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"45-DAY SAFETY SCREENING RESULTS FOR TANK 241-AN-107, GRAB SAMPLES 7AN-95-1 THROUGH 7AN-95-10 AND 7AN-95-FB."

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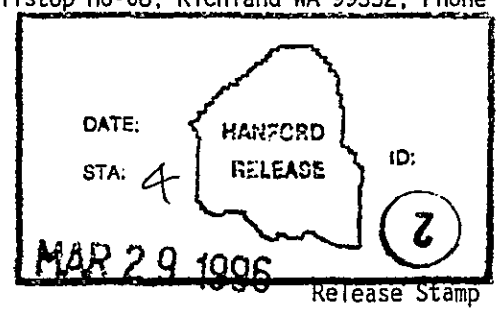

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ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-AN-107, GRAB SAMPLES 7AN-95-1 THROUGH 7AN-95-10 AND 7AN-95-FB

Project Coordinator: RUTH A. ESCH

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

Westinghouse Hanford Company
Box 1970
Richland, Washington

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This Document consists of pages 1 through 140, plus pages 2, 15, 21, 33.1, and 37 were intentionally left blank.

TRADEMARKS:

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NARRATIVE

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45 DAY SAFETY SCREENING RESULTS FOR TANK 241-AN-107 GRAB SAMPLES 7AN-95-1 THROUGH 7AN-95-10 AND 7AN-95-FB

SUMMARY

Ten grab samples (7AN-95-1 through 7AN-95-10) and one field blank (7AN-95-FB) were taken from tank 241-AN-107. The samples consisted of three supernates and two sludges from each of two risers. The following analyses were performed in support of the Safety Screening program, as specified in the Tank 241-AN-107 Grab Sampling and Analysis Plan (TSAP) (reference 1): differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), bulk density, specific gravity (Sp.G.), and total alpha activity (AT). The upper limit to a one-sided 95% confidence interval was computed for DSC and AT for comparison to the safety screening limits.

Based on the results of vapor monitoring prior to sampling, the vapor in tank AN-107 dome space is far below the lower flammability limits (LFL) stated in the TSAP.

All fourteen of the subsamples had DSC exotherms that exceeded the action limit of 480 joules/g (dry weight basis) stated in the TSAP and the Safety Screening Data Quality Objective (references 1 & 2). These energetics results were expected for this tank, since tank 241-AN-107 is known to contain complexed waste. Appropriate notifications were made and total organic carbon (TOC) analyses were requested. Reactive system screening tool (RSST) adiabatic calorimetry (AC) analysis was requested for the sample that exhibited the highest exothermic energy. These results will be reported in a revision to this document.

None of the data indicate that the tank is "unsafe" when compared to the criteria in the Safety Screening Data Quality Objective (reference 2) with the exception of the energetics. However, with the high moisture content of 50%, the tank may be considered "conditionally" safe.

SCOPE

This document is the 45 day report deliverable for the tank 241-AN-107 grab samples collected on February 13 and 14, 1996, and received at the 222-S Laboratory on those same days. All of the samples were subsampled and analyzed in accordance with the TSAP (reference 1). The analytical results are presented in Table 1 (pages 22 - 32).

Attachment 1 (pages 16 - 19) is provided as a cross-reference for relating the tank farm customer ID numbers with the 222-S Laboratory LABCORE sample numbers. The samples are arranged with respect to the sampling event in which they were collected. The subsamples that were generated in the laboratory for analysis are also identified in these diagrams.

Included in this report are the tank dome space flammability screening and primary safety screening results. Copies of the DSC and TGA raw data are also included.

The results from the required secondary analyses will be reported in a revision to this document.

TANK DOME SPACE FLAMMABILITY SCREENING

The dome space was sampled and analyzed for the presence of flammable gases prior to sampling tank AN-107. The results of the combustible gas monitoring inside risers 10 and 22A are presented in Table 2. Although the TSAP indicates that the results shall be reported as a percentage of the lower flammability limit (%LFL), the instrumentation used to collect the data reports as a percentage of the lower explosive limit (%LEL). For the purpose of screening the tank dome space, the %LEL is an acceptable substitute for %LFL, since the two values are used interchangeably in reference to the physical properties of chemical hazards (reference 3).

Table 2: Characteristics of Vapor Space as Determined by Combustible Gas Monitoring
Tank 241-AN-107, Dome Space (20 feet inside riser)

Vapor Characteristic Measured	Results	
	Riser 10A	Riser 22A
Flammable vapor concentration as percent of lower explosion limit (LEL)	0%	0%
Volume percent oxygen gas	N/A	20.6%
Concentration of ammonia gas	65 ppm	< 200 ppm
Concentration of total organic carbon vapor	2.7 ppm	9.6 ppm

ppm = parts per million
N/A = data not available

APPEARANCE AND SAMPLE HANDLING

Appearance

Three supernate grab samples (7AN-95-1, 7AN-95-2, and 7AN-95-3) and two sludge grab samples (7AN-95-4 and 7AN-95-5) were removed from tank 241-AN-107 riser 22A on February 14, 1996. Three supernate grab samples (7AN-95-6, 7AN-95-7, and 7AN-95-8) and two sludge grab samples (7AN-95-9 and 7AN-95-10) were removed from tank 241-AN-107 riser 10A on February 13, 1996. All samples were received at the 222-S Laboratory on the same day that they were removed from the tank. Note that the numbering of the samples from the two risers is reversed from that indicated in the TSAP.

Table 3 summarizes the appearance information. The reported sampling depths were recorded from the tank farm process memo. Changes in the sampling depth were recorded in the work package.

