GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Pulmonary Function Screening Program
PROCEDURE TITLE

HNP-8035
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
0	New Procedure	RW Zavadoski WT Rogers	J T Beckham Jr	11/28/83

Need by 11-18-83

WE 11/16

PROCEDURE REVIEW REQUEST
FOR NEW PROCEDURES

SHEET 1 OF 1

PROCEDURE NO. HNP- 8035

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
J.D. McDonald	11-15-83	W.H. Rogers	11-15-83

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 To provide a procedure for a Pulmonary Screening Program on site.

REVIEWED AND FOUND ACCEPTABLE BY QA
[signature]

PRB RECOMMENDS APPROVAL: (✓)Yes ( )No [signature]
PRB Secretary

83-217
PRB Number

11-22-83
Date

BT

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 FSAR due to this procedure because the procedure does not change the purpose or performance of ~~the~~ any plant 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 all ~~the~~ systems respond and 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 safety system or reduce any safety limit. It establishes a program for on-site preliminary function screening.

APPROVAL	
See Title Page	
DATE	
See Title Page	

E. I. HATCH NUCLEAR PLANT

Georgia Power

PROCEDURE NO	
HNP-8035	
REVISION NO	
0	
PAGE NO	
1 of 10	

PULMONARY FUNCTION SCREENING PROGRAM

A. PURPOSE

To provide adequate and qualified on-site pulmonary function screening in co-operation with the approved physician to determine whether or not personnel are physically able to use respiratory protection equipment.

B. REFERENCES

1. 10 CFR 20, Para 20.103
2. Nu Reg 0041, Sec. 7.4
3. ANSI Z-88.2 (1969), Sec. 3.7
4. Regulatory Guide 8.15 (Oct 1976), Sec. C, para. 4h
5. The Jones Pulmonor Waterless Spirometer-Instruction Manual TDC-6000M

C. SAFETY

There are no abnormal safety requirements for this procedure.

D. MEDICAL REQUIREMENT

All personnel who wear respirators will be evaluated by competent medical personnel prior to an assignment requiring such use. The physician will determine what health and physical conditions are pertinent. The medical status of each respirator user will be reviewed annually by a physician and records maintained by Health Physics.

E. GENERAL

Pulmonary function screening shall consist of the following:

1. A Respiratory Medical History to be filled out completely by the potential respirator user.
2. Screening Vital Signs which will include blood pressure - sitting, chest sounds and heart pulse will be taken by the approved paramedical personnel.
3. Pulmonary Functions Test which will be a single forced expirograph (of at least two usable tracings) on the Jones Pulmonor Waterless Spirometer administered by approved spirometer qualified paramedical personnel.

MANUAL SET

4. The above data will be recorded on Form 1 (Figure 3) for evaluation by the approved physician.

NOTE

Any questionable findings by the screening technician or physician as to respirator fitness will result in the respirator user being evaluated in person by the approved physician.

F. SCREENING TECHNICIANS

Only qualified personnel, approved in writing by the physician, may administer the pulmonary function screening for that physician. These approved paramedical personnel will be Emergency Medical Technicians or equivalent qualified in pulmonary spirometry and will be reviewed annually by the approved physician.

G. PULMONARY FUNCTION SCREENING RECORDS

1. Form 1, Hatch Respiratory Protection Medical History and Pulmonary Function Test Report (Figure 3).

   a. The purpose of this form is to obtain an adequate respiratory medical history from the respirator user. It is also used to record the pulmonary function test data to be sent to the approved physician for evaluation.

   b. Procedure for recording information on Form 1 (Figure 3).

      (1) The respirator user shall complete the form except for the heavy black box labeled "Technician Use Only". The technician shall assure that the respirator user understands the medical terminology and questions.

      (2) The "Technician Use Only" box shall be completed by the approved screening technician.

   c. The single forced expirograph will be attached to Form 1 (Figure 3) for physician review.

2. Form 2, Respiratory Protection Medical Approval (Figure 4)

   This form will be attached to completed Form 1 (Figure 3) to be sent to the approved physician. After approving or disapproving the respirator user physically able to wear respirators the Form 2 (Figure 4) will be returned to Plant Hatch Health Physics to be kept on file and maintained.

3. Form 3, (Figure 5) Physician's Technician Authorization Form

   a. The purpose of this form is to signify the personnel approved to administer the pulmonary screening for that physician.

   b. The comleted form will be returned with the physician's signature. It will be transmitted to documentation for retention.

4. Pulmonary Functions Screening Log

   This log book will contain a daily record of all persons screened and will include name, social security number, TLD number, occupation and employer.

H. DESCRIPTION OF THE SPIROMETER

Refer to Jones Pulmonor Waterless Spirometer-Instruction Manual TDC-6000M and Figure 1.

I. PULMONARY FUNCTION TESTING

1. Testing Readiness

   a. Make sure timer is connected to power supply.

   b. Place graph on timer plate with 0.0 liter edge nearest cabinet (Figure 2, #3).

   c. Make sure timer plate and graph are in the upward ready position.

   d. Set inkless stylus to graph for tracing (Figure 2, #7).

   e. Place new disposable mouthpiece on breathing tube.

   f. The tests are done with the subject standing so that the graph is out of his view.

2. Examinee Preparation

   For best results tell your subject what is required for single forced expirograph prior to test. This may be done by explanation and demonstration.

NOTE

Demonstration does not have to be with machine use.

3. Administering Pulmonary Function Test

NOTE

Personal instructions to the subject may be adapted to the technician for best results.

a. Instructions for single forced expirograph.

(1) To the subject - "Whenever you are ready, hold your nose. Take a deep breath, as much as you can, and place your mouth on the mouthpiece. Then push out ALL the air as completely and rapidly as possible."

(2) The technician will place his finger on the timer switch (Figure 2). He shall turn it on just before the suject begins to place his mouth over the mouthpiece.

(3) Coach the subject just as be begins to exhale, "That's the way! Push! Push! All the way out! All the way out!" As soon as the stylus on the graph shows no further increase in volume and at least four seconds (four graph squares) say, "That's fine . . . Thank you!" Then release the switch and stylus.

b. Reset timer plate with same graph and set stylus to graph for tracing.

c. Repeat test step I.3.a at least once for validation of results.

d. Enter required results of pulmonary function test on Form 1 (Figure 3) and attach expirograph.

J. DISINFECTION OF PULMONOR II

1. The Pulmonor II has been designed for sterilization without need for disassembly. Wescodyne or Betadine solutions are approved for proper disinfection. The Pulmonor II should be disinfected after each days use.

2. Use a two quart solution of water and 2 ounces of Wescodyne or Betadine solution. Pour the entire contents through the breathing tube into the bellows.

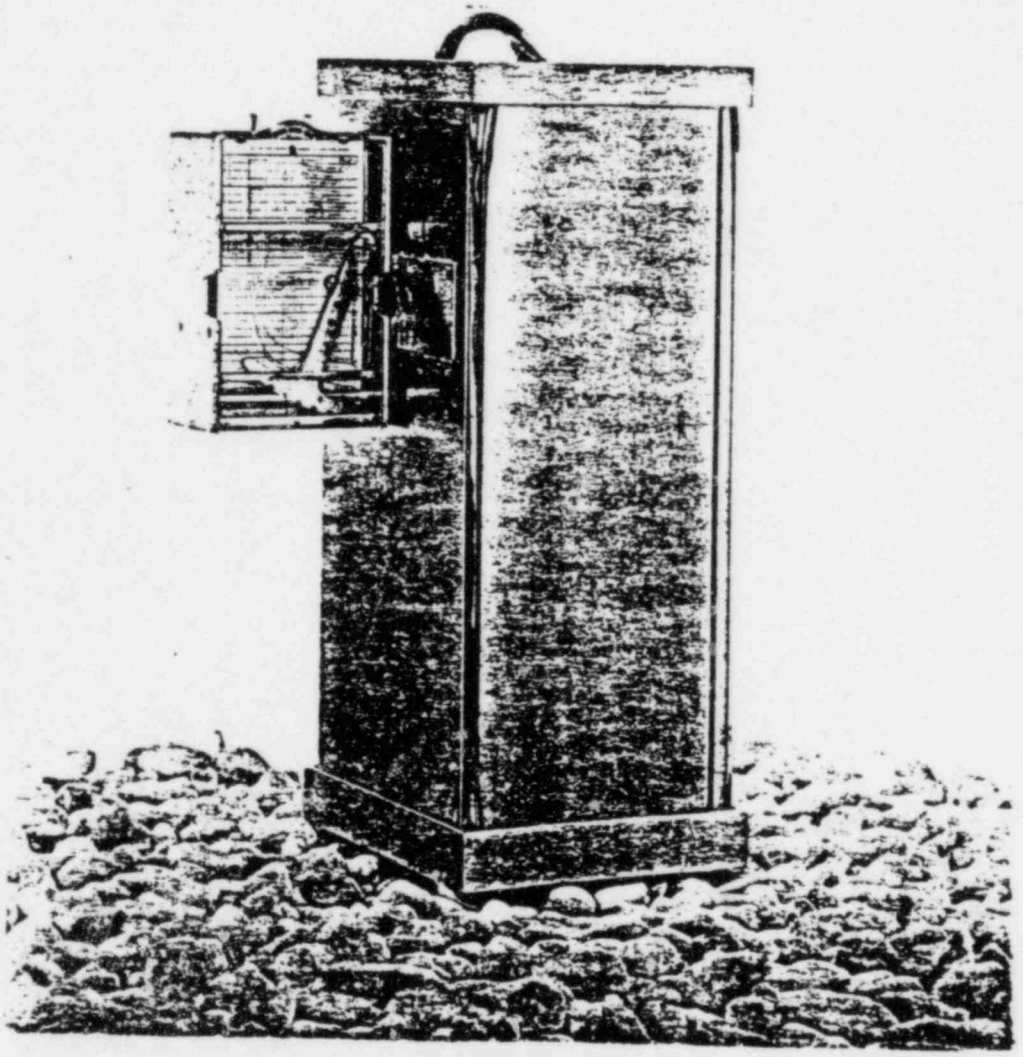
3. Push the "T-Bar" (Figure 2, #8) into the unit until the stylus reads at about "zero" volume position. Using a #4 rubber stopper plug off the bellows with the stylus in the "zero" position. After removing the plastic tube, the stopper is plugged into the metal breathing tu[illegible]ctor.

4. With the timer still connected to the cabinet, lean the unit over on the timer's side, jostling it gently for one minute. After the minute, then lean the unit over onto the rubber stopper side, jostling it gently for one minute.

5. Position the unit upright and remove the stopper. Replace the plastic breathing tube, then lean the unit clear over the breathing tube side pouring the solution back into the two quart container. Put the "T-Bar" upward to the 3600 ml position to facilitate drainage. The fixed bellows plate has been spun into a saucer shape to facilitate good drainage. A small amount of residual fluid is permissible.

FIGURE 1

The **F-JLMONOR®** series spirometer is widely accepted as a standard for practical, clinical pulmonary function testing. Tests performed are now in the millions ...exceeded by no other respirometer.



MANUAL SET

FIGURE 2

NOTE:

New Pulmonor units do not require use of the "Zero" setting ring (10), and without it can utilize the larger range, 7-1/2 liter graph paper (Type JP1006A). Older Pulmonor II's can remove the ring and also use the new graph paper.

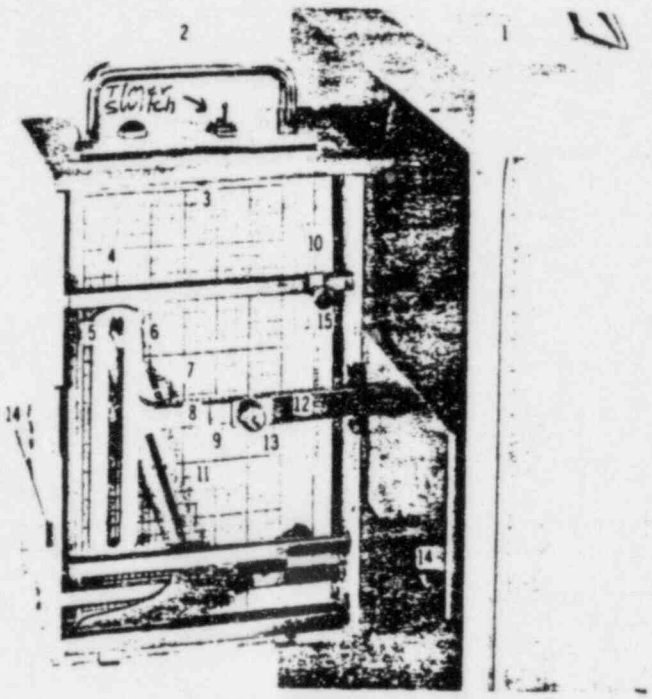


Figure 9

1. Volume Component
2. Timer Component
3. Timer Plate & Graph
4. Inkless Stylus & Rocker Assembly
5. Volume (Sensitivity) Pin
6. Direct Reading Volume Pin/ Rocker Position
7. "On-Off" Stylus Knobs
8. "T" Bar
9. Standard Linkage Line
10. "Zero" Setting Ring
11. Double Sensitivity Pin/ Rocker Position
12. Bellows Linkage Tube
13. Linkage Adjustment Screw
14. For Left Handed Operation
15. "Zero" Retention Screw

THE PULMONOR II SPIROMETER

A distinguishing characteristic of the Pulmonor II is that the stylus automatically resets to the "Zero" of base line. A special "W" spring configuation that does this requires no adjustment.

FIGURE 3

HATCH RESPIRATORY PROTECTION MEDICAL HISTORY
& PULMONARY FUNCTION TEST REPORT

FORM 1

PRINT

NAME	SSN	DATE	SEX	DATE OF BIRTH
AGE AT TEST	**HEIGHT**	**OCCUPATION**	**EMPLOYER**	

1. Do you have or have you ever had any of the following:

		YES	NO	DATE
A.	CHRONIC BRONCHITIS			
B.	EMPHYSEMA			
C.	PNEUMONIA			
D.	CORONARY ARTERY DISEASE			
E.	ASTHMA			
F.	ANY OTHER CHRONIC OR RESTRICTIVE LUNG DISEASE			
G.	CORONARY INSUFFICIENCY			
H.	HEART ATTACK			
I.	HYPERTENSION (HIGH BLOOD PRESSURE)			
J.	BLOOD DISORDERS			
K.	CANCER			
L.	CATARACTS			
M.	FEAR OF BEING IN CLOSED SPACES			
N.	THRYOID DISORDER			
O.	CYSTIC FIBROSIS			
P.	EPILEPSY			
Q.	DIABETES			
R.	STROKE			
S.	FACIAL ABNORMALITIES			
T.	KIDNEY DISEASE			
U.	HEARING LOSS			
V.	SERIOUS VISION PROBLEM			
W.	RUPTURED EARDRUMS			
X.	MENTAL ILLNESS			
Y.	LIMITATIONS IN MOBILITY			
Z.	IMPAIRED OR NON-EXISTENT SENSE OF SMELL			

2. Are you or have you ever been an alcholic? YES NO

3. Are you presently taking any medication? YES NO
IF "YES", what kinds?_____

4. Date of your last physical examination. _____

The information above is true and complete to the best of my knowledge and recollection.

SIGNATURE	DATE

5. a. Never Smoke Used to Smoke Now Smoke
b. Began Smoking at age_____
Stopped at age_____
c. Number of cigarettes smoked per day_____
" " cigars " " " _____
" " pipe " " " _____

6. Do you have any allergies or skin conditions (such as acne or eczema) which might be aggrevated by using a face mask? YES NO

7. Have you ever had ill effects from wearing respiratory protective equipment? YES NO

8. Do you have or have you ever had any other disease, condition or disability which might make the use of respiratory protective equipment unwise or unsafe in your case? YES NO
If "YES" explain on back.

If you answered "YES" to any of the above questions, please give complete details on the back of this form

TECHNICIAN USE ONLY

BLOOD PRESSURE _____ / _____
CHEST CLEAR _____ / NOT-CLEAR
HEART-PULSE _____

PULMONARY FUNCTION TEST

	1	2	Predicted
FEV_1			

measured / predicted = _____

Technician

Remarks

HNP-8035 R00
Figure 3

MANUAL SET

FIGURE 4

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

FORM 2

Georgia Power

Edwin I. Hatch Nuclear Plant

RESPIRATORY PROTECTION MEDICAL APPROVAL

_____ NAME _____ SS#

To assure compliance with 10CFR20.103 it is requested that the physician answer the following question.

Do you believe there is any reason, from the health standpoint, that this individual could not engage in duties requiring utilization of respiratory protective equipment?

☐ YES
REMARKS _____

☐ NO
REMARKS _____

NAME OF EXAMINING PHYSICIAN _____

ADDRESS _____

TELEPHONE _____

_____ DATE _____ SIGNATURE OF EXAMINING PHYSICIAN

FIGURE 5

FORM 3

PHYSICIAN'S TECHNICIAN AUTHORIZATION FORM

The following personnel are approved to administer the pulmonary screening program as per HNP-8035 for me.

_____

_____

_____

_____

_____
Physician's Signature Date

_____
Address

_____

_____

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Maintenance and Operation of Portable High Efficiency Particulate Atmosphere (HEPA) Filtration Units

PROCEDURE TITLE

HNP-8040

PROCEDURE NUMBER

Lab

RESPONSIBLE SECTION

SAFETY RELATED (X)   NON-SAFETY RELATED (   )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
0	New Procedure	RW Zawadoski W.H. Rogers	[signature]	11-22-83

MANUAL SET.

WE 10/25

PROCEDURE REVIEW REQUEST FOR NEW PROCEDURES

PROCEDURE NO. HNP- 8040

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
Dwaine Brown	8-3-83	RW Zavadoski W. Rogers 10/22/83 Day Shift for use	10/21/83 8/9/83

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 system for maintenance, operation and inventory control of HEPA filtration units.

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

83-204
PRB Number

11-3-83
Date

HNP-9

BT

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~~ 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.~~ procedure addresses only the operation and maintenance of portable HEPA filters used by Health Physics to contain contamination spread.

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. The intent of this procedure is to enhance radiological safety in areas adjacent to containment vessels or structures where high levels or the potential for high levels of airborne radioactivity exist.

MANUAL SET.

BT

MAINTENANCE AND OPERATION OF PORTABLE HIGH EFFICIENCY PARTICULATE ATMOSPHERE (HEPA) FILTRATION UNITS

A. PURPOSE

1. To outline the requirements for filter change and general maintenance of the HEPA filtration units.

2. To define operational surveillance of the HEPA filtration units.

3. To provide a system of HEPA filtration unit readiness verification.

4. To provide a system of HEPA filtration unit inventory and control.

B. REFERENCES

1. HNP-8006 Decontamination

2. HNP-8008 Radiation Work Permit

C. SAFETY

Ensure that the HEPA filtration unit has been disconnected from all electrical power sources prior to performing any unit maintenance.

D. EQUIPMENT DESCRIPTION

1. The portable HEPA filtration units are designed for a variety of uses within the nuclear industry.

   The unit may be utilized to provide exhaust ventilation for containment tents or structures when unfiltered release of atmospheric contaminants could inadvertently expose personnel.

2. The unit may also be utilized to provide filtered exhaust ventilation with a corresponding air circulation for void spaces and tanks with oxygen deficient atmospheres where airborne radioactive contaminants may be present.

