GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Waste Classification And Manifest Reporting
All Type Waste
PROCEDURE TITLE

HNP-8038
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. MANAGER	APPROVED GENERAL MANAGER	DATE
0	New Procedure	RW Zawadski	[signature]	1/7/84

MANUAL SET

HNP-9

Needed by 1-2-84

SHEET 1 OF 1

PROCEDURE REVIEW REQUEST FOR NEW PROCEDURES

PROCEDURE NO. HNP- 8038

REQUESTED BY		DEPARTMENT MANAGER APPROVAL	
Name:	Date:	Signature:	Date:
Mike Link	12-8-83	R W Zavadoski	12/8/83

SAFETY RELATED (✓) NON-SAFETY RELATED ( )

PROCEDURE CHANGES MODE OF OPERATION OR INTENT AS DESCRIBED IN FSAR:
( ) Yes (✓) No

PROCEDURE INVOLVES:
( ) An unreviewed Safety Question ( ) Tech.Specs. ( ) A condition not addressed in FSAR (✓) None of these
(See back for Safety Evaluation if required).

Attach copy of procedure to this form.

REASON FOR REQUEST Procedure required to comply with 10CFR20.311 and 10CFR61.

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No JCElt
PRB Secretary

83-237
PRB Number

Date

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SAFETY EVALUATION

This procedure does not constitute an unreviewed safety question as explained below.

1. The probability of occurrence and the consequences of an accident or malfunction of equipment important to safety are not increased above those analyzed in the FSAR due to this procedure because the procedure does not change the purpose or performance of ~~the~~ any system.

2. The possibility of an accident or malfunction of a different type than analyzed in the FSAR does not result from this procedure because ~~the system responds and is operated as before the procedure~~ this procedure does not effect any system.

3. The margin of safety as defined in the Technical Specifications is not reduced due to this procedure because the procedure does not change any limited, safety system settings which would allow a safety limit to be exceeded or allow a limiting condition for operations to be exceeded as stated in Technical Specifications.

APPROVAL	E. I. HATCH NUCLEAR PLANT	PROCEDURE NO HNP-8038
See Title Page	Georgia Power	REVISION NO 0
DATE See Title Page		PAGE NO 1 of 18

WASTE CLASSIFICATION AND MANIFEST REPORTING ALL TYPE WASTE

A. PURPOSE

To detail the steps necessary to classify all types of radioactive waste in accordance with the requirements of 10 CFR 61.55 and to identify manifest reporting requirements in accordance with 10 CFR 20.311. This procedure should be used for wastes that are not adequately addressed by the classification and manifest reporting procedures for resin and DAW shipments (Procedures HNP-8036 and HNP-8037).

B. REFERENCES

1. 10 CFR 20, Standards for Protection Against Radiation.
2. 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Material.
3. HNP-8016, Shipment of Radioactive Material.
4. HNP-8036, Waste Classification and Manifest Reporting, Resin Shipments.
5. HNP-8037 Waste Classification and Manifest Reporting, DAW (Compacted and Non-Compacted Trash).

C. DEFINITIONS

1. TRU - Alpha emitting transuranic nuclides with half-lives greater than 5 years (in particular - Pu-238, Pu-239, Pu-240, Am-241, Pu-242, Cm-243 and Cm-244).
2. Principal gamma emitter - any radionuclide of plant origin identified by gamma spectroscopy and contributing $>$ 1% of the total identifiable gamma activity for the waste under consideration.

D. PRECAUTIONS

1. If the shipment includes multiple containers with differing waste composition, separate analysis for each different type waste should be performed for waste classification and manifest reporting. A single analysis may be used for multiple containers of the same type waste provided the container composition (i.e., radionuclide concentration or distribution) is considered the same.

2. Procedure HNP-8037 should be used for waste that can be characterized as DAW - compacted and non-compacted trash. Procedure HNP-8036 should be used for resin shipments.

E. DATA SHEET 1 GUIDANCE

1. Determine the waste container(s) that are to be included in the waste shipment.

2. For each waste container complete the initial identification material as listed on Data Package 1, Data Sheet 1. Record the container(s) identification number, type container, type waste and the measured dose rate @ 1 meter, if available.

NOTE

For some type containers it may not be feasible to measure an unshielded dose rate prior to loading in the shipping cask. A dose rate @ 1 meter is not required by this procedure unless a dose rate to curie content conversion is to be used for determining the total activity of the container.

3. Identify the method to be used for determining radionuclide distribution. Priority should be given to use of a representative sample of the container contents for nuclide quantification. However, if it is not feasible to collect such a sample, nuclide distribution can be based on a smear of the container contents, plant area smears, or other methods as directed by the Lab Foreman (or designated alternate). For irradiated components special directions are provided in Procedural Steps G.1 through G.5.

4. Depending on the method to be used for determining radionuclide distribution, record either the concentration (uCi/cm^3, as determined by gamma spectroscopy) or ralative activity (uCi, or similar equivalent units) for all principal gamma emitters using the entries under Columns #1 and #2 on Data Sheet 1. The blank entries in Column #1 may be used to record radionuclides that are identified but are not specifically listed on the Data Sheet 1 entries.

5. Total the Column #1 and #2 entries to determine Subtotals #1 and #2 for either the concentration or relative activity.

6. Using the entries under Column #3, calculate the concentrations or relative activity, as appropriate, for the correlated radionuclides. Multiply the previously determined concentration or relative activity of the scaling radionuclide, as listed, by the scaling factor (SF); the product is the correlated radionuclide concentration or relative activity.

MANUAL SET

NOTE

Generic scaling nuclides and conservative scaling factors have been included in the Column #3 and #4 entries. However, it may be more appropriate to select scaling factors based on the type waste. If other than generic SF are to be used, cross through the generic value and insert the appropriate value. H-3 and C-14 are not correlated to any other radionuclides. The concentrations and relative activities listed under Column #3 for these nuclides are conservative, generic values. The Lab Supervisor (or designated alternate) will determine if other than the generic SF values or generic H-3 or C-14 values should be used. Technical bases for selection of scaling factors (if other than the generic values) shall be documented on Data Sheet 1 (or by an accompanying attachment).

NOTE

If the waste consists of irradiated components, use of scaling factors is inappropriate. Special analysis, as performed in Procedural Steps G.1 - G.6, shall be used for determining radionuclide concentrations. Procedural steps, as addressed below, which are inappropriate for classifying activated metals need not be performed. Unless trace quantities of H-3, Tc-99 and I-129 are known to exist in the activated metals (either by radiochemical analysis or material composition), these nuclides should be reported as not present on the manifest. If available, a radiochemical analysis of a representative sample of the activated metals shall be used for determining radionuclide composition and shall be given priority over Procedural Steps G.1 - G.6.

7. Similarily for Column #4, calculate the correlated concentration or relative activity of TRU, Pu-241 and Cm-242, as indicated by multiplying the measured Cs-137 concentration by the designated scaling factor (SF).

8. Calculate Subtotal #3 by adding the Column #3 entries, Subtotal #4 by adding the Column #4 entries.

9. Determine the total concentration or total relative activity (GRAND TOTAL) by summing Subtotals #1, #2, #3 and #4. Circle the appropriate units (uCi/cm^3 or Relative Activity).

10. For each nuclide as identified or correlated above, determine its fractional abundance by dividing its concentration or relative activity by the GRAND TOTAL (either concentration or relative activity, respectively). The quotient is the fractional abundance for the nuclide.

11. The Total Activity for each waste container shall be calculated by either Method #1.1 or Method #1.2 as delineated on Data Sheet 1 and as described below. Method #1.1 should be used for single or multiple containers with the radioactive material content based on concentration. Method #1.2 should be used for single or multiple containers with the radioactive material content based on a dose rate to millicurie content conversion.

    a. Method #1.1

    For each container enter its identification, the GRAND TOTAL (concentration, as determined above), and the container volume (or volume of waste, as appropriate) (ft^3). Perform the multiplication as listed to determine the Total Container Activity (mCi). Sum the Total Container Activity for all containers to determine the TOTAL MILLICURIES for the waste shipment.

    b. Method #1.2

    Enter each container's identification. Based on the measured dose rate @ 1 meter, determine the container activity for the principal gamma emitters using Procedural Steps H.1 - H.6 (or computerized dose conversion code). Determine the gamma fractional abundance by adding the Subtotals #1 and #2 for fractional abundance. Divide the total Gamma Activity by the Fractional Abundance; the quotient is the Total Container Activity. Sum all containers to determine the TOTAL MILLICURIES.

12. Calculate the TOTAL MILLICURIES of H-3, C-14, Tc-99 and I-129 for all containers as indicated on Data Sheet 1 by multiplying the nuclide Fractional Abundance by the TOTAL MILLICURIES.

13. If the dose rate @ 1 meter does not exceed 100 mR/hr for a 55-gal. drum container or 500 mR/hr for a 4X4X6 box (or similar dimension box), the waste is catagorically CLASS A. Otherwise, Data Sheet 2 should be used to determine WASTE CLASS.

14. If the dose rate is used to determine WASTE CLASS, enter the WASTE CLASS as A for each applicable container on the initial identification material, Data Sheet 1. Otherwise, proceed to Procedure Section F, DATA SHEET 2 GUIDANCE.

15. Provide completed Data Sheet 1 (and Data Sheet 2, if applicable) to the Lab Foreman (or designated alternate).

16. The Lab Foreman (or designated alternate) will review the calculations and waste class determination of Data Sheets 1 and 2. If satisfactory, the Lab Foreman (or designated alternate) will sign and date the data sheets.

17. The Lab Foreman (or designated alternate) shall complete Data Package 1, Data Sheet 3, QA/QC Check List. A "N/A" entry shall be recorded for any item on Data Sheet 3 that is not applicable to the type waste being evaluated. Any designated "No" response shall be explained on the data sheet (or by an accompanying attachment).

18. The completed data sheet(s) shall be provided to the Lab Supervisor (or designated alternate) for review. The Lab Supervisor will sign and date Data Sheet 3, QA/QC Check List.

19. All completed data sheets shall be included in the station records for the waste shipment.

F. DATA SHEET 2 GUIDANCE

1. If Data Package 1, Data Sheet 2 is to be used for determining WASTE CLASS, transfer the radionuclide concentrations from Data Sheet 1 for each radionuclide or radionuclide grouping to appropriate entries on Data Sheet 2. If concentrations have not been identified on Data Sheet 1, calculate the concentration for each nuclide. Divide the Total Container Activity (mCi) by the container volume (ft^3); multiply by the nuclide fractional abundance; and multiply by 0.035 to convert from mCi/ft^3 to uCi/cm^3. It will be necessary to evaluate each container separately (i.e., a separate Data Sheet 2 for each container).

2. The concentrations (and corresponding limits) for all nuclides are expressed as uCi/cm^3, except for TRU, Pu-241 and Cm-242 for which the units are nCi/g. Therefore, the concentrations for TRU, Pu-241 and Cm-242 shall be converted from uCi/cm^3 to nCi/g prior to entry on Data Sheet 2 by dividing by the density of the waste (g/cm^3) and multiplying by 10^3 (nCi per uCi).

3. Perform the required calculations to determine waste class. After dividing each radionuclide concentration by the 10 CFR 61 limit (as included on Data Sheet 2), determine the "sum of fractions" for each column.

4. Waste class is determined per the guidance included on Data Sheet 2.

5. Enter the WASTE CLASS; sign and date Data Sheet 2.

6. Return to Procedural Step E.15.

G. IRRADIATED COMPONENTS GUIDANCE

NOTE

If the material to be disposed of consists of irradiated materials, it is necessary to account for the presence of C-14, Ni-59, Ni-63 and Nb-94 within the activated metal. This analysis is required only for metals that have been exposed to a neutron flux of $>10^{17}$ neutrons/cm^2-sec (i.e., any materials located outside the sacrificial shield need not be evaluated for activated metals).

1. For the metals under evaluation, determine the chemical composition and density (example: stainless steel #304 - 0.08% carbon, 0.1% cobalt, 10% nickel, 0.016% niobium at a density of 8 g/cm^3).

2. Determine the averge neutron flux in the area of the core where the material was located.

3. Determine the total time of exposure. For conservation, periods of shutdown may be excluded. The net full power days of exposure in conjunction with the neutron flux at full power may be used.

4. Based on the above information and the activation data in Table 1, calculate the concentration of C-14, Ni-59, Ni-63 and Nb-94 using the equation:

$$A = 2.7 \times 10^{-5} * \phi * \sigma * N * (1 - (\exp -\lambda t))$$

where: A = concentration of the radionuclide in the activated metal (uCi/cm^3)

ϕ = average (or full power) thermal neutron flux to which the metal was exposed (cm^{-2} - sec^{-1})

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σ = thermal neutron cross section of the target nuclide (cm^2, from Table 1)

N = target nuclide density ($atoms/cm^3$)

N = (density of metal) * (target nuclide abundance) ÷ (g/mole) * 6.025E + 23 (atoms/mole)

λ = radionuclide (A) decay constant (sec, from Table 1)

t = total time of exposure (sec)

2.7×10^{-5} = conversion factor (uCi per disintegration per sec)

5. As directed by the Lab Foreman (or designated alternative) determine the concentration of Co-60 in the activated metal based on either a calculation (correlating Co-60 to a measured dose rate for the metal) or an activation calculation (using the equation in step F.4 and data in Table 1).