Table 3: Appearance for Tank 241-AN-107 Grab Samples

CUSTOMER ID	LAB ID	SAMP DEPTH (IN.)*	SAMPLE ELEV. (IN)**	APPEARANCE			
				Color	Clarity	Org Layer	Solids
7AN-95-1	S96T000719	372	300	Dark yellow/brown	Opaque	None	Trace
7AN-95-2	S96T000720	456	216	Dark yellow/brown	Opaque	None	Trace
7AN-95-3	S96T000721	540	132	Dark yellow/brown	Opaque	None	Trace
7AN-95-4	S96T000738	636	36	Dark yellow/brown	Opaque	None	77.1% Settled brown
7AN-95-5	S96T000739	639	33	Dark yellow/brown	Opaque	None	89.2% Settled brown
7AN-95-6	S96T000661	372	300	Dark yellow/brown	Opaque	None	Trace
7AN-95-7	S96T000662	456	216	Dark yellow/brown	Opaque	None	Trace
7AN-95-8	S96T000663	540	132	Dark yellow/brown	Opaque	None	Trace
7AN-95-9	S96T000695	640	32	Dark yellow/brown	Opaque	None	87.5% Settled brown
7AN-95-10	S96T000696	648	24	Dark yellow/brown	Opaque	None	88.0% Settled brown
7AN-95-FB	S96T000722	240	N/A	Colorless	Clear	None	None

* Sample depth is measured from the top of the riser to the mouth of the sample bottle
** Sample elevation is measured from tank bottom to mouth of the sample bottle

Subsampling

For the six supernate samples, one 20 mL unfiltered subsample was recovered for safety screening analyses and 60 mL was archived.

For the sludge samples, first the volume percent settled solids was measured. The result is listed in Table 3. The supernate above the settled solids was then removed, and the remaining sludge was transferred to three centrifuge cones for volume percent solids by centrifugation determination, and for separation of solids from remaining liquids. Bulk densities for the wet sludge, the centrifuged solid and the decanted liquid were determined. Subsamples for analysis and archive were created from both the centrifuged solid and decanted liquid portions. Identical analyses were performed on each sample portion.

To separate the solid and liquid phases of the sludge samples, the entire sample was shaken to suspend the solids, and then the sample was poured into centrifuge cones. Before shaking the samples, it was noted that all of the sludges had very dark particulates in the bottom of the jar. After transferring the suspended solids, some of these pieces remained in the sample bottles. The pieces looked similar to corroded pieces of metal. Any of this material that may have been transferred into the cones would create an nonhomogeneous sample which would result in large differences between sample and duplicate results.

For sample 7AN-95-4, there was about 7 grams of the material described above that did not pour out of the original sample bottle. This material was saved in a separate jar for possible future analysis.

For sample 7AN-95-5, there was about 15 grams of material left in the original sample bottle, which consisted of a small amount of the chunky material described above, as well as large salt-like pieces. These also were saved in a separate jar for possible future analysis.

For samples 7AN-95-9 and 7AN-95-10, any material that was left in the jar was not enough to be saved.

Separation of the solid and liquid in the sludges was very difficult. Samples 7AN-95-4 and 7AN-95-5 were centrifuged for 4 hours each. After that length of time, sample 7AN-95-5 still had approximately 10 to 11 mL of suspended solids. This material was transferred to the liquid archive jar with the supernate. Due to the suspended solids, the bulk density of the liquid alone could not be determined. Specific gravity was requested for this liquid sample. Also, the volume percent solids by centrifugation test results do not include the volume and weight of solid that was transferred to the liquid archive jar.

For samples 7AN-95-9 and 7AN-95-10, the samples were centrifuged for approximately ten hours to obtain a better separation of the solid and liquid portions.

ANALYTICAL RESULTS

Differential Scanning Calorimetry (DSC)

The energetics determination was performed by DSC using procedure LA-514-113 Rev. C-1. The analysis was performed in duplicate on direct samples. The exothermic energy based on a dry weight of sample was calculated for all samples except the field blank, which did not exhibit any exotherms. The average of two TGA results (sample and duplicate) was used in the dry weight correction for all samples.

All fourteen subsamples submitted for DSC exhibited exotherms. The ten supernates exhibited exotherms ranging from 476.9 to 664.8 joules/g on a wet weight basis. The wet weight exotherms for the four solid samples ranged from 287.4 to 390.5 joules/g. The results calculated for the dry weight were all above the action limit of 480 joules/g, with the exception of the duplicate for the solid portion of sample 7AN-95-4 (S96T000744), with a dry weight exotherm of 466.5 joules/g. These high results were expected based on the knowledge of the presence of a high concentration of total organic carbon (TOC) in this tank.

It was noted that the shape of the exotherm was similar for all supernate samples and all solid samples, although the shape was slightly different between the supernates and solids. Each exotherm began around 200° C, rising slightly, then was continuous up to about 440° C where it ended abruptly. It was also noted that this region of exothermic energy corresponded exactly with a region of 9% to 15% weight loss in the TGA thermograms.

The relative percent difference (RPD) between the sample and duplicate results was greater than 10% for one supernate, one decanted supernate, and two solid subsamples. The RPDs were as follows: sample 7AN-95-4 solid portion (S96T000744), RPD = 12.5%; sample 7AN-95-8 supernate (S96T000699), RPD = 25%; sample 7AN-95-9 decanted supernate (S96T000700), RPD = 15.4%; and sample 7AN-95-9 solid portion (S96T000707) RPD = 10.4%. A triplicate sample was analyzed for sample 7AN-95-9, decanted supernate (S96T000700), with a result of 580.8 joules/g (sample result was 556.5 joules/g; duplicate 476.9 joules/g). However, no additional analyses were performed on any other samples because the dry weight results were all clearly above the action limit of 480 joules/g.

The one-sided upper 95% confidence limit was calculated for each sample (excluding the field blank). The upper limit for all fourteen samples was greater than the action limit of 480 joules/g. The results are presented in Table 4.