3. The filtration unit consists of the following primary components.

   a. A 1000 SCFM antifugal blower driven by a 440 VAC, 60 Hz, 3Φ electric motor which pulls air through the unit. A transformer must be utilized to step down welding outlet power supplies.

b. A filter housing which provides support for and flow direction through the spark arrestor screen, roughing prefilter and the HEPA filter.

c. Two magnahelic differential pressure indicators to provide continuous differential pressure indication across the spark arrestor screen/roughing prefilter combination and the HEPA filter.

d. A spark arrestor screen to provide protection for the filtration media when the unit is used in conjunction with welding or flame cutting operations.

e. The roughing prefilter P/N 2184, this filter will collect large particles to preclude premature blockage of the more expensive HEPA filter.

f. The HEPA filter, P/N 2186, provides for filtration of atmospheric contaminants with an efficiency of 99.98%.

E. MAINTENANCE PROCEDURE

1. Initiate a Radiation Work Permit (RWP) for HEPA filtration unit maintenance.

2. Initiate a HEPA filtration unit maintenance check off list, FORM 1 (Figure 2).

3. Establish a contamination control area for filtration unit maintenance in the decon area of Unit 1 Rx 185' elevation.

CAUTION

If radiation levels on contact with the filtration unit housing are ≥ 10 mr/hr in the vicinity of either filter element initial opening and filter element, removal must be accomplished inside a containment tent.

4. Remove the front and rear panels from the filtration unit. Decontaminate and remove these panels from the area. Retain the hand cranks stored inside these panels for filter removal.

5. Utilizing the hand crank(s) relax the tension on the HEPA filter support frame.

6. Carefully remove the roughing prefilter from the unit into a plastic bag and dispose of it as radioactive waste.

7. Carefully remove the HEPA filter from the unit.

8. Inspect both the inlet and outlet surfaces of the HEPA filter for any irregularities. Enter the inspection results on the HEPA Filtration Unit Maintenance Check-Off List, FORM 1 (Figure 2).

NOTE

If no surface irregularities are evident and HEPA filter differential pressure is ≤ 1.5" H2O as noted on FORM 1 (Figure 2), retain the HEPA filter for re-use.

9. Inspect the spark arrestor screen and clean with a wire brush and decontamination solution as necessary to eliminate any buildup which could restrict unit air flow. Initial step 5 of FORM 1 (Figure 2) to signify completion.

10. Decontaminate the HEPA filtration unit inside and outside in accordance with Reference 1. Enter decontamination results of FORM 1 (Figure 2).

11. Install an acceptable HEPA filter into the filtration unit housing.

12. Utilizing the hand cranks raise the HEPA filter support frame evenly until the HEPA filter outlet side gasket is compressed.

CAUTION

Do not overtorque the filter support frame lifting mechanism. Overtorquing could strip the frame gearing and render the unit inoperable.

NOTE

If the HEPA filter support frame lifting frame is inoperable and the unit must be placed in service, gasket compression may be achieved by utilizing wooden wedges between the filter support frame and the lifting platform. Ensure even filter gasket compression.

13. Install a new roughing prefilter.

14. Install the front and rear panels on the filtration unit housing. Ensure that the hand cranks are installed in the clips provided inside the covers.

15. Verify the differential pressure sensing lines are properly connected as marked on the side of the filtration unit housing and the differential pressure gauges.

16. Attach a Unit Readiness Verification Sticker, Figure 1 across the closure seams on both the front and rear housing panels in such a manner that the sticker would be destroyed if either panel were removed or tampered with. Indicate completion of this step on FORM 1 (Figure 2). Ensure the appropriate use area is indicated on the sticker.

17. Submit FORM 1 (Figure 2) to the H.P. Foreman for review and entry of the HEPA unit into the HEPA filtration unit control record, Data Package 1 as available for use.

NOTE

Filtration units which have been serviced and are available for use will be stored in a locked cage on the Unit 2 TB 112' elevation.

18. Filtration units will be issued from the Health Physics office and this issure recorded on Data Package 1.

19. Filtration units will be inventoried monthly and the service location recorded on Data Package 1 verified.

F. OPERATING PROCEDURE

1. Ensure all connections between containment structure/tent are securely sealed.

2. After starting unit verify both the roughing prefilter/spark arrestor and the HEPA filter differential pressures are $\leq$ 1.5" H2O.

3. Verify inward ventilation flow through the tent/structure inner airlock door.

4. Periodically monitor all filter differential pressures. If either filter differential pressure exceeds 3" H2O monitor filtration unit flow closely and service the unit during the next work stoppage.

5. Prior to electrically disconnecting the HEPA filtration unit at the completion of work requiring HEPA filtration unit ventilation or a filter change is imminent, obtain the data required by FORM 1 (Figure 2), steps 1.a and 1.b.

FIGURE 1

UNIT READINESS VERIFICATION STICKER

THIS UNIT HAS BEEN SERVICED AND IS READY FOR USE IN AN UNCONTAMINATED/ CONTAMINATED AREA ONLY. (CIRCLE ONE)

_____/_____ H.P. TECH.
Date

FIGURE 2

HEPA FILTRATION UNIT MAINTENANCE CHECK OFF LIST

FORM 1

HEPA FILTRATION UNIT MAINTENANCE CHECK OFF LIST

1. Pre-maintenance test operation data for HEPA filtration unit NO._____.

   a. Spark arrestor/roughing prefilter differential pressure _____" H20.

   b. HEPA filter differential pressure _____" H20.

2. HEPA filtration unit maintenance RWP NO._____.

3. HEPA filter visual inspection results satisfactory/unsatisfactory. (circle one)

4. HEPA filter acceptable for re-use acceptable/unacceptable. (circle one)

5. Spark arrestor screen cleaned_____.

6. HEPA filtration unit decontaminated.

   a. Available for use in uncontaminated areas. yes/no (circle one)

   b. Available for use in contaminated areas only. yes/no (circle one)

7. Unit Readiness Verification Stickers, Figure 1, installed on unit. yes/no (circle one)

8. HEPA filtration unit NO._____ available for use.

Completed By _____
H.P. Technician/Date

Reviewed _____
H.P. Foreman

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8040-1

SERIAL NO: R00-

MPL NO: N/A

RTYPE: G15.14

XREF: N/A

TOTAL SHEETS: 2

FREQUENCY: As Required

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 2

MANUAL SET.

DATA PACKAGE 1
(Data Sheet 1)

HEPA FILTRATION UNIT CONTROL RECORD

____

TYPE EQUIPMENT	SERIAL NO.	AREA ASSIGNED	PERSON ASSIGNED	DATE	ASSIGNED BY	RETURNED/ AVAILABLE	BY
						/	/
						/	/
						/	/
						/	/
						/	/
						/	/
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Page 2 of 2

HNP-8040 R00

FIGURE 3
Page 2 of 2

MANUAL SET.

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Continuous Air Monitors Models AM-30 and AM-33-1
Operation and Calibration
PROCEDURE TITLE

HNP-8109
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
10	Pages 1, 3-5, 8-14 16 and 18	R W Zavadoski	Harvey Nix	6/22/83
11	Pages 1, 3 and 7-14	R W Zavadoski W A Rogers	Dennis Shannon for	11-22-83

WE 10/25

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- ~~##~~ 8109 SHEET 1 OF 1

Revision No. 10

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
		R W Zavadoski	10/21/83
M. B. Wright	10-4-83	W H Rogers	10-20-83

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: To add document numbers for compliance with Q.A. trace # 83-260

DESCRIPTION OF CHANGES: Pg 1, added document numbers to reference section. Pg 3, corrected spelling of guages. Pg 7, changed little c to capital C, added i in to determining. Pg 8 delete one -11, add semi-colon, add d to ilapsed. Pg 9 add -8, Pg 10 correct spelling of predominant and assess, Pg 11, add slash mark, Pg 13 change and to 5.0 Pg 14, add (Ex G.I. count.)

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No

JCCk
PRB Secretary

83-197
PRB Number

10-28-83
Date

HNP-9

MANUAL SET

SAFETY EVALUATION

This revision 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 revision because the revision does not change the purpose or performance of the ~~system~~ instrument

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

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 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.

MANUAL SET.

BT

CONTINUOUS AIR MONITORS MODELS AM-3D AND AM-33-1 OPERATION AND CALIBRATION

A. PURPOSE

To ensure that the instruments are calibrated properly and to provide operation guides for the user.

B. REFERENCES

1. NMC Air Monitor Model AM-3D Instruction Manual, TDC #0500
2. NMC Air Monitor Model AM-33-I Instruction Manual, TDC #0501
3. Determination of Concentrations of Airborne Radioactivity, George L. Helgeson, Health Physics Journal 1963 Vol. 9, pp. 931-942, TDC #0502

C. SAFETY

Observe Radiation Protection Procedures.

D. TEST EQUIPMENT

1. Minipulser MP-1 or equivalent
2. Cl^{36} check source and source holder
3. Ba^{133} check source and source holder
4. Magnehelic gauge

E. DESCRIPTION OF INSTRUMENT

The NMC models AM-3D and AM-33-I monitors use a continuously moving filter paper so that replacement of the filter is required only infrequently. The function of these instruments is to measure the radioactivity from air particulates and gaseous activity by concentrating these particulates on a filter, detecting, and graphing the activity on a graphic recorder.

In the AM-3D and AM-33-I, air is drawn through a special filter paper at a controlled rate. The build-up of activity on the filter paper is detected by a Geiger-Mueller detector which, in turn, operates a count ratemeter, solid state voltmeter alarm system and a graphic recorder. The alarm system in the AM-3D and AM-33-I particulate channel provides two levels of alarm based

upon the level of radio-activity. A high level alarm provides for continuous sounding of a loud bell or sonalert and operation of a red lamp. The low level alarm is used as a fail-safe indicator that the detectable radioactivity is below that expected in a properly functioning instrument. This provides a continuously lighted amber lamp.

In addition to particulate air activity, the model AM-33-I also monitors the filtered air for iodine and gaseous activity. These gases are collected by a fixed activated charcoal cartridge. The Iodine-131 activity build-up on the charcoal cartridge is detected by a scintillation detector. The scintillation detector is coupled to a single window spectrometer system. The spectrometer is provided with a window-width control and high voltage control that is set at the Iodine-131 energy base.

The AM-33-I incorporates a discriminator system, count rate meter, solid state voltmeter alarm system and a graphic 2 channel recorder. The AM-33-I iodine channel has a single (high) alarm system based on the level of iodine and gaseous activity deposited on the charcoal cartridge. This high level alarm provides for continuous sounding as previous described.

F. DESCRIPTION OF CONTROLS

1. External Controls

a. Master switch - Turns power on to the counting ratemeter and moving filters drive unit.

b. H.V. switch - Turns on high voltage for detector operation.

c. H.V. Test switch - Displays the detector voltage on the rate-meter (AM-33-I).

d. Input Mode Switch - In the TEST position, inserts a 3600 CPM signal to the ratemeter input for instrument check. In the OPERATE position it places the GM detector in service for normal operation.

e. D_1 and D_2 switch positions are the boundries of the spectrometer window and operate from the gamma scintillation probe, (AM-33-I).

f. N. switch position is the window position and normal operating condition (AM-33-I).

g. Window Width Switch-Provides 11 window levels from 0 to 5%. The instrument is optimized for the 5% window (setting 5). This setting should be used unless there is significant interference from some other emitter with an energy peak close to that of iodine 131.

h. Alarm Reset Pushbutton - Resets the alarm circuit after alarm condition.

i. Meter Reset Pushbutton - Resets the meter to minimum when depressed.

j. Blower Power Switch - Turns blower ON or OFF.

k. Continuous-Stepwise Switch in CONTINUOUS position, filter paper advances continuously. In STEPWISE position, filter paper advances only when the Fast Advance pushbutton is depressed.

l. Magnehelic gauges:

(1) AM-3D Indicates air flow rate through filter paper. An adjustment screw on the guage provides adjustment of the flow rate control. Clockwise adjustment increases the flow rate.

(2) AM-33-I (Photohelic) Indicates air flow rate through filter paper and charcoal cartridge assembly. Flow rate adjustment is accomplished by dual set point controls. The left set point control governs the minimum flow rate setting. The right set point control governs the maximum flow rate setting.

m. Flow jog indicator lamps- mounted on the right end of the cart. Yellow lamp ON continually indicates blockage of filter paper. Red lamp ON continually indicated rupture, loss of filter paper or a leak in the system.

2. Internal Controls

a. H.V. Adjust - Allow setting of high voltage on G.M. tube.

b. High potentiometer - Adjusts high alarm setpoint on alarm assembly module.

c. Low potentiometer - Adjusts low alarm setpoint on alarm assembly module.

d. The AM-33-I monitor is labeled "I" or "G" to indicate iodine or G-M detectors adjustment.

e. Bias potentiometer - Calibrates low end of ratemeter scale.

f. High potentiometer - Calibrates high end of ratemeter scale.

g. Low potentiometer - Calibrates mid-scale of ratemeter scale.

G. OPERATION OF INSTRUMENT

1. Install filter paper roll per instructions in paragraph 5.7. Instruction-Manual (AM-3D) or paragraph 2.1 (AM-33-I) also insert the charcoal cartridge in the detector shield plug. (AM-33-I).

2. Switch the Continuous-Stepwise Toggle switch on filter transport mechanism to CONTINUOUS.

   a. The filter paper speed can be varied for either monitor as per paragraph 4.7.1 (AM-3D) or paragraph 1.3 and programming key on Drawing # D005923 (AM-33-I).

3. Plug the instrument into a 115 V.A.C receptacle.

4. Switch the Blower Power switch to ON. Adjust air flow rate to 5 CFM using adjustment on Magnehelic gauge after about 24 hours of operation (AM-3D). Adjust AM-33-I photohelic gauge flow set point controls to 3.5 CFM and readjust after 24 hours if necessary.

5. Switch the Master Switch to ON.

6. Place the Input Mode switch to TEST and observe count ratemeter and recorder. Reading should be 3600 $\pm$ 400 CPM, if not report findings to the Health Physics Foreman.

7. Switch the High Voltage switch to ON. The red indicator light should be on.

8. Return the Input Mode switch to "OP" (AM-3D) or "N" (AM-33-I).

H. INTERPRETATION OF INSTRUMENT RESPONSE

1. Background Radioactivity

   The normal background before collecting may be in the vicinity of 50 C/M. Upon collecting, this count will rise rapidly due to the presence of radon gas and its radioactive daughters in the air. The count should rise to a level between 100 and 5000 C/M, depending upon the environment, the air cleaning used in the facility and atmospheric conditions at the time. This is an exceedingly sensitive instrument and a high rate of count from radon and its progeny is to be expected. (Particulate activity-CAM only).

A fail-safety alert level is set at 10-50 C/M. Whenever the counting meter indicates below this level, the amber lamp on top of the instrument cabinet will light. This is to show that the instrument is operating below the preset level. The amber light will also remain lit after changing or upon advancing the filter paper.

2. Long Half-Life Radioactivity

In the moving filter CAM, the GM tube only "detects" one half of the activity at any given time because as the paper moves into the suction area, it is just starting to collect particulates, whereas, as the paper moves out of the suction area, it has collected its maximum number of particulates, hence, a factor of 2 is needed to correct for this.

Furthermore, the sampling time is limited, i.e., after the filter paper has moved out of the suction area, it stops collecting particulates.

The following formula (1) applies:

$$C = \frac{5.3 \times 10^{-13} As}{Fga}$$

Where C=Concentration in uCi/cc
A=Count rate in CPM
s=Speed of filter paper in in./hr.
a=Suction area in inches
F=Flow rate in SCFM
g=Detector efficiency

The speed of the filter paper is set at one (1) inch per hour. Shorter speeds can be set; however, a speed of one inch per hour allows greater sensitivity and the added ability to earlier detect changing air concentrations.

The above formula (1) is derived with the basic assumption that airborne radioactivity concentrations are constant during the sampling period of concern. Sudden changes in airborne concentrations will be discussed later.

The average efficiency of the AM-3D, and AM-33-I continuous air monitors is about .20 (20.0%) and .080 (8%) respectively. A concentration vs count rate graph is attached to each unit. Thus, during periods of "static" conditions the average air concentrations can be determined. By applying the filter speed and CAM detector efficiency and substituting 10, 10^2, 10^3, 10^4, 5×10^4, and 10^6 counts per minute respectively we can exhibit the average concentration for a given count rate.

Substituting formula (1).

Column 2 $\frac{(5.3\times10^{-13})(1)}{(5)(0.2)(2)}$ (cpm)* = uCi/cc=$\frac{(2.65\times10^{-13})(\text{cpm})}{\text{(factor for 20\% efficency) Am-3D}}$

Column 3 $\frac{(5.3\times10^{-13})(1)}{(3.5)(.080)(2)}$ (cpm)*=uCi/cc=$\frac{(5.3E^{-13})(\text{cpm})}{\text{(factor for 8\% efficency) AM-33-I}}$

*Instrument background has been subtracted.

TABLE 1

COLUMN 1 A (cpm)	COLUMN 2 c(uCi/cc for AM-3D)	COLUMN 3 c(uCi/cc for AM-33-I)
10	2.65x10-12	9.46x10-13
100	2.65x10-11	9.46x10-12
1,000	2.65x10-10	9.46x10-11
1,320	3.49x10-10	1.24x10-10
1,600	4.24x10-10	1.51x10-10
10,000	2.65x10- 9	9.46x10-10
50,000	1.32x10- 8	4.73x10- 9
10^5	1.32x10- 7	4.73x10- 8
10^6	2.65x10- 7	9.46x10- 8

3. Rising Air Concentrations

Formula (2) $C = \frac{0.16\times10^{-10}(A)}{fgts}$

Assumes that the concentration is constant only over short intervals. We can determine the rate of rise in cpm/minute and t (sample time) becomes 1 minute (for graph interpretation).

By this method we can observe any portion of the rise or peak activity and determine the concentration for that period. For example: If the air concentration for any given CAM rose from a "static" condition of 200 cpm to 1200 cpm in 10 minutes then:

Average rate of rise (in cpm/min) = $\frac{\text{(rise)} \quad \text{(static)}}{\frac{1200\text{cpm} - 200\text{ cpm}}{10\text{ min.}}}$ = 100cpm/min (Δ A)

(rise time)

$$C = \frac{(.16 \times 10^{-10})\ (A)}{fgts}$$

Formula (2)

Where: C = Concentration in μCi/cc
A = cpm
F = Flow rate in SCFM
g = Detector efficency
t_s = Sample time

The above formula may be reduced by determining the average rate of rise as previously mentioned.

Then: $C = \frac{(.16 \times 10^{-10})\ (\Delta A)}{Fg}$ Where: ΔA = cpm/min.

Substituting the detector efficiencies and flow rates of the AM-3D and AM-33-I CAMs the following results in Table 2 can be graphed.