NOTE

It can be conservatively assumed that Co-60 accounts for all remaining activity (i.e., all activity attributing to the dose rate from the metal). Other radionuclides may be present due to neutron activation analysis or external contamination; however, because of either production rates or radioactive decay, the overall contribution of these nuclides (in both abundance and radiation dose contribution) relative to Co-60 will be minor.

6. Return to Procedural Step E.4 for completion of waste classification and manifest reporting using the radionuclide concentrations as determined above.

H. DETERMINATION OF WASTE CONTAINER MILLICURIE CONTENT BASED ON MEASURED DOSE RATE

1. Identify the waste container(s) to be evaluated, container weight or waste density, and the measured dose rate at 1 meter (from exterior surface of container).

NOTE

If multiple dose rate measures are recorded, average all values to determine the value that should be used for calculating the container millicurie content.

MANUAL SET

2. Identify the average gamma energy of the radionuclide distribution for the waste. If unavailable, a conservative average energy of 0.7 Mev may be used. (Considering the normal radionuclide distribution at nuclear power reactors, use of 0.7 Mev average gamma energy will overestimate actual container content.)

3. Determine the appropriate set of curves for relating dose rate to millicurie content -- Figure 1 for 55-gal. drum or Figure 2 for a 4X4X6 box.

4. Based on the average gamma energy, determine the specific curve from either Figure 1 or 2, as appropriate. For conservation, if the average gamma energy is between any of the designated energies, use the lower energy curve for determining the value of C. If the average gamma energy exceeds the maximum designated gamma energy curve, use the maximum energy curve.

5. The total container gamma activity of the container is calculated by the following equation:

$$Q = DR * C$$

where:

- Q = total radioactive material content for gamma emitting radionuclides for the container (4X4X6 box or 55-gal. drum) (mCi)
- DR = dose rate measured at 1 meter from container exterior surface (mR/hr)
- C = conversion factor from Figure 1 for a 55-gal. drum container or from Figure 2 for a 4X4X6 box container (or similar capacity container) (mCi per mR/hr @ 1 meter)

6. If the density (or weight) of the container exceeds the bounds of the curves in either Figure 1 or 2, the value of C may be approximated by taking the ratio of the actual container density (or weight) to the maximum value of the curve. This ratio should be multiplied by the maximum value of the curve to determine the value of C.

TABLE 1
10 CFR 61 NUCLIDES

NEUTRON ACTIVATED METALS

Nuclide	Decay Constant(λ)	TARGET NUCLIDE Nuclide	Natural Abundance	g/mole	Thermal Neutron Cross Section[1]
C-14	3.8E-12 sec^{-1}	C-13	1.11%	13	0.9 ± 0.2 mb
Ni-59	2.9E-13 sec^{-1}	Ni-58	67.9%	58	4.4 ± 0.4 b
Ni-63	2.2E-10 sec^{-1}	Ni-62	3.66%	62	15 ± 2 b
Nb-94	1.1E-12 sec^{-1}	Nb-93	100%	93	0.15 ± 0.1 b (Nb-94m) 1.15 ± 0.05 b (Nb-94) (1.3 b, total)
Co-60	4.2E-09 sec^{-1}	Co-59	100%	59	19.9 ± 0.9 b (Co-60m) 17 ± 2 b (Co-60) (37 b, total)

1) Cross section units are expressed as barns (b) or millibarns (mb). A barn equals $10^{-24} cm^2$.

FIGURE 1

Dose Rate to Millicurie Content Conversion
DOT 17 Container (55-gal. drum)

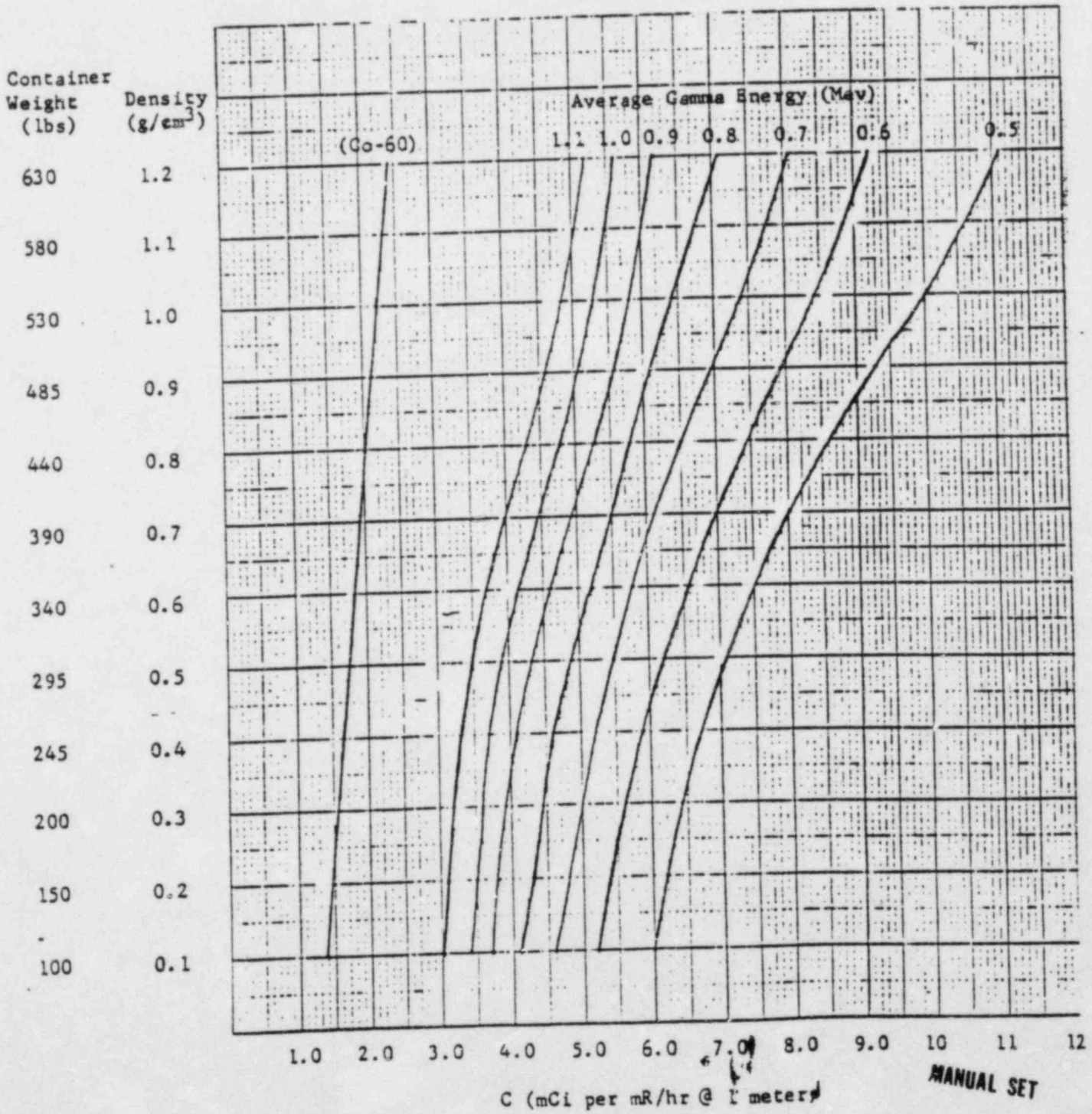
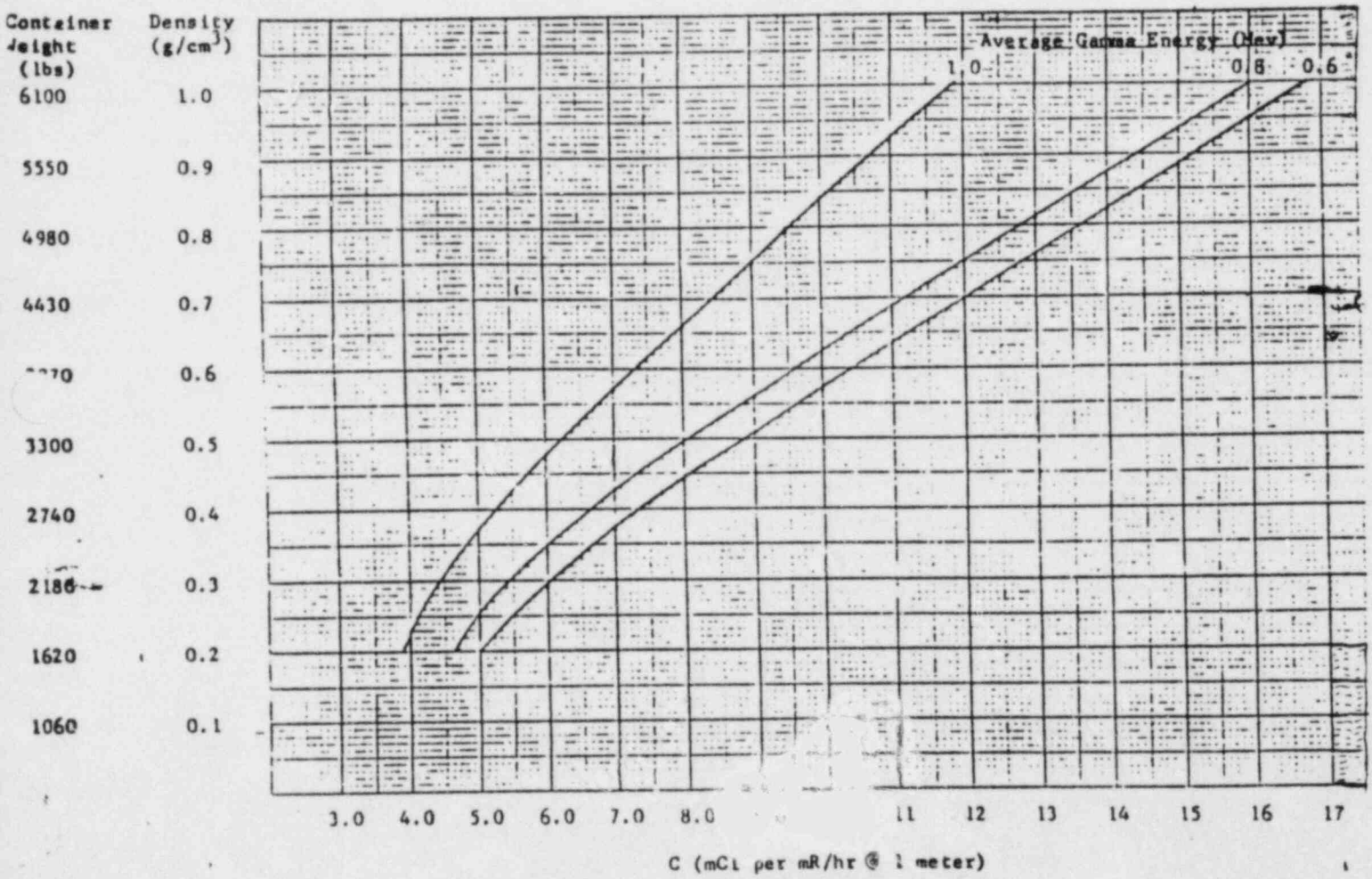


FIGURE 2

Dose Rate to Millicurie Content Conversion
4X4X6 LSA Box



MANUAL SET

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8038-1

SERIAL NO: R00-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 7

FREQUENCY: _____

COMPLETED BY: _____

DATE COMPLETED: _____

I HAVE REVIEWED THIS DATA PACKAGE FOR COMPLETENESS AND AGAINST ACCEPTANCE CRITERIA IN ACCORDANCE WITH HNP-830.

ACCEPTABLE _____ UNACCEPTABLE _____

REVIEWED BY: _____

DATE REVIEWED: _____

REMARKS: _____

MANUAL SET

DATA PACKAGE 1
DATA SHEET 1
WASTE CLASSIFICATION

Shipment Number: _____ Technician: _____
Total Volume of Waste: _____ ft³ Date: _____

Container Identification	Type Container	Type Waste	Dose Rate @ 1 meter	WASTE CLASS
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	
			_____ mR/hr	

Radionuclide Distribution determined by:
_____ sample of waste, gamma spectrum analysis
_____ smear of waste
_____ plant area smears
_____ other, specify _____

RADIONUCLIDE DISTRIBUTION

Column #1 Radionuclides with 1/2 < 5 yr				Column #2 10 CFR 61 Nuclides			
	Conc. (μCi/cm³)	or	Relative Activity	Fractional Abundance	Conc. (μCi/cm³)	or	Relative Activity	Fractional Abundance
Cr 51	_____		_____	_____				
Mn 54	_____		_____	_____				
Fe 55	_____		_____	_____	Co-60		_____	_____
Co 58	_____		_____	_____				
Zn 65	_____		_____	_____	Cs-137		_____	_____
Cs 134	_____		_____	_____				
Ce 144	_____		_____	_____	Subtotal #2		_____	_____
_____	_____		_____	_____				
_____	_____		_____	_____				
_____	_____		_____	_____				
Subtotal #1	_____		_____	_____				

DATA PACKAGE 1 (cont.)
DATA SHEET 1 (cont.)