Table 4: Comparison of Dry Weight DSC Results at a Confidence Level of 95%

Customer ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (mean)
SUPERNATES	joules/g	joules/g	joules/g		joules/g
7AN-95-1	1047	1139	1093	65.1	1383
7AN-95-2	1278	1243	1260	24.7	1371
7AN-95-3	1077	1167	1122	63.6	1406
7AN-95-6	1264	1345	1304	57.3	1560
7AN-95-7	1224	1303	1263	55.9	1513
7AN-95-8	969	1247	1108	196.3	1985
SLUDGES					
Decanted Supernates	joules/g	joules/g	joules/g		joules/g
7AN-95-4	1148	1114	1131	24.0	1238
7AN-95-5	1174	1167	1170	4.9	1193
7AN-95-9	1124	Dup 963 Trip 1173	1087 *	109.9	1272
7AN-95-10	1115	1034	1074	57.3	1330
Centrifuged Solids	joules/g	joules/g	joules/g		joules/g
7AN-95-4	528	466	498	43.8	693
7AN-95-5	530	497	514	23.8	620
7AN-95-9	628	566	597	43.7	792
7AN-95-10	638	652	645	9.2	686

* This mean is based on three results (sample, duplicate and triplicate)

Thermogravimetric Analysis (TGA)

The percent moisture content was determined by TGA using procedure LA-560-112 Rev. B-1. The analysis was performed in duplicate on direct samples.

Results for the supernates and decanted supernates ranged from 49.42 to 51.61 percent moisture. The results for the centrifuged solids range from 38.17 to

43.55 percent moisture. The field blank gave an average result of 100.0 percent moisture. All of the samples (except for the field blank) produced two weight loss steps in the temperature region below 200° C. The sum of these two steps was reported as the percent moisture content.

The solid portion of samples 7AN-95-9 and 7AN-95-10 had two additional weight loss steps between 200° C and 440° C. These two steps represented an average weight loss of about 10%. All of the other samples (both solids and supernates) had only one additional weight loss step in the region between 200° C and 440° C, with an average weight loss of 12%. As mentioned in the DSC discussion, this weight loss region corresponds exactly with the region of exothermic energy.

The relative percent difference (RPD) between sample and duplicate results for all samples were less than 5.0%.

Density

The density measurements obtained for all of the samples (except the field blank and the supernate decanted from the solid portion of 7AN-95-5 (S96T000747)) were determined by performing a bulk density analysis during subsampling, using procedure LO-160-103 Rev. B-0. A single determination was made for each sample, and each phase of the sludge samples (i.e. solids alone, liquids alone, and wet sludge bulk density determinations were performed for samples 7AN-95-4, 7AN-95-5, 7AN-95-9, and 7AN-95-10). For the field blank and the liquid portion of 7AN-95-5 (S96T000747), the density was determined by performing a specific gravity (Sp.G.) analysis using procedure LA-510.112 Rev. C-3. As mentioned earlier, the bulk density for the liquid portion of sample 7AN-95-5 could not be determined due to the presence of suspended solids in the liquid portion. The bulk density and Sp.G. results are presented in Table 1.

The bulk density for the supernates and the decanted supernates ranged from 1.34 to 1.40 g/mL. The average Sp.G. for the decanted supernate from 7AN-95-5 was 1.36. The Sp.G. analysis for the field blank is being rerun due to a failed standard. The results for the rerun will be provided in a revision to this document. For safety screening purposes, the density of liquid samples is not necessary since the total alpha results for liquids do not require correction for density.

For the centrifuged solids, the bulk density ranged from 1.53 to 1.59 g/mL, with an average density of 1.56 g/mL. This average solid density was used to calculate the action limit for the total alpha determination for the solids.

Total Alpha (AT)

The AT determination was performed using procedure LA-508-101 Rev. D-2. The analysis was performed in duplicate on direct samples for the supernates. The solid portion of the sludge samples was prepared for analysis, in duplicate, using a fusion digest following procedure LA-549-141 Rev. D-0. The fusion digest is indicated with an "F" in the aliquot class (A#) column in Table 1.

The maximum result for the supernate samples was 0.861 μCi/mL. The maximum result for the decanted supernates was 1.15 μCi/mL. The average result for the field blank was 2.81e-5μCi/mL. All of the supernate results were at least one order of magnitude below the action limit of 61.5 μCi/mL. The RPDs for all supernate samples were less than 7%, with the exception of sample 7AN-95-8 (S96T000699) with an RPD = 17.7%. This sample had a high RPD for the DSC results also. Since the sample was opaque, it was difficult to see if there were suspended solids creating a non-homogeneous sample. No rerun was requested because the sample result was well below the action limit.

The maximum result for the centrifuged solids was 1.58 μCi/g. This result is at least one order of magnitude below the action limit of 39.4 μCi/g, which is based on the average density of 1.56 g/mL for the centrifuged solids. The RPDs for all solid samples were greater than 20%, for the first set of analyses. These high RPDs are attributed to the non-homogeneity of the solids described previously in the subsampling section.

A redigest and reanalysis was requested for samples 7AN-95-9 and 7AN-95-10. The RPD for sample 7AN-95-9 was 56.9%, and that for sample 7AN-95-10 was 3.30% on the second fusion prep. These results still indicate a homogeneity problem with the solids. However, since the results are still well below the action limit, no further repreps or reanalyses were requested. The results for both fusion preps for samples 7AN-95-9 and 7AN-95-10 are presented in Table 1. Refer to Attachment 1 to identify the original and reprep sample numbers.

The 95% upper confidence limits were calculated for each sample, and are presented in Table 5. The maximum liquid result of 1.411 μCi/mL for decanted supernate from sample 7AN-95-9, is well below the action limit of 61.5 μCi/mL. The result of 3.44 μCi/g for sample 7AN-95-9 is an order of magnitude below the action limit of 39.4 μCi/g for the solids.

