

Document Type: Decommissioning Plan/Supporting Documentation

August, 24, 2009  
Steve McCamy, POB 2A-SQN

**SEQUOYAH NUCLEAR PLANT - RECORDS OF SPILLS AND UNUSUAL OCCURENCES IMPORTANT TO DECOMMISSIONING. Memorandum for inclusion in 10CFR50.75(g)(1) required decommissioning file.**

This memorandum documents the identification and evaluation of a radioactive spill and unusual occurrence to outdoor environs of the plant site. The time frame of the evaluation involves the spread of contamination from the unit 1 Refueling Water Storage Tank (RWST) moat to the ground immediately outside of the moat.

The following information is relevant to decommissioning and is contained in an appendix to this report.

Event Log:

- 1. Unit 1 RWST moat drain

Time of Occurrence July 30, 2009 at 0755

Event: The Unit 1 and Unit 2 RWST Moats are not protected from rain water intrusion. Prior moat spills and moat samples have indicated that the moats are sources of radioactive contamination to include tritium. To keep radioactive material from getting into the environment the bottom drains were capped and sump pumps were installed to pump the rain water to the Auxiliary Building Sump. The overflow drain was left unplugged to prevent water from damaging equipment. A catch containment was installed at the out fall of the overflow drain to catch any water that might exit the drain. Another sump pump was installed in the catch containment to pump out any water that collected in the catch containment to the Auxiliary Building Sump.

Sometime prior to July 30 the ground fault interrupters that connect the sump pumps to the plant electrical system tripped shutting off power to the sump pumps. Since the pumps were not working when it started raining on July 30 the moat filled with water. At 0755 the moat was full of water and water started flowing out the overflow drain and into the catch containment. The sump pump in the catch containment could not keep up with the water flowing from the overflow drain and water started backing up in the catch containment. When the water reached the top of the containment it started flowing onto the ground. Approximately ten gallons of rain water flowed out of the catch containment onto the ground before the event stopped. Chemistry and Radiation Protection sampled the water from in the catch containment. The results of the samples from the catch container are Tritium at 6.64E-4 micro Curie/ ml and Total Gamma emitter's at 1.13E-6 micro Curie /ml.

6.6(10)<sup>-4</sup>  $\frac{\mu\text{Ci}}{\text{ml}} \times 1000 \frac{\text{ml}}{\text{l}} \times \frac{10^{12} \text{ pCi}}{\mu\text{Ci}} = 6.6(10)^5 \text{ pCi/l}$

$\Rightarrow \frac{6.6(10)^{-4} (10)^3 (10)^{12}}{10^6} = 6.6(10)^5 \text{ pCi/l}$

$\frac{\mu\text{Ci}}{\text{ml}} \frac{1000 \text{ ml}}{\text{l}} \frac{10^{12} \text{ pCi}}{\mu\text{Ci}} \Rightarrow 10^9 \frac{\text{pCi}}{\text{l}}$

$6.6(10)^5 \text{ pCi/l} (664,000 \text{ pCi/l})$

A-6  
M-3

The Unit 2 RWST Moat did not experience this because the sump pumps worked correctly.

The following specifics are provided to characterize the spill data thus far:

- Chemistry, Operations, and Radiation Protection logs were reviewed. From this log information the volume of water transferred from the moat to the ground was estimated to be approximately ten gallons.
- Spill Water Principal gamma emitters: (See attached analysis sheets)
- Spill water Tritium; (See attached analysis sheets)

SPP-5.14, Guide for Communicating Inadvertent Radiological Spills/Leaks to Outside Agencies, Section 3.2A States that any spill greater than 100 gallons or any spill containing greater than 20,000 picoCuries/liter has to be reported to outside agencies. This incident does not meet either one of these criteria this event does not have to be reported to any outside agencies.

Remediation performed: No soil excavation performed. Area included in Radiation Protection quarterly surveys of outside environs. RMD-FO-035.

Documentation: See attached appendix's of documentation.