CALCULATION OF CORRELATED RADIONUCLIDES

Column #3

				Conc. ($\mu Ci/cm^3$)	or	Relative Activity	Fractional Abundance
H-3	=			2E-03		----------	----------
C-14	=			5E-04		----------	----------
N-63	=	_____ (Co-60)	* 4E-02 (SF) =	_____		----------	----------
Sr-90	=	_____ (Cs-137)	* 4E-02 (SF) =	_____		----------	----------
Tc-99	=	_____ (Cs-137)	* 3E-04 (SF) =	_____		----------	----------
I-129	=	_____ (Cs-137)	* 1E-05 (SF) =	_____		----------	----------
Subtotal	#3		=	_____		----------	----------

Column #4

				Conc. ($\mu Ci/cm^3$)	or	Relative Activity	Fractional Abundance
TRU	=	_____ (Cs-137)	* 3E-03 (SF) =	_____		----------	----------
Pu-241	=	_____ (Cs-137)	* 3E-02 (SF) =	_____		----------	----------
Cm-242	=	_____ (Cs-137)	* 2E-04 (SF) =	_____		----------	----------
Subtotal	#4		=	_____		----------	----------

DATA PACKAGE 1 (cont.)
DATA SHEET 1 (cont.)

DETERMINATION OF TOTAL ACTIVITY

GRAND TOTAL = _____ (Subtotal #1) + _____ (Subtotal #2) + _____ (Subtotal #3) + _____ (Subtotal #4) = _____ uCi/cm³ or Rel. Activity

METHOD #1.1

Container Identification	GRAND TOTAL (uCi/cm³)	*	Volume of Waste (ft³)	*	Conversion Factor	=	Total Container Activity (mCi)
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____	*	_____	*	28.3	=	_____
_____	_____				TOTAL MILLICURIES		_____

METHOD # 1.2

Container Identification	Total % Activity	-	% Frac. Abundance (Subtotal #1 & 2)	=	Total Container Activity (mCi)
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____	-	_____	=	_____
_____	_____		TOTAL MILLICURIES		_____

TOTAL H-3 = _____ (H-3 Frac. Abun.) * _____ (TOTAL MILLICURIES) = _____ mCi
TOTAL C-14 = _____ (C-14 Frac. Abun.) * _____ (TOTAL MILLICURIES) = _____ mCi
TOTAL Tc-99 = _____ (Tc-99 Frac. Abun.) * _____ (TOTAL MILLICURIES) = _____ mCi
TOTAL I-129 = _____ (I-129 Frac. Abun.) * _____ (TOTAL MILLICURIES) = _____ mCi

WASTE CLASSIFICATION

WASTE CLASS = _____ as determined by _____ dose rate @ 1 meter
_____ Data Sheet 2
_____ other, specify_____

Criteria for Waste Classification Based on Dose

Waste is categorically CLASS A if dose rates measured at 1 meter do not exceed 100 mR/hr for a 55-gal. drum container or 500 mR/hr for a 4X4X6 container (B-25 box), or similar capacity container.

DATA PACKAGE 1 (cont.)
DATA SHEET 2
WASTE CLASSIFICATION WORKSHEET

SUM OF FRACTIONS - 10 CFR 61 TABLE 1 LIMITS

Nuclide	Units of Entry[1]	Class A			Class C		
C-14	uCi/cm³	_____	- 0.8 *	_____	_____	- 8.0 *	_____
C-14[2]	uCi/cm³	_____	- 8.0 *	_____	_____	- 80.0 *	_____
Ni-59[2]	uCi/cm³	_____	- 22.0 *	_____	_____	- 220.0 *	_____
Nb-94[2]	uCi/cm³	_____	- 0.02 *	_____	_____	- 0.2 *	_____
Tc-99	uCi/cm³	_____	- 0.3 *	_____	_____	- 3.0 *	_____
I-129	uCi/cm³	_____	- 0.008 *	_____	_____	- 0.08 *	_____
TRU (T1/2 >5 yr)	nCi/g	_____	- 10.0 *	_____	_____	- 100.0 *	_____
Pu-241	nCi/g	_____	- 350.0 *	_____	_____	- 3500. *	_____
Cm-242	nCi/g	_____	- 2000. *	_____	_____	- 2E + 04 *	_____

Sum of Fractions: * _____ <1 → >1 → * _____ <1 → >1 → unacceptable for burial

SUM OF FRACTIONS - 10 CFR 61 TABLE 2 LIMITS

Nuclide	Units of Entry[1]	Class A			Class B			Class C		
Total (T1/2 < 5 yr)	uCi/cm³	_____	- 700.0 *	_____		N/A			N/A	
H-3	uCi/cm³	_____	- 40.0 *	_____		N/A			N/A	
Co-60	uCi/cm³	_____	- 700.0 *	_____		N/A			N/A	
Ni-63	uCi/cm³	_____	- 3.5 *	_____	_____	- 70.0 *	_____	_____	- 700. *	_____
Ni-63[2]	uCi/cm³	_____	- 35.0 *	_____	_____	- 700.0 *	_____	_____	- 7000. *	_____
Sr-90	uCi/cm³	_____	- 0.04 *	_____	_____	- 150.0 *	_____	_____	- 7000. *	_____
Cs-137	uCi/cm³	_____	- 1.0 *	_____	_____	- 44.0 *	_____	_____	- 4600. *	_____

Sum of Fractions: * _____ >1 → * _____ >1 → * _____ >1 → unacceptable for burial

The waste classification is determined by the highest class for which the "sum of fractions" does not exceed 1.

If the "sum of fractions" for Table 1, Class A < 1, waste class is determined by highest column of Table 2 with "sum of fraction" < 1.

If "sum of fraction" of Table 1, Class A is > 1 but Class C < 1, waste is Class C, provided Table 2, Class C "sum of fraction" < 1.

If "sum of fractions" of Table 1, Class C > 1 or if "sum of fraction" of Table 2, Class C > 1, waste not suitable for burial.

[1] Units are uCi/cm³ for all nuclides except TRU, Pu-241 and Cm-242 for which the units are nCi/g.

[2] In activated metals only.

WASTE CLASS: _____ Technician: _____ Date: _____
Lab Foreman: _____ Date: _____

FIGURE 3
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MANUAL SET

DATA PACKAGE 1 (cont.)
DATA SHEET 3
QA/QC CHECK LIST
WASTE CLASSIFICATION AND MANIFEST REPORTING

Shipment #:_____

Waste Class

YES	NO		
_____	_____	1.	Has waste been properly classified? Data Sheet 1 (and Data Sheet 2, if applicable) completed?
_____	_____	2.	Has waste container been labeled CLASS A, CLASS B, or CLASS C?

Waste Stability Characteristics

YES	NO		
_____	_____	1.	Has proper waste container been selected (Class A - carbon steel, Class B or C- HIC)?
_____	_____	2.	If HIC used, has User Checklist been completed?
_____	_____	3.	Verify proper dewatering of resins ($<$ 1% water).
_____	_____	4.	If any liquids have been included, has sufficient absorbant been added to absorb twice the volume of the liquid? Absorbed liquids are not acceptable at Barnwell.
_____	_____	5.	For waste containing oils, does the designated burial site allow for receipt of waste containing oil? Waste containing oils cannot be shipped to Barnwell. For Class B or C waste in a HIC, oils cannot exceed 0.5%.
_____	_____	6.	Have void spaces been reduced to extent practical?
_____	_____	7.	For shipments to Barnwell, the site criteria for required use of HIC is 1 uCi/cm^3 long lived activity (i.e., Subtotals #2, #3, and #4, Data Sheet 1).

DATA PACKAGE 1 (cont.)
DATA SHEET 3 (cont.)
WASTE CLASSIFICATION AND MANIFEST REPORTING

Manifest Reporting

YES	NO		
_____	_____	1.	Have the total millicurie quantities of H-3, C-14, Tc-99 and I-129 been determined and included on Manifest?
_____	_____	2.	Have all principal gamma emitters and all correlated radionuclides been included on manifest? Barnwell site criteria require reporting correlated abundances of TRU, Pu-241 and Cm-242.
_____	_____	3.	Verify accounting for at least 99% of total activity by individual radionuclide identification.
_____	_____	4.	Verify identification of Waste Class.
_____	_____	5.	Verify correct physical description of waste.
_____	_____	6.	Verify total volume of waste (same as used for determining millicurie content; if different explain below).
_____	_____	7.	Verify correct chemical form.
_____	_____	8.	Verify exclusion of chelating agents (if > 0.1%, chelating agents must be identified).

Lab Foreman:_____ Date:_____

Lab Supervisor:_____ Date:_____

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Operation of the Bartlett Nuclear Mixing Unit
PROCEDURE TITLE

HNP-8044
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. MANAGER	APPROVED GENERAL MANAGER	DATE
0	New Procedure	RWZavadoski	[signature]	1/7/84

MANUAL SEP -9

Need by 1-5-84

WE 1010

0-83 ucm

SHEET 1 OF 1

PROCEDURE REVIEW REQUEST FOR NEW PROCEDURES

PROCEDURE NO. HNP- 8 Att

REQUESTED BY		DEPARTMENT MANAGER APPROVAL	
Name:	Date:	Signature:	Date:
[illegible]	12-14-83	RW Zavadoski	12/15/83

SAFETY RELATED (✓) NON-SAFETY RELATED ( )

PROCEDURE CHANGES MODE OF OPERATION OR INTENT AS DESCRIBED IN FSAR:
( ) Yes (✓) No

PROCEDURE INVOLVES:
( ) An unreviewed Safety Question ( ) Tech.Specs. ( ) A condition not addressed in FSAR (✓) None of these
(See back for Safety Evaluation if required).

Attach copy of procedure to this form.

REASON FOR REQUEST [illegible]

PRB RECOMMENDS APPROVAL: ( )Yes ( )No Steve Tipton
PRB Secretary

83-240
PRB Number

Date

HNP-3
MANUAL SET

SAFETY EVALUATION

This procedure does not constitute an unreviewed safety question as explained below.

1. The probability of occurrence and the consequences of an accident or malfunction of equipment important to safety are not increased above those analyzed in the FSAR due to this procedure because the procedure does not change the purpose or performance of the system.

2. The possibility of an accident or malfunction of a different type than analyzed in the FSAR does not result from this procedure because the system responds and is operated as before the procedure

3. The margin of safety as defined in the Technical Specifications is not reduced due to this procedure because the procedure does not change any limited, safety system settings which would allow a safety limit to be exceeded or allow a limiting condition for operations to be exceeded as stated in Technical Specifications

E. OPERATION

1. This system is designed to be used with a 55 gallon D.O.T. specification 17 H drums.

2. Hydraulic system is incorporated for raising and lowering the mixing blade and is operated from the control panel.

3. Switch on power at the control panel (indication light should be on).

4. Engage electric motor switch (indication light should be on).

5. To raise mixing blade, engage "up" switch.

6. To lower mixing blade, engage "down" switch.

7. To turn mixing blade, engage "forward" switch

   a. Blade should turn freely.

   b. Psi gauge should read approx. 350 psi and flow control meter set at 3.

NOTE

Unit is not electrically designed to mix in the reverse mode.

8. Oil line on sight glass should be in line with black indicator line or within 2 inches for operation.

9. During operation, the speed of the mixing blade may be increased by unlocking the flow control meter knob and rod moved up scale. The vortex in the liquid waste should be maintained as long as possible to give a good homogeneous mixture.

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Waste Classification and Manifest Reporting
DAW (Compacted and Non-Compacted Trash
PROCEDURE TITLE

HNP-8037
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. MANAGER	APPROVED GENERAL MANAGER	DATE
0	New Procedure	RW Zavadoski	Dan Lee Jr	1/31/87

manual set HNP-3

Needed by 1-3-84 M Link

SHEET 1 OF 1

PROCEDURE REVIEW REQUEST FOR NEW PROCEDURES

PROCEDURE NO. HNP-8037

REQUESTED BY		DEPARTMENT MANAGER APPROVAL	
Name:	Date:	Signature:	Date:
Mike Link	12-8-83	RW Zavadoski	12/8/83

SAFETY RELATED (✓) NON-SAFETY RELATED ( )

PROCEDURE CHANGES MODE OF OPERATION OR INTENT AS DESCRIBED IN FSAR:
( ) Yes (✓) No

PROCEDURE INVOLVES:
( ) An unreviewed Safety Question ( ) Tech.Specs. ( ) A condition not addressed in FSAR (✓) None of these
(See back for Safety Evaluation if required).

Attach copy of procedure to this form.

REASON FOR REQUEST Procedure required to comply with 10CFR20.311 and 10CFR61.

PA reviewed comments resolved. Procedure acceptable
WAT Nixon 12/19/83

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No JCelt
PRB Secretary

83-287
PRB Number

12-21-83
Date

HNP-9
8x11 | set

SAFETY EVALUATION

This procedure does not constitute an unreviewed safety question as explained below.

1. The probability of occurrence and the consequences of an accident or malfunction of equipment important to safety are not increased above those analyzed in the FSAR due to this procedure because the procedure does not change the purpose or performance of ~~the~~ any system.

2. The possibility of an accident or malfunction of a different type than analyzed in the FSAR does not result from this procedure because ~~the system responds and is operated as before the procedure~~ this procedure does not effect any system.