Table 5: Comparison of Total Alpha Results at a Confidence Level of 95%

Customer ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (mean)
SUPERNATES	µCi/mL	µCi/mL	µCi/mL		µCi/mL
7AN-95-1	0.839	0.825	0.832	9.90e-3	0.876
7AN-95-2	0.854	0.805	0.830	3.46e-2	0.984
7AN-95-3	0.823	0.788	0.806	2.47e-2	0.916
7AN-95-6	0.760	0.717	0.739	3.04e-2	0.874
7AN-95-7	0.787	0.776	0.782	7.78e-3	0.816
7AN-95-8	0.721	0.861	0.791	9.90e-2	1.233
SLUDGES					
Decanted Supernates	µCi/mL	µCi/mL	µCi/mL		µCi/mL
7AN-95-4	0.838	0.839	0.839	7.07e-4	0.842
7AN-95-5	1.030	1.000	1.015	2.12e-2	1.110
7AN-95-9	0.983	1.100	1.042	8.27e-2	1.411
7AN-95-10	1.150	1.200	1.175	3.54e-2	1.333
Centrifuged Solids	µCi/g	µCi/g	µCi/g		µCi/g
7AN-95-4	0.723	0.580	0.652	1.01e-1	1.103
7AN-95-5	1.020	0.719	0.870	2.13e-1	1.820
7AN-95-9	1.580	0.880	1.230	4.95e-1	3.440
7AN-95-10	1.540	1.490	1.515	3.54e-2	1.673

References

1. WHC-SD-WM-TSAP-061, REV. 1, "Tank 241-AN-107 Grab Sampling and Analysis Plan", dated February 13, 1996, Westinghouse Hanford Company, Richland, WA 99352.

2. WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.

3. NIOSH Pocket Guide to Chemical Hazards, 1994 edition.

ATTACHMENT 1

AN-107 GRAB SAMPLE BREAKDOWN

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Attachment 1 (1 of 4)

AN-107 GRAB SAMPLE BREAKDOWN

Riser 22A

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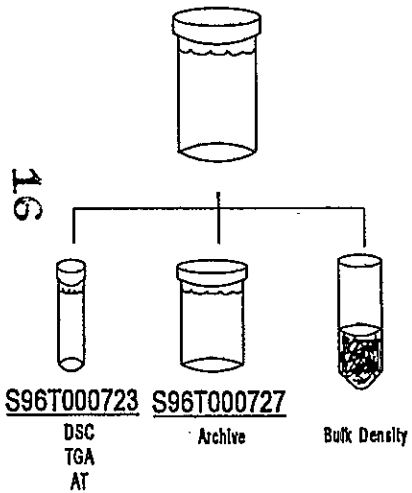
7AN-95-1
S96T000719



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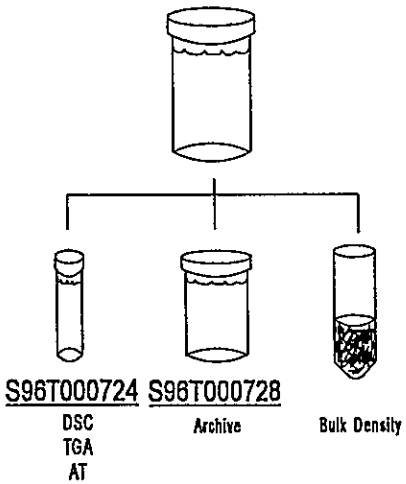
S96T000720



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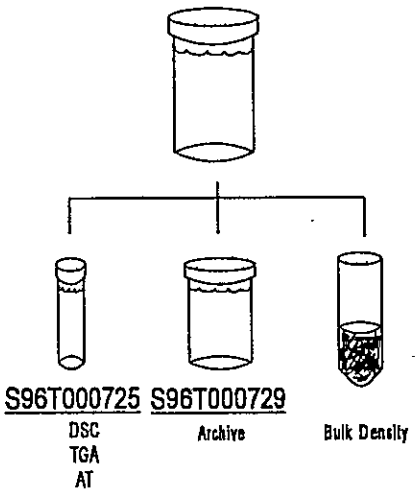

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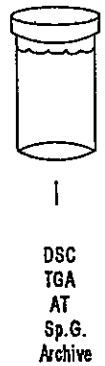
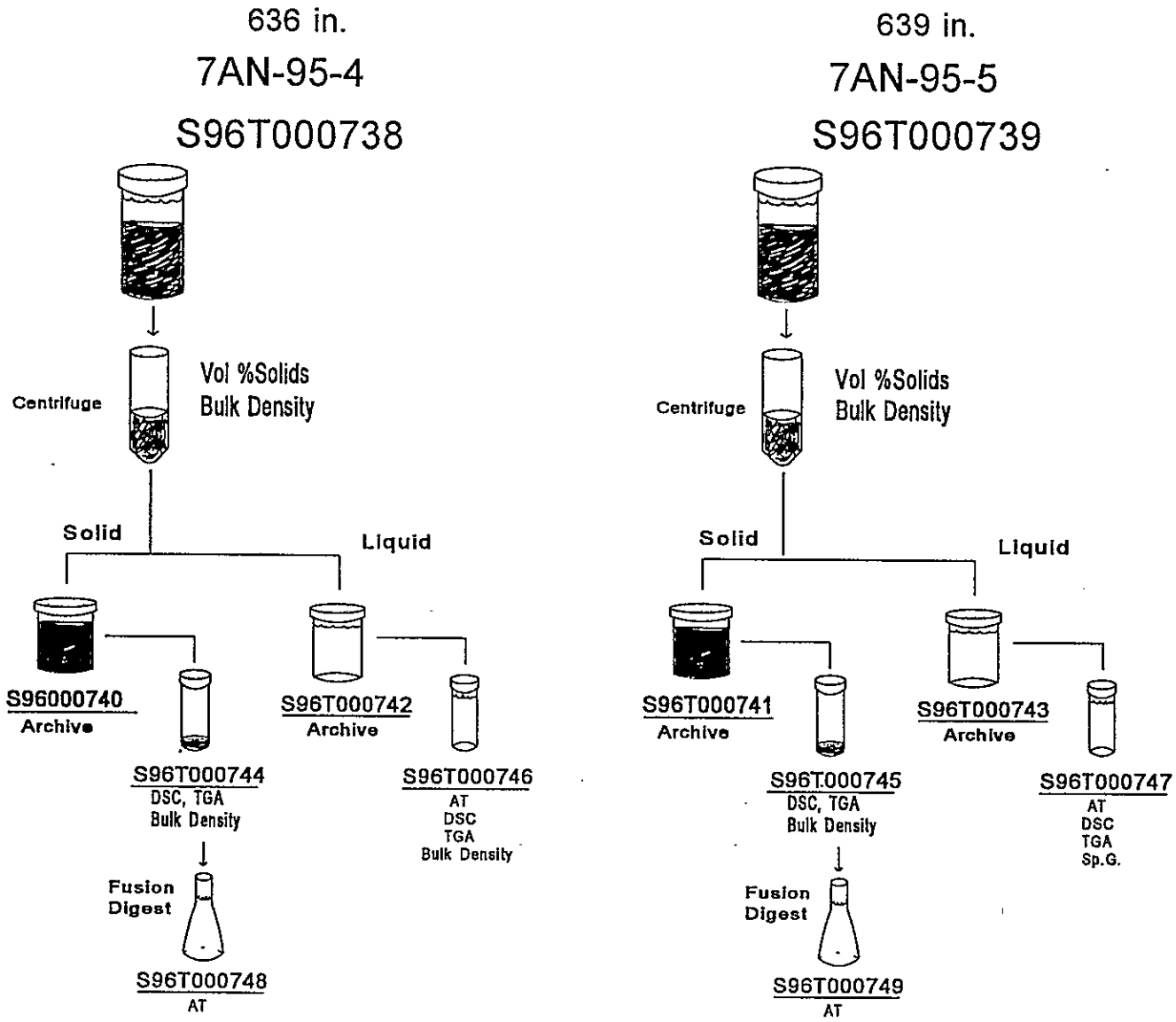