Appendix 1, Spill water principal gamma emitters and tritium analysis.



Michael F. Halter  
Radiation Protection Support Manager.  
SB2A-SQN

REPORT NAME : QA\_CHECK (V9.3)  
REPORT DATE : 30-JUL-2009 13:51  
REQUESTOR : CAS

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT

POST NID QA ANALYSIS

TITLE : U1 - RWST MOAT 08:10 07/30

SAMPLE No. : 9092111022 OPERATOR NAME : CAS Account  
SAMPLE TYPE : LIQUID SAMPLE GEOMETRY : LM1  
COUNT TIME : 30-JUL-2009 13:34:38 SAMPLE QUANTITY : 7.55000E+02  
SAMPLE TIME : 30-JUL-2009 08:10:00 DETECTOR : ADC1  
LIBRARY : LIQUID

ISOTOPE	GRP	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR uCi/ml	COMMENTS
CO-58	AP	810.76	0.22	5.716E-07	QA Results OK
CO-60	AP	1332.49	-0.10	5.322E-07	QA Results OK
CS-137	FP	661.64	0.25	6.754E-08	QA Results OK
AVG ENERGY DIFF = 0.12				1.171E-06 = TOTAL GAMMA ACTIVITY	
				6.754E-08 = Total FP Activity	
				1.104E-06 = Total AP Activity	

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /ml	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
135.27	20.	2.34	6.097E-01	8.075E-04	55.1	R	CO-57	2.060E-07
						R	I-134	4.661E-05
						R	W-187	2.700E-07
428.05	19.	1.82	1.132E+00	1.500E-03	27.0	<u>K</u>	SB-125	1.382E-07
511.04	65.	2.95	4.611E+00	6.107E-03	24.0	U	C-11	1.335E-02
						U	F-18	6.986E-07
						U	ZN-65	5.837E-06
						U	I-133	1.097E-05
						U	TL-208	7.644E-07

Total Unidentified/Rejected Peaks = 3  
% Unidentified/Rejected Peaks = 42.86

Flags: U - Unknown Line  
R - Rejected During Analysis  
P - Positively Identified (line not in analysis library)

PERFORMED BY : \_\_\_\_\_

*qa*

DATE : 07/30/09

REPORT NAME : QA CHECK (V9.3)  
 REPORT DATE : 30-JUL-2009 13:31  
 REQUESTOR : CAS

TENNESSEE VALLEY AUTHORITY  
 SEQUOYAH NUCLEAR PLANT

POST NID QA ANALYSIS

TITLE : U1 - RWST MOAT 08:10 07/30

SAMPLE No. : S092111019 OPERATOR NAME : CAS Account  
 SAMPLE TYPE : SI-421 LIQUID SAMPLE GEOMETRY : LM1  
 COUNT TIME : 30-JUL-2009 13:14:17 SAMPLE QUANTITY : 7.55000E+02  
 SAMPLE TIME : 30-JUL-2009 08:10:00 DETECTOR : ADC1  
 LIBRARY : LIQUID

ISOTOPE	GRP	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR uCi/ml	COMMENTS
CO-58	AP	810.76	0.18	5.622E-07	QA Results OK
CO-60	AP	1332.49	0.14	5.693E-07	QA Results OK
CS-137	FP	661.64	-0.13	1.040E-07	QA Results OK
AVG ENERGY DIFF = 0.06				1.236E-06 = TOTAL GAMMA ACTIVITY	
				1.040E-07 = Total FP Activity	
				1.132E-06 = Total AP Activity	

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /ml	% ERROR	FLAG	POTENTIAL ID	ACTIVITY
335.34	14.	1.35	6.740E-01	8.927E-04	52.6	R	TE-131M	2.835E-07
410.24	15.	1.87	8.921E-01	1.182E-03	24.6	U	unk	
511.54	39.	2.54	2.785E+00	3.688E-03	43.6	U	C-11	4.036E-03
						U	F-18	3.710E-07
						U	ZN-65	3.524E-06
						U	I-133	6.552E-06
						U	TL-208	4.616E-07