3. The margin of safety as defined in the Technical Specifications is not reduced due to this procedure because the procedure does not change any limited, safety system settings which would allow a safety limit to be exceeded or allow a limiting condition for operations to be exceeded as stated in Technical Specifications.

APPROVAL	
See Title Page	
DATE	
See Title Page	

E. I. HATCH NUCLEAR PLANT

Georgia Power

PROCEDURE NO	HNP-8037
REVISION NO	0
PAGE NO	1 of 14

JB

WASTE CLASSIFICATION AND MANIFEST REPORTING DAW (COMPACTED AND NON-COMPACTED TRASH)

A. PURPOSE

To detail the steps necessary to classify radioactive waste (DAW shipment - compacted and non-compacted trash) in accordance with the requirements of 10 CFR 61.55 and to identify manifest reporting requirements in accordance with 10 CFR 20.311.

B. REFERENCES

1. 10 CFR 20, Standards for Protection Against Radiation
2. 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste.
3. HNP-8016, Shipment of Radioactive Material

C. DEFINITIONS

1. TRU - Alpha emitting transuranics with half-lives greater than 5 years (in particular - Pu-238, Pu-239, Pu-240, Pu-242, Am-241, Cm-243 and Cm-244).
2. Principal gamma emitter - Any radionuclide of plant origin identifiable by gamma spectroscopy and contributing >1% of the total identifiable gamma activity for the waste under consideration.

D. PRECAUTIONS

If the shipment includes multiple containers with differing waste composition, separate analysis for each different type waste should be performed. A single analysis may be used for multiple containers of the same type waste provided the container composition (i.e., radionuclide distribution) is considered the same.

E. DATA SHEET 1 GUIDANCE

1. Determine the DAW containers that are to be included in the waste shipment.
2. For each container complete the initial identification information on Data Package 1, Data Sheet 1. The same data sheet may be used to record multiple containers provided each container represents a common type waste and storage time interval. Enter the container(s) identification, container weight (lbs), dose rate(s) @ 1 meter, storage time(s), type waste and type container.

3. If the maximum dose rate @ 1 meter is < 100 mR/hr for a 55-gal. drum container or < 500 mR/hr for a 4X4X6 box container (or similar capacity container), the waste is categorically Class A. If the dose rate exceeds the above, contact the Lab Foreman (or designated alternative). It may be necessary to open the container; identify and remove the item(s) contributing to the unacceptably high dose rate.

NOTE

DAW shipments cannot exceed the Class A limits. Exceeding these limits requires the packaging of the items in a "High Integrity Container."

4. Determine the appropriate radionuclide distribution to be used for calculating the individual radionuclide fractional abundance and curie inventory of the container(s). The Generic Distribution (appropriately decay corrected) should be used for all DAW unless the waste is known to be substantially different in radionuclide composition (i.e., a change of more than a factor of 10 in relative activities or fractional abundances of the principal gamma emitters).

5. If other than the Generic Distribution is required, take a special sample (i.e., smear of the container contents of special plant area smears) and have analyzed by gamma spectroscopy to determine relative activity of the principal gamma emitters. Use Data Package 1, Data Sheet 2 for determining fractional abundance. Refer to Data Sheet 2 Guidance for details (Procedural Steps F.1 - F.9).

6. If using a Special Distribution (as determined by Procedural Steps F.1 - F.11), calculate the weighted gamma energy for each nuclide by multiplying the fractional abundance of the nuclide by its average gamma energy. Sum all weighted gamma energies to determine the average gamma energy for the distribution. This average gamma energy is used to calculate the container millicurie inventory (based on the curves in Figure 1 or Figure 2, if used for determination).

7. Determine the radioactive material content of the container(s), in millicuries, for the principal gamma emitters by the following steps (or a computerized dose conversion code). Enter the results on Data Sheet 1.

   a. For each waste container(s) to be evaluated, identify the container weight or waste density, and the measured dose rate at 1 meter (from exterior surface of container). As recorded on Data Sheet 1.

NOTE

If multiple dose rate measures have been recorded, average all values to determine the value that should be used for calculating the container millicurie content.

b. Identify the average gamma energy of the radionuclide distribution for the waste (from Data Sheet 1). If unavailable, a conservative average energy of 0.8 Mev may be used. (Considering the normal radionuclide distribution at nuclear power reactors, use of a 0.8 Mev average gamma energy will overestimate actual container content.)

c. Determine the appropriate set of curves for relating dose rate to millicurie content -- Figure 1 for 55-gal. drum or Figure 2 for a 4X4X6 box.

d. Based on the average gamma energy, determine the specific curve from either Figure 1 or 2, as appropriate. For conservation, if the average gamma energy is between any of the designated energies, use the lower energy curve for determining the value of C. If the average gamma energy exceeds the maximum designated gamma energy curve, use the maximum energy curve.

e. The total container gamma activity of the container is calculated by the following equation:

$$Q = DR * C$$

where:

Q = total radioactive material content for gamma emitting radionuclides for the container (4X4X6 box or 55-gal. drum) (mCi)

DR = dose rate measured at 1 meter from container exterior surface (mR/hr)

C = conversion factor from Figure 1 for a 55-gal. drum container or from Figure 2 for a 4X4X6 box container (or similar capacity container) (mCi per mR/hr @ 1 meter)

manual set

f. If the density (or weight) of the container exceeds the bounds of the curves in either Figure 1 or 2, the value of C may be approximated by taking the ratio of the actual container density (or weight) to the maximum value of the curve. This ratio should be multiplied by the maximum value of the curve to determine the value of C.

8. Calculate the Total Activity (mCi) for each container using the entries on the data sheet to correct for the presence of the non-gamma emitting radionuclides. The Total Activity is determined by dividing the Total γ Activity by the gamma fractional abundance (γ - Fraction). The quotient is the Total Activity (mCi) for the container.

9. Sum the Total Activities for all containers to determine the TOTAL MILLICURIES, which is the total millicuries of all waste containers being evaluated.

10. Calculate the total H-3, C-14, Tc-99 and I-129 inventory (mCi) for the shipment using the appropriate entries on Data Sheet 1 by multiplying nuclide fractional abundance by TOTAL MILLICURIES (mCi). The generic fractional abundances for H-3 and C-14 have been included as default values; the Tc-99 and I-129 fractional abundances should be taken from the radionuclide distribution - Generic or Special.

11. Record Waste Class and identify bases for determination under the Waste Classification and Manifest Reporting, Data Sheet 1. Criteria for classification are provided on the data sheet.

12. If Waste Class exceeds Class A (i.e., Class B or C), contact Lab Foreman (or designated alternative). Class B or C waste requires packaging and shipment in a "High Integrity Container" (HIC).

13. Sign and date the completed Data Sheet 1. Provide completed Data Sheet 1 (and Data Sheet 2, if applicable) to the Lab Foreman (or designated alternate).

14. The Lab Foreman (or designated alternate) will review the calculations and waste class determination of Data Sheet 1 and Data Sheet 2, if applicable. If satisfactory, the Lab Foreman (or designated alternate) will sign and date the data sheets.

15. The Lab Foreman (or designated alternate) shall complete Data Package 1, Data Sheet 3, QA/QC Check List. A "N/A" entry shall be recorded for any item on Data Sheet 3 that is not applicable to the type waste being evaluated. Any designated "No" response shall be explained on the data sheet (or by an accompanying attachment).

16. The completed data sheets shall be provided to the Lab Supervisor (or designated alternate) for review. The Lab Supervisor (or designated alternate) will sign and date Data Sheet 3, QA/QC Check List.

17. All completed Data Sheets 1, 2 and 3 shall be included in the station records for the waste shipment.

F. DATA SHEET 2 GUIDANCE

NOTE

Data Package 1, Data Sheet 2 is used to determine the correlated concentration of the non-gamma emitting radionuclides. These procedural steps need only be completed if a Special Distribution (i.e., other than the Generic Distribution) is used to quantify the radionuclide content of the container(s).

1. Enter the identification of each container to be addressed by the Special Distribution.

2. Based on a gamma spectrum analysis of a special sample (e.g., smear of the container contents of special plant area smears) determine the distribution of the principal gamma emitters (relative activity).

3. Enter the relative activity of the principal gamma emitters in Columns #1 and #2 on Data Sheet 2. The blank entries in Column #1 may be used to record radionuclides that are identified but not specifically listed.

4. Total Columns #1 and #2 to determine Subtotals #1 and #2, respectively.

5. Determine the relative activity of the correlated radionuclides in Columns #3 and #4 by multiplying the relative activity of the scaling radionuclide by the designated scaling factor (SF). The fractional abundances for H-3 and C-14 should be taken directly from the Generic Distribution unless special analysis have been performed to quantify these nuclides.

manual set

NOTE

The generic DAW scaling nuclides and scaling factors (SF) are listed for each correlated radionuclide on Data Sheet 2. If scaling nuclides or scaling factors other than the generic are required to be used due to particulars of the waste, cross through the generic value and insert appropriate value. The Lab Supervisor (or designated alternative) will determine if other than generic scaling nuclides and scaling factor values should be used. Technical bases for selection of scaling factors (if other than the generic DAW values) shall be documented on Data Sheet 2 (or by an accompanying attachment).

6. Determine Subtotal #3 by summing the Column #3 entries, Subtotal #4 by summing the Column #4 entries.

7. Sum the Subtotals #1, #2, #3 and #4 to determine the Total Relative Activity.

8. To determine the Fractional Abundance for each radionuclide, divide its relative activity by the Total Relative Activity. The quotient is the Fractional Abundance.

9. Enter these Fractional Abundances on Data Sheet 1 under Special Distribution.

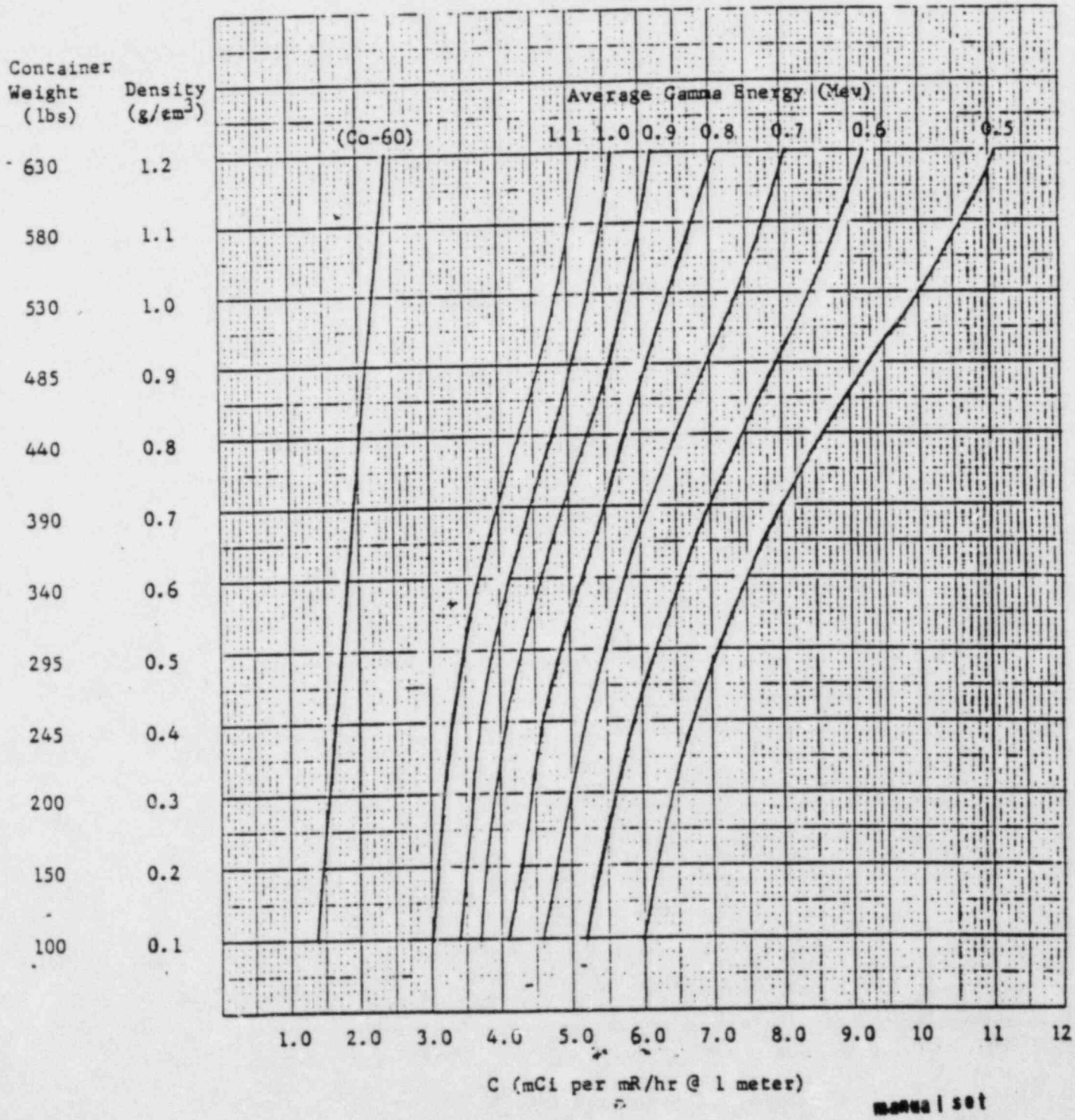
10. Sum the Fractional Abundances of the gamma emitters on Data Sheet 1. Sum all Fractional Abundances to verify accounting for all activity (i.e., 100% $\pm$ 1%).