Attachment 1 (2 of 4)
AN-107 GRAB SAMPLE BREAKDOWN
Riser 22A



Attachment 1 (3 of 4)

AN-107 GRAB SAMPLE BREAKDOWN

Riser 10A

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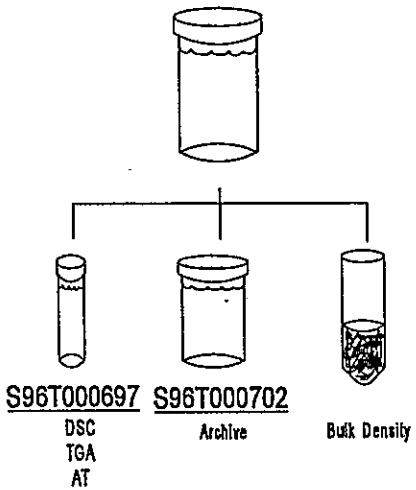
7AN-95-6
S96T000661



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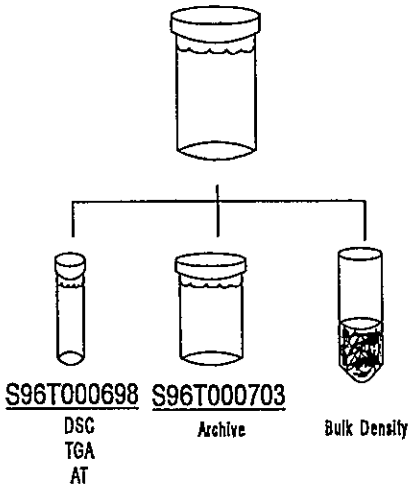
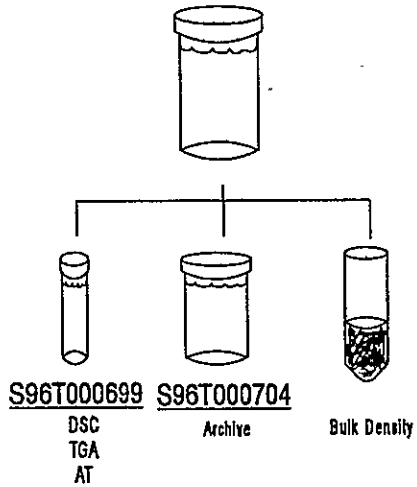
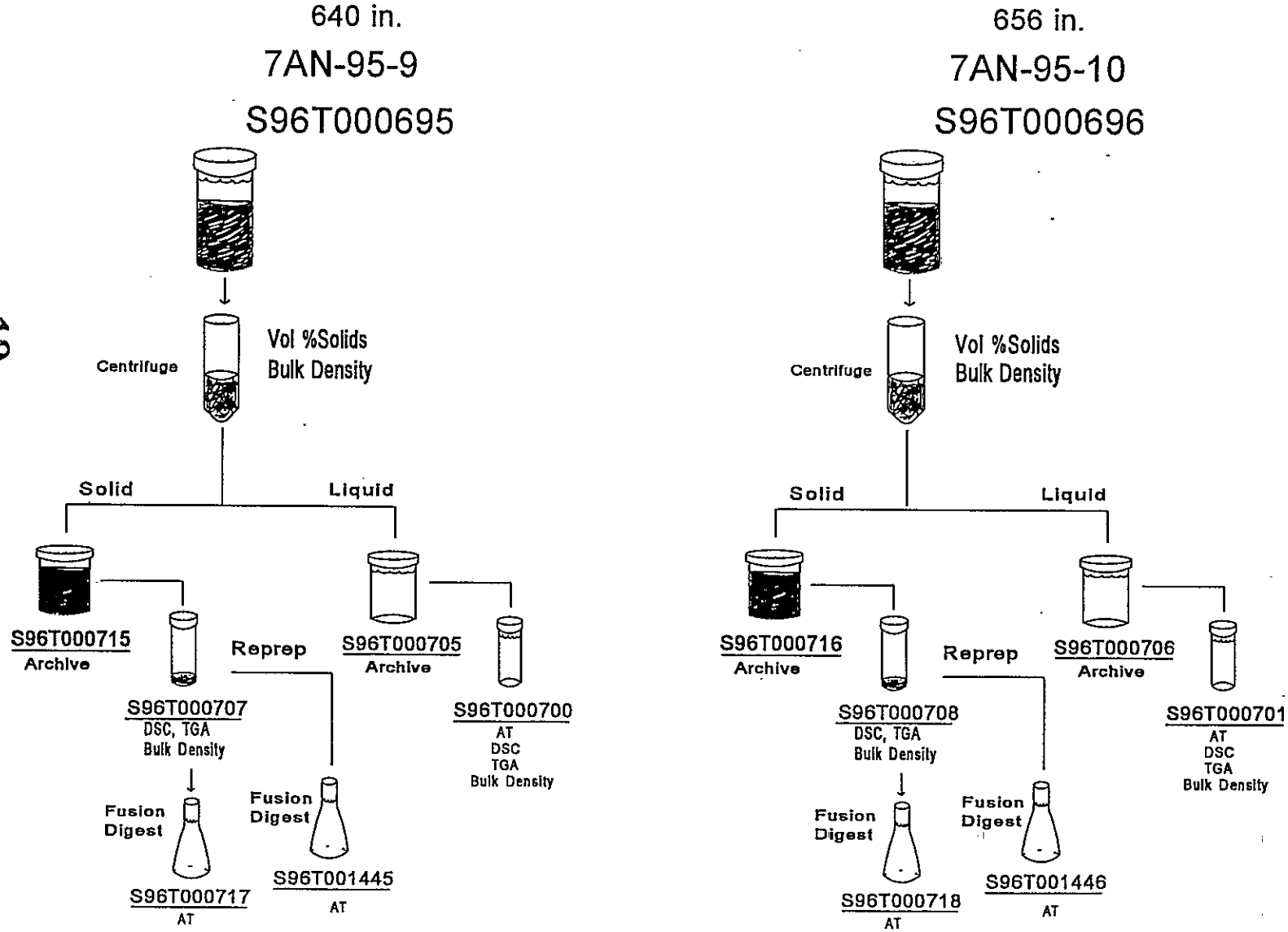
S96T000662