Column 2 $\frac{(.16 \times 10^{-10})}{Fg}$ (cpm/min) = μCi/cc = $\frac{(1.60 \times 10^{-11})(cpm/min)}{\text{(factor for 20\% efficency) AM-3D}}$

Column 3 $\frac{(.16 \times 10^{-10})}{Fg}$ (cpm/min) = $\frac{\mu Ci/cc = (5.71E^{-11})(cpm/min)}{\text{(factor for 8\% efficency) AM-33-I}}$

TABLE 2

COLUMN 1 c(μCi/cc for AM-3D) (PARTICULATE)	COLUMN 2 c(μCi/cc for AM-33-I) (PARTICULATE)	COLUMN 3 c(μCi/cc for AM-33-I) (IODINE)
1.60x10-10	5.71x10-10	8.79x10-10
4.80x10-10	1.71x10- 9	2.63x10- 9
8.00x10-10	2.85x10- 9	4.39x10- 9
1.60x10- 9	5.71x10- 9	8.79x10- 9
4.00x10- 9	1.42x10- 8	2.19x10- 8
8.00x10- 9	2.85x10- 8	4.39x10- 8
1.60x10- 8	5.71x10- 8	8.79x10- 8
8.00x10- 8	2.85x10- 7	4.39x10- 7
1.60x10- 7	5.71x10- 7	8.79x10- 7
8.00x10- 7	2.85x10- 6	4.39x10- 6
8.00x10- 6	2.85x10- 5	4.39x10- 5

The following rate of rise rates are equal to the administrative limits of 1×10^{-9} uCi/cc.

	AM-3D	AM-33-I
Particulate B + Y activity	27 cpm/min	22 cpm/min
Iodine-131	---	12 cpm/min

A rate of rise graph will be attached to each air monitor.

4. Determination of Airborne Iodine Concentrations.

a. The Model AM-33-I air monitor incorporates a scintillation detector and fixed charcoal cartridge to access the Radio-iodine levels. Because the collecting media is fixed and the collecting efficency for Iodine is not 100% the following formulas are necessary to determine the airborne concentrations. Collection efficency of the F & J cartridge is 99% or 0.99.

For "Static" conditions where there is no appreciable rate of rise formula (3) applies;

Column 4 $C=\frac{(1.6\times10^{-11})(\Delta A)}{(F)(\Delta ts)(g)(Ce)}$

Where: ΔA = cpm/min
F = Flow rate in SCFM
Δt_s = Sampling time min.
g = Detector efficency
Ce = Filter Media Collection Efficency
C = Concentration in uCi/cc.

By assuming the flow rate, detector efficiency and filter media collection and the absorption factor is accounted for during detector calibration formula (3) can be reduced to:

$C = \frac{AK'}{t_s}$ Where $K' = \frac{.16\times10^{-10}}{FgCe}$

Then $K' \frac{.16\times10^{-10}}{(3.5)(.08)(.99)} = 5.77E-11$ and $C = \frac{A\ (5.77E-11)}{t_s}$

F g Ce

From the above data the average Iodine-131 airborne concentration can be determined. For example, if "Static" conditions exist (slow rise or no rise on the chart $\leq$ 10cpm/min). The counting rate is 200 cpm and the sample has been on for 2 hours then:

$\frac{(200)(5.77E-11)}{120\ min.} = 9.62E-11$ uCi/cc

b. The average concentration for a change in airborne activity may be determined by subtracting the stable airborne concentration from the peak concentration and dividing the difference by the elapsed time period of stable and peak activity. Use formula (1) to determine the results.

$\frac{(\text{concentration at } t_2 - \text{concentration at } t_1)}{t_2 - t_1} = \Delta A$ (in minutes)

Where: ΔA = average rise in cpm/min
t_1 = static condition time
t_2 = peak condition time

For example, over the last two hours the counting rate for Iodine-131 has risen from 0 to 200 cpm but over the last 30 minutes the concentration has risen from 200 to 800 cpm.

Then: $\frac{(800-200)(5.77E-11)}{30} = 1.15E-9$ uCi/cc
$(t_2 - t_1)$

A graph is attached to each CIM exhibiting a static condition and a rate of rise condition. The charcoal cartridge should be changed when the collected activity indicates a level of $5x10^{-8}$ uCi/cc (~8500cpm) in 24 hours. The charcoal cartridge will be further assessed by laboratory counting methods. Normally the charcoal cartridge (CESCO) will be changed once per week. The following graphs will be attached to the CIM:

Graph #1. Assumes the Iodine 131 concentrations are essentially constant during the collection periods of 2 to 24 hours.

Graph # 2. Assumes the Iodine 131 concentrations are essentially constant during the collection periods of one to seven days.

Graph # 3 Assumes the Iodine 131 concentrations are constant only during short intervals, where t_s is reduced to one minute. (rate of rise in cpm/min).

NOTE

Because Iodine-131 has a long half-life, compared with t_2 or t_d (radioactive decay is not accounted for in the derivations) λjtd is essentially zero and $e^{-\lambda jtd} = e^0 = 1$, also $e^{\lambda jts}$ may be expanded neglecting all but the first two terms;

$$Cj = \frac{(0.16x10^{-10})\lambda jA}{FgCe(1-e^{-\lambda jts})} = \frac{(0.16x10^{-10}A)}{FgCe} \quad \frac{1}{\frac{e^{jts}}{(1-1+1!} - \frac{(e^{jts})^2}{2!}+\ldots)}$$

$$Cj = \frac{0.16x10^{-10}A}{FgtsCe} \qquad \text{Formula (3)}$$

Where: ts = sample time
td = delay in minutes before the sample is counted
λj = the decay constant of a particular isotope.
Cj = concentration of a particular isotope.
A = cpm (counting rate on the filter media).
F = flow rate in SCFM.
g = detector efficiency
Ce = collection efficiency of the filter media.

5. Other observations for moving and fixed filter CAMS.

a. Down trend in chart recorder.

(1) This could be due to long half-life activity which has stopped forming and the filter is moving out of the detection area.

(2) A decrease in long half-life airborne concentrations.

(3) Short half-life material decaying, showing a stop or decrease in activity.

(4) A combination of these reasons.

b. Horizontal line straight across chart.

(1) Sudden increase in background from sources or casks.

(2) Extremely high airborne radioactivity.

(3) CAM Filter paper not moving, activity buildup.

I. CAM LOCATIONS AND OPERATION

1. The CAM units shall be placed in areas where the occupation factors and the possibility of airborne problems are most predominant.

2. If possible the CAM's should be placed near air exhaust vents to better assess overall airborne concentrations.

3. The CAM's shall be equipped with an air sample intake extension in that the sample collected is representative of a "breathing zone" for personnel.

4. The distance from the airborne source should also be taken into account.

5. The alarm level shall be set in the following manner.

a. The CAMS shall be operated for a 24 hour period to establish a relative Ra-Th equillibrium.

b. The CAM alarm point is set at the administrative level of 3.0×10^{-9} µCi/cc. The actual alarm setting will vary depending on Ra-Th concentration, area background and CAM efficiency. Using the long lived graph the number should be written 1500 cpm ± 10%(AM-3D). For example, if the CAM background is 500 cpm and the 1×10^{-9} µCi/cc criterion is equal to 1500 cpm then the alarm point is set at 2000 cpm.

The CIM alarm point is to be set at the administrative level of 3.0×10^{-9} µCi/cc. The actual alarm setting will vary depending on area background and cim efficiency. A rate of rise of 12 cpm/min or 720 cpm/hr is equal to 1×10^{-9} µCi/cc. (See formula 3 and its variations). It the background is 100 cpm then the alarm point is set at 820 cpm.

J. CALIBRATION AND CHECKS

1. Daily or Shift Check

a. Insure the AM-3D and AM-33-I air flow is maintaining a 5 and 3.5 SCFM flow rate; adjust as necessary.

b. Observe the chart and insure the pen is inking.

c. Calculate the present air concentration using the appropriate praph (graph #1). If any spikes or a rate of rise is indicated determine the concentration during the rise and notify the H.P Supervisor (provided the rate of rise is or was in excess of administrative limits-3.0×10^{-9} µCi/cc).

d. Insure there is a sufficient filter paper supply (24 inches per day) and draw a vertical line across the filter paper. The line is used as a reference point to determine if the filter paper is advancing.

e. Note the flow, concentration, date and time on the chart paper and initial the chart paper.

2. Weekly Check (AM-3D)

a. Check flow rates of cams and cim-cams to assure proper flow on magnehelic or photohelic guages and record on DATA SHEET 1, Data Package 1.

b. Place the Input Mode switch to TEST and observe ratemeter and recorder. Reading should be 3600 ± 400 CPM. Record results on Data Sheet 1, Data Package 1. Weekly Continuous Air Monitor Check. Mark "TEST" on the chart paper, turn the pump off, and open or remove the detector shielding.

c. Place radioactive check source provided to the center of the detector and check the instrument response and alarm setpoint. Record results and complete Data Sheet 1, Data Package 1. Note on the chart paper and insure the c/m meter and chart readout match. If the detecter efficiency is low, calibrate the CAM in accordance with the Semi-Annual checks prescribed below.

For the Model AM33-I CAM, place the radioactive check source on the end of a metal rod and insert the source gently into the detector chamber. Insure the source is centered and against the detector window. Proceed as mentioned in the previous paragraph.

d. After completion of the above checks return the CAM to operation and note on the chart paper the time, date and calibration completed by initial.

e. The CIM (AM-33-I) may be source checked in the following manner.

(1) With the pump off, remove the filter holder-detector shield plug, remove the charcoal cartridge, and place the Ba 133 check source in the filter holder-detector shield plug. Reinsert the detector shield.

(2) Check the instrument response and alarm setpoint. Record the results and complete Data Sheet 1, Data Package 1. Note the results on the chart paper and check the count rate meter and chart readout coincide. If the detector efficency is low, calibrate the cim in accordance with the Semi-Annual checks prescribed below.

(3) Semi-Annual Calibration.

(a) Test Shop will calibrate the magnehelic or Photohelic on the cam or cim-cam (MR's are to be written by Instrument Techs) semi-annually.

(b) Note on the chart paper the Semi-annual calibration is occuring. Turn the instrument high voltage off and remove the probe connector.

(c) Connect the output of the Minipulser from positive (red lead) to pin "F" of the input connector (located on left side of probe connector), (AM-3D) Ground the other lead (black) to the frame. Remove the probe connector to the scintillation detector (AM-33-I) and connect output of the Minipulser from positive (red lead) to pin "F" of the connector.

(d) Switch the input mode on the counting ratemeter to "OP" or D.

(e) Set the minipulser at 1.0 volt amplitude. Set the counting rate of the minipulser to 100, 1000, 10,000, 40,000, and 800,000 cpm. Adjust the bias, low and high-end controls as necessary to correspond to the input pulse being generated.

NOTE

Am-3D's scale reads to 50,000 cpm only. Disreguard 800,000 cpm step.

(f) After this calibration insert the check source as prescribed in J.2 and perform a plateau check. (Instrument high voltage back on). See the instruction manual Section IV 4.4. If the high voltage plateau has not drifted and instrument efficiency is within 10% of the last efficiency check, return the instrument to operation. (AM-3D).

(g) The cim detector Iodine 131 operating voltage is set by inserting the Ba 133 source as prescribed in Section J.2.e. With the input mode selector switch in "N" position, adjust the 10- turn high voltage control until the c/m meter indicates the optimum value. Then set the high voltage control 1% lower than indicated reading.

(h) Replace calibration sticker and initial chart.

(i) Complete the necessary forms (see attached forms).

NOTE

The AM-3D and Am-33-I is designed to measure general air trends and changes in these trends. Any unusual rises in airborne activity should be verified by additional air sampling (high or low volume); isotope identification should be made and documented (by Geli count).

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8109-1

SERIAL NO: R11-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 2

FREQUENCY: Weekly

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 2

MANUAL SET

DATA PACKAGE 1
(Data Sheet 1)

WEEKLY CONTINUOUS AIR MONITOR CHECK

CIM-CAM MFR. NO. _____
CIM-CAM LOCATION _____
CAM FLOW RATE 18 APPROX 3 SCFM.
CIM FLOW RATE 18 APPROX 3.5 SCFM

SOURCE _____ CPM
SOURCE ASSAY DATE: _____

DATE	AIR FLOW RATE (CFM)	3HOD CYCLE TEST	BHGD CPM	SOURCE NCPM	EFF. (NCPM/DPM)	ALARM POINT	DET. EFF. AT TIME OF SEMI-ANNUAL CAL.	REMARKS	INIT.

FIGURE 1
Page 2 of 2

MANUAL SET.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8109-2

SERIAL NO: R11-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: _____

FREQUENCY: Semi-Annually

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 2
Page 1 of 2

MANUAL SET.

DATA PACKAGE #2
(Data Sheet #2)

INSTRUMENT CALIBRATION DATA SHEET

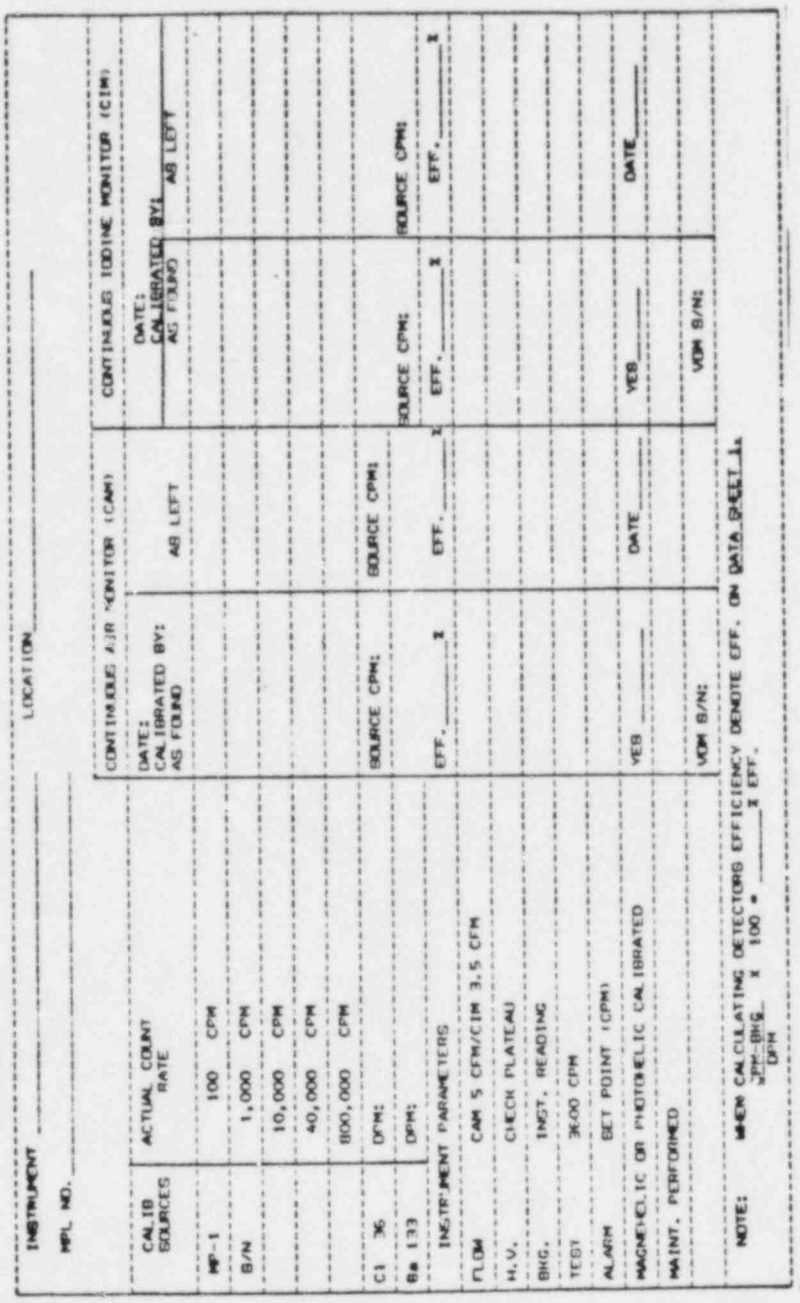


FIGURE 2
Page 2 of 2

MANUAL SET.

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Hand and Foot Monitor HFM-4A Operation and Calibration
PROCEDURE TITLE

HNP-8135
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X)   NON-SAFETY RELATED (   )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
2	Pages 1 - 7	WBM R.W. Zavadoski	Harvey Nix	7/14/83
3	Pages 1, 5, 6, 7 & 8	WBM W.H. Rogers	Jerris Summer for	11-22-83

MANUAL SET

We 10/6

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 8135 SHEET 1 OF 1

Revision No. 2

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
M. Wright	9-27-83	RW Zavadoski	10/3/83
		[signature]	10-2-83

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: To make changes requested by QA tracer number 83-355.

DESCRIPTION OF CHANGES: Pg 1, reversed order of Safety and Reference section to comply with HNP-9 format, compulsory comment number 2., Pg 5, para H.2 changed tip to top. Pg 6, para. H.12 added "Step off the monitor and" Added new pg 7 as the data package cover sheet. Pg 1, added document control number, TDC-519M.

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No

JCElt
PRB Secretary

83-189
PRB Number

10-17-83
Date

SAFETY EVALUATION

This revision 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 revision 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 revision because the system responds and is operated as before the revision.

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 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.

HAND AND FOOT MONITOR HFM-4A OPERATION AND CALIBRATION

A. PURPOSE

To ensure that the instrument is calibrated properly and to provide operation guides to the user.

B. REFERENCE

1. Technical manual for hand and foot monitor, model HFM-4A. TDC# 0519M

C. SAFETY

Observe radiation protection procedures.

D. EQUIPMENT

1. P-10 gas (10% methane, 90% argon).
2. Electrostatic voltmeter.
3. Assorted check sources.

E. DESCRIPTION

1. The HFM-4A provides a fast go/no-go indication of beta-gamma contamination on the hands and shoes of personnel. The instrument design allows an individual to monitor himself/herself.

   The instrument is entirely digital. All controls are internally mounted. Indications as to the status of the instrument and whether a person being monitored has an unacceptable level of radioactive contamination are provided on the front panel by solid state LED's and an audible alarm.

   The instrument has three channels, each monitoring beta-gamma radiation. Each channel has a separate alarm switch for beta-gamma. Each channel monitors its own background continuously in pre-set time segments while the HFM-4A is unoccupied. The most recent background count is stored in memory and is subtracted whenever someone steps onto the HFM-4A to be monitored.

   The electronics of the HFM-4A are solid state, mostly integrated circuits. All major circuits are plug-in circuit boards.

2. Indicators:

a. Front panel, visual

1. Counting background - yellow light-emitting diode. (LED).

2. Counting activity - yellow LED
3. Recount - red LED
4. OK - green LED.
5. High background - red LED.
6. Fail - red LED
7. Hands beta - gamma - red LED.
8. Left foot beta - gamma - red LED.
9. Right foot beta - gamma - red LED.
10. Inlet gas flow - flow meter (20 - 240 cc/min.).
11. Outlet gas flow - flow meter (20 - 240 cc/min.).

b. Front panel, aural: The Sonalert "squealer" is actuated when any of the following alarm conditions exists.

1. Recount
2. High background
3. Fail
4. Hands beta - gamma
5. Left Foot beta - gamma
6. Right foot beta - gamma

The Sonalert also "beeps" (approximately a 300-millisecond tone) when the count - time for a person being monitored is complete and also if the gas inlet pressure falls below the recommended level.