11. Sign and date the completed Data Sheet 2. Return to Procedural Step E.6 for completion of the waste classification and shipping manifest reporting.

manual set

FIGURE 1

Dose Rate to Millicurie Content Conversion
DOT 17 Container (55-gal drum)

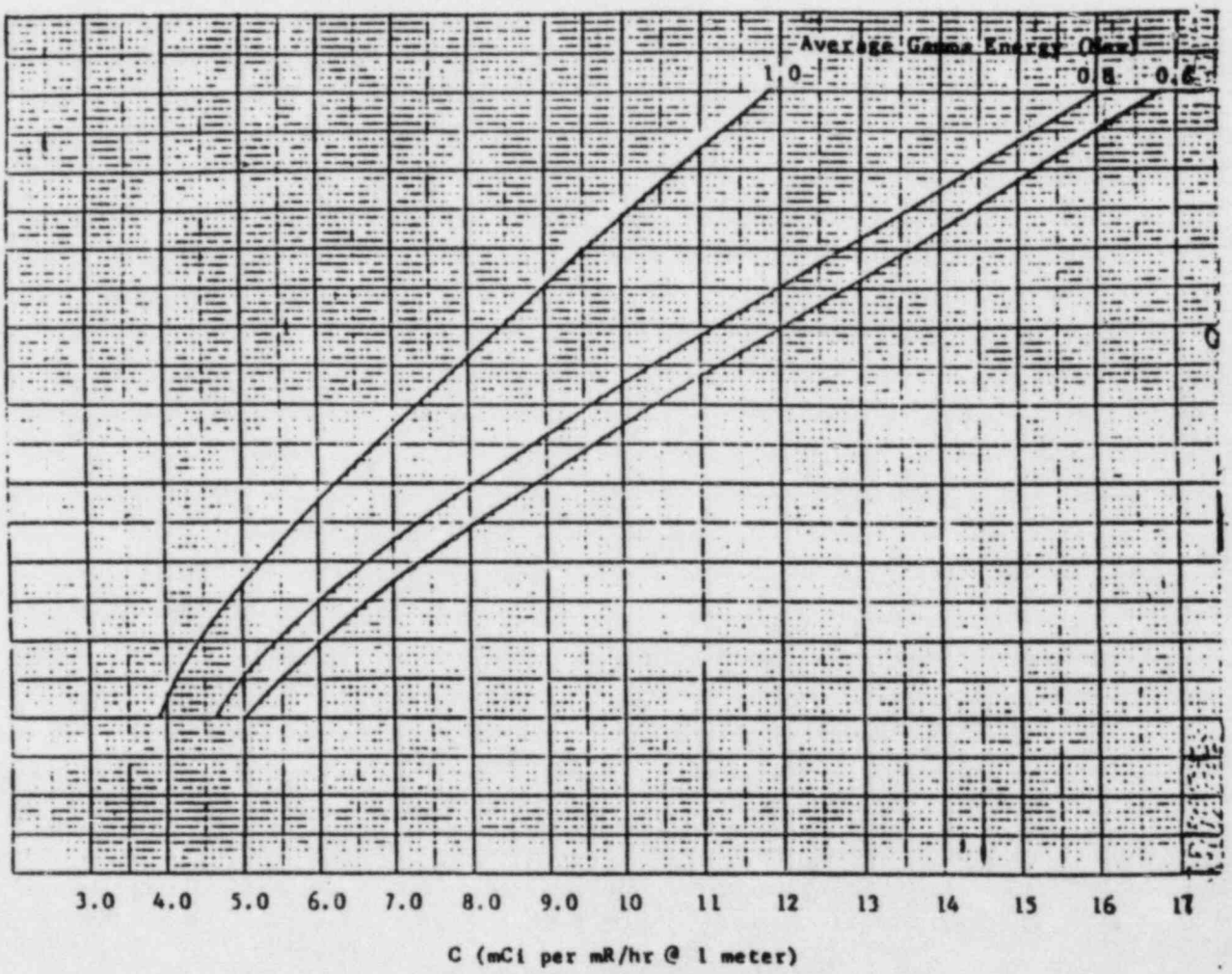


manual set

FIGURE 2

Dose Rate to Millicurie Content Conversion
4X4X6 LSA Box

Container Weight (lbs)	Density (g/cm^3)
6100	1.0
5550	0.9
4980	0.8
4430	0.7
3870	0.6
3300	0.5
2740	0.4
2180	0.3
1620	0.2
1060	0.1



manual set

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8037-1

SERIAL NO: R00-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 6

FREQUENCY: _____

COMPLETED BY: _____

DATE COMPLETED: _____

I HAVE REVIEWED THIS DATA PACKAGE FOR COMPLETENESS AND AGAINST ACCEPTANCE CRITERIA IN ACCORDANCE WITH HNP-830.

ACCEPTABLE _____ UNACCEPTABLE _____

REVIEWED BY: _____

DATE REVIEWED: _____

REMARKS: _____

FIGURE 3
Page 1 of 6

manual set

DATA PACKAGE 1
DATA SHEET 1
WASTE CLASSIFICATION - DAW

Container Identification	Weight (lbs.)	Dose Rate @ 1 meter (mR/hr)	Storage Time (months)

Shipment No: _____
Technician: _____
Date: _____
Type Container: _____ B 25 box
_____ 55-gal. drum
_____ other, specify

Type Waste: _____ compacted trash
_____ non-comp. trash
_____ other, specify

Radionuclide Distribution:
_____ generic values
_____ special plant area smears
_____ smear of container contents
_____ other, specify
_____
→ enter nuclides on Data Sheet 2 to determine frac. abun.

RADIONUCLIDE DISTRIBUTION

NUCLIDE	AVG. γ ENERGY (Mev)	GENERIC DISTRIBUTION[1] < 3 Months frac. abun.	< 3 Months weighted energy	3 Months - 1 Yr. frac. abun.	3 Months - 1 Yr. weighted energy	1 - 3 Years frac. abun.	1 - 3 Years weighted energy	SPECIAL DISTRIBUTION[2] frac. abun.	SPECIAL DISTRIBUTION[2] weighted energy
H-3	----	3E-04	----	4E-04	----	5E-04	----	5E-04	----
C-14	----	2E-04	----	3E-04	----	4E-04	----	4E-04	----
Mn-54	0.84	0.05	0.04	0.044	0.04	0.03	0.02	_____	_____
Co-58	0.18	0.01	0.002	-----	----	-----	----	_____	_____
Co-60	2.50	0.28	0.70	0.36	0.90	0.53	1.32	_____	_____
Ni-63	----	0.005	----	0.007	----	0.012	----	_____	----
Zn-65	0.57	0.53	0.30	0.44	0.25	0.20	0.11	_____	_____
Sr-90	----	0.003	----	0.003	----	0.006	----	_____	----
Zr-95	0.73	0.01	0.007	-----	----	-----	----	_____	_____
Tc-99	----	2E-05	----	3E-05	----	5E-05	----	_____	----
I-129	----	5E-04	----	6E-04	----	0.001	----	_____	----
Cs-134	1.55	0.04	0.06	0.05	0.08	0.053	0.08	_____	_____
Cs-137	0.57	0.07	0.04	0.09	0.05	0.16	0.09	_____	_____
TRU	----	7E-04	----	0.001	----	0.001	----	_____	----
Pu-241	----	0.002	----	0.002	----	0.004	----	_____	----
Cm-242	----	9E-06	----	5E-06	----	1E-06	----	_____	_____
_____	____							_____	_____
_____	____								
GAMMA FRAC. OF TOTAL WEIGHTED γ ENERGY		0.990 (Mev)	1.15	0.984	1.32	0.973	1.63	_____	_____

[1] The fractional abundance for the Generic Distribution is based on a nominal once every two years special radiochemical analysis of selected plant smears for all radionuclides as needed for 10 CFR 61 waste classification.

[2] For Special Distribution, use the Scaling Factors of Data Sheet 2 to determine the fractional abundance of the non-gamma emitting radionuclides. For H-3 and C-14 generic DAW fractional abundances have been included. Due to the insignificant contribution of these radionuclides to waste classification, having to perform special evaluations or corrections are not required. These generic fractional abundances have been factored into the conservative waste classification criteria for DAW.

FIGURE 3
Page 2 of 6

manual set

DATA PACKAGE 1 (cont.)
DATA SHEET 1 (cont.)

DETERMINATION OF TOTAL ACTIVITY

Container Identification	Total γ Activity (mCi)	:	γ - Fraction	=	Total Activity (mCi)

TOTAL MILLICURIES _____ mCi

Total H-3 = 5E-04 (frac. abun.) * _____ (TOTAL MILLICURIES) = _____ mCi
Total C-14 = 4E-03 (frac. abun.) * _____ (TOTAL MILLICURIES) = _____ mCi
Total Tc-99 = _____ (frac. abun.) * _____ (TOTAL MILLICURIES) = _____ mCi
Total I-129 = _____ (frac. abun.) * _____ (TOTAL MILLICURIES) = _____ mCi

WASTE CLASSIFICATION AND MANIFEST REPORTING

WASTE CLASS = _____

As determined by: _____ dose rate @ 1 meter $\leq$ 500 mR/hr (B-25 box) $\leq$ 100 mR/hr (55-gal. drum)
_____ other, specify _____

CRITERIA FOR WASTE CLASSIFICATION BASED ON DOSE RATE

Waste is categorically CLASS A if dose rate measured at 1 meter from unshielded container does not exceed 100 mR/hr for a 55-gal. drum (DOT 17 container) and 500 mR/hr for a 4X4X6 container (B-25 box) or similar capacity container.

NOTE: If the dose rate exceeds the above guidelines, contact Lab Foreman for guidance. Waste may exceed Class A; additional analysis may be needed or container contents examined. Compacted and non-compacted trash may not be shipped as Class B or C unless packaged in a HIC.

MANIFEST REPORTING:

1. List all radionuclides as recorded in the Generic Distribution or Special Distribution.

2. The total activity (mCi) in the waste shipment for H-3, C-14, Tc-99 and I-129 must be included on manifest.

FIGURE 3
Page 3 of 6

manual set

DATA PACKAGE 1 (cont.)
DATA SHEET 3
CALCULATION OF CORRELATED RADIONUCLIDES - DAW

Container Identification _____/_____/
_____/_____/_____/_____/_____/_____

Shipment #: _____
Technician: _____
Date: _____

GAMMA SPECTRUM ANALYSIS OF SPECIAL SAMPLE

Column #1 Radionuclides with T1/2 < 5 Yr.	rel. activity[1]	frac. abun.[2]
Mn-54		
Co-58		
Zn-65		
Cs-134		
Ce-144		
_____		
_____		
_____		
_____		
Subtotal #1		

Column #2 10 CFR 61 Nuclides	rel. activity[1]	frac. abun.[2]
Co-60		
Cs-137		
Subtotal #2		

CALCULATION OF CORRELATED RADIONUCLIDE FRACTIONAL ABUNDANCES

Column #3			relative activity[1]	frac. abun.[2]
H-3[3]	=			5E-04
C-14[3]	=			4E-04
Ni-63	=	_____ (Co-60) * 3E-02 (SF)	= _____	_____
Sr-90	=	_____ (Cs-137) * 4E-02 (SF)	= _____	_____
Tc-99	=	_____ (Cs-137) * 3E-04 (SF)	= _____	_____
I-129	=	_____ (Cs-137) * 1E-05 (SF)	= _____	_____
Subtotal #3			_____	_____

Column #4			relative activity[1]	frac. abun.[2]
TRU	=	_____ (Cs-137) * 3E-03 (SF)	= _____	_____
Pu-241	=	_____ (Cs-137) * 3E-02 (SF)	= _____	_____
Cm-242	=	_____ (Cs-137) * 3E-04 (SF)	= _____	_____
Subtotal #4			_____	_____

Total Relative Activity = _____ Subtotal #1 + _____ Subtotal #2 + _____ Subtotal #3 + _____ Subtotal #4 = _____

[1] Relative activity is the activity of a radionuclide as determined by a gamma spectrum analysis of a smear sample (or other type special sample) or by use of scaling factors for non-gamma emitting radionuclides.

[2] Fractional abundance is determined by dividing each radionuclide's realt..e activity by the Total Relative Activity (as determined above). The quotient is the fractional abundance.

[3] Unless special analysis have been performed for H-3 and C-14, the generic fractional abundances may be used without incurring significant error.

FIGURE 3
Page 4 of 6

manual set

DATA PACKAGE 1 (cont.)
DATA SHEET 3
QA/QC CHECK LIST
WASTE CLASSIFICATION AND MANIFEST REPORTING

Shipment #:_____

Waste Class

YES	NO		
_____	_____	1.	Has waste been properly classified? Data Sheet 1 (and Data Sheet 2, if applicable) completed?
_____	_____	2.	Has waste container been labeled CLASS A, CLASS B, or CLASS C?