540 in.
7AN-95-8
S96T000663



Attachment 1 (4 of 4)
AN-107 GRAB SAMPLE BREAKDOWN
Riser 10A



SAMPLE DATA SUMMARY

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INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 22A
SEGMENT #: 7AN-95-1

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000719			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.360	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000723			% Water by TGA using Mettler	%	None	None	101.8	n/a	50.18	4.966e1	4.992e1	1.04	n/a	n/a	n/a
S96T000723			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.05e+03	1.140e3	1.090e3	8.42	n/a	n/a	n/a
S96T000723			DSC Exotherm using Mettler	Joules/g	None	None	110.0	n/a	5.24e+02	5.703e2	5.472e2	8.44	n/a	n/a	n/a
S96T000723			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	98.69	<3.380e-2	8.39e-01	8.250e-1	8.320e-1	1.68	98.21	4.000e-2	1.09E+01

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 22A
SEGMENT #: 7AN-95-2

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000720			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.380	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000724			% Water by TGA using Mettler	%	None	None	101.9	n/a	49.42	4.955e1	4.948e1	0.26	n/a	n/a	n/a
S96T000724			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.28e+03	1.240e3	1.260e3	2.78	n/a	n/a	n/a
S96T000724			DSC Exotherm using Mettler	Joules/g	None	None	107.9	n/a	6.46e+02	6.277e2	6.367e2	2.81	n/a	n/a	n/a
S96T000724			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	98.69	<3.380e-2	8.54e-01	8.050e-1	8.300e-1	5.91	n/a	4.000e-2	1.10E+01

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 22A
SEGMENT #: 7AN-95-3

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000721			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.370	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000725			% Water by TGA using Mettler	%	None	None	101.9	n/a	49.95	5.041e1	5.018e1	0.92	n/a	n/a	n/a
S96T000725			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.08e+03	1.170e3	1.120e3	8.02	n/a	n/a	n/a
S96T000725			DSC Exotherm using Mettler	Joules/g	None	None	107.9	n/a	5.37e+02	5.815e2	5.591e2	7.99	n/a	n/a	n/a
S96T000725			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	98.69	<3.380e-2	8.23e-01	7.880e-1	8.050e-1	4.35	n/a	4.000e-2	1.11E+01

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 22A
SEGMENT #: 7AN-95-FB

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000722			% Water by TGA using Mettler	%	None	None	102.1	n/a	99.84	1.002e2	1.000e2	0.36	n/a	n/a	n/a
S96T000722			Specific Gravity	Sp.G.	None	None	n/a	n/a		n/a	n/a	n/a	n/a	1.000e-3	n/a
S96T000722			DSC Exotherm using Mettler	Joules/g	None	None	111.4	n/a	0.00e+00	0.000e0	0.000e0	0.00	n/a	n/a	n/a
S96T000722			Alpha in Liquid Samples	uCi/mL	-1.0e+00	81.50	100.0	<4.370e-7	2.72e-05	2.910e-5	2.810e-5	6.75	111.5	1.070e-6	1.04E+01

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 22A
SEGMENT #: 7AN-95-4

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000744			% Water by TGA using Mettler	%	None	None	101.3	n/a	38.17	3.860e1	3.839e1	1.12	n/a	n/a	n/a
S96T000744			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	5.28e+02	4.665e2	4.975e2	12.5	n/a	n/a	n/a
S96T000744			DSC Exotherm using Mettler	Joules/g	None	None	102.3	n/a	3.26e+02	2.874e2	3.065e2	12.5	n/a	n/a	n/a
S96T000744			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.590	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000748		F	Alpha of Digested Solid	uCi/g	-1.0e+00	39.40	98.69	<5.960e-3	7.23e-01	5.800e-1	6.510e-1	21.9	80.10	1.100e-2	6.02E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000746			% Water by TGA using Mettler	%	None	None	100.8	n/a	50.61	5.090e1	5.075e1	0.57	n/a	n/a	n/a
S96T000746			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.15e+03	1.110e3	1.130e3	3.01	n/a	n/a	n/a
S96T000746			DSC Exotherm using Mettler	Joules/g	None	None	104.4	n/a	5.65e+02	5.483e2	5.568e2	3.04	n/a	n/a	n/a
S96T000746			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.370	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000746			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	103.3	<1.360e-2	8.38e-01	8.390e-1	8.390e-1	0.12	103.3	2.200e-2	8.40E+00