3. Detectors

a. General

1. Window thickness: 3 mg/cm2 aluminized myLar.
2. 4 pi beta efficiency: Approximately 20%
3. Gamma sensitivity: Approximately 50,000 cpm/mr/hr.
4. Counting gas: P-10 (10% methane, 90% argon)

F. DESCRIPTION OF CONTROLS AND CONNECTIONS

1. Front panel

   a. LH (Left hand) Simulate Switch: Performs the same function electronically as the switch which is actuated when a hand is inserted into the left hand cavity. Button must be depressed to accomplish function; used when monitoring right hand only.

   b. RH Simulate Switch: Same as above except used when monitoring left hand only.

   c. Gas Flow: Screwdriver slot gas flow control valve used in conjunction with the front panel mounted flow meters to set gas flow rate through detectors.

2. Back panel

   a. 115/230 VAC Switch: Changes the configuration of the power transformer primary as appropriate for the indicated voltage.

   b. Power: Turns instrument ON and OFF.

   c. Reset Start: Resets counting circuits to zero and starts new count when CYCLE switch is in the MANUAL position.

3. Internal - Control board (10721 00)

   a. OPN (operational) MODE switch - determines the channel or combination of channels for which the counting circuitry is active: FEET, HANDS OR FEET AND HANDS.

   b. MODEL switch - Provides the Logic manipulation required by the instrument. Model switch should be set for MODEL "A".

   c. CYCLE switch - In the "AUTO" position, all sensor switches are interlocked into the counting electronics. In the "MANUAL" position, a new counting cycle is initiated by the RESET - START switch.

   d. DISPLAY switch - Enables operator to choose which channel is displayed on the internal 4 - digit beta - gamma display. Instrument also designed for ALPHA detection, but alpha logic has been omitted.

   e. LINE FREQUENCY switch - Selects 50 or 60 Hz as applicable for the incoming line frequency.

f. COUNT TIME switch - Selects, in the timing circuitry, the proper output of a "divided - by" counter to provide either a 6 or 30 second count time.

g. TIME MULT switch - In the X1 position the count time selected by the COUNT TIME switch (above) is unaffected. In the X2 position, the count time signal is put through a divide - by 2 counter and either a 12 or 60 second count time is provided.

4. Internal - Channel Counter Boards (10720-00)

a. BETA - GAMMA ALARM digit switches - set into the counting circuitry, a number which is added to the most recent background count.

5. Internal - Large Mother Board (10731-00)

a. SONALERT switch - in the ENABLE position, 5 VDC is provided to the Sonalert so that when an alarm condition exists and a path to ground is established the Sonalert sounds. In the OFF position the 5 VDC path to the Sonalert is interrupted.

6. Internal - Amplifier/Discriminator Boards (10722-00)

a. ANTI-CON switch - In the IN position this switch controls the output of one section of the amplifier.

b. BETA - GAMMA THLD (threshold) potentiometer - varies the reference voltage at the beta - gamma comparator.

7. Internal - Small Mother Board

a. HI VOLTAGE switch - determines whether power is supplied to the high voltage power supply. ON or OFF.

b. HI VOLTAGE ADJUST potentiometer - changes the output of the high voltage power supply.

G. OPERATION OF INSTRUMENT

1. With the power switch in the OFF position, and the AC switch set to the appropriate line voltage, plug the AC power cord into an outlet.

2. Ensure the gas flow is at least 30 cc/min.

3. Turn HI VOLTAGE switch on small mother board to the OFF position. Turn the POWER switch to the ON position.

4. At this time, the FAIL light will come on (due to no high voltage at the detectors) if the HIGH BACKGROUND and RECOUNT lights appear, there is no need for concern. The condition will reset itself after 34 seconds.

5. Turn HI VOLTAGE switch to the ON position, FAIL light should go out.

6. Instrument is now ready for use.

7. Step onto instrument, place hands in hand cavity, and press down to start count cycle. COUNTING ACTIVITY L.E.D. should be on.

8. At the end of the count cycle, the O.K. L.E.D. will light and the Sonalert will sound. If contaminated, the "HANDS" or "FEET" L.E.D.'s will be on and the Sonalert will sound.

NOTE

If contaminated, call Health Physics.

H. Weekly Monitor Checks

1. Observe gas flow and record on DATA PACKAGE 1. Flow rate should be approximately 30 cc/min.

2. Remove top cover or open cover door and place CYCLE switch to the MANUAL position.

3. Adjust TIME MULT switch for a 1 minute count time.

4. Press RESET button on the rear of the monitor to begin background counts.

5. When the counting light goes out on the front of the monitor, turn the display switch to channel 1 and record results on DATA PACKAGE 1 as background CPM for hands. Turn display switch to channel 2 and record results as background CPM for left foot. Turn display switch to channel 3 and record results as background CPM for the right foot.

6. Adjust display switch to channel 1. Place source against the center of the outside left hand detector. Press RESET button. When the counting light goes out record results on DATA PACKAGE 1 in the correct column.

7. Duplicate step 6 for inside left hand, inside right hand, and outside right hand detector.

8. Adjust the display switch to channel 2. Lay the source in the center of the left foot detector. Press RESET button. When the counting light goes out, record results in the correct column on DATA PACKAGE 1.

9. Turn display switch to channel 3 and repeat step 8 for right foot detector.

10. Return CYCLE switch to AUTO position and TIME MULT switch for a 6 second count.

11. Step onto the monitor. Observe and ensure counting activity L.E.D. and O.K. L.E.D. are operational.

12. Step off the monitor and ensure BACKGROUND L.E.D. is operational.

13. Step onto the monitor. Lift left hand before counting time expires. Observe and insure the RECOUNT light comes on.

14. Duplicate step 13 for the right hand, right foot, and left foot.

15. Place source in left hand detector side. Activate counting mode, and ensure alarm and lights comes on for hands. Record results on DATA PACKAGE 1. Perform the same procedure on the right hand detector.

16. Remove protective covering from foot detectors and repeat Step 15 for each foot detector.

17. Record alarm set points on channel boards on DATA PACKAGE 1.

18. Install top cover or close lid and return instrument to service.

19. Replace paper covering on foot detectors if necessary.

20. Complete DATA PACKAGE 1, calculating efficiency of the detectors. If any detector efficiencies are less than 20% or greater than 50%, repair or replace detector. Allow new detector sufficient purge time. Then repeat section H.

NOTE

Alarm set points will be determined by a Laboratory Foreman using 20% worst possible detector efficiency before detector would be changed.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8135-1

SERIAL NO: R03-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 2

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 2

MANUAL SET

DATA PACKAGE 1

HEM-4A WEEKLY MONITOR CHECK

LOCATION: _____ M.P.L. NO: _____ SERIAL NO: _____

SOURCE NO: _____ SOURCE D.P.M. _____

GAS FLOW: _____ cc/min GAS PRESSURE: _____

BACKGROUND CHECKS:

HANDS _____ cpm; LEFT FOOT _____cpm; RIGHT FOOT _____cpm

SOURCE CHECKS:

SOURCE CPM-BKG DIVIDE SOURCE DPM X 100 = EFF.

DETECTOR	SOURCE CK. CPM	BKG. CPM	SOURCE DPM	DETECTOR EFF.	ALARM SET POIN
L.H. OUTSIDE					
L.H. INSIDE					
R.H. INSIDE					
R.H. OUTSIDE					
LEFT FOOT					
RIGHT FOOT					

NOTE

IF DETECTOR EFFICIENCY IS LESS THAN 20% OR GREATER THAN 50%, REPAIR OR REPLACE DETECTOR.

ALARM CHECKS:

LEFT HAND:	ACCEPTABLE	UNACCEPTABLE
RIGHT HAND:	ACCEPTABLE	UNACCEPTABLE
LEFT FOOT:	ACCEPTABLE	UNACCEPTABLE
RIGHT FOOT:	ACCEPTABLE	UNACCEPTABLE

COMPLETED BY: _____ DATE _____

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Operation of Waste Separation & Temporary Storage Facility
PROCEDURE TITLE

HNP-8430
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
0	NEW PROCEDURE	W H Rogers	G T Mangy	2-22-82
1	Page 2	W H Rogers	Jay Thompson	4/16/82
2	Pages 1 thru 5	W H Rogers	Jim Thompson	7/2/82
3	Pages 2 & 3	W H Rogers	Dennis Summerford	11-22-83

MANUAL SET.

WE 9/27

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 8430 SHEET 1 OF ___

Revision No. 2

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
MICHAEL C. SEEPE	8-31-83	[signature]	8-31-83

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: To facilitate the transfer of RADIOACTIVE Material to the WASTE Separation - Temporary Storage Facility.

DESCRIPTION OF CHANGES: Change F.4. on Page No. 2 of 9 the 2nd sentence from "Dose rates outside the vehicle shall be within the limits specified in DOT regulations and in HNP-8016." to "Dose rates outside the vehicle for an exclusive use vehicle should be within limits specified in D.O.T. regulations. If not, notify the Lab Supervisor for approval to proceed with transfer"

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No [signature]
PRB Secretary

83-185
PRB Number

9-30-83
Date

HNP-9

MANUAL SET.

WE 10/6/83

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 8430 SHEET 1 OF 1

Revision No. 2

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
Mikebirk	10-5-83	RW Zawadski	10/5/83

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: Add comment from AIT 05805 + QA-83-BWC-2/61

DESCRIPTION OF CHANGES: Page 3 of 9, provide instruction on dealing with radioactive or contaminated objects reading greater than 5 mr/hr

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

83-189
PRB Number

10-17-83
Date

HNP-9

MANUAL SET

SAFETY EVALUATION

This revision 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 revision 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 revision because the system responds and is operated as before the revision.

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 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.

JB
WE

OPERATION OF WASTE SEPARATION AND TEMPORARY STORAGE FACILITY

A. PURPOSE

The purpose of this procedure is to provide instructions in the operation of the waste separation and temporary storage facility.

B. SAFETY

Observe Radiation Protection Procedures.

C. REFERENCES

HNP-8012
HNP-8016
HNP-8028

D. SPECIAL EQUIPMENT

1. Appropriate survey instruments.

2. Appropriate protective clothing.

3. Appropriate signs, placards, and labels.

E. DETERMINATION OF MATERIALS TO BE TRANSFERRED TO THE WASTE SEPARATION AND TEMPORARY STORAGE FACILITY (WS-TSF)

1. All waste transferred to the WS-TSF will be transported in such a manner as to prevent the release of contamination to the environs during transport.

2. Liquids should not be transferred to the WS-TSF. This includes wet or damp mop heads, rags, or oil soaked blankets. Transfer of any liquids must be approved by the H.P. Supt. or his designee.

3. Each bag or piece of material should be surveyed by a Health Physics Technician prior to leaving the operating buildings. HNP-8028.

4. There should be no external surface contamination on the container. Also, no waste reading in excess of 50 mr/hr contact will be transferred to the WS-TSF without the approval of the Health Physics Superintendent or his designee.

5. Each container or piece of material must be labeled with a Radioactive Material label containing the following information:

   a. A general description of the waste.

   b. Surface contamination results.

   c. Highest contact dose rates.

   d. Date

   e. Surveyor's name.

NOTE

Any material with a contact dose rate greater than 50 mr/hr must be taken to the Unit II radwaste trash compacting area on the R/W 132' elevation, unless exempted per Paragraph E.4.

F. TRANSFER OF WASTE TO THE WASTE SEPARATION AND TEMPORARY STORAGE FACILITY (WS-TSF)

1. Material shall be transported to the WS-TSF by truck or other appropriate means. The vehicle will be loaded in an area designated by a Health Physics foreman or supervisor.

2. During the loading, transporting, and unloading of waste from the vehicle, the vehicle shall be posted "Radioactive Material" on the front rear and each side of the vehicle.

3. After the loading of waste onto the transport vehicle has been completed, the vehicle shall be locked and sealed and shall remain locked and sealed, until the commencement of unloading at the WS-TSF. If transport vehicle is a flat bed trailer, locks and seals do not apply.

4. The vehicle shall be surveyed prior to leaving the protected area. Dose rates outside the vehicle should be within limits specified in D.O.T. regulations. If not, notify the Lab Supervisor for approval to proceed with the transfer. Survey results will be documented on Figure 1 of HNP-8012.

5. The vehicle should travel unimpeded and by the quickest route to the WS-TSF. There shall be no unauthorized stops along the way. Emergency stops (such as mechanical failure, flat tire, etc.) shall require the immediate notification of a Health Physics foreman.

6. After the vehicle has been unloaded, a survey shall be performed. The interior of the vehicle or the surface of the flat bed trailer will be smeared for surface contamination. Survey results will be logged on Figure 1 of procedure HNP-8012.

G. RECEIPT OF WASTE AT THE WASTE SEPARATION AND TEMPORARY STORAGE FACILITY

1. Upon receipt of waste at the WS-TSF, all waste should be separated or classified according to dose rate and type of waste.

2. Waste reading less than 5 mr/hr should be set aside for processing by the waste separation facility. Waste reading greater than 5 mr/hr should be prepared for shipment for burial.

3. Non-compactable waste should be set aside for packing B-25 shipping containers or equivalent.

4. Compactable contaminated waste should be set aside for compacting.

5. All bags containing waste should be opened and investigated for salvageable protective clothing and equipment.

NOTE

Any deviation from the above guides requires approval from a Health Physics Foreman or Supervisor.

H. WASTE SEPARATION

1. Bags of waste reading less than 5 mr/hr contact should be opened and the waste should be placed on the waste sorting tables for inspection.

2. All waste shall be scanned with an RM-14/HP-210 probe or an E-120 or equivalent. Waste found to be reading 100 cpm above background at one half inch will be considered contaminated and will be processed as Radioactive Waste. The remaining material will be placed in green plastic bags and sent to the landfill as non-contaminated trash.

3. Before any clean waste is released to the landfill, each bag is to be checked with a micro-R meter or a PRM-4A/SPA-3. This check is to be performed at the landfill by an ANSI qualified H.P. Any bag of clean trash reading greater than two times background will be returned to the waste separation facility for reprocessing.

4. A written log will be kept of all materials leaving the WS-TSF as non-contaminated trash. This log should contain:

   a. Date
   b. Time
   c. Number of bags of trash
   d. Type of trash
   e. Surveyor's name
   f. Instrument serial number

I. PROCESSING OF RADIOACTIVE WASTE

1. All radioactive waste packaged for shipment will be in an appropriate DOT shipping container. Non-compactable waste is normally packaged in B-25 or equivalent shipping containers. Compactable waste is normally packaged in B-25 or equivalent shipping containers and/or DOT 17 H 55 gallon drums when compacting in a B-25 box place all material greater than 20 mr/hr in the center of the box in order to limit the surface dose rates. The highest average reading on all sides of the boxes should not exceed 100 mr/hr.

2. All shipping containers will be labeled with a radioactive materials sticker and the following information:

   a. I.D. number
   b. General description of contents
   c. Highest contact dose rate
   d. Container contamination levels
   e. Gross weight
   f. Date and surveyor's name

3. A written record will be kept on each package or container. See Data Package 1, Data Sheet 1.

4. Containers should be numbered consecutively with the numbers preceded by HNP and the year.

   Example: HNP-82-1
   HNP-82-2

5. Radioactive LSA stickers will be placed on two opposite sides of each container.

6. Containers should be stored in such a way as to limit exposure and allow easy access.

NOTE

When containers are shipped, the containers that were packaged first are to be shipped first.

J. ROUTINE SURVEYS

1. Routine contamination and radiation surveys will be performed at least once per day during manning of the facility or following any event which might cause a change in conditions. Survey results are to be logged on Figure 1, 2, or 3 of HNP-8012.

K. RADIATION AND CONTAMINATION CONTROL

1. Personnel working in the WS-TSF will be required to wear pocket dosimeters and TLDs at all times.

2. All entries into a radiation controlled area inside the WS-TSF will require an RWP (Radiation Work Permit).

3. All exits from contaminated areas will have step-off pads and frisker stations. Any person exiting a contaminated area must perform a whole body frisk.

NOTE

Any material leaving or taken out of the WS-TSF must be surveyed by an H.P. staff person.

4. The storage area will be inspected monthly for signs of container deterioration or leakage. Appropriate corrective action will be taken if damaged containers are found. Documentation will be on Data Sheet 2 of Data Package 2.

5. Any water that accumulates in the floor sump will be sampled and analyzed by Health Physics. If the liquid contains radioactive material other than natural radioactivity, it will be transferred to the radwaste system for processing. When liquid is found, the source should be identified and stopped.

6. When the building is not in use, Health Physics will perform a survey of the building interior on a weekly basis.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8430-1

SERIAL NO: R03-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 2

FREQUENCY: As Required

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 2

MANUAL SET.

DATA PACKAGE 1
DATA SHEET 1

ITEM ID #	WASTE DESCRIPTION	MR/HR CONTACT	WT. LBS	STORAGE LOCATION	DATE PACKAGED	DATE SHIPPED	REMARKS

FIGURE 1
Page 2 of 2

MANUAL SET.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8430-2

SERIAL NO: R03-

MPL NO: _____

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 2

FREQUENCY: As Required

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 2
Page 1 of 2

MANUAL SET.

DATA PACKAGE 2
DATA SHEET 2

STORAGE AREA MONTHLY INSPECTION SHEET

INSPECTOR:_____ DATE:_____

	ACCEPTABLE	UNACCEPTABLE
TRASH OR DEBRIS BUILDUP (ADDITIONAL EMPHASIS AROUND WORK AREAS)	_____	_____
DETERIORATION OF CONTAINERS (i.e. RUST, HOLES, ETC.)	_____	_____
PROPER POSTING WHERE APPLICABLE	_____	_____
DOSE RATES ARE WITHIN LIMITS POSTED	_____	_____
SPILLS (WATER OR OIL)	_____	_____
GENERAL CLEANLINESS	_____	_____

NOTE

IF UNACCEPTABLE, NOTIFY AN HP FOREMAN IMMEDIATELY.

REMARKS:_____

_____

_____

_____

_____

_____

FIGURE 2
Page 2 of 2

MANUAL SET.

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Portable Ion Chamber
Model RO-2A Operation And Calibration
PROCEDURE TITLE

HNP-8137
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
1	Pages 1 thru 4	WHR	Harry Nix	5/18/83
2	Pages 1 & 7	RW Zavadoski / R H Rogers	Jerris Summers for	11-22-83

WE 10/25

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 8127 SHEET 1 OF ___

Revision No. 1

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
M R Wright	10-4-83	R W Swadesh W H Rogers	10/21/83 10-20-83

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: To add document numbers for compliance with QA Tracer number 83-244

DESCRIPTION OF CHANGES: Add IDC number to reference B.1, delete reference B.3, Pg 7, add data package cover sheet

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No J Zelt
PRB Secretary

83-197
PRB Number

10-20 83
Date

HNP-9

MANUAL SET

SAFETY EVALUATION

This revision 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 revision 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 revision because the system responds and is operated as before the revision.

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 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.

PORTABLE ION CHAMBER

MODEL RO-2A OPERATION AND CALIBRATION

A. PURPOSE

To insure instrument is calibrated properly and to provide guides for the user.

B. REFERENCES

1. Portable Ion Chamber Model RO-2A Technical Manual, TDC #538.
2. Gamma Calibrator Procedure.

C. SAFETY

Observe Radiation Protection Procedures.