Waste Stability Characteristics

YES	NO		
_____	_____	1.	Has proper waste container been selected (Class A - carbon steel, Class B or C- HIC)?
_____	_____	2.	If HIC used, has User Checklist been completed?
_____	_____	3.	Verify proper dewatering of resins ($<1\%$ water).
_____	_____	4.	If any liquids have been included, has sufficient absorbant been added to absorb twice the volume of the liquid? Absorbed liquids are not acceptable at Barnwell.
_____	_____	5.	For waste containing oils, does the designated burial site allow for receipt of waste containing oil? Waste containing oils cannot be shipped to Barnwell. For Class B or C waste in a HIC, oils cannot exceed 0.5%.
_____	_____	6.	Have void spaces been reduced to extent practical?
_____	_____	7.	For shipments to Barnwell, the site criteria for required use of HIC is >1 uCi/cm^3 long lived activity (i.e., Subtotals #2, #3, and #4, Data Sheet 1).

manual set

DATA PACKAGE 1 (cont.)
DATA SHEET 3 (cont.)
WASTE CLASSIFICATION AND MANIFEST REPORTING

Manifest Reporting

YES	NO		
_____	_____	1.	Have the total millicurie quantities of H-3, C-14, Tc-99 and I-129 been determined and included on Manifest?
_____	_____	2.	Have all principal gamma emitters and all correlated radionuclides been included on manifest? Barnwell site criteria require reporting correlated abundances of TRU, Pu-241 and Cm-242.
_____	_____	3.	Verify accounting for at least 99% of total activity by individual radionuclide identification.
_____	_____	4.	Verify identification of Waste Class.
_____	_____	5.	Verify correct physical description of waste.
_____	_____	6.	Verify total volume of waste (same as used for determining millicurie content; if different explain below).
_____	_____	7.	Verify correct chemical form.
_____	_____	8.	Verify exclusion of chelating agents (if > 0.1%, chelating agents must be identified).

Lab Foreman:_____ Date:_____

Lab Supervisor:_____ Date:_____

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Radiological Work Practices
PROCEDURE TITLE

HNP-8042
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. MANAGER	APPROVED GENERAL MANAGER	DATE
0	New Procedure	E W Zwadoshin	[illegible]	4/28/83

HNP-9

MANUAL SET

Need by 12/20/83

We 12/13

PROCEDURE REVIEW REQUEST
FOR NEW PROCEDURES

SHEET 1 OF 1

PROCEDURE NO. HNP- 8042

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
M. Wright	10-25-83	R W Zavodoski	11/3/83
		W A Rogers	10-28-83

SAFETY RELATED (✓ NON-SAFETY RELATED ( )

PROCEDURE CHANGES MODE OF OPERATION OR INTENT AS DESCRIBED IN FSAR:
( ) Yes (✓) No

PROCEDURE INVOLVES:
( ) An unreviewed Safety Question ( ) Tech. Specs. ( ) A condition not addressed in FSAR (✓) None of these
(See back for Safety Evaluation if required).

Attach copy of procedure to this form.

REASON FOR REQUEST To provide a procedure incorporating certain selected radiological work practices for use of the general employee.

Incorporating these work practices complies with actions discussed in the Hatch Radiological Improvement Program

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No

T L Elton
PRB Secretary

83-239
PRB Number

12-15-83
Date

HNP-9
MANUAL SET

YB

SAFETY EVALUATION

This procedure does not constitute an unreviewed safety question as explained below.

1. The probability of occurrence and the consequences of an accident or malfunction of equipment important to safety are not increased above those analyzed in the FSAR due to this procedure because the procedure does not change the purpose or performance of ~~the~~ any system.

2. The possibility of an accident or malfunction of a different type than analyzed in the FSAR does not result from this procedure because ~~the~~ all system~~s~~ respond~~s~~ and ~~is~~ are operated as before the procedure.

3. The margin of safety as defined in the Technical Specifications is not reduced due to this procedure because the procedure does not change any limited safety system settings which would allow a safety limit to be exceeded or allow a limiting condition for operations to be exceeded as stated in Technical Specifications.

4. This procedure does not impact any plant systems or safety related equipment.

HNP-9
MANUAL SET

RADIOLOGICAL WORK PRACTICES

A. PURPOSE

To make available to the general employee a brief set of general guidelines to be used for certain radiological work situations.

B. REFERENCES

10 C.F.R. 20, "Standards for Protection Against Radiation"

C. SAFETY

1. Observe all radiation protection procedures.

2. Observe safety rules contained in SAFETY, Section O.

D. WORK PRACTICES

The following work practices have been selected for all GPC Hatch employees to be familiar with.

1. INDIVIDUAL RESPONSIBILITIES

Observe the following when working in radiation control areas:

a. Exposure: Don't get exposure you don't need.

(1) Obey promptly "stop-work" and "evacuate" orders of Health Physics and Operations personnel.

(2) Obey posted, oral, and written Health Physics instructions and procedures, including instructions on Radiation Work Permits.

(3) Wear TLD and self-reading dosimeter where required by signs or by Health Physics personnel. Immediately report unexpected exposure and a lost or offscale dosimeter to the Health Physics Department. Do not tamper with dosimetry in any manner.

(4) Keep track of personal radiation exposure status and avoid exceeding exposure limits. Administrative limits are whole body 2.5 Rem/quarter; skin 7.5 Rem/quarter; extremities 18.75 Rem/quarter.

(5) Remain in as low a radiation area as practicable to accomplish work.

(6) Do not loiter in radiation areas.

(7) Notify Health Physics personnel of faulty or alarming radiation protection equipment.

(8) Notify dosimetry personnel upon returning to the site after medical administration of radiopharmaceuticals.

(9) Ensure that your activities do not create radiological problems for others and be alert for the possibilities that the activities of others may change the radiological conditions to which you are exposed.

(10) Do not enter any areas with radiological hazards such as high radiation areas, airborne radioactivity areas unless you have been trained and are qualified to deal with the situation in a safe manner.

b. Contamination: Do not carry radioactive materials home with you.

(1) Do not smoke, eat, drink, or chew in Radiation - Controlled areas.

(2) Properly wear protective clothing and respiratory protection wherever required by signs or Health Physics personnel.

(3) Remove protective clothing and respiratory protection properly to minimize spread of contamination.

(4) Perform frisking properly. Assume that you are contaminated. Whole body frisking is required when leaving contaminated areas when protective clothing has been worn.

(5) For a known or possible radioactive spill, minimize its spread and notify Health Physics personnel promptly.

(6) Do not unnecessarily touch a contaminated surface or allow clothing, tools, or other equipment to do so.

(7) Material must be surveyed after leaving a radiation control area. Contaminated items must be bagged (as practical), labeled, and stored properly.

(8) Report the presence of open wounds to Health Physics and medical personnel prior to working in areas where radioactive contamination exists and immediately if a wound occurs while in such an area.

(9) Minimum protective clothing dress for contaminated areas is:

(a) Cloth shoe covers
(b) Rubber shoe covers
(c) Cotton gloves
(d) Rubber gloves

(10) Tools, equipment, trash, or any material leaving the operating buildings must be surveyed by HP prior to exit.

(11) Do not step in puddles.

c. Radioactive Waste: Minimize the waste that is generated.

(1) Limit the amount of material that has to be decontaminated or disposed of as radioactive waste. This can be accomplished by minimizing the amount of waste taken into the controlled zone, limiting the use of water when using it on contaminated surfaces, separating clean and contaminated trash and performing all jobs in a manner that generates as little radwaste as possible.

(2) Read the label on trash and laundry drums. Place items in the proper container.

d. Significance of Violating Standards

(1) Violation of procedural standards concerning radiation protection will be documented on the Radiological Deficiency Report (RDR) and brought to the attention of the person's supervisor. It is up to the supervisor to take action to assure this problem is solved. Action taken should then be reported back to H.P.

(2) Any flagrant violation will be documented on the Radiological Occurrence Report (ROR) and brought to the person's Dept. Head attention. A copy of the ROR will also go to Plant Management. A response is expected from the Dept. Head as to the resolution of the problem. In addition, Plant Management has the discretion to delegate the severity of discipline to the person who has been recognized as continuously violating radiation protection procedures.

2. ALARA AS LOW AS REASONABLY ACHIEVABLE

a. Objective

The objective of the ALARA program is to maintain all personnel exposures, both internal and external, at the lowest practical level. This will be accomplished through good radiation protection planning along with a firm management commitment to ALARA.

b. Employee Responsibilities

(1) Know your current whole body dose.

(2) Cooperate fully with HP personnel in all matters.

(3) Comply with plant directives, standard operating procedures, and warning signs or barriers that concern radiation and contamination control.

(4) Knowing principal radiation sources and exposure rates on the job site as defined by HP.

(5) Properly using the exposure reduction tools and methods available.

(6) Discuss exposure reduction ideas with HP and supervisory personnel.

c. ALARA Guidelines

(1) Minimize time spent in Radiation Areas.

(2) Increase the distance between yourself and the radiation source.

(3) Use shielding to reduce your exposure.

(4) Plan all radiation work.

(5) Practice on mockups when available so you can do your work in a radiological environment in less time.

3. HANDLING RADIOACTIVELY CONTAMINATED MATERIALS

a. Previously contaminated materials, such as tools and equipment which could not be completely decontaminated, should be reused whenever possible for work in contaminated areas.

b. Health Physics must be notified prior to removing material from contaminated areas.

c. In as much as practical, contaminated materials or potentially contaminated materials must be placed in containers or in yellow plastic bags or wrapping material prior to being transferred from a contaminated area. Health Physics may specify special requirements such as the use of double plastic bags, use of shielded containers, or special precautions while handling the material.

d. All containers or plastic wrappings should be properly sealed to prevent the spread of contamination. Containers or wrappings should be open only when work is actually in progress that involves the container or wrapped material.

e. Anyone observing damaged or torn containers/wrappings of radioactive materials should notify Health Physics immediately.

f. Materials removed from contaminated areas shall be handled as radioactive until monitored by Health Physics. Based upon monitoring results, non-contaminated materials will be released by Health Physics. Contaminated materials will be tagged by Health Physics, indicating the radiation and contamination levels, and will be handled as radioactive material.

g. Health Physics must be notified prior to contaminated material being moved from one contaminated area to another contaminated area.

h. Personnel should always minimize their exposure and prevent the spread of contamination when handling contaminated materials.

i. Yellow plastic indicates the item is radioactive or radioactively contaminated material. Yellow plastic bags, tubing, and wrapping should be used only with radioactive materials or systems. Non-radioactive applications are not permitted.

4. RADIOACTIVE SPILLS

a. Stop the spill: If the spill is from a system which may have more material (either airborne particulate radioactivity or fluids) to leak out, promptly stop the leak if possible. If the spill is from an overturned container, try to set it upright if the contents have not all escaped. The amount of time spent stopping a difficult leak should depend upon the radiation levels involved, the possibility of inhaling airborne radioactivity from the spill, and the consequences of not making a prompt closure.

If the spill is minor (for example, a small amount of water with low radioactivity spilled on a smooth surface), immediately cover the spill with the most convenient absorbent material available, such as absorbent paper or rags to soak up the liquid. After the spill is covered, follow steps b and c below as necessary to keep the spill under control.

b. Protect Others: Other personnel who may become contaminated by the spill or who may be able to help control it should be warned immediately. Call Health Physics personnel and the Control Room and give them the location and description of what has happened. Keep unnecessary personnel away from the area affected by the spill to minimize spread of contamination. This action may require closing doors and verbally warning approaching personnel.

c. Protect Yourself: Move to the edge of the affected area, taking care to minimize spread of contamination. It may be advisable to step outside the room where a spill occurred and close the door. Remain at the edge of the area until Health Physics personnel advise otherwise.

d. Follow Instructions: Follow instructions of Health Physics personnel, your department supervisor, or instructions given over the speaker system.

5. PROCEDURE FOR HIGH AIRBORNE ACTIVITY

a. Stop Work: Stop all work which might be causing the airborne activity. For example, grinding or welding on contaminated components may be the source of the airborne radioactivity. You may be unable to determine the cause. Therefore, you and all other personnel in the area should stop work and leave.

b. Protect Others: Other personnel who may be exposed to airborne activity or who may be able to help control it should be warned immediately. Call Health Physics and the Control Room and give them your location and describe what has happened.

c. Protect Yourself: Move out of the affected area. If possible, step outside the area and close the door. Put on a respirator if available.

d. Follow Instructions: Follow instructions of Health Physics personnel, your department supervisor, or instructions given over the speaker system.

6. PROCEDURE FOR AN AREA RADIATION MONITOR (ARM) ALARM

a. Stop Work: Stop all work and leave the area immediately.

b. Protect Others: Other personnel who may be exposed to high radiation should be told to leave the area immediately. Keep the unnecessary personnel away from the area. Call Health Physics personnel and the Control Room and give them your location and describe what has happened. This action may require closing doors and verbally warning approaching personnel.

c. Protect Yourself: Leave the area. When you think you are out of the affected area, read your dosimeter. If the reading is 3/4 scale or greater, notify Health Physics of this fact.

d. Follow Instructions: Follow instructions of Health Physics personnel, your department supervisor, or instructions given over the speaker system.