*Annihilation*

Total Unidentified/Rejected Peaks = 3  
 % Unidentified/Rejected Peaks = 42.86

Flags: U - Unknown Line  
 R - Rejected During Analysis  
 P - Positively Identified (line not in analysis library)

PERFORMED BY : \_\_\_\_\_ DATE : 07 / 30 / 09

\*\*\*\* End Of Report ( 1 Page ) \*\*\*\*

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\*\*\*\*\* EFFLUENT RELEASE (WATER) REPORT \*\*\*\*\*  
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Sample ID: S092111019  
Sample Time: 30-JUL-2009 08:10:00  
Sample Title: U1 - RWST MOAT 08:10 07/30  
Nuclide Library: LIQUID

Nuclide Name	Weighted Mean Activity (uCi/ml)	ECL Type	ECL Limit (uCi/cm3)	Fraction Of ECL
CO-58	5.6218E-07	D	2.000E-05	2.8109E-02
CO-60	5.6933E-07	D	3.000E-06	1.8978E-01
CS-137	1.0402E-07	D	1.000E-06	1.0402E-01

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TOTAL

3.2191E-01

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30-JUL-2009 13:31:25.84

TVA  
SEQUOYAH NUCLEAR PLANT

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SAMPLE TITLE : U1 - RWST MOAT 08:10 07/30  
FILE IDENT : CAS\$DISK:[SQN.SAMPLE.CHEM.NEW]S092111019.CNF;1

SAMPLE ID : S092111019 \* OPERATOR : CAS Account  
SAMPLE TIME : 30-JUL-2009 08:10 \* SAMPLE GEOMETRY : LM1  
\* SHELF HEIGHT : 0  
\* EFFICIENCY FILE : LM10  
SAMPLE TYPE : SI-421 LIQUID \* SAMPLE QUANTITY : 7.55000E+02 ml

\*\*\*\*\*

CO DATE & TIME : 30-JUL-2009 13:14 \* DEADTIME (%) : 0.0%  
RESET LIVE TIME : 0 00:16:40 \* SENSITIVITY : 4.00000  
ELAPSED REAL TIME : 0 00:16:40 \* GAUSSIAN SEN : 10.00000  
ELAPSED LIVE TIME : 0 00:16:40 \* NBR ITERATIONS : 10

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DETECTOR : ADC1 \* LIBRARY : LIQUID  
EFFIC CAL DATE : 18-AUG-2004 10:36 \* EFFIC CERT DATE : 18-AUG-2004 10:36  
CAL DATE & TIME : 30-JUL-2009 03:09 \* ENERGY TOLER : 1.25  
KEV/CHAN : 4.99710E-01 \* HALF LIFE RATIO : 8.00000  
OFFSET : 1.48561E-01 keV \* ABUNDANCE LIMIT : 70.0%  
COEFFICIENT : 8.55423E-08 \* CORRECTION FACTOR : 1.00000E+00  
PEAK START CHAN : 110 \* PEAK END CHAN : 4091

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ANALYSES : PEAK V16.9 NID V3.4 MINACT V2.8 WTMEAN/KEY V1.8

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Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	335.34	14	15	1.35	670.69	667	7	52.6	3.41E+00	
1	410.24	15	0	1.87	820.54	816	8	24.6	6.55E-01	
1	511.54	39	50	2.54	1023.20	1020	12	43.6	1.71E+00	
1	661.51	28	3	2.45	1323.19	1317	10	21.7	1.29E+00	CS-137
1	810.94	146	7	1.83	1622.08	1617	13	9.2	8.96E-01	CO-58
1	1173.10	107	0	1.63	2346.32	2339	13	10.1	1.69E+00	CO-60
1	1332.63	98	0	1.86	2665.28	2660	12	10.2	3.01E-01	CO-60

uclide Type: AP

uclide	Energy	%Abn	%Eff	Uncorrected uCi/ml	Decay Corr uCi/ml	1-Sigma %Error	Status
O-58	810.76	99.40*	9.402E-01	5.610E-07	5.622E-07	9.16	OK
	863.94	0.74	8.906E-01	-----	Line Not Found	-----	Absent
	1321.76	0.10	6.188E-01	-----	Line Not Found	-----	Absent
	1621.52	-- Miscellaneous--	-----	-----	Line Not Found	-----	Absent
	1674.68	0.54	5.040E-01	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 5.622E-07+/- 5.152E-08 ( 9.16%)