D. TEST EQUIPMENT

1. Gamma Calibrator.
2. Calibrated Beta Source.
3. 92 mci CS-137 Source.

E. DESCRIPTION OF INSTRUMENT

The Ion Chamber, Model RO-2A, is a portable air ion chamber instrument used to detect beta, gamma and X-ray radiation. The RO-2A has four linear ranges of operation to measure dose rate. The ion chamber is vented to atmospheric pressure and is specifically designed to have flat energy response into the X-ray region.

F. DESCRIPTION OF CONTROLS

1. Function Switch: Eight position rotary switch that turns the instrument OFF, checks the condition of the batteries, checks instrument ZERO, and selects the range of operation to be used.
2. ZERO Knob: Used to set the meter to zero when ZERO switch position is selected, or when in an insignificant radiation field.

3. Calibration Controls: Four variable resistors, one for each range.

G. OPERATION OF INSTRUMENT

1. Turn the function switch to BAT 1, and then to BAT 2 position. The meter should read above the BATT cut-off line in both cases.

NOTE

If BAT check on any range does not indicate good, tag instrument out with TO SHOP tag.

2. Turn the function switch to ZERO position. Check that the meter reads zero. If not, set it to zero with the ZERO knob.

3. Set the function switch to the desired range of operation. The switch position selected is the full scale reading of that range.

NOTE

When selecting the most sensitive range 50 mr/hr switching transient noise may cause a temporary deflection of the needle. This can be avoided by turning the function switch through the ranges slowly stopping at the 300 mr/hr and letting the needle settle, and then switching to the 50 mr/hr range.

4. When measuring beta or low energy gamma or X-ray emissions, open the sliding beta shield on the bottom of the case and face the bottom of the instrument toward the radiation source. To open or close the shield, depress the friction release button on the left side of the case and manually move the slide or let it fall due to gravity. When the shield is open, protect the thin face against damage by puncture and radioactive contamination.

NOTE

The effective center of the ion chamber is marked by dimples at the front and sides of the instrument case.

The zero setting of the instrument may be checked in radiation fields by merely selecting the ZERO position. Since the ion chamber is vented to atmospheric pressure, it is sensitive to changes in both air pressure and temperature. Tables 2-1 and 2-2 in the Technical Manual gives correction factors which should be used if the instrument is used in conditions of significant differences from the calibration conditions.

H. DOSE RATE INTERPRETATION

1. Gamma radiation.

a. When no significant difference is seen in the needle deflection with the beta window open and the beta window closed, the radiation should be reported as gamma only. When high gamma dose rates are present low beta dose rates may go undetected unless a smear is taken and removed from area and surveyed for beta dose rate.

b. When significant differences are seen in the needle deflection with the beta window open and beta window closed, the gamma exposure rate is the meter reading with the beta window shut. The indicated beta exposure is the difference between the reading with the beta window open and closed.

NOTE

The meter reading above will reflect true dose rate exposure only for true field dose rate. This is when the intensity of the radiation in all parts of the chamber is practically the same. Small beams, point sources, and small line sources will give meter readings less than actual exposure rates and must be evaluated on an individual basis.

2. Beta radiation.

The beta contact dose rate for a source at least as large as the window on the RO-2A is meter reading window open less meter reading window closed times beta correction factor on the side of the instrument.

NOTE

The beta correction factor is only for a source at least as large as the beta window. Sources smaller will have to be evaluated on individual basis.

I. GAMMA CALIBRATION OF INSTRUMENT (Quarterly)

CAUTION

The gamma field intensities required for calibration of the RO-2A are potentially hazardous to personnel. Observe precautions to prevent over exposure.

NOTE

It is very important that the inside of the chamber assembly be kept dry to avoid leakage currents due to moisture. If the desiccant becomes saturated and the RO-2A becomes erratic due to moisture, renew the desiccant crystals and cycle the instrument between room temperature (or lower) and + 140° F. three or four times to flush the chamber air across the desiccant.

CAUTION

Avoid any contact with electrical components with the hands as damage to the amplifier will occur.

1. Turn the function switch to BAT 1, and then BAT 2 positions. The meter should read above the BATT cut-off lines in all cases.

NOTE

The entire chamber assembly must be in the gamma field.

2. Turn the function switch to zero, check zero off-set. If not on zero, turn the ZERO knob until the needle comes to the zero position.

3. Turn the function switch to 50 mr/hr, place the instrument in about a 10 mr/hr and 40 mr/hr gamma field respectively, and check the readings. Record the readings on the Instrument Calibration Data Sheet (Figure 1) in the "As Found" column.

4. Turn the function switch to 500 mr/hr. Check zero off-set.

5. Repeat Step I.3 for about 100 mr/hr and 400 mr/hr fields, respectively.

6. Turn the function switch to 5 R/hr. Check zero off-set.

7. Repeat Step I.3 for about 2 R/hr and 4 R/hr gamma field, respectively.

8. Turn the function switch to 50 R/hr. Check zero off-set.

9. Repeat Step I.3 for the 10 R/hr and 40 R/hr gamma field, respectively.

10. If the instrument reads within ± 20% of the actual dose rate in Step I.3 thru I.9, write all values recorded in the "As Found" column into the "As Left" column, and proceed to Section J.

MANUAL SET

11. If the instrument does not read within ± 20% of the actual dose rates in each field, continue with Step I.12.

12. Turn the function switch to 50 mr/hr. Check zero off-set. Place instrument in about 10 mr/hr and adjust the 50 mr/hr control resistor until the meter indicates the field reading or ± 20% of this value, also check the 40 mr/hr dose rate using a field of about 40 mr/hr. Record meter values in the "As Left" column.

13. Turn the function switch to 500 mr/hr. Check zero off-set. Place instrument in about 100 mr/hr field and adjust the 500 mr/hr control resistor until the meter indicates the field reading ± 20% of this value, also check the 400 mr/hr dose rate. Record meter value in the "As Left" column.

14. Turn the function switch to 5 R/hr. Check zero off-set. Place instrument in about 2 R/hr and adjust the 5 R/hr control resistor until the meter indicates the field reading or ± 20% of this value, also check the 4 R/hr dose rate. Record meter values in the "As Left" column.

15. Turn the function switch to 50 R/hr, check zero off-set. Place instrument in about 10 R/hr and adjust the 50 R/hr control resistor until the meter indicates the field reading or ± 20% of this value, also check the 40 R/hr dose rate. Record meter values in the "As Left" column.

J. BETA CALIBRATION OF INSTRUMENT (Quarterly)

1. Zero RO-2A, place instrument on center of the beta source slab (beta window closed) and measure gamma radiation, record in the "As Found" column. Open beta window (as in G.4) and measure radiation level, record in the "As Found" column. Subtract the gamma reading from the beta, gamma reading. This is the beta indication.

   Determine a beta multiplication factor by dividing 230 (Beta slab reads 230 Mrad beta) by the indicated beta dose rate. Record this value on Figure 1.

   After calibration is complete, replace calibration sticker and beta multiplication factor on instrument.

CAUTION

When RO-2A needs to be removed from its can, use caution when replacing can, beta window on detector can be punctured by the bolt on the tension bar in the can.

NOTE

When adjusting control resistors is complete, replace caps on resistors while in field so if resistor turns while caps are being replaced causing meter reading to change, it can be determined.

NOTE

If changing mylar is necessary on RO-2A, be sure to check mylar with a ohm meter and put conductive side to the inside of the detector.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8137-1

SERIAL NO: R02-

MPL NO: D21-N

RTYPE: G15.14

XREF: _____

TOTAL SHEETS: 2

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 2

MANUAL SET

APPROVAL	
See Title Page	
DATE	
See Title Page	

PROCEDURE NO	
HNP-8137	
REVISION NO	
2	
PAGE NO	
8 of 8	

INSTRUMENT CALIBRATION DATA SHEET

INSTRUMENT RO-2A
M.F.L. NUMBER Dc1-N
SERIAL NUMBER

LOCATION

CALIB. SOURCE	ACTUAL COUNT RATE	ACTUAL DOSE RATE	DATE CALIB. BY: AS FOUND	AS LEFT	DATE CALIB. BY: AS FOUND	AS LEFT	DATE CALIB. BY AS FOUND	AS LEFT	DATE CALIB. BY AS FOUND	AS LEFT
	N/A	10 mr/hr								
		40 "								
		100 "								
		400 "								
		2 R/Hr								
		4 R/Hr								
		10 "								
		40 "								
		Beta, Gamma = _____	Gamma = _____		Beta = _____					
		_____ ÷ _____ = Beta Correction factor								
	Sens. Set		(Circle)	Sens.	(Circle)	Sens.	(Circle)	Sens.	(Circle)	Sens.
Maint. Performed										
Remarks										

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Offsite Radiological Environmental Monitoring During Emergencies
PROCEDURE TITLE

HNP-4827
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X) NON-SAFETY RELATED ( )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
0	New Procedure	W H Rogers	Jim Hayne for	12/3/82
1	Pages 1 thru 15	R W Zavadoski W H Rogers	Jim Hayne for	10/6/83
2	Pages 4 and 13	R W Zavadoski	Jim Hayne	10/12/83
3	Page 15	R W Zavadoski W H Rogers	Jim Hayne for	12/3/83

manual set

WE 11/4

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 4827 SHEET 1 OF 1

Revision No. 2

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
J L Collins	10/28/83	D W Zavadoski	11/3/83
		G J Smith	11/2/83

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 N/A

Attach marked up copy of procedure to this form.

REASON FOR REQUEST: Correct thyroid dose rate calculation on page 15.

DESCRIPTION OF CHANGES: Change line 7 on page 15 to use line 6 for proper calculation of thyroid dose rate to mr/hr.

PRB RECOMMENDS APPROVAL: (✓) Yes ( ) No J Clk
PRB Secretary

83-210
PRB Number

11-10-83
Date

HNP-9

BT

manual set

SAFETY EVALUATION

This revision 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 revision because the revision does not change the purpose or performance of ~~the system~~ this procedure. JLC 10/28/83

2. The possibility of an accident or malfunction of a different type than analyzed in the FSAR does not result from this revision because ~~the~~ this procedure does not ~~operate~~ address systems or components as ~~system responds and is operated as before the revision~~. JLC 10/28/83

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 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-4827	
REVISION NO	
3	
PAGE NO	
1 of 15	

B1

OFFSITE RADIOLOGICAL ENVIRONMENTAL MONITORING DURING EMERGENCIES

NOTE

This procedure supercedes HNP-4625 Rev. 5 and HNP-4725 Rev 5.

A. PURPOSE

To provide a method for the determination of radiological conditions in the plant environs, due to the release of radioactive materials from the plant under accident conditions. Also, this procedure will provide instructions for integrated offsite survey teams consisting of some combination of state, local, and GPC personnel.

B. DEFINITIONS AND TERMS

1. EOF - Emergency Operations Facility
2. REC - State Radiological Emergency Coordinator
3. RET - Radiological Emergency Team
4. Dose Assessment Management - Integrated state, local, and GPC personnel collectively consisting of the Dose Assessment Manager, the REC, and lead personnel from local civil defense organizations.

C. SCOPE

1. The activities of the offsite monitoring teams will generally be performed in the Emergency Planning Zones (EPZ), from the plant to distance of approximately (but not limited to) 10 miles.
2. Offsite monitoring teams will be under the direction of the Dose Assessment Management in the EOF.

NOTE

It is understood that the ultimate responsibility for offsite radiological environmental monitoring rests with the State.

D. REFERENCES

1. HNP-4620 "Site Area Emergency"
2. HNP-8142 "Stabilized Assay Meter SAM-2 Operation and Calibration"

manual set

E. ORGANIZATION

1. Team Composition

a. The teams are expected to generally consist of 3 or 4 persons, depending upon the avilability of personnel and the nature of the mission to be performed. Functions to be performed may include:

(1) Driver
(2) Navigator
(3) Data Recorder
(4) In-transit Instrument Reader
(5) Field Sampler
(6) Communicator
(7) Sample Taker
(8) Sample Analyzer

b. The Dose Assessment Management shall designate a team captain for each monitoring team. The team captain shall assign responsibility for each of the above functions (as applicable) to individual team members. Team members may be assigned responsibility for multiple functions. The team captain is responsible for assuring that all necessary actions are performed.

2. Team Responsibilities

a. Collect environmental media.

b. Conduct radiological field measurements (plume monitoring) with readings by location.

c. Conduct air monitoring by location.

d. Communicate sample analysis data, dose rate information, and personnel dosimetry to the EOF.

F. ACTIONS

1. Radiological Emergency Team personnel should meet in the EOF to get instructions, find out the events that have taken place, and to be assigned to a monitoring team.

2. The Dose Assessment Management is to divide personnel into teams using combinations of state, local, and CPC personnel. Teams should consist of a max of 4 people (avg. 3).

3. Offsite teams may use vehicles equipped with two-way communication devices belonging to GPC, the state, or the locals as appropriate. In addition, portable radios and antennas obtained from the EOF will be used as alternative communications. If personal vehicles are used, the portable radios and antennas will be the primary communication system and the Bell system as an alternative.

4. The Dose Assessment Management shall designate a team captain for each team.

5. Once the teams and team captains have been designated, each team captain will be responsible for assigning each member of his team certain tasks, ie, driver of the vehicle, navigator, data recorder, in-transit instrument reader, field sampler, communicator, sample taker, and sample analyzer.

6. Upon the classification of an ALERT level emergency, the offsite teams may be activated at the discretion of the Dose Assessment Management. If the classification is a SITE AREA or GENERAL Emergency, teams shall be activated. The Dose Assessment Management directs the staffing and deployment.

7. Obtain a survey team kit at the EOF.

8. Complete the checklist in Data Package 1, Data Sheet 1.

9. After the equipment is checked for operability, the monitoring team will establish communications with the EOF.

10. Turn on survey instruments, allow them to warm up, and verify response with the check source provided.

11. Install glass fiber filter and silver zeolite cartridge in sample holder of air sampler. Turn on sampler and confirm proper operation. Turn off.

12. Proceed to area specified by Dose Assessment Management.

13. While in transit, survey meter for measuring dose is turned on. The instrument is positioned for continuous viewing and ready access for recording readings. If readings above background are detected, record appropriate information on Data Package 2, Data Sheet 1.

    a. Indicate observed readings on survey map. (Report any indication of a plume to the EOF). Record on Data Package 2, Data Sheet 1.

    b. Record time entering the plume as indicated by the survey meter reading on Data Package 2, Data Sheet 2.

c. If dose rate is in excess of 5 mr/hr, report reading to the EOF.

NOTE

Minimize traversing of the plume as much as practical to maintain exposures ALARA. Contact the EOF prior to exceeding any administrative exposure guidelines. Provide periodic personnel exposure updates to the EOF when exposures are considered significant. Record personnel exposure data in Data Package 2, Data Sheet 1.

14. Upon arrival at the sampling location, perform a dose rate survey in the following manner:

a. At waist level, hold GM probe HP-210 or GM survey meter (or equivalent), read meter, and record results on Data Package 2, Data Sheet 2.

b. At 2" above the ground, hold GM probe with detector window facing the ground, read meter and record results on Data Package 2, Data Sheet 2.

c. At waist level, hold high range survey meter horizontal, read and record dose rate on Data Package 2, Data Sheet 2.

d. Repeat step c above, but at 2" from the ground.

15. Take air sample at designated area when requested by Dose Assessment Management as follows:

a. Place a silver zeolite (AgX) cartridge in the sample head, and mark the cartridge to specify the inlet side of the cartridge. Place a particulate filter upstream of the AgX cartridge, and place the sample head in the air sampler.

b. With the engine running, connect the air sampler power leads to the vehicle battery, taking care to connect the positive and negative cables to the positive and negative battery terminals respectively.

c. Start air sampler and record time on Data Package 2, Data Sheet 2.

d. Check air flow indication and record flow rate.

e. Run air sampler 10 minutes, record flow rate from calibration sticker on Data Package 2, Data Sheet 2.

NOTE

Dose Assessment Management may request other sample times.

f. Make radiation survey as in step 14 above while running the air sampler.

NOTE

If levels are greater than 10 mr/hr report reading to the EOF and await instruction from the Dose Assessment Management.

g. Remove the AgX cartridge and particulate filter from the sampler head, and place in separate plastic bags.

h. Air samples should be labeled and a log entry made in the log book of the following information:

Date and start time of sample
Duration of sample
Flow rate of sample
Location of sample point (map location, landmarks, etc.)
Survey team name
Air sampler number
SAM-2 Analyzer serial number (if used)

NOTE

During air sampling, monitoring teams should observe the dose rate instrument for significant changes in dose rates. Report any significant changes to the EOF. Record personnel doses on Data Package 2, Data Sheet 2 while sampling.

i. Insert GM survey meter probe (HP-210) into sample holder (SH-4A) and record background reading.

j. Place glass fiber filter in SH-4A holder and obtain reading (CPM). Calculate airborne concentration per Data Package 2, Data Sheet 3.

k. Place silver zeolite cartridge (which has been placed in plastic bags) directly against probe (HP-210). Obtain reading (cpm) and calculate airborne concentration per Data Package 2, Data Sheet 3. (µci/cc)

NOTE

If SAM-2 Counters are available, cartridges may be counted using HNP-8142 and HNP-4826. Record data on Data Package 2, Data Sheet 2 as CPM (net).

1. Place sample filters in envelopes and record on envelopes time, location, flow, sample time, cpm, background, and air activity. Hold for further analysis at place EOF.

16. Collect soil, vegetation and water samples when requested by the Dose Assessment Management, as follows:

    a. Take bag (mark it soil) and small scoop, fill with surface soil from a bare spot, tape closed, and tag with the date, time, and location.

    b. Take bag (mark it vegetation) and scissors. Cut vegetation approximately two (2) inches above ground, fill bag, tape closed, and tag with the date, time and location. (If possible, choose vegetation that might be ingested by animals).

    c. Fill poly bottle with surface water, close and tag with date, time and location.

