3246E-08
CE-141	6.	145.44	3.8969E-08
LA-141	0.	1354.52	8.5052E-07
BA-142	5.	255.12	2.2097E-07
LA-142	0.	641.17	2.2009E-08
CE-143	3.	293.26	5.2613E-08
CE-144	5.	133.54	1.6541E-07
PR-144	1.	1489.15	2.9484E-05
ND-147	5.	91.10	7.8361E-08
PM-148M	0.	550.27	1.0014E-08
EU-152	0.	344.27	2.3748E-08
EU-154	0.	1004.76	9.3621E-08
EU-156	0.	646.29	1.5425E-07
HF-181	2.	482.03	3.2866E-08
TA-182	0.	1221.42	7.2684E-08
W-187	1.	685.81	1.1213E-07
RE-188	4.	155.03	1.0998E-07
HG-203	1.	279.19	1.8475E-08
BI-207	1.	567.67	2.7282E-08
TL-208	3.	583.14	1.8252E-07
FB-212	1.	238.63	2.9033E-08
BI-214	3.	609.31	1.1843E-07
PB-214	8.	301.92	1.2503E-07
RA-224	1.	240.98	3.2201E-07
RA-226	5.	186.21	5.8766E-07
AC-228	3.	338.32	2.1629E-07
TH-228	6.	84.37	2.1327E-06
PA-234	0.	131.20	1.7753E-08
TH-234	14.	63.29	2.1793E-06
U-235	8.	143.76	1.9360E-07
NP-239	4.	106.13	7.6006E-08
AM-241	7.	59.54	2.2582E-07