O-60	310.49	-- Double Escape--	-----	-----	Line Not Found	-----	Absent
	1173.22	100.00	6.856E-01	5.597E-07	5.597E-07	10.09	OK
	1332.49	100.00*	6.144E-01	5.693E-07	5.693E-07	10.18	OK

Final Mean for 2 Valid Peaks = 5.693E-07+/- 5.797E-08 ( 10.18%)

uclide Type: FP

uclide	Energy	%Abn	%Eff	Uncorrected uCi/ml	Decay Corr uCi/ml	1-Sigma %Error	Status
S-137	661.64	85.12*	1.120E+00	1.040E-07	1.040E-07	21.72	OK

Final Mean for 1 Valid Peaks = 1.040E-07+/- 2.260E-08 ( 21.72%)

lag: "\*" = Keyline

Identified Energy Lines  
Sample ID : S092111019

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Acquisition date : 30-JUL-2009 13:14:17

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	335.34	14	15	1.35	670.69	667	7	1.37E-02	52.6	2.03E+00	T
1	410.24	15	0	1.87	820.54	816	8	1.52E-02	24.6	1.70E+00	
1	511.54	39	50	2.54	1023.20	1020	12	3.91E-02	43.6	1.40E+00	

Flags: "T" = Tentatively associated



nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (uCi/ml)	1-Sigma %Error	Rejected by
E-131M	30.00H	0.17	81.14	4.07	---	Not Found	---
			102.06	7.90	---	Not Found	---
			149.72	5.10	---	Not Found	---
			200.63	7.56	---	Not Found	---
			240.93	7.59	---	Not Found	---
			278.56	1.78	---	Not Found	---
			334.27	9.60	2.835E-07	52.55	
			364.98	1.20	---	Not Found	---
			452.32	1.50	---	Not Found	---
			462.92	1.82	---	Not Found	---
			586.30	1.98	---	Not Found	---
			665.05	4.34	---	Not Found	---
			713.10	1.43	---	Not Found	---
			744.20	1.59	---	Not Found	---
			773.67*	38.20	---	Not Found	---
			782.49	7.79	---	Not Found	---
			793.75	13.90	---	Not Found	---
			822.78	6.12	---	Not Found	---
			852.21	20.70	---	Not Found	---
			910.00	3.29	---	Not Found	---
			920.62	1.20	---	Not Found	---
			1059.69	1.55	---	Not Found	---
			1125.46	11.40	---	Not Found	---
			1148.89	1.50	---	Not Found	---
			1206.60	9.80	---	Not Found	---
			1646.01	1.24	---	Not Found	---
			1887.70	1.36	---	Not Found	---
			2000.94	2.01	---	Not Found	---
% Abundances Found =				5.41	(Abn. Limit = 36.00%)		

-132	2.30H	2.27	262.70	1.44	---	Not Found	---
			446.00	0.60	---	Not Found	---
			505.90	5.03	---	Not Found	---
			522.65	16.10	---	Not Found	---
			535.50	0.52	---	Not Found	---
			547.10	1.25	---	Not Found	---
			621.20	1.58	---	Not Found	---
			630.22	13.70	---	Not Found	---
			650.60	2.66	---	Not Found	---
			667.69*	98.70	---	Not Found	---
			669.80	4.90	---	Not Found	---
			671.60	5.20	---	Not Found	---
			727.00	5.40	---	Not Found	---
			728.50	1.10	---	Not Found	---
			772.61	76.20	---	Not Found	---
			780.20	1.23	---	Not Found	---
			784.50	0.42	---	Not Found	---
			809.80	2.90	9.242E-05	9.16	
			812.20	5.60	---	Not Found	---
			876.80	1.08	---	Not Found	---
			954.55	18.10	---	Not Found	---
			983.70	0.56	---	Not Found	---