17. Record time out of the plume on Data Package 2, Data Sheet 2, and determine total stay time.

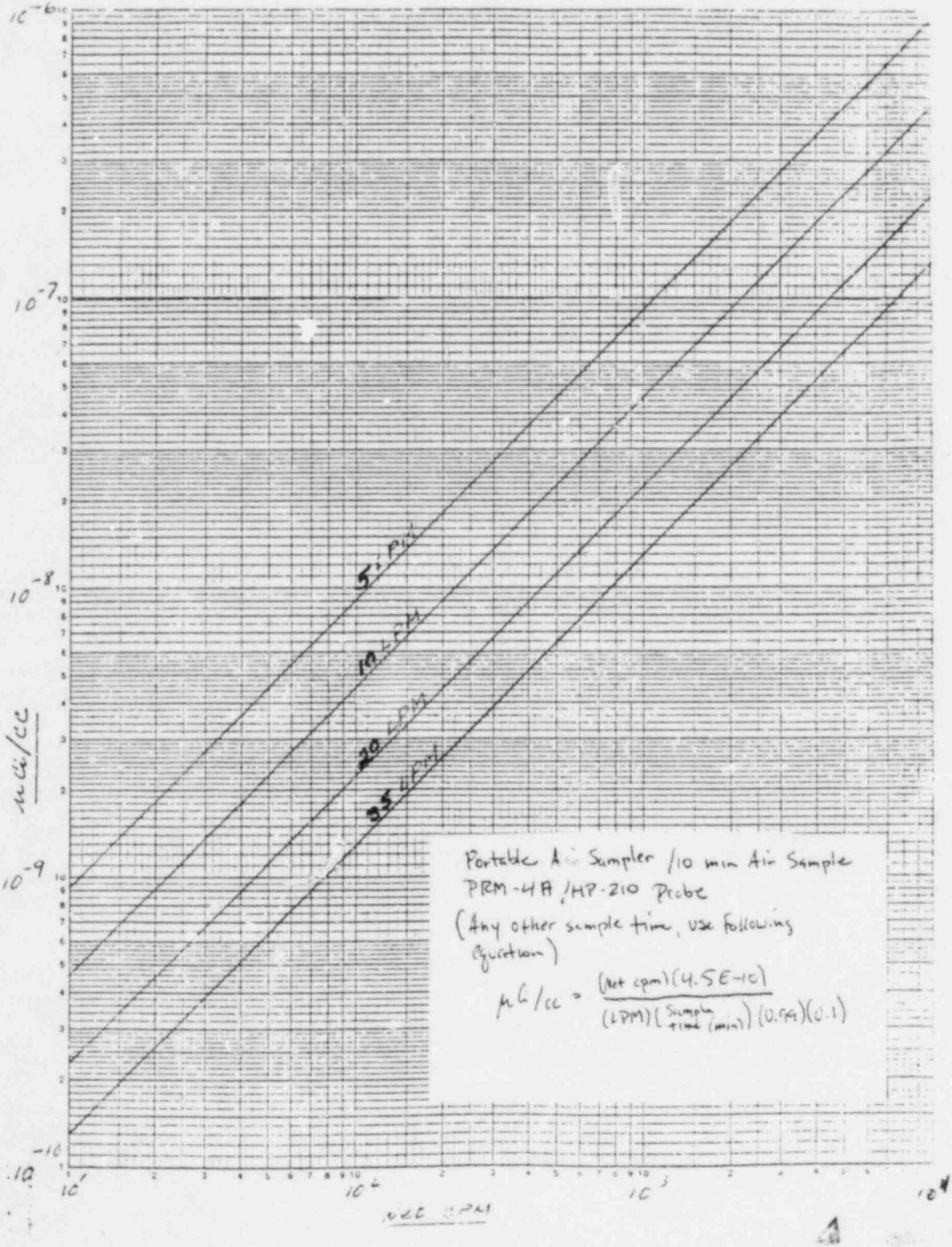
18. Report all results to EOF and await further instructions. Document all results in Data Package 2.

19. When directed by the Dose Assessment Management, proceed to environmental TLD and air sample cabinet locations. Change out TLD and filters at the stations noting time and date of change out. Return samples to the EOF.

20. Return all data sheets to the EOF for review, analysis and temporary storage. These data sheets shall be permanently stored in Document Control upon termination of the emergency condition.

FIGURE 1

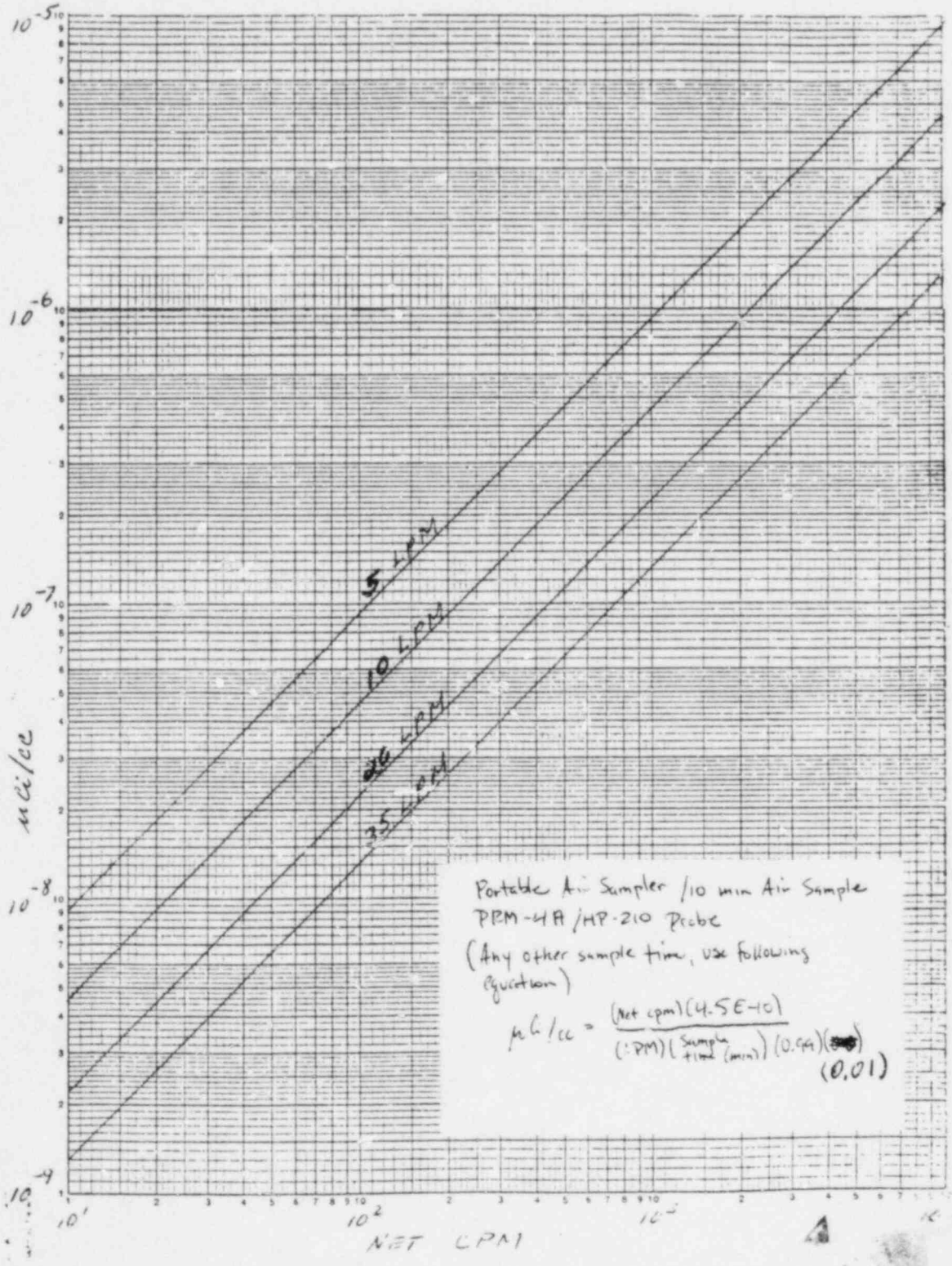
GROSS AIRBORNE DETERMINATION



manual set

FIGURE 2

IODINE DETERMINATION



manual set

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-4827-1

SERIAL NO: R03-

MPL NO: _____

RTYPE: G15.03

XREF: _____

TOTAL SHEETS: 2

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 2

manual set

DATA PACKAGE 1
MONITORING TEAM CHECKLIST
Data Sheet 1

A. Inventory Kit and Verify Necessary Items

1.	SAM-2 Analyzer (optional) a. *Battery and source check	_____ _____
2.	Survey Instruments a. Battery and source check	_____ _____
3.	AgX Cartridges	_____
4.	Particulate Filters	_____
5.	Calculator	_____
6.	Stop Watch	_____
7.	Log Book	_____
8.	Sample Bags	_____
9.	Pocket dosimeters	_____
10.	TLDs	_____
11.	EOF Telephone Numbers (in log book)	_____
12.	Airborne Activity Calculation Form	_____
13.	Gloves	_____
14.	Tweezers	_____
15.	Labeling Materials (labels, pens, etc)	_____
16.	Maps and Procedures	_____
17.	Spare Batteries	_____
18.	Blank Smears	_____
19.	Portable Air Sampler	_____
20.	Sample Bottles	_____
21.	HP 210 Probe/Holder	_____

B. Prior to departing the EOF, verify the following:

1.	Survey instrument in cab and on lowest scale	_____
2.	Team members equipped with dosimetry	_____
3.	Maps in cab	_____
4.	Vehicle radio check completed	_____

FIGURE 3
Page 2 of 2

manual set

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-4827-2

SERIAL NO: R03-

MPL NO: _____

RTYPE: G15.03

XREF: _____

TOTAL SHEETS: 5

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 4
Page 1 of 5

manual set

DATA PACKAGE 2

Data Sheet 1

Monitoring Team_____ Page ____ of ____ Date_____

EXPOSURE RATE AND EXPOSURE MEASUREMENT DATA FORM

** LOCATION				TIME	SURVEY INSTRUMENT	GROUND LEVEL EXPOSURE RATES			PERSONNEL DIRECT READING DOSIMETRY			TIME REPORTED
S	M	P	OTHER			2 meter (mR/hr)	1 meter (mR/hr)	Contact (mR/hr)	Name____ (mR)	Name____ (mR)	Name____ (mR)	

CONDITION	ACTION
1a. Exposure rate 25 mR/hr and radioiodine (^{131}I) air is not known.	1a. Potassium iodide (KI) recommended, unless directed otherwise by Dose Accessment Management.
2a. Total exposure 100 mR.	2a. Contact Dose Assessment Management and advise.
b. Total exposure 3 R.	b. Evacuation recommended, unless directed otherwise by Dose Assessment Management.
c. Total exposure 25 R.	c. Evacuation mandatory, contact Dose Assessment Management.

**Location-ie, sector, mile marker, direction, distance, road signs, landmarks, Hwy #'s, etc.

NOTE: Anytime exposure rate greater or equal to 25 mR/hr (regardless of air activity), Dose Assessment Management must be contacted.

S = Sector
M = Mile
P = Sample Point (1,2)

FIGURE 4
Page 2 of 5

manual set

DATA PACKAGE 2
Data Sheet 2

OFFSITE EMERGENCY MONITORING TEAM

Team_____ Date_____

Time entering plume_____ Time Exiting Plume_____ Plume Stay Time_____

Sample: Location_____ Sample Time On_____Sample Time Off_____

Flow Rate:_____LPM

Sampler Type _____ Serial Number_____

GROSS AIRBORNE ACTIVITY (Glass Fiber Filter)

(Sample + background CPM)_____CPM (Background CPM)_____CPM

(Sample + background CPM)-(background CPM)=Corrected CPM____CPM (net)*

From Figure 1 particulate airborne concentration=_____µci/cc**

Instrument Type_____ Serial Number_____

IODINE AIRBORNE ACTIVITY (AgX Filter)

(Sample + background CPM)_____CPM (Background CPM)_____

(Sample + background CPM)-(Background CPM)=Corrected CPM____CPM (net)*

From Figure 2 Iodine Airborne concentration=_____µci/cc**

From Data Sheet 3 Thyroid Dose Rate _____mr/hr

Instrument Type_____ Serial Number_____

COUNT/DOSE RATE SURVEY

Count/dose rate while in transit_____CPM_____Mr/hr

Count rate @ waist level _____CPM

Count rate @ 2" from ground (window facing ground)_____CPM

Dose rate @ waist level_____Mr/hr

Dose rate @ 2" from ground_____Mr/hr

Instrument type_____ Serial Number_____

Instrument type_____ Serial Number_____

FIGURE 4
Page 3 of 5

manual set

DATA PACKAGE 2 (CONT)
Data Sheet 2

OFFSITE EMERGENCY MONITORING TEAM

PERSONNEL DOSIMETRY*** Time_____

Team member_____Dose_____mr
Team member_____Dose_____mr
Team member_____Dose_____mr
Team member_____Dose_____mr

SAMPLES COLLECTED

_____Direct radiation TLD's _____Milk

_____Vegetation _____Well Water

_____Soil _____Drinking Water from surface source

_____Other (specify) _____Other (specify)

* Note: If SAM-2 used record CPM (net) as instrument reading.

** Note: If activity (CPM), flow rate (LPM), or sample times (min) are different from information on Figures 1 & 2, use Data Sheet 3 for calculations and record results on Data Sheet 2 (µci/cc).

*** Note: Read and record personnel doseimtry at least one time while at each sample location. (More frequently if does rates are high).

FIGURE 4
Page 4 of 5

manual set

DATA PACKAGE 2
Data Sheet 3

ENVIRONMENTAL AIRBORNE ACTIVITY CALCULATION FORM

1. Net Particulate (CPM)_____(from Data Sheet 2)
2. Net Iodine (CPM)_____(from Data Sheet 2)
3. Sample time_____ min. (from Data Sheet 2)
4. Flow rate_____ LPM (from Data Shret 2)

Particulate

5. Gross Airborne Concentration =

Particulate

$$\frac{(\quad \text{CPM (net) (4.5E-9)})}{(\_\_\_\_\_\text{LPM})\ (\_\_\_\_\_\text{min.})} = \_\_\_\_\_\ \mu\text{ci/cc}$$

Iodine

6. Airborne Concentration=

Iodine

$$\frac{(\quad \text{CPM (net) (4.5E-8)})}{(\_\_\_\_\_\text{LPM})\ (\_\_\_\_\_\text{min.})} = \_\_\_\_\_\ \mu\text{ci/cc}$$

7. Thyroid Dose Rate=

(line 6 µci/cc) x (1.85E+9 mr/hr/µci/cc) = _____mr/hr

*If a SAM-2 is used the graphs are not usable. The formula following must be used:

$$\frac{\text{(Net CPM) (1.5 E-9)}}{\text{(volume in liters)}}$$ for charcoal cartridge

$$\frac{\text{(Net CPM) (1.58 E-9)}}{\text{(volume in liters)}}$$ for silver zeolite

FIGURE 4
Page 5 of 5

manual set

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Eberline Model PM-6 Portal Monitor
PROCEDURE TITLE

HNP-8158
PROCEDURE NUMBER

Operations
RESPONSIBLE SECTION

SAFETY RELATED (X)   NON-SAFETY RELATED (   )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
0	New Procedure	RWZavadoski / W.H. Rogers	[signature]	12/3/13

WE 11/17 Rec'd 11/28/83

PROCEDURE REVIEW REQUEST FOR NEW PROCEDURES

SHEET 1 OF 1

PROCEDURE NO. HNP- 8158

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name: MRW	Date: 9-12-83	Signature: RW Zavadoski	Date: 10/1/85
David Bartlett	9-12-83	W H Rogan	9-13-83

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 Operational & Calibration procedure for - New Instrument - PM-6 Portal Monitor

Reviewed by QA & PMP Acceptable
[signature]

PRB RECOMMENDS APPROVAL: (✓)Yes ( )No [signature]
PRB Secretary

83-217
PRB Number

11-22-83
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 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.~~ instrument for which the procedure has been written is a personnel contamination monitor which enhances personnel safety.

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-8158
See Title Page	Georgia Power	REVISION NO	0
DATE		PAGE NO	1 of 12
See Title Page			

20

EBERLINE MODEL PM-6 PORTAL MONITOR

A. PURPOSE

To ensure that the instrument is calibrated properly and to provide operation guides to the user.

B. SAFETY

Observe radiation protection procedure.

C. REFERENCES

SX-S10244, Model PM-6 Technical Manual

D. TEST EQUIPMENT

1. P-10 Gas (10% methane, 90% argon)
2. Electrostatic voltmeter
3. Assorted check sources

E. DESCRIPTION - GENERAL

The Eberline PM-6 monitor is a microprocessor based radiation detection system which provides a quick indication of beta-gamma contamination on the clothes and shoes of personnel. The microcomputer provides a sophisticated and flexible means of acquiring and manipulating data and presenting operational conditions and alarms on the alpha-numeric gas discharge display and status indicator lights.

All functions of the monitor are automatic with the parameters preset into the microcomputer. It is capable of operation as a walk through type monitor or as a pause type. During use the display will indicate whether the occupant is clean (non-contaminated) or contaminated and the zone in which the alarm occurs if the alarm setpoint is exceeded.

F. DESCRIPTION OF CONTROLS AND INDICATORS:

1. External

   a. Ultrasonic sensing unit: Senses one's approach to the monitor and initiates counting activities in the walk through mode.

   b. Display Chassis: It is composed of the display module, ready light, alarm light, trouble light, and a counting light. All of which indicate the operating condition of the monitor and display the appropriate message to the occupant of the monitor.

manual set

c. Photoelectric Sensor: Indicates to the monitor that it is occupied or if the occupant has exited the monitor before the count cycle has been completed. (This is functional in the pause mode only.)

2. Internal Right Column

a. Power Switch: Provides on-off capabilities for 110 volt AC power.

b. Flow Gauges: Indicates inlet and outlet flow rates in cc/minute for both left and right side detectors. The inlets flow rate gauges are adjustable.

c. Pressure Regulator: A dual gauge fully adjustable control for the P-10 gas used in the detectors. It is mounted on a type 1A gas cyclinder and is connected to the instrument by 3/16" Id Tygon Tubing (Bottle #2).

3. Internal Left Column

a. Keyboard: A 16 key control board that serves as the interface for communication between operator and machine.

b. Operate/Test Switch: Controls the operation of the monitor between the normal operation mode and its test and maintenance routines.

c. Pressure Regulator: A dual gauge fully adjustable control for the P-10 gas used in the detectors. It is mounted on a type 1A gas cylinder and is connected to the instrument by a 3/16" Id tygon tube. (Bottle #1)

d. Program Header Switch: Located on the computer board determines the mode of operation of the monitor according to the model in use.

e. HV Switches: Two switches that provide on-off capabilities for each of 2 high voltage sections.

f. HV Adjust: Two potentiometers that provide a reference voltage to each of the high voltage power supplies enabling control of the high voltage setting.

G. OPERATION OF INSTRUMENT

1. Initial Set-up

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a. P-10 gas hook up: Install the P-10 gas bottles in both sides (bottle #1 is on the left, bottle #2 is on the right) connect the pressure regulators on bottles 1 & 2 and connect the 3/16" tygon tubing to the outlet side of the regulators.

b. Gas Flow and Pressure Adjust: Adjust the pressure regulators to 5 psig and the flow regulator to 50 cc/minute.

CAUTION

Do not exceed 50cc/minute or damage to the detectors may occur.

c. Initial Purge: Allow approximately 4 to 5 hours purge time at 50cc/minute to insure that the system is completely purged of outside air and moisture. The flow rate can then be adjusted to 25cc/minute for normal operation.

d. Power Connection: The instrument uses 110 volt AC power. It may be plugged and turned on at this time.

2. Normal Use

Operate vs. Test

If the OPERATE/TEST switch above the keyboard is set to operate, the monitor will run in its main routine, measuring and storing background for all channels, checking for high background alarm levels, low count failure, and low gas pressure conditions until the actuation of sensing switches calls the personnel monitoring routine. This routine causes all channels to check for high activity alarm conditions with automatic background subtraction, according to the protocol of one of the three operating modes in which the monitor has been set to operate:

Mode 1	Preset All
Mode 2	Maximum Sensitivity
Mode 3	Minimum Count Time

If the OPERATE/TEST Switch S1 is set to TEST, the monitor runs in its test and maintenance routines. In this mode, the keyboard is active and the other sensors are inactive.