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Waste Classification and Manifest Reporting
Resin Shipments
PROCEDURE TITLE

HNP-8036
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. MANAGER	APPROVED GENERAL MANAGER	DATE
0	New Procedure	RW Zawadoski	Jim Beckham	1/3/84

HNP-9

MANUAL SET

1-3-84 Milink

PROCEDURE REVIEW REQUEST FOR NEW PROCEDURES

SHEET 1 OF 1

PROCEDURE NO. HNP- 8036

REQUESTED BY		DEPARTMENT MANAGER APPROVAL	
Name:	Date:	Signature:	Date:
Milo Finly	12-8-83	RW Zavadoski	12/8/83

SAFETY RELATED (✓) NON-SAFETY RELATED ( )

PROCEDURE CHANGES MODE OF OPERATION OR INTENT AS DESCRIBED IN FSAR:
( ) Yes (✓) No

PROCEDURE INVOLVES:
( ) An unreviewed Safety Question ( ) Tech.Specs. ( ) A condition not addressed in FSAR (✓) None of these
(See back for Safety Evaluation if required).

Attach copy of procedure to this form.

REASON FOR REQUEST

Reviewed comments resolved + found acceptable to GA

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No JCElt

PRB Secretary

83-237
PRB Number

12-21-83
Date

HNP-9

MANUAL SET

SAFETY EVALUATION

This procedure does not constitute an unreviewed safety question as explained below.

1. The probability of occurrence and the consequences of an accident or malfunction of equipment important to safety are not increased above those analyzed in the ESAR due to this procedure because the procedure does not change the purpose or performance of ~~the~~ any system.

2. The possibility of an accident or malfunction of a different type than analyzed in the ESAR does not result from this procedure because ~~the system responds and is operated as before the procedure~~ this procedure does not effect any system.

3. The margin of safety as defined in the Technical Specifications is not reduced due to this procedure because the procedure does not change any limited, safety system settings which would allow a safety limit to be exceeded or allow a limiting condition for operations to be exceeded as stated in Technical Specifications.

APPROVAL	
See Title Page	
DATE	
See Title Page	

E. I. HATCH NUCLEAR PLANT

Georgia Power

PROCEDURE NO	
HNP-8036	
REVISION NO	
0	
PAGE NO	
1 of 10	

1B

WASTE CLASSIFICATION AND MANIFEST REPORTING RESIN SHIPMENTS

A. PURPOSE

To detail the steps necessary to classify radioactive waste resin shipments in accordance with the requirements of 10 CFR 61.55 and to identify manifest reporting requirements in accordance with 10 CFR 20.311.

B. REFERENCES

1. 10 CFR 20, Standards for Protection Against Radiation.
2. 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste.
3. HNP-8016, Shipment of Radioactive Material.

C. DEFINITIONS

1. TRU - Alpha emitting transuranic nuclides with half-lives greater than 5 yr. (in particular - Pu-238, Pu-239, Pu-240, Am-241, Pu-242, Cm-243 and Cm-244).
2. Principle gamma emitters - any radionuclide of plant origin identified by gamma spectroscopy and contributing > 1% of the total identifiable gamma activity for the waste under consideration.

D. PRECAUTIONS

If the shipment includes multiple containers with differing waste composition, separate analysis for each different type waste should be performed. A single analysis may be used for multiple containers of the same type waste provided the container composition (i.e., radionuclide distribution) is considered the same.

E. DATA SHEET 1 GUIDANCE

1. Obtain results of gamma spectrum analysis of the resin sample for the resin shipment that has been collected and analyzed per Procedure HNP-8016.
2. Enter the sample identification information and the results of the gamma spectrum analysis on Data Package 1, Data Sheet 1. Record the measured concentration for each principal gamma emitter in the designated entries in Column #1 and #2. The blank entries in Column #1 may be used to record radionuclides that are identified but not specifically listed.

3. Total the radionuclide concentration for Column #1 and #2 entries to determine Subtotals #1 and #2.

4. Using the entries under Column #3, calculate the concentrations of the correlated radionuclides. Multiply the previously determined concentration of the scaling radionuclide, as listed, by the scaling factor (SF); the product is the correlated radionuclide concentration.

NOTE

Generic scaling nuclides and generic resin scaling factors (SF) have been included in the Column #3 and #4 entries. If other than generic scaling nuclides or SF are to be used, cross through the generic value and insert the appropriate value. The Lab Supervisor (or designated alternate) will determine if other than the generic values should be used. H-3 and C-14 are not correlated to any other radionuclides. The concentrations listed under Column #3 for these nuclides are conservative, generic values. Technical bases for selection of scaling factors (if other than the generic resin values) shall be documented on Data Sheet 1 (or by an accompanying attachment). Data Packet 1,

NOTE

The generic scaling factors will normally be updated yearly or once every two years as appropriate for the particular type of waste and activity levels.

5. Similarly for Column #4, calculate the correlated concentration of TRU, Pu-241 and Cm-242, as indicated, by multiplying the measured Cs-137 concentration by the designated scaling factor (SF). These correlated concentrations shall be multiplied by 1.25×10^3 to convert from uCi/cm^3 to nCi/g (based on a dewatered resin density of $0.8\ g/cm^3$) for use in comparison with the waste classification limits on Data Sheet 2). Data Packet 1

6. Calculate Subtotal #3 by adding the Column #3 entries, Subtotal #4 by adding the Column #4 entries.

7. Determine the total radionuclide concentration (GRAND TOTAL) by summing Subtotals #1, #2, #3 and #4.

8. For each nuclide as identified or correlated above, determine its fractional abundance by dividing its concentration (uCi/cm^3) by the GRAND TOTAL. The quotient is the fractional abundance for the nuclide.

9. Determine the TOTAL MILLICURIES (total activity, in millicuries, of the shipment) by multiplying the GRAND TOTAL concentration by the volume of the waste (which may be less than the container size but in no case larger) and a conversion factor of 28.3 (cm^3 /ft^3 * mCi/uCi).

10. Similarly, determine the total activity (millicuries) of the shipment for the nuclides H-3, C-14, Tc-99 and I-129. (Total activity of these radionuclides must be included on the shipping manifest.)

F. DATA SHEET 2 GUIDANCE

1. Transfer the radionuclide concentrations from (Data Sheet 1) Data Package 1 for each radionuclide or radionuclide grouping to appropriate entries on Data Package 1, Data Sheet 2.

2. The concentrations (and corresponding limits) for all nuclides are expressed as uCi/cm^3 , except for TRU, Pu-241 and Cm-242 for which the units are nCi/g. Therefore, the concentrations for TRU, Pu-241 and Cm-242 that should be used are those under the heading Conc. (nCi/g) from (Data Sheet 1) Data Package 1.

3. Perform the required calculations to determine waste class. After dividing each radionuclide concentration by the 10 CFR 61 limit (as included on Data Sheet 2) Data Package 1, determine the "sum of fractions" for each column.

4. Waste class is determined per the guidance included on (Data Sheet 2) Data Package 1.

5. Enter the WASTE CLASS; sign and date (Data Sheet 2) Data Package 1. Data Package 1

6. Provide completed (Data Sheets 1 and 2) Data Package 1 to the Lab Foreman (or designated alternate).

7. The Lab Foreman (or designated alternate) will review the calculations and waste class determination of (Data Sheets 1 and 2) Data Package 1. If satisfactory, the Lab Foreman (or designated alternate) will sign and date the data sheets.

8. The Lab Foreman (or designated alternate) shall complete Data Package 1, Data Sheet 3, QA/QC Check List. A "N/A" entry shall be recorded for any item of Data Sheet 3 that is not applicable to the type waste being evaluated. Any designated "No" response shall be explained on the data sheet (or by an accompanying attachment).

9. The completed data sheets shall be provided to the Lab Supervisor (or designated alternate) for review. The Lab Supervisor (or designated alternate) will sign and date Data Sheet 3, QA/QC Check List.

10. All completed Data Sheets 1, 2, and 3 shall be included in the station records for the waste shipment.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8036-1

SERIAL NO: R00-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 6

FREQUENCY: _____

COMPLETED BY: _____

DATE COMPLETED: _____

I HAVE REVIEWED THIS DATA PACKAGE FOR COMPLETENESS
AND AGAINST ACCEPTANCE CRITERIA IN ACCORDANCE WITH HNP-830.

ACCEPTABLE _____ UNACCEPTABLE _____

REVIEWED BY: _____

DATE REVIEWED: _____

REMARKS: _____

_____

_____

_____

FIGURE 1
Page 1 of 6

MANUAL SET

DATA PACKAGE 1
DATA SHEET 1
WASTE CLASSIFICATION - RESIN

Sample Identification:_____ Shipment #:_____

Type Waste:_____ Technician:_____

Volume of Shipment:_____ ft^3 Date:_____

GAMMA SPECTRUM ANALYSIS RADIONUCLIDES

	Column #1 Radionuclides with T 1/2 < 5 yr.		Column #2 10 CFR 61 Nuclides	
	Conc. (uCi/cm^3)	Fractional Abundance	Conc. (uCi/cm^3)	Fractional Abundance
Cr-51			Co-60	
Mn-54			Cs-137	
Fe-59				
Co-58			Subtotal #2	
Zn-65				
Cs-134				
Ce-144				

Subtotal #1				

CALCULATION OF CORRELATED RADIONUCLIDES

		Column #3 Conc. (uCi/cm^3)	Fractional Abundance
H-3	=	= 4E-04	
C-14	=	= 5E-04	
Ni-63	= _____(Co-60) * 4E-02 (SF)	=	
Sr-90	= _____(Cs-137) * 2E-03 (SF)	=	
Tc-99	= _____(Cs-137) * 1E-04 (SF)	=	
I-129	= _____(Cs-137) * 1E-05 (SF)	=	
Subtotal #3		=	

DATA PACKAGE 1 (cont.)
DATA SHEET 1 (cont.)
WASTE CLASSIFICATION - RESIN

CALCULATION OF CORRELATED RADIONUCLIDES (con't)

			Column #4 Conc. (uCi/cm^3)	*	Conversion Factor	=	Conc. (nCi/g)	Fractional Abundance
TRU	= _____ (Cs-137)	* 2E-04 (SF)	= _____	*	1.25×10^3	=	_____	_____
Pu-241	= _____ (Cs-137)	* 6E-03 (SF)	= _____	*	1.33×10^3	=	_____	- _____
Cm-242	= _____ (Cs-137)	* 7E-05 (SF)	= _____	*	1.25×10^3	=	_____	_____

Subtotal #4 = _____

DETERMINATION OF TOTAL ACTIVITY

GRAND TOTAL = _____ (Subtot #1) + _____ (Subtot #2) + _____ (Subtot #3) + _____ (Subtot #4) = _____ uCi/cm^3

TOTAL MILLICURIES = _____ uCi/cm^3 GRAND TOTAL * _____ ft^3 (vol. of waste) * 28.3 = _____ mCi

Total H-3 = 4E-04 uCi/cm^3 * _____ ft^3 (vol. of waste) * 28.3 = _____ mCi

Total C-14 = 5E-04 uCi/cm^3 * _____ ft^3 (vol. of waste) * 28.3 = _____ mCi

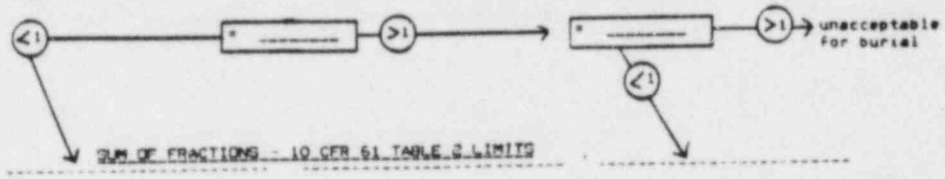
Total Tc-99 = _____ uCi/cm^3 * _____ ft^3 (vol. of waste) * 28.3 = _____ mCi

Total I-129 = _____ uCi/cm^3 * _____ ft^3 (vol. of waste) * 28.3 = _____ mCi

DATA PACKAGE 1 (cont.)
DATA SHEET 2
WASTE CLASSIFICATION WORKSHEET

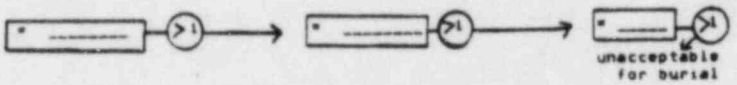
SUM OF FRACTIONS - 10 CFR 61 TABLE 1 LIMITS

Nuclide[1]	Units of Entry	Class A				Class C			
C-14	uCi/cm³	_____	÷	0.8	*	_____	÷	8.0	*	_____
Tc-99	uCi/cm³	_____	÷	0.3	*	_____	÷	3.0	*	_____
I-129	uCi/cm³	_____	÷	0.008	*	_____	÷	0.08	*	_____
TRU (T1/2>5 yr)	nCi/g	_____	÷	10.0	*	_____	÷	100.0	*	_____
Pu-241	nCi/g	_____	÷	350.0	*	_____	÷	3500.	*	_____
Cm-242	nCi/g	_____	÷	2000.	*	_____	÷	3E + 04	*	_____
Sum of Fractions										



SUM OF FRACTIONS - 10 CFR 61 TABLE 2 LIMITS

Nuclide[1]	Units of Entry	Class A				Class B				Class C			
Total (T1/2>5 yr)	uCi/cm³	_____	÷	700.0	*	_____		N/A				N/A	
H-3	uCi/cm³	_____	÷	40.0	*	_____		N/A				N/A	
Co-60	uCi/cm³	_____	÷	700.0	*	_____		N/A				N/A	
Ni-63	uCi/cm³	_____	÷	3.5	*	_____	÷	70.0	*	_____	_____	÷ 700.	* _____
Sr-90	uCi/cm³	_____	÷	0.04	*	_____	÷	150.0	*	_____	_____	÷ 7000.	* _____
Cs-137	uCi/cm³	_____	÷	1.0	*	_____	÷	44.0	*	_____	_____	÷ 4600.	* _____
Sum of Fractions													



The waste classification is determined by the highest class for which the "sum of fractions" does not exceed 1.