ejected Report (continued)  
ample ID : S092111019

Page : 5  
Acquisition date : 30-JUL-2009 13:14:17

nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity (uCi/ml)	1-Sigma %Error	Rejected by
-132	2.30H	2.27	1136.03	2.96	---	Not Found	---
			1143.40	1.35	---	Not Found	---
			1173.20	1.09	2.468E-04	10.09	
			1290.70	1.14	---	Not Found	---
			1295.30	1.97	---	Not Found	---
			1372.07	2.47	---	Not Found	---
			1398.57	7.10	---	Not Found	---
			1440.30	0.00	---	Not Fnd Miscl	---
			1442.56	1.42	---	Not Found	---
			1757.50	0.30	---	Not Found	---
			1921.08	1.18	---	Not Found	---
			2002.20	1.09	---	Not Found	---
% Abundances Found =				1.39	(Abn. Limit = 61.00%)		

P-239	2.36D	0.09	99.55	14.70	---	Not Found	---
			103.76*	23.70	---	Not Found	---
			106.13	22.70	---	Not Found	---
			117.00	11.10	---	Not Found	---
			209.75	3.24	---	Not Found	---
			228.18	10.70	---	Not Found	---
			277.60	14.10	---	Not Found	---
			315.88	1.59	---	Not Found	---
			334.19	2.03	1.267E-06	52.55	
% Abundances Found =				1.95	(Abn. Limit = 47.00%)		

lag: "\*" = Keyline

Interference Report  
Sample ID : S092111019

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Acquisition date : 30-JUL-2009 13:14:17

No interference correction performed

Summary of Nuclide Activity  
Sample ID : S092111019

Page : 7  
Acquisition date : 30-JUL-2009 13:14:17

Total number of lines in spectrum 7  
Number of unidentified lines 2  
Number of lines tentatively identified by NID 5 71.43%

nuclide Type : AP

nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	1-Sigma	
			Uncorrected	Decay Corr			Decay Corr
			uCi/ml	uCi/ml	1-Sigma Error	%Error	Flags
O-58	70.80D	1.00	5.610E-07	5.622E-07	0.515E-07	9.16	
O-60	5.27Y	1.00	5.693E-07	5.693E-07	0.580E-07	10.18	
Total Activity :			1.130E-06	1.132E-06			

nuclide Type : FP

nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	1-Sigma	
			Uncorrected	Decay Corr			Decay Corr
			uCi/ml	uCi/ml	1-Sigma Error	%Error	Flags
S-137	30.17Y	1.00	1.040E-07	1.040E-07	0.226E-07	21.72	
Total Activity :			1.040E-07	1.040E-07			

Grand Total Activity : 1.234E-06 1.236E-06

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Nuclide	Activity (uCi/ml)	1-Sigma % Error	MPC (uCi/ml)	% MPC
CO-58	5.622E-07	9.2	9E-05	0.625
CO-60	5.693E-07	10.2	3E-05	1.90
CS-137	1.040E-07	21.7	2E-05	0.520
-----				
Totals:	1.236E-06			3.04

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\*\*\*\*\* EFFLUENT RELEASE (WATER) REPORT \*\*\*\*\*  
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Sample ID: S092111022  
Sample Time: 30-JUL-2009 08:10:00  
Sample Title: U1 - RWST MOAT 08:10 07/30  
Nuclide Library: LIQUID

Nuclide Name	Weighted Mean Activity (uCi/ml )	ECL Type	ECL Limit (uCi/cm3)	Fraction Of ECL
CO-58	5.7163E-07	D	2.000E-05	2.8581E-02
CO-60	5.3219E-07	D	3.000E-06	1.7740E-01
CS-137	6.7537E-08	D	1.000E-06	6.7537E-02