Background measurements and related computations are suspended while in TEST, and all parameters are available for display and/or modification as listed in Table 1. The display prompts the operator with the name of the parameter list ready for examination or, within a list, the name of the variable being displayed and its present value. The keyboard protocol is such that touching the "+" key causes an increment to the next item, the "-" key causes a decrement to the prior item and the ENTER key causes entry to that list. EDIT and ENTER allow modification of appropriate items as indicated by E in the table.

a. Routine Monitoring (Operate)

(1) Walk through mode: A typical measurement in the walk through mode involves nothing more than walking through the frame. The ultrasonic unit senses one's approach, which initiates a minimum of five seconds worth of individual counting intervals. After the person has departed and the five second sensor delay has expired, the PM-6 will resume background counting. (The program header switch should be set with the number 2 and 3 switches open. All of the others should be closed for the PM-6 to operate in the walk through mode).

(2) Pause Mode: In the pause mode it is necessary to stand in the frame blocking the light beam for the duration of the counting time. A chime and a "count OK" or a "Contaminated" message signals the end of a count. (The program header switch should be set with the number 4 switch open and all others closed for the PM-6 to operate in the pause mode.)

b. Test Mode

TABLE 1
TEST MODE MENU

PARAMETER LIST AND ITEM	OPERATING MODE Mode 1 PRESET ALL	Mode 2 MAX. SENS.	Mode 3 MIN.CT. TIME
DISPLAY SYSTEM PARAMETERS			
Identification and Type	H	H	H
Mode (1,2, or 3)	E	E	E
Sigma Factor (SF)	E	E	E
Weighting Factor (W)	E	E	E
Alarm Hold Time (seconds)	E	E	E
Count Time, Test (seconds)	E	E	E
Count Time, (T, seconds)	E	E	C
Min. Count Time (Mode 1 only)	C	NA	NA
Max. Count Time (Mode 3 only)	NA	NA	E
DISPLAY CHANNEL PARAMETERS			
Zone or Channel Identification			
Average Background cps (R_B)	M	M	M
Alarm Setting cps (R_A)	E	C	E
Min. Alarm Limit (Mode 1 only)	C	NA	NA
Max. Alarm Limit (Mode 2 only)	NA	E	NA
(Repeats for each zone or channel)			
COUNT RATE MODE			
Zone or Channel cps	M	M	M
(Repeats for each zone or channel)			
DISPLAY TROUBLE LIST (available only if trouble light is on)			
Zone or Channel Identification			
High Background	M	M	M
High Count Fail	M	M	M
Low Count Fail	M	M	M
Bottle #1 Empty	M	M	M
Bottle #2 Empty	M	M	M
Failure ** Out of Gas!	M	M	M

manual set

PARAMETER LIST AND ITEM	OPERATING MODE Mode 1 PRESET ALL	Mode 2 MAX. SENS.	Mode 3 MIN. CT. TIME
SYSTEMS DIAGNOSTICS			
Display Test	A	A	A
Keyboard Test	OI	OI	OI
Alarm Ack	A	A	A
*One Hand	A	A	A
Light Test	A	A	A
Chime Test	A	A	A
Read/Write Memory Test	A	A	A
Program Memory Test	A	A	A
USAGE			
Personnel Counter/Elapsed Time	M	M	M

LEGEND

H - Fixed by hardware configuration
E - Edit/Enter via keyboard
C - Computed variable by microprocessor
M - Measured variable
NA- Not Available
A - Auto Sequence
OI- Operator Input
* - PM6-2 (Hand and Foot Portal) only

(1) Operating Mode

(a) Preset All, Mode 1

In this mode the alarm setpoint R_A for each channel, and the counting time T and sigma factor SF for all channels, are entered via the keyboard. A personnel alarm occurs if the count N in the counting time T is such that

$$N \geq R_B T \text{ and } R_A T$$

The high background alarm occurs if

$$SF \sqrt{R_B T} \geq R_A T$$

manual set

(b) Maximum Sensitivity, Mode 2

In this mode the maximum alarm limit R_{Amax}, counting time T, and SF are entered via the keyboard. Each time the background is updated a new alarm setting R_A is computed for each channel.

$$R_A = SF \sqrt{R_B / T}$$

A personnel alarm occurs if

$$N \geq R_B T + R_A T$$

The high background alarm occurs if

$$R_A \geq R_{Amax}$$

(c) Minimum Count Time, Mode 3

In this mode, R_A, SF and maximum count time T_{max} are entered. Each time background is updated a new count time is computed from

$$T = (SF)^2 \ RB/(R_A)^2$$

based on the channel with the highest R_B

Personnel alarm occurs if

$$N \geq R_B T + R_A T$$

The high background alarm occurs if

$$T \geq T_{max}$$

(2) Sigma Factor (SF): A user entered variable that is a multiplier of the background standard deviation used in determining alarm setpoints.

(a) Mode 1, the SF is used in determining the alarm setpoint for the high background alarm when

$$SF \sqrt{R_B \ T} \geq R_A \ T$$

the alarm will occur

(b) Mode 2, the SF is used in determining the personnel alarm setpoint - R_A

where $R_A = SF \sqrt{R_B / T}$

manual set

(c) Mode 3; the SF is used in determining the minimum count time, where the alarm setpoint R_A is preset and the highest average background R_B is used where count time $T = (SF)^2 RB/(R_A)^2$.

NOTE

The value of the Sigma Factor will vary based on which of the 3 modes of operation is to be used. Determine values for the variable represented in the formulas based on the location and operating conditions of the monitor. Use these to arrive at an acceptable value for the SF that will produce the most sensitive operation with the least amount of false alarms.

(3) Weighting Factor (W): A number that is used in compensating for background variation. An increase in the W value results in an increased confidence level for false alarms, but at the same time it increases the amount of time it takes to respond to real changes in the ambient background. A value between 10 and 20 is recommended.

(4) Alarm Hold Time: The length of time the sonar alert and the display module remain activated during an alarm condition. (Operator determined 1 to 9 seconds).

(5) Count Time, Test: The length of time that the system counts in the "Count Rate" mode, normally used for source checking individual channels. (Operator determined 1 to 900 seconds).

(6) Count Time (T): (Modes 1 & 2) A predetermined period of time for the count duration of the background update and the personnel count. (Operator determined 1 to 10 seconds).

(7) Maximum Count Time (T_{max}); (Mode 3 only) - The maximum amount of counting time, (T) allowable before a high background alarm will occur when $T \geq T_{max}$.

(8) Alarm Setting (R_A): (Operator determined - Modes 1 and 3) The maximum amount of counts (N) collected before a contamination alarm will occur when $N = R_A + R_B$. R_A can be solved for given T, R_B , R_b , Z and W. R_b is taken to be equal to R_B as it is the best estimate of R_b.

$$R_A = R_a - Z\sqrt{\frac{R_a + R_b}{T} + \frac{R_b}{T(2W+1)}}$$

Z is determined by choosing the desired confidence level that will produce an acceptable false alarm rate, and still maintain the confidence level as high as possible. This determination should be based on the location of the monitor and the conditions under which it is to be used.

For 99.9 percent confidence level, F(z) = .999, z = 3.090
For 99.0 percent confidence level, F(z) = .990, z = 2.326
For 95.0 percent confidence level, F(z) = .950, z = 1.645
For 90.0 percent confidence level, F(z) = .900, z = 1.282
For 75.0 percent confidence level, F(z) = .750, z = 0.674
For 50.0 percent confidence level, F(z) = .500, z = 0

(9) Max Alarm Limit: (Mode 2) Preset amount of counts that will cause a high background alarm if the setpoint is exceeded.

Variable Legend

R_A	Alarm Setpoint (Limit)
R_a	Activity Count Rate
R_B	Average Background
R_b	Individual Background Count
N	Personnel Count
SF	Sigma Factor
T	Count Time
T_{max}	Maximum Count Time
Z	Confidence Level Value

3. System Failure

If the instrument indicates trouble or failure notify a Health Physics instrument technician of the problem so it can be resolved.

manual set

H. WEEKLY SOURCE CHECK

NOTE

Due to the frequency of the routine source check, other periodic calibration is unnecessary.

1. Observe and record the pressure in bottles 1 & 2 and the regulated pressures to the instrument. The regulated pressure should be 5 psig. Adjust if necessary.

2. Observe and record on Data Package 1 gas flow on the gauges for both sides. The flow should be 25cc/minute. Adjust if necessary.

3. Switch the Operate/Test switch to Test. Advance the display to "Display Channel Parameters" using the "+" key. Press "Enter" to gain access to the program list. The display will show the zone identification number. Press "Enter" to gain access to the individual Zone/Channel parameters. Use "+" to step through the list recording the "Average Background" and the "Alarm Level". Continue through the 11 Zone/Channels in the above manner recording the required data. If the instrument is being used in the "Maximum Sensitivity, Mode 2", also record the "Max Alarm" setting.

4. Advance the display using the "+" key to the "Count Rate Mode". Press "Enter" to gain access to Zone/Channel #1. Center the source against the detector screen. Allow 2 count cycles to occur before recording the results of the 2nd count. Continue through all 11 Zone/Channels using the "+" advance recording the data on Data Package 1.

5. Backup to the "Display System Parameter" list using the "-" key. Press "Enter" to gain access. Press "+" to increment through the list recording the parameters for the following: Mode (1, 2, or 3), Sigma Factor, Weighting Factor, Alarm Hold Time, Count Time, Test, and Count Time.

6. Note whether the monitor is being used in the Pause or Walk through mode.

7. Return the Operator/Test Switch to Operate. Allow the monitor to background count momentarily. Place the source on Zone #1 while standing in the monitor. Indicate on the data sheet in the Alarm Acceptable Column whether or not the channel alarms. Step out of the monitor, allow the alarm to clear. Continue through the remaining zones in the above manner.

8. Calculate the efficiency for each Zone and Channel completing the Data Package. If the detector efficiency is below 20% it is not acceptable. Replace the detector or manual set initiate repairs to return the efficiency to an acceptable level.

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8158-1

SERIAL NO: R00-

MPL NO: _____

RTYPE: G15.14

XREF: N/A

TOTAL SHEETS: 2

FREQUENCY: Weekly

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

FIGURE 1
Page 1 of 2

DATA PACKAGE 1

PM-6 WEEKLY MONITOR CHECKS

Location: _____ MPL # _____ Serial # _____

Source #: _____ Source D.P.M. _____

Gas Pressures: 1. _____ PSI _____ Regulator Gas Flow 1. _____ cc/min
2. _____ PSI _____ Regulator Gas Flow 2. _____ cc/min

Source CPM-BKG Divided By Source D.P.M. X 100 = EFF.

Detector Zones	Source CK CPM	Average BKG. CPM	Net Source CPM	Detector EFF%	Alarm Setpoint	Alarm Acceptable
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

Walk or Pause Mode. . . . . _____
Mode (1, 2, or 3) . . . . . _____
Sigma Factor. . . . . _____
Weighting Factor. . . . . _____
Alarm Hold Time . . . . . _____
Count Time Test . . . . . _____
Max. Alarm Limit Mode 2 . . . . . _____
Count Time (Pause Mode Only). . . . . _____

COMPLETED BY: _____

DATE COMPLETED: _____

manual set

FIGURE 1
Page 2 of 2

GEORGIA POWER COMPANY

HATCH NUCLEAR PLANT

PROCEDURE

Shipment Of Radioactive Material
PROCEDURE TITLE

HNP-8016
PROCEDURE NUMBER

Lab
RESPONSIBLE SECTION

SAFETY RELATED (X)   NON-SAFETY RELATED (   )

REV.	DESCRIPTION	APPROVED DEPT. HEAD	APPROVED PLANT MANAGER	DATE
12	Page 15,16 & 18	W H Rogers	[illegible]	3/10/82
13	Pages 18 & 19	W H Rogers	[illegible]	9/06/83
14	General Revision	RW Zavadoski	[illegible]	12/7/83

manual set
HNP-9

WR 11/8

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP- 8016 SHEET 1 OF 1

Revision No. ~~18~~ #13

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name: MRW	Date:	Signature:	Date:
Wade Melerd	11-1-83	~~[illegible]~~ Collins	11/10/83
		WB Kirkley for RWZ	11/8/83

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: To Specify that Cask Handling Procedures used at Plant Hatch will be sent to PRB. Also include method for Activity determination of Trash in a 55 gallon drum and inspection of 55 gallon drums and B-25 boxes used as shipping containers.

DESCRIPTION OF CHANGES: Page 5 D.1.a - Specify that PRB approved cask handling procedures will be used. Page 5 D.5.c include procedure for activity determination of Trash and oil in 55 gallon drum. Page 9 D.7 include Procedure for inspecting shipping containers. Pg 3 add density for Ecodize Resin.

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

11-10-83 Date

83-210 PRB Number

HNP-9

EC manual set

SAFETY EVALUATION

This revision 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 revision because the revision does not change ~~the purpose or performance of the system.~~ the purpose or performance of the shipment of Radioactive material in compliance with 49 CFR parts 100 to 177 and 10 CFR 71

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

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 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.

WE 10/11

PROCEDURE REVISION REQUEST

PROCEDURE NO. HNP-8016 SHEET 1 OF 1

Revision No. 13

REQUESTED BY		DEPARTMENT HEAD APPROVAL	
Name:	Date:	Signature:	Date:
Wade McLeod	6/15/83	RW Zavadoski	10/10/83
			10-6-83

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: To comply with New Revisions in 49 CFR parts 100-177 effective date 7-1-83

DESCRIPTION OF CHANGES: Reference 49 CFR and other applicable regulations in procedure and include a method for documenting Radioactive Shipments in one Data Package. Include methods for Activity determination and Cask Handling into HNP-8016. Total Procedure Revision

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

83-189
PRB Number

10-17-83
Date

HNP-9

manual set

EC

SAFETY EVALUATION

This revision 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 revision 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 revision because the system responds and is operated as before the revision.

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 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.

SHIPMENT OF RADIOACTIVE MATERIAL

A. PURPOSE

To assure that all shipments of radioactive material meet the Department of Transportation (DOT), Nuclear Regulatory Commission (NRC) requirements, and all state, local and burial site criteria.

B. REFERENCES

1. 49 CFR 100-177
2. 10 CFR 71
3. 10 CFR 61
4. Control and Accountability of Radioactive Material, HNP-8017
5. Barnwell, Hanford and Bealty Disposal Site Criteria.

C. SAFETY

Observe Radiation Protection Procedures.

D. PROCEDURE

1. The shipment of all radioactive material will be done in compliance with 49 CFR parts 100-177, 10 CFR parts 61 and 71 and all burial site criteria.
2. In addition to the requirements of D.1 above, the following additional requirements will also be applied.
   a. Exclusive use vehicles loaded for shipment must have approval of a Lab Supervisor or higher authority to exceed 165 mr/hr at the surface or vertical plane of vehicle, 8 mr/hr at 2 meters from surface or vertical plane of the vehicle or 1.6 mr/hr at the surface of the rear of the cab.
   b. The survey performed at the rear of the cab for exclusive use vehicles will be done with an instrument which is graduated to read dose rates < 2 mr/hr such as a teletector or an E-400.
   c. Truck surveys for exclusive use shipments will be documented on Data Package 1, Data Sheet 2A or 2B.

manual set

3. Activity Determination

a. Expended resin

NOTE

Extremity and high range dosimeters shall be worn when obtaining samples of expended resin when dose rates are expected to exceed 100 mr/hr whole body and four times greater than whole body for extremities.

(1) Operations shall notify Health Physics when tanks are full and shall supply the recirculation start time and tank volume. Recirculation is required to insure that a representative sample is obtained. The recirc time for Reactor Water Cleanup Phase Separator Tank is 30 minutes and for condensate phase separator tank is 60 minutes.

(2) After the required recirculation time, collect about 25 ml. of the slurry in a one liter bottle. The Unit One Sample Points are located on the discharge side of the CPS mixing pump for CPS resin, and on the discharge side of the cups mixing pump for CUPS resin. The Unit Two Sample point for both CPS and CUPS is located in the Waste Skid Room on Unit 2, Radwaste 132' elevation. If sample points are not operable, corrective action should be taken, and dip samples obtained in the interim.

(3) Place a 5 micron millipore filter in a petri dish and weigh. Record results on Data Package 1 (Data Sheet 3).

(4) Ensure that the filter holder is clean.

(5) Place the millipore filter in the filter holder of the vacuum flask.

(6) Place upper filter holder over filter and secure.

(7) Filter about 5 ml of sample through the filter disc using the standard vacuum filter flask. Pull a vacuum across the filter for approximately 1 minute or until resin is dewatered.

(8) Remove the filter disc, and place it in petri dish.

(9) Reweigh the filter and petri dish. Record results on Data Package 1 (Date Sheet 3).

(9) Reweigh the filter and petri dish. Record results on Data Package 1 (Date Sheet 3).

(10) Obtain an isotopic analysis of the sample using a Ge(Li) detector. Sample size and geometry should be selected such that dead time of the detector is less than 10% and the counts are quantifiable. The isotopic analysis should be in units of uCi/cc. This can be obtained by dividing the sample weight in grams by the density of resin which is taken to be 0.8 gm/cc.

(11) If the specific activity for isotopes greater than five year half life is greater than 1 uCi/cc, then the resin must be dewatered in a high integrity container and if it is less than 1 uCi/cc, then the resin should be dewatered in a steel liner.

For administrative purposes the following limits shall be adhered to:

uCi/cc	Action
<0.90	Dewater in a steel liner
>0.90 but <0.95	Resample tank; if <0.95 uCi/cc dewater in steel liner, if >0.95 dewater in a high integrity container
>0.95 but <350	Dewater in a high integrity container
>350	Resin must be solidified

Exceeding administrative limits must be approved by a Laboratory Supervisor or higher authority.

(12) Complete Data Package 1 (Data Sheet 3).

(13) Curie content of the shipment liner can be determined by the following formula:

$$\text{Activity in Curies} = \text{Total activity } \left(\frac{\text{uCi}}{\text{cc}}\right) \times 10^{-6}$$

$$\frac{\text{Ci}}{\text{uCi}} \times \text{volume of resin cu ft} \times 28317 \left(\frac{\text{cc}}{\text{ft}^3}\right)$$

b. Trash in a B-25 box.

manual set

(2) Average the highest readings collected at each point (mR/hr).

(3) Estimate the Curie content using the formula below:

mCi = 92 x D.R. x (x)

Where D.R. is average dose rate in mR/hr from step D.3.b.(2).

(x) is read directly from the curve on Table 1.

c. Trash or absorbed oil in a 55 gallon drum.

(1) Measure the exposure rate at 3 feet from surface of the container in mR/hr.

(2) Average the highest readings collected at each point (mR/hr).

(3) Estimate the Curie Content using the formula below:

mCi = (6.9)(D.R.)(X)

Where D.R. is average dose rate in mR/hr from step D.3.c.(2)

(X) is read directly from the curve on Table 2

4. Cask Handling

a. Refer to appropriate PRB reviewed cask handling procedures provided by vendor.

b. To assure all critical functions are performed, the cask handling check-off forms shall be completed. Use the cask handling form titled "User Check-Off Sheet" Data Package 1, Data Sheet 4.

5. Shipping Papers

a. Shipments to Barnwell Disposal Site shall include the following forms:

(1) Bill of lading

(2) Chem-Nuclear Radioactive Shipment Form

(3) (Resins Only) Solid Radwaste Decision Log*, Data Sheet 3.

manual set

(4) Isotopic analysis*

(5) Truck Survey*, Data Sheet 2A or 2B

(6) (Cask only) Cask Handling Form*, Data Sheet 4

(7) Prior Notification Form

(8) South Carolina Certification Form

(9) Exclusive Use Statement

b. Shipments to Hanford Disposal Site shall include the following forms.