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000738			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.510	n/a	n/a	n/a	n/a	5.000e-1	n/a

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 22A
SEGMENT #: 7AN-95-5

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000745			% Water by TGA using Mettler	%	None	None	101.3	n/a	39.39	4.071e1	4.005e1	3.30	n/a	n/a	n/a
S96T000745			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	5.30e+02	4.967e2	5.135e2	6.54	n/a	n/a	n/a
S96T000745			DSC Exotherm using Mettler	Joules/g	None	None	102.3	n/a	3.18e+02	2.978e2	3.079e2	6.53	n/a	n/a	n/a
S96T000745			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.560	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000749		F	Alpha of Digested Solid	uCi/g	-1.0e+00	39.40	98.69	<5.960e-3	1.020	7.190e-1	8.690e-1	34.6	n/a	1.100e-2	5.25E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000747			% Water by TGA using Mettler	%	None	None	100.8	n/a	50.23	5.113e1	5.068e1	1.78	n/a	n/a	n/a
S96T000747			Specific Gravity	Sp.G.	None	None	98.45	n/a	1.367	1.346e0	1.357e0	1.55	n/a	1.000e-3	n/a
S96T000747			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.17e+03	1.170e3	1.170e3	0.60	n/a	n/a	n/a
S96T000747			DSC Exotherm using Mettler	Joules/g	None	None	104.4	n/a	5.79e+02	5.754e2	5.772e2	0.62	n/a	n/a	n/a
S96T000747			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	103.3	<1.360e-2	1.030	1.000e0	1.015e0	2.96	n/a	2.200e-2	7.36E+00

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000739			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.470	n/a	n/a	n/a	n/a	5.000e-1	n/a

▒▒▒ => Limit violated
=> Selected Limit

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INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 10A
SEGMENT #: 7AN-95-6

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000661			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.380	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000697			% Water by TGA using Mettler	%	None	None	99.80	n/a	51.61	4.950e1	5.055e1	4.17	n/a	n/a	n/a
S96T000697			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.26e+03	1.340e3	1.300e3	6.21	n/a	n/a	n/a
S96T000697			DSC Exotherm using Mettler	Joules/g	None	None	104.0	n/a	6.25e+02	6.648e2	6.448e2	6.19	n/a	n/a	n/a
S96T000697			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	98.04	<2.180e-2	7.60e-01	7.170e-1	7.380e-1	5.82	99.50	5.100e-2	1.24E+01

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 10A
SEGMENT #: 7AN-95-7

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000662			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.400	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000698			% Water by TGA using Mettler	%	None	None	99.80	n/a	49.63	4.961e1	4.962e1	0.04	n/a	n/a	n/a
S96T000698			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.22e+03	1.300e3	1.260e3	6.25	n/a	n/a	n/a
S96T000698			DSC Exotherm using Mettler	Joules/g	None	None	104.0	n/a	6.16e+02	6.562e2	6.363e2	6.58	n/a	n/a	n/a
S96T000698			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	98.04	<2.180e-2	7.87e-01	7.760e-1	7.820e-1	1.41	n/a	5.100e-2	1.21E+01

=> Limit violated
=> Selected Limit

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INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 10A
SEGMENT #: 7AN-95-8

SEGMENT PORTION: Supernate

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000663			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.380	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000699			% Water by TGA using Mettler	%	None	None	101.8	n/a	49.91	4.995e1	4.993e1	0.08	n/a	n/a	n/a
S96T000699			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	9.69e+02	1.250e3	1.110e3	25.0	n/a	n/a	n/a
S96T000699			DSC Exotherm using Mettler	Joules/g	None	None	110.0	n/a	4.85e+02	6.244e2	5.549e2	25.0	n/a	n/a	n/a
S96T000699			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	98.04	<2.180e-2	7.21e-01	8.610e-1	7.910e-1	17.7	n/a	5.100e-2	1.30E+01

=> Limit violated
=> Selected Limit

INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 10A
SEGMENT #: 7AN-95-9

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000707			% Water by TGA using Mettler	%	None	None	101.9	n/a	43.55	4.219e1	4.287e1	3.17	n/a	n/a	n/a
S96T000707			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	6.28e+02	5.659e2	5.968e2	10.4	n/a	n/a	n/a
S96T000707			DSC Exotherm using Mettler	Joules/g	None	None	103.7	n/a	3.59e+02	3.233e2	3.410e2	10.4	n/a	n/a	n/a
S96T000707			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.570	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000717		F	Alpha of Digested Solid	uCi/g	-1.0e+00	39.40	102.0	<1.730e-3	8.04e-01	1.060e0	9.320e-1	27.5	93.11	4.000e-3	4.36E+00
S96T001445		F	Alpha of Digested Solid	uCi/g	-1.0e+00	39.40	107.2	<9.160e-3	1.580	8.800e-1	1.230e0	56.9	98.61	1.900e-2	5.73E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000700			% Water by TGA using Mettler	%	None	None	102.8	n/a	50.45	5.051e1	5.048e1	0.12	n/a	n/a	n/a
S96T000700			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.12e+03	9.630e2	1.040e3	15.4	n/a	n/a	n/a
S96T000700			DSC Exotherm using Mettler	Joules/g	None	None	105.1	n/a	5.56e+02	4.769e2	5.167e2	15.4	n/a	n/a	n/a
S96T000700			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.340	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000700			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.0	<2.140e-2	9.83e-01	1.100e0	1.042e0	11.2	111.7	5.100e-2	1.10E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000695			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.480	n/a	n/a	n/a	n/a	5.000e-1	n/a