=====  
TOTAL

2.7352E-01

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30-JUL-2009 13:51:42.07

TVA  
SEQUOYAH NUCLEAR PLANT

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SAMPLE TITLE : U1 - RWST MOAT 08:10 07/30  
FILE IDENT : CAS\$DISK:[SQN:SAMPLE.CHEM.NEW]S092111022.CNF;1

SAMPLE ID : S092111022 \* OPERATOR : CAS Account  
SAMPLE TIME : 30-JUL-2009 08:10 \* SAMPLE GEOMETRY : LM1  
\* SHELF HEIGHT : 0  
\* EFFICIENCY FILE : LM10  
SAMPLE TYPE : LIQUID \* SAMPLE QUANTITY : 7.55000E+02 ml

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ACQ DATE & TIME : 30-JUL-2009 13:34 \* DEADTIME (%) : 0.0%  
PRESET LIVE TIME : 0 00:16:40 \* SENSITIVITY : 4.00000  
ELAPSED REAL TIME : 0 00:16:40 \* GAUSSIAN SEN : 10.00000  
ELAPSED LIVE TIME : 0 00:16:40 \* NBR ITERATIONS : 10

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DETECTOR : ADC1 \* LIBRARY : LIQUID  
EFFIC CAL DATE : 18-AUG-2004 10:36 \* EFFIC CERT DATE : 18-AUG-2004 10:36  
LOCAL DATE & TIME : 30-JUL-2009 03:09 \* ENERGY TOLER : 1.25  
KEV/CHAN : 4.99710E-01 \* HALF LIFE RATIO : 8.00000  
OFFSET : 1.48561E-01 keV \* ABUNDANCE LIMIT : 70.0%  
COEFFICIENT : 8.55423E-08 \* CORRECTION FACTOR : 1.00000E+00  
PEAK START CHAN : 110 \* PEAK END CHAN : 4091

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ANALYSES : PEAK V16.9 NID V3.4 MINACT V2.8 WTMEAN/KEY V1.8

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Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	135.27	20	29	2.34	270.39	265	10	55.1	2.41E+00	
1	428.05	19	3	1.82	856.17	853	7	27.0	9.46E-01	
1	511.04	65	35	2.95	1022.20	1015	16	24.0	1.63E+00	
1	661.89	18	0	1.41	1323.96	1319	8	22.9	4.42E-01	CS-137
1	810.98	149	5	1.51	1622.15	1616	11	8.9	9.72E-01	CO-58
1	1173.09	114	3	1.61	2346.30	2341	12	10.0	4.30E-01	CO-60
1	1332.39	91	0	2.21	2664.82	2659	12	10.6	5.89E-01	CO-60

Isotope Type: AP

Isotope	Energy	%Abn	%Eff	Uncorrected uCi/ml	Decay Corr uCi/ml	1-Sigma %Error	Status
IO-58	810.76	99.40*	9.401E-01	5.703E-07	5.716E-07	8.89	OK
	863.94	0.74	8.906E-01	-----	Line Not Found	-----	Absent
	1321.76	0.10	6.188E-01	-----	Line Not Found	-----	Absent
	1621.52	-- Miscellaneous--		-----	Line Not Found	-----	Absent
	1674.68	0.54	5.040E-01	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 5.716E-07 +/- 5.081E-08 ( 8.89%)

IO-60	310.49	-- Double Escape--		-----	Line Not Found	-----	Absent
	1173.22	100.00	6.856E-01	5.952E-07	5.953E-07	9.96	OK
	1332.49	100.00*	6.145E-01	5.321E-07	5.322E-07	10.56	OK

Final Mean for 2 Valid Peaks = 5.322E-07 +/- 5.618E-08 ( 10.56%)