If the "sum of fractions" for Table 1, Class A <1, waste class is determined by highest column of Table 2 with "sum of fraction" <1.

If "sum of fraction" of Table 1, Class A is >1 but Class C <1, waste is Class C, provided Table 2, Class C "sum of fraction" <1.

If "sum of fractions" of Table 1, Class C >1 or if "sum of fraction" of Table 2, Class C >1, waste not suitable for burial.

[1]Units for all nuclides are uCi/cm³ except for TRU, Pu-241 and Cm-242 for which the units are nCi/g.

WASTE CLASS: _____ Technician: _____ Date: _____

Lab Foreman: _____ Date: _____

FIGURE 1
Page 4 of 6

MANUAL SET

DATA PACKAGE 1 (cont.)
DATA SHEET 3
WASTE CLASSIFICATION AND MANIFEST REPORTING

Waste Class

Shipment #: _____

YES	NO		
_____	_____	1.	Has waste been properly classified? Data Sheet 1 (and Data Sheet 2, if applicable) completed?
_____	_____	2.	Has waste container been labeled CLASS A, CLASS B, or CLASS C?

Waste Stability Characteristics

YES	NO		
_____	_____	1.	Has proper waste container been selected (Class A - carbon steel, Class B or C- HIC)?
_____	_____	2.	If HIC used, has User Checklist been completed?
_____	_____	3.	Verify proper dewatering of resins ($<$1% water).
_____	_____	4.	If any liquids have been included, has sufficient absorbant been added to absorb twice the volume of the liquid? Absorbed liquids are not acceptable at Barnwell.
_____	_____	5.	For waste containing oils, does the designated burial site allow for receipt of waste containing oil? Waste containing oils cannot be shipped to Barnwell. For Class B or C waste in a HIC, oils cannot exceed 0.5%.
_____	_____	6.	Have void spaces been reduced to extent practical?
_____	_____	7.	For shipments to Barnwell, the site criteria for required use of HIC is $>$1 uCi/cm^3 long lived activity (i.e., Subtotals #2, #3, and #4, Data Sheet 1).

DATA PACKAGE 1 (cont.)
DATA SHEET 3 (cont.)
WASTE CLASSIFICATION AND MANIFEST REPORTING

Manifest Reporting

YES	NO		
_____	_____	1.	Have the total millicurie quantities of H-3, C-14, Tc-99 and I-129 been determined and included on Manifest?
_____	_____	2.	Have all principal gamma emitters and all correlated radionuclides been included on manifest? Barnwell site criteria require reporting correlated abundances of TRU, Pu-241 and Cm-242.
_____	_____	3.	Verify accounting for at least 99% of total activity by individual radionuclide identification.
_____	_____	4.	Verify identification of Waste Class.
_____	_____	5.	Verify correct physical description of waste.
_____	_____	6.	Verify total volume of waste (same as used for determining millicurie content; if different explain below).
_____	_____	7.	Verify correct chemical form.
_____	_____	8.	Verify exclusion of chelating agents (if >0.1%, chelating agents must be identified).

Lab Foreman: _____ Date: _____

Lab Supervisor: _____ Date: _____

FIGURE 1
Page 6 of 6

MANUAL SET

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Charcoal and Particulate Sampling
Of Gaseous Effluents Under Emergency Conditions
PROCEDURE TITLE

HNP-4830
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. MANAGER	APPROVED GENERAL MANAGER	DATE
2	Pages 1, 2, 3 & 4	R W Zwadolski	[illegible]	1/6/84

WR 1217

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 4830 SHEET 1 OF ___

Revision No. 1

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
M. Wright	11-4-83	RW Zavadoski	12/6/83

REVISION CHANGES MODE OF OPERATION OR INTENT AS DESCRIBED IN FSAR:
( ) Yes (✓) No

CHANGE INVOLVES:
( ) An unreviewed Safety Question ( ) Tech. Specs. (✓) Neither
(See back for Safety Evaluation if required).

PRESENT STATUS: Safety Related (✓) Non-Safety Related ( )

The above Safety/Non-Safety Status has changed ( ) Yes to _____

Attach marked up copy of procedure to this form.

REASON FOR REQUEST: HNP-843 procedure review

DESCRIPTION OF CHANGES: Revising Special Equipment and Safety Sections and adding new Section to comply with HP 9, #2 Change filter to filters

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No JZ Elt
PRB Secretary

83-233
PRB Number

12-15-83
Date

HNP-9

Comment

SAFETY EVALUATION

The revision of this procedure does not constitute an unreviewed safety question as explained below:

1. The probability of occurence and the consequences of an accident or malfunction of equipment important to the safety are not increased above those analyzed in the FSAR due to these changes because the revision does not change the purpose or performance of the system.

2. The possibility of an accident or malfunction of a different type than analyzed in the FSAR does not result from this change because the system responds and is operated as before the change.

3. The margin of safety as defined in the Technical Specifications is not reduced due to this revision because the revision does not change any limited safety system setting which would allow a safety limit to be exceeded or to allow a limiting condition for operation to be exceeded as stated in Technical Specifications

4. The change to the procedure is minor in nature and is required to comply with Corporate

HNP-9

APPROVAL	
See Title Page	
DATE	
See Title Page	

E. I. HATCH NUCLEAR PLANT

Georgia Power

PROCEDURE NO.	
HNP-4830	
REVISION NO.	
2	
PAGE NO.	
1 of 4	

EC

CHARCOAL AND PARTICULATE SAMPLING OF GASEOUS EFFLUENTS UNDER EMERGENCY CONDITIONS

A. PURPOSE

To provide a detailed procedure for sampling gaseous effluent for Iodine and Particulates during a Site or General Emergency.

B. REFERENCES

1. HNP-7600, HNP-7129

C. SAFETY

1. Due to the high dose rates and contamination levels which are to be expected with this kind of an accident, dry runs of sampling techniques should be performed before doing actual sampling.

2. Laboratory supervision shall be consulted on all activities associated with sampling and counting any material obtained for post-accident analysis.

3. All attempts to get samples will be followed with the most restrictive H.P. practices. Constant H.P. monitoring will be provided and adhered to. A minimum of two persons will be required while getting the sample.

4. These sample points are high and hard to get locations. Be aware of the danger of falling.

5. Be aware of time it would take to retreat and which is the best and fastest way down.

D. SPECIAL EQUIPMENT

1. Sample shields previously placed at sample points.

2. Special lowering device to lower samples from top of Reactor Bldg. and from the stack sample station.

3. Hoods in lab with shielding which to unload sample behind.

4. Special counting shield for charcoal and particulate.

5. Cart or truck to bring sample from Stack to Lab.

6. High range dosimeter, TLD's, Finger Rings, Pc's, Polybags, and air packs for H.P. purposes.

7. Remote tools to open sample holders.

E. SAMPLING REACTOR BUILDING VENTS

1. Load a spare charcoal and particulate holder with a Cesco Charcoal Cartridge and a 5 micron millipore filter. If available substitute a Silver Zeolite Cartridge for the charcoal. Obtain a plastic bag large enough to hold holder.

2. Notify Health Physics you are ready and you need a person to survey for you. Put on the protective clothing required for the R.W.P.

3. One technician proceeds to Unit I Reactor Building by using Reactor Building elevator or stairs and ladders from the Turbine Bldg. roof, taking radiation surveys as you go. If dose rate is above 5R/hr retreat. The second technician goes to the area where the sample is to be lowered with cart and awaits the lowering of the sample.

4. One technician proceeds to the appropriate Unit I or Unit II vent.

5. Assure that the previously placed shielded sample carrier and apparatus to lower sample is available. Place plastic bag into shield.

6. Survey current sample line and holder. Assume 1 minute to remove holder and replace holder. If dose will be above 1 and 1/4 Rem to whole body or 7 and 1/2 Rem to extremities do not remove holder.

7. Very quickly and with constant monitoring, disconnect the present sample holder and place in shield. Connect spare holder in place. Note time sample was removed.

8. Lower shield over side of Reactor Building to ground.

9. The other technician removes the sample from the shield and places it in the lead pig on the cart and brings the cart to the lab for counting.

F. SAMPLING MAIN STACK

1. Load spare sample holder as per E.1 of this procedure.

2. Notify Health Physics you are ready and need a person to survey for you. Put on the protective clothing required on the R.W.P.

3. One technician proceeds to main stack and up the outside stairs to the sample room taking radiation surveys as he goes. If dose rate is above 5 R/hr. retreat. The second technician waits with sample cart at base of main stack for the sample to be lowered.

4. Assure that previously placed shielded sample carrier and apparatus to lower sample is available. Place plastic bag into shield.

5. With a teletector ,survey current sample line and holder. Assume 4 minutes to remove holder and replace holder. If dose will be above 1 and 1/4 Rem to whole body or 7 and 1/2 Rem to extremities do not remove holder.

6. Very quickly climb to platform where sample is located. With constant H.P. monitoring disconnect the present sample holder and place in shield. Note time sample was removed. Connect spare sample holder in place.

7. Lower bucket to floor and then to ground, where waiting technician is ready to place sample in shielded cart and proceed to Lab for counting.

G. SAMPLE PREPARATIONS AND COUNTING

1. Take sample from shield and place behind shield in hood.

2. Unscrew two halves and take out particulate and charcoal filters.

3. Place particulate in a petri dish and wrap dish with plastic.

4. If sample is too hot to count on GeLi, place sample in special shield and counting holder. The holder is half a lead brick with an indention to hold the petri dish. The brick will have a 1/2 inch hole thru it at the center of the brick. The top of the holder is another half brick.

5. Count particulate filter and calculate particulate releases using procedure HNP-7600 and 7129.

6. Place the charcoal from G.2 in special holder for purging. Blow air very slowly thru filter. Try to get all gases released to go up hood and not out into Lab.

NOTE

If Silver Zeolite is used, the purge is not necessary.

7. When dose rate on filter quits dropping, stop the air purge.

8. Wrap charcoal in plastic. If sample is too hot to count, place sample in special shield and counting holder. The holder is similar to one in G.4.

9. Count charcoal filter and calculate release as per HNP-7129 and 7600.

10. If counting room is not habitable, mobile labs should be on site.

11. If no Lab is available, send sample to outside vendor specified by Lab Supervisor for analysis.

H. DISPOSAL

NOTE

Keep samples in the fume hood behind lead bricks until proper disposal methods are arranged.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 26, 1984

50-321/366 Hatch

MEMORANDUM FOR: Chief, Document Management Branch, TIDC

FROM: Director, Divison of Rules and Records, ADM

SUBJECT: REVIEW OF UTILITY EMERGENCY PLAN DOCUMENTATION

The submitter of the attached document has expressed no desire to withhold any information contained therein. Therefore, this material may now be made publicly available.

J. M. Felton, Director
Division of Rules and Records
Office of Administration

Attachment: As stated

Georgia Power Company
Post Office Box 439
Baxley, Georgia 31513
Telephone 912 367-7781
912 537-9444

Georgia Power

Edwin I. Hatch Nuclear Plant

January 13, 1984
GM-84-41

PLANT E. I. HATCH
Emergency Implementing Procedures

Docket Nos. 50-321/50-366

United States Nuclear Regulatory Commission
Director of Nuclear Reactor Regulation
Washington, DC 20555

Gentlemen:

Pursuant to Appendix E, Section V of 10 CFR 50, please find enclosed ten (10) copies of the latest revisions to the Plant E. I. Hatch Emergency procedures. Three copies of these procedures are also being forwarded to the Region II office in Atlanta, Georgia.

H. C. Nix
General Manager

HCN/CLMC/tvs

xc: U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II
Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

file

X005
1/1

DOCUMENT TRANSMITTAL

TRANSMITTAL NO: DCD FY-33

DATE: 1-11-94

TRANSMITTED TO: Siemens Westinghouse - Mail Code (1E Copies)

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HNP-2033 Rev 0

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E. Daniels/CHPE
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BC Dowell BCH
DOCUMENT CONTROL SUPERVISOR

HNP-0-ADM-00010 R13

manual set

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E C Jones/CHP

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D C Sorrell DCH
DOCUMENT CONTROL SUPERVISOR

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HNP-4830 Rev 1

DATE RETURN REQUIRED 2-13-84

B C Burrell NRB&A.
DOCUMENT CONTROL SUPERVISOR

HNP-0-ADM-00010 R13