=> Limit violated
=> Selected Limit

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INTERIM

Table 1: Safety Screening Results for Tank 241-AN-107
AN-107 GRAB

RISER: 10A
SEGMENT #: 7AN-95-10

SEGMENT PORTION: Centrifuged Solids (Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000708			% Water by TGA using Mettler	%	None	None	101.9	n/a	40.07	4.004e1	4.005e1	0.07	n/a	n/a	n/a
S96T000708			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	6.38e+02	6.515e2	6.450e2	2.02	n/a	n/a	n/a
S96T000708			DSC Exotherm using Mettler	Joules/g	None	None	103.7	n/a	3.83e+02	3.905e2	3.866e2	2.02	n/a	n/a	n/a
S96T000708			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.530	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000718		F	Alpha of Digested Solid	uCi/g	-1.0e+00	39.40	102.0	<1.730e-3	6.71e-01	1.130e0	9.000e-1	51.0	n/a	3.000e-3	4.65E+00
S96T001446		F	Alpha of Digested Solid	uCi/g	-1.0e+00	39.40	107.2	<9.160e-3	1.540	1.490e0	1.515e0	3.30	106.7	1.900e-2	5.87E+00

Decanted Supernate (Liquid Grab Sludge): Decanted Supernate (Liquid Grab Sludge)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000701			% Water by TGA using Mettler	%	None	None	102.8	n/a	50.91	5.037e1	5.064e1	1.07	n/a	n/a	n/a
S96T000701			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.12e+03	1.030e3	1.070e3	7.54	n/a	n/a	n/a
S96T000701			DSC Exotherm using Mettler	Joules/g	None	None	105.1	n/a	5.50e+02	5.103e2	5.304e2	7.56	n/a	n/a	n/a
S96T000701			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.390	n/a	n/a	n/a	n/a	5.000e-1	n/a
S96T000701			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	100.0	<2.140e-2	1.150	1.120e0	1.135e0	2.64	n/a	5.100e-2	1.01E+01

Sludge (from Liquid Grab Sample): Sludge (from Liquid Grab Sample)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S96T000696			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.470	n/a	n/a	n/a	n/a	5.000e-1	n/a

=> Limit violated
=> Selected Limit

DOME SPACE FLAMMABILITY DATA

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WORKING COPY Printed on: Feb 12, 96 14:18 pm

WHC-SD-WM-DP-176, REV. 0

DATA SHEET 2 - IH&S VAPOR SURVEY

Tank No. _____ Riser No. _____

Location (Breather, Vent, Riser, Dome Space, Breathing zone) _____

Vapor	Results
T.O.V.	5.7 ppm
LEL	0 %
NH3	90 ppm

Tank No. 107-AN Riser No. 10-A

Location (Breather, Vent, Riser, Dome Space, Breathing zone) _____

Vapor	Results	
	3ft	20ft
T.O.V.	0.0 ppm	2.7 ppm
LEL	0%	0%
NH3	0 ppm	65 ppm

Tank No. 107-AN Riser No. 10-A

Location (Breather, Vent, Riser, Dome Space, Breathing zone) _____

Vapor	Results
T.O.V.	0.0 ppm
LEL	0%
NH3	0 ppm
O2	20.9%

COMMENTS: _____

R. Mutke 2-13-96
IH&S Signature/Date

WHC-SD-WM-DP-176, REV. 0

DATA SHEET 2 - IH&S VAPOR SURVEY

Tank No. 107-AN Riser No. _____

Location (Breather, (Vent) EXH. STACK, Riser, Dome Space, Breathing zone) _____

Vapor	Results
T.O.V	8.7 PPM
LEL	0.0 %
O2	20.8 %
NH3	< 100 PPM

Tank No. 107-AN Riser No. 22-A

Location (Breather, Vent, Riser, (Dome Space) 3' CHECK, Breathing zone) 3' CHECK

Vapor	Results
T.O.V	0.0 PPM
LEL	0.0 %
O2	20.6 %
NH3	0.0 PPM

Tank No. 107.AN Riser No. 22-A

Location (Breather, Vent, Riser, (Dome Space) 20' CHECK, Breathing zone) 20' CHECK

Vapor	Results
T.O.V.	9.6 PPM
LEL	0.0 %
O2	20.6 %
NH3	< 200 PPM

COMMENTS: BREATHING ZONE MONITORING T.O.V. 0.0 PPM THROUGHOUT ENTIRE JOB.

Evan D. Clark 2-14-96
IH&S Signature/Date

INORGANIC ANALYSES

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SD-WM-DP-176
Rev 0

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages 38 thru 140,

is available only from
Central Files.

DP1

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Production Planning & Control	Date: 03-27-96
Project Title/Work Order **WHC-SD-WM-DP-176, REV. 0** "45-Day Safety Screening Results for Tank 241-AN-107, Grab Samples 7AN-95-1 Through 7AN-95-10 and 7AN-95-FB."		EDT NO.: 614785 ECN NO.: N/A

Name	MSIN	Text With all Attach	EDT/ECN ONLY
Pacific Northwest Laboratory			
J. R. Gormsen	K7-28		X
S. J. Harris	K7-22	X	
K. L. Silvers	P7-27		X
U.S. Department of Energy, RL			
C. A. Babel	S7-54	X	
Westinghouse Hanford Company			
J. N. Appel	G3-21		X
H. Babad	S7-30	X	
T. M. Blaak	S5-13	X	
R. A. Esch	T6-06	X	
G. D. Forehand	S7-31		X
V. W. Hall	T6-03	X	
D. C. Hetzer	S6-31		X
J. E. Hyatt	S3-31	X	
L. Jensen	R2-12	X	
N. W. Kirch	R2-11	X	
M. J. Kupfer	H5-49	X	
J. E. Meacham	S7-15	X	
K. L. Powell	T6-04		X
J. B. Schaffer (SD COV SHT., DST. SHT, ROR)	R2-12		X*
L. W. Shelton	H5-49	X	
T. T. Tran (LATA)	B1-44	X	
L. A. Tusler	R2-11	X	
J. A. Voogd	H5-03		X
L. R. Webb (SD COV SHT., DST. SHT, ROR)	T6-06		X *
Central Files	A3-88	2	
EDMC	H6-08	X	
LTIC	T6-03		X
TFIC (Tank Farm Information Center)	R1-20		X
U. S. Department of Energy			
Jim Poppiti 12800 Middlebrook Rd. Trevion II, EM-36 Germantown, MD 20874			X

* Needs only releasing paperwork, not a copy of the released document.