Isotope Type: FP

Isotope	Energy	%Abn	%Eff	Uncorrected uCi/ml	Decay Corr uCi/ml	1-Sigma %Error	Status
IS-137	661.64	85.12*	1.120E+00	6.754E-08	6.754E-08	22.93	OK

Final Mean for 1 Valid Peaks = 6.754E-08 +/- 1.548E-08 ( 22.93%)

Flag: "\*" = Keyline



Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma		Rejected by			
					(uCi/ml)	%Error				
PO-57	270.90D	0.00	122.06*	85.51	---	Not Found	---	Abun.		
			136.48	10.60	2.060E-07	55.10				
			% Abundances Found =			11.03				
SB-125	2.77Y	0.00	176.33	6.89	---	Not Found	---	Abun.		
			380.44	1.50	---	Not Found	---			
			427.90*	29.33	1.382E-07	26.99				
			463.38	10.35	---	Not Found	---			
			600.56	17.80	---	Not Found	---			
			606.64	5.02	---	Not Found	---			
			635.90	11.32	---	Not Found	---			
			671.41	1.81	---	Not Found	---			
			% Abundances Found =			34.91	(Abn. Limit =		56.00%)	
I-132	2.30H	2.41	262.70	1.44	---	Not Found	---	Abun.		
			446.00	0.60	---	Not Found	---			
			505.90	5.03	---	Not Found	---			
			522.65	16.10	---	Not Found	---			
			535.50	0.52	---	Not Found	---			
			547.10	1.25	---	Not Found	---			
			621.20	1.58	---	Not Found	---			
			630.22	13.70	---	Not Found	---			
			650.60	2.66	---	Not Found	---			
			667.69*	98.70	---	Not Found	---			
			669.80	4.90	---	Not Found	---			
			671.60	5.20	---	Not Found	---			
			727.00	5.40	---	Not Found	---			
			728.50	1.10	---	Not Found	---			
			772.61	76.20	---	Not Found	---			
			780.20	1.23	---	Not Found	---			
			784.50	0.42	---	Not Found	---			
			809.80	2.90	1.041E-04	8.89				
			812.20	5.60	5.390E-05	8.89				
			876.80	1.08	---	Not Found	---			
			954.55	18.10	---	Not Found	---			
			983.70	0.56	---	Not Found	---			
			1136.03	2.96	---	Not Found	---			
			1143.40	1.35	---	Not Found	---			
			1173.20	1.09	2.907E-04	9.96				
			1290.70	1.14	---	Not Found	---			
			1295.30	1.97	---	Not Found	---			
			1372.07	2.47	---	Not Found	---			
1398.57	7.10	---	Not Found	---						
1440.30	0.00	---	Not Fnd	Misc1---						
1442.56	1.42	---	Not Found	---						
1757.50	0.30	---	Not Found	---						
1921.08	1.18	---	Not Found	---						
2002.20	1.09	---	Not Found	---						
% Abundances Found =			3.35	(Abn. Limit =	61.00%)					
I-134	52.60M	6.33	135.40	3.76	4.661E-05	55.10	Abun.			
			235.47	1.98	---	Not Found		---		

Nuclide	Half-life	Half-Life Ratio	Energy	%Abund	Activity 1-Sigma		Rejected by	
					(uCi/ml)	%Error		
I-134	52.60M	6.33	405.45	7.30	---	Not Found	---	Abun.
			433.35	4.19	---	Not Found	---	
			458.92	1.30	---	Not Found	---	
			488.88	1.41	---	Not Found	---	
			514.40	2.34	---	Not Found	---	
			540.83	7.80	---	Not Found	---	
			595.36	11.40	---	Not Found	---	
			621.79	10.60	---	Not Found	---	
			627.96	2.37	---	Not Found	---	
			677.34	8.50	---	Not Found	---	
			730.74	1.91	---	Not Found	---	
			739.18	0.76	---	Not Found	---	
			766.68	4.10	---	Not Found	---	
			847.03	95.41	---	Not Found	---	
			857.29	6.96	---	Not Found	---	
			884.09*	65.30	---	Not Found	---	
			947.86	4.04	---	Not Found	---	
			974.67	4.70	---	Not Found	---	
			1040.25	1.91	---	Not Found	---	
			1072.55	15.30	---	Not Found	---	
1136.16	9.70	---	Not Found	---				
1159.10	0.35	---	Not Found	---				
1190.03	0.35	---	Not Found	---				
1455.24	2.29	---	Not Found	---				
1613.80	4.36	---	Not Found	---				
1741.49	2.67	---	Not Found	---				
1806.84	5.70	---	Not Found	---				
% Abundances Found =			1.30	(Abn. Limit = 55.00%)				
N-187	23.83H	0.23	134.22	9.50	2.700E-07	55.10	Abun.	
			479.53	23.40	---	Not Found	---	
			551.55	5.44	---	Not Found	---	
			618.37	6.70	---	Not Found	---	
			625.52	1.16	---	Not Found	---	
			685.81*	29.20	---	Not Found	---	
			772.87	4.40	---	Not Found	---	
% Abundances Found =			11.90	(Abn. Limit = 65.00%)				

Flag: "\*" = Keyline

Total number of lines in spectrum 7  
 Number of unidentified lines 1  
 Number of lines tentatively identified by NID 6 85.71%

Nuclide Type : AP

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	1-Sigma	1-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/ml	uCi/ml					
CO-58	70.80D	1.00	5.703E-07	5.716E-07	0.508E-07	8.89			
CO-60	5.27Y	1.00	5.321E-07	5.322E-07	0.562E-07	10.56			
Total Activity :			1.102E-06	1.104E-06					

Nuclide Type : FP

Nuclide	Hlife	Decay	Wtd Mean	Wtd Mean	Decay Corr	1-Sigma	1-Sigma Error	%Error	Flags
			Uncorrected	Decay Corr					
			uCi/ml	uCi/ml					
CS-137	30.17Y	1.00	6.754E-08	6.754E-08	1.548E-08	22.93			
Total Activity :			6.754E-08	6.754E-08					

Grand Total Activity : 1.170E-06 1.171E-06

Flags: "K" = Keyline not found  
 "E" = Manually edited

"M" = Manually accepted  
 "A" = Nuclide specific abundance limit

REPORT NAME : QA CHECK (V9.3)  
REPORT DATE : 30-JUL-2009 13:51  
REQUESTOR : CAS

PAGE 2 OF \_\_\_\_

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT

POST NID QA ANALYSIS

\*\*\*\* End Of Report ( 2 Pages ) \*\*\*\*

REPORT NAME : H3CAL (V 3)  
REPORT DATE : 7/30/2009 1:11:27 PM

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT

Liquid Scintillation Counter Calibration Report

STD REFERENCE DATE : 6-jan-2005 12:00  
STD REFERENCE ACTIVITY : 9.030E3  
STD ACQUISITION DATE : 7/30/2009 2:49:43 AM  
STD AVERAGE CPM : 8.679E3  
STD VOLUME (ML) : 3.00  
STD EFFICIENCY : 0.414 LIMITS : 0.320 - 0.500  
BKG AVERAGE CPM : 7.00  
BKG COUNT LENGTH : 20.0 NUMBER OF COUNTS : 1

PART II - SAMPLE COUNTING DATA

SAMPLE ID : U1 RWST MOAT NEW STILL 07/30 0  
VOLUME (ML) : 3.00  
VOLUME CORRECTION FACTOR : 1.00  
LENGTH OF COUNT (min) : 6.00  
NUMBER OF COUNTS : 3  
AVERAGE COUNTRATE (CPM) : 1836.3  
  
ACTIVITY (uCi/ml) : 6.64E-4  
1-SIGMA ERROR : 3.672E-6  
MDA (uCi/ml) : 1.055E-6

Performed By : \_\_\_\_\_

Date : \_\_\_\_\_

*gsp* 07/30/09