(1) Bill of lading

(2) U.S. Ecology Radioactive Material Shipping form.

(3) (Resins only) Solid Radwaste Decision Log*, Data Package 1, Data Sheet 3.

(4) Isotopic Analysis *

(5) Truck survey*, Data Sheet 2A or 2B

(6) (Cask only) Cask Handling Form*

(7) Prior Notification Form

(8) Exclusive Use statement

(9) Dept of Social/Health Services Certification Form

(10) (Broker shipments only) Broker Certification Form

c. Shipments to all other locations will include, as a minimum, the following forms.

(1) GPC Radioactive Shipment Record

(2) (exclusive use only) Truck Survey Form*, Data Sheet 2A or 2B

(3) (if required by receiver of Radioactive material) isotopic analysis*.

* Indicates forms in which the original remains at Plant Hatch and duplicates accompany shipping papers. All other forms not denoted by an asterisk (*) will be duplicated after manual set completion and attached to Data Package 1.

d. All forms listed in 5.a., 5.b., and 5.c., will be completed in accordance to 49 CFR parts 100-177, 10 CFR parts 61 and 71 and all state and burial site criteria.

e. Due to the state and burial site requirements to use specific form types for radioactive shipments, and to avoid redundancy, Data Package 1, Data Sheet 1 will be used for the documentation of radioactive material shipments.

6. Semi-Annual Report of Solid Waste and Irradiated Fuel Shipments.

Record, every semi-annual period, on Data Package 2 the following information.

a. Cubic meters and total curies of spent resins, filter sludges, evaporator bottoms, etc. for 6 month period.

b. Cubic meters and total curies of dry compressible waste, contaminated equipment etc. for 6 month period.

c. Cubic meters and total curies of irradiated components, control rods, fuel channels, etc. for 6 month period.

d. Other items that contain licensable amounts of radioactive materials not covered above for 6 month period.

e. Breakdown of percent and curies of major nuclides for each of the four categories above.

f. Number of solid waste shipments, mode of transportation and destination of the shipments.

g. Number of irradiated fuel shipments, mode of transportation and the destination of the shipments.

7. Inspection of Shipping Containers

a. 55 gallon drums and B-25 boxes used for the shipment of Radioactive Waste should be visually inspected prior to filling. This inspection is a check for defects in the package which could possibly cause a release of its contents during waste compacting, packaging and shipping.

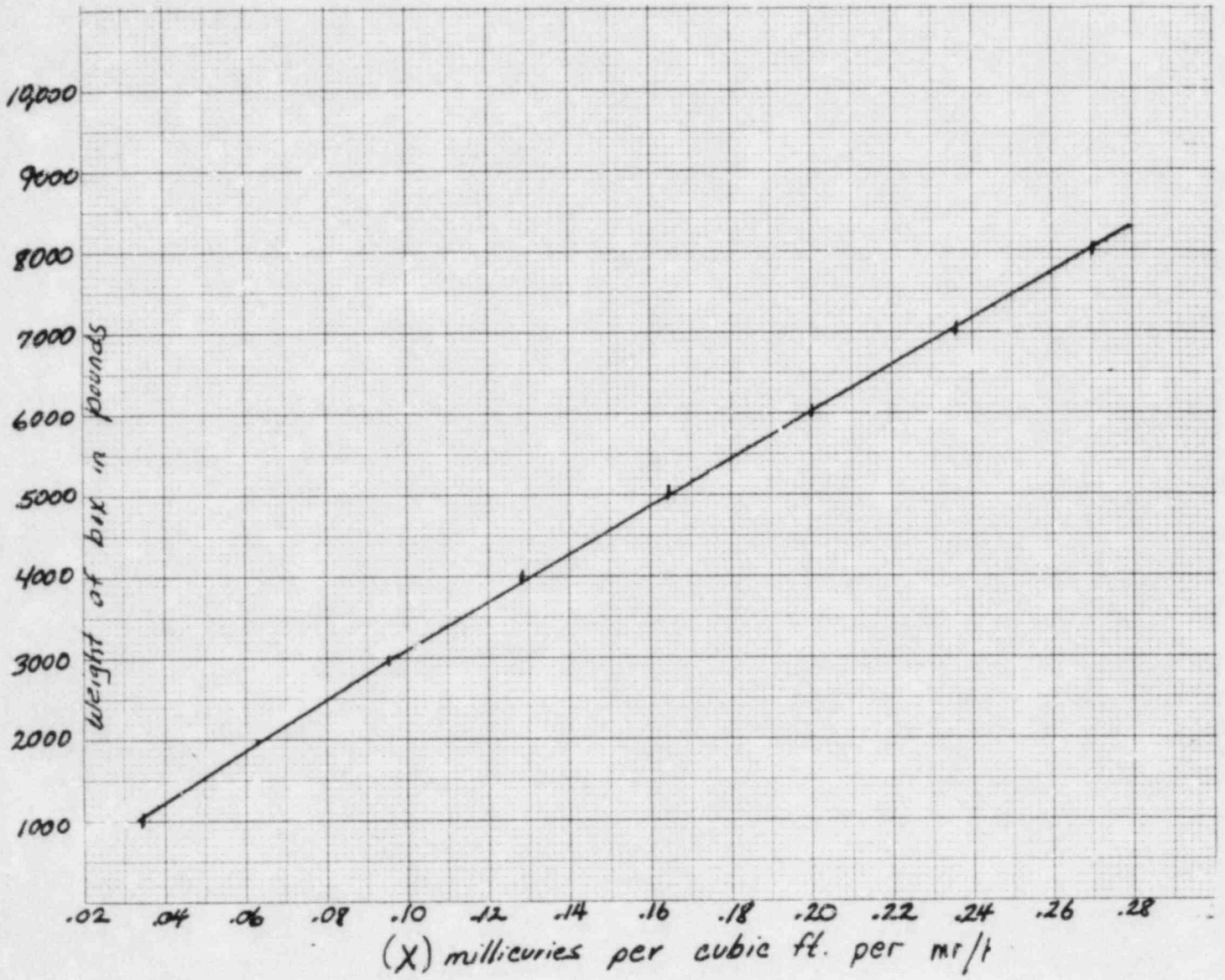
b. After the waste compacting and packaging process, all 55 gallon drums and B-25 boxes used for the shipment of Radioactive material will be visually inspected as described in D.7. above.

c. 55 gallon drums or B-25 boxes which do not pass the inspections of D.7.a. and D.7.b. will not be used for the shipment of Radioactive material.

manual set

TABLE 1

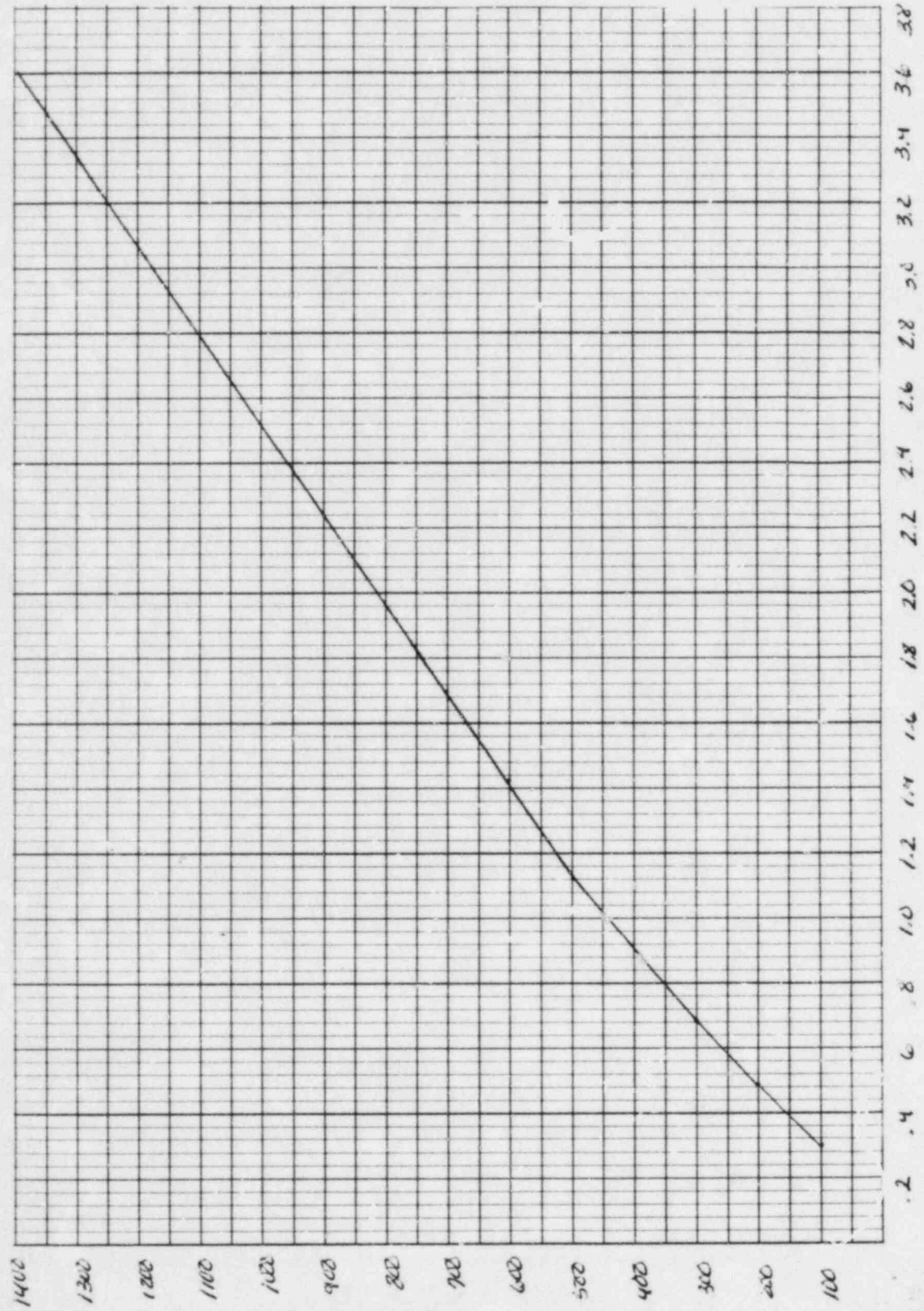
ACTIVITY DETERMINATION FOR 6 x 4 x 4 LSA BOX



manual set

TABLE 2

WEIGHT OF DRUM IN POUNDS



manual set

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8016-1

SERIAL NO: R14-

MPL NO: N/A

RTYPE: G15.14

XREF: N/A

TOTAL SHEETS: 6

FREQUENCY: As Required

COMPLETED BY: _____

DATE COMPLETED: _____

I HAVE REVIEWED THIS DATA PACKAGE FOR COMPLETENESS AND AGAINST ACCEPTANCE CRITERIA IN ACCORDANCE WITH HNP-330.

ACCEPTABLE _____ UNACCEPTABLE _____

REVIEWED BY: _____

DATE REVIEWED: _____

REMARKS: _____

FIGURE 1
Page 1 of 6.

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DATA PACKAGE 1
DATA SHEET 1

Shipment Number_____

Date:_____

	Shipment to Barnwell Disposal Site		Shipment to Hanford Disposal Site		Other Shipments
	Bill of Lading		Bill of Lading		GPC RSR Form
	Chem-Nuclear RSR Form		U.S. Ecology RSR Form		Truck Survey
	Solid Radwaste Decision Log		Solid Radwaste Decision Log		Isotopic Analysis
	Isotopic Analysis		Isotopic Analysis		Other (List Below)
	Cask Handling Form		Cask Handling Form		
	Prior Notification Form		Prior Notification Form		
	South Carolina Certification		Dept.Social/Health Services Certification Form		
	Exclusive Statement		Broker Certification Form		
	Truck Survey		Truck Survey		
	Others (List Below)		Others (List Below)		

To indicate type of shipment, place a check (✓) in the space to the left of the column heading. Also indicate forms attached by placing a check (✓) in the space to the left of the form title. Write NR for forms not required. All forms which are denoted by a check (✓) will be attached to this data package.

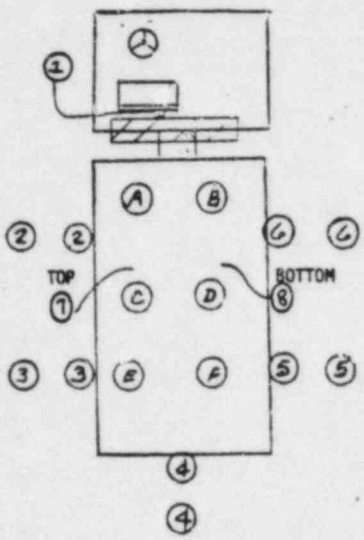
FIGURE 1
Page 2 of 6.

manual set

DATA PACKAGE 1
(Data Sheet 2A)

TRUCK SURVEY MAP-VAN OR FLATBED TRUCK

SHIPMENT NO. _____



	UNLOADED	LOADED
DATE		
TIME		
LOCATION		
INSTR #'S		
SERIAL NO'S		

(UNLOADED) LOCATION	DOSE RATE (SURFACE) mr/hr	UNLOADED LOCATION	SMEAR SURVEY RESULTS * dpm/100 cm² ≤
1		A	
2		B	
3		C	
4		D	
5		E	
6		F	

(LOADED)* LOCATION	DOSE RATE mr/hr SURFACE	'6' AWAY
1		
2		
3		
4		
5		
6		
7		
8		

RECORD HIGHEST READING MEASURED AT DISTANCE OF INTEREST

GENERAL VEHICLE CONDITION _____

INSPECTED BY _____ VEHICLE OPERATOR _____

REMARKS _____ DATE _____

_____

SEAL NO'S _____ _____ _____

SURVEYED BY _____ DATE _____

REVIEWED BY _____ DATE _____
HEALTH PHYSICS SUPERVISOR

NOTE

THE RADIATION LEVEL SHOULD NOT EXCEED 165 mr/hr AT SURFACE, 8 mr/hr AT 6 FT. AWAY FROM SURFACE AND 1.6 mr/hr AT ANY NORMALLY OCCUPIED POSITION. EXCEEDING THESE ADMINISTRATIVE LIMITS MUST BE APPROVED BY A LABORATORY SUPERVISOR OR HIGHER AUTHORITY.

* Record results in dpm/100 cm 2 .

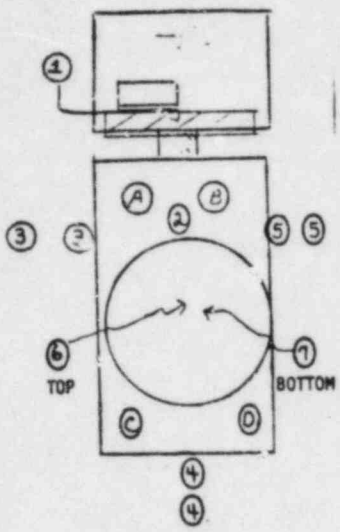
Assure that seals have been attached to all vehicles after loading. For incoming unloaded "Sole Use Vehicle's" the following limits shall apply:

SMEARABLE CONTAMINATION ≤ 2200 DPM/100 cm^2 BETA, GAMMA AND ≤ 220 DPM/100 cm^2 ALPHA. FIXED CONTAMINATION ≤ .5 mr/hr AT SURFACE.

DATA PACKAGE 1
(Data Sheet 28)

TRUCK SURVEY MAP: CASE

SHIPMENT NO. _____



	UNLOADED	LOADED
DATE		
TIME		
LOCATION		
INSTRUMENT		
SERIAL NO'S		

(UNLOADED) LOCATION	DOSE RATE (SURFACE) mr/hr	UNLOADED LOCATION	SMEAR SURVEY RESULTS * >	<
1		PALLET 1		
2		PALLET 2		
3		PALLET 3		
4		A		
5		B		
6		C		
		D		

(LOADED)* LOCATION	DOSE RATE mr/hr SURFACE	'6' AWAY
1		
2		
3		
4		
5		
6		
7		
8		

RECORD HIGHEST READING MEASURED AT DISTANCE OF INTEREST

GENERAL VEHICLE CONDITION _____

INSPECTED BY _____ VEHICLE OPERATOR _____

REMARKS _____ DATE _____

_____

SEAL NUMBERS: _____ _____ _____

SURVEYED BY _____ DATE _____

REVIEWED BY _____ DATE _____
HEALTH PHYSICS SUPERVISOR

NOTE

THE RADIATION LEVEL SHOULD NOT EXCEED 165 mr/hr AT SURFACE, 8 mr/hr AT 6 FT. AWAY FROM SURFACE AND 1 6 mr/hr AT ANY NORMALLY OCCUPIED POSITION. EXCEEDING THESE ADMINISTRATIVE LIMITS MUST BE APPROVED BY THE LABORATORY SUPERVISOR OR HIGHER AUTHORITY.

* Record results in dpm/100 cm 2 . See Section M and Q for limits.

Assure that seals have been attached to all vehicles after loading. For incoming unloaded "Sole Use Vehicle's" the following limits shall apply:

SMEARABLE CONTAMINATION ≤ 2200 DPM/100 cm^2 BETA, GAMMA AND ≤ 220 DPM/100 cm^2 ALPHA. FIXED CONTAMINATION ≤ .5 mr/hr AT SURFACE.

FIGURE 1
Page 4 of 6.

manual set

DATA PACKAGE 1 (CONT)
DATA SHEET 3

SOLID RADWASTE DECISION LOG

UNIT:_____ TANK:_____ DATE:_____

TYPE OF RESIN: POWDEX ☐ BEAD ☐

Gross weight = _____ gm
Tare weight = _____ gm
Net weight = _____ gm

ISOTOPES	SPECIFIC ACTIVITY FOR ISOTOPE WITH T 1/2 > 5 years	(uCi/cc)
TOTAL SPECIFIC ACTIVITY ISOTOPES T 1/2 > 5 YEARS		

Type of liner used: Steel ☐ High Integrity ☐

Volume of resin transferred: _____Cubic Feet

Liner Serial Number _____

Curie content of the liner = total activity $\left(\frac{uCi}{cc}\right)$ x 10^{-6} $\frac{Ci}{uCi}$

x 28317 $\left(\frac{cc}{cu\ ft}\right)$ x volume of resin (cu ft)

= ( ) ( ) ( ) ( ) = _____ Curies

CERTIFICATION STATEMENT FOR DISPOSAL OF
ENVIRONSAFE™ HIGH INTEGRITY CONTAINER

For the ENVIRONSAFE™ High Integrity Containers to be disposed of at Chem-Nuclear's Barnwell, South Carolina Low-Level Radioactive Waste Burial Facility and identified by serial numbers _____,

(Company) Georgia Power Company - Hatch Nuclear Plant hereby certifies that its use of such containers has complied with the certain Carolina Department of Health and Environmental Control, Bureau of Radiological Health, No. DHEC-NIC-RL-001, and all amendments thereto.

COMPANY: Georgia Power Co.
Hatch Nuclear Plant

BY: _____ TITLE:_____

DATED:_____

manual set

DATA PACKAGE 1 (CONT)
DATA SHEET 4

USER CHECK-OFF SHEET

Date_____ Shipment Number_____ Waste Identification_____

Worker(s)_____ HP Technician(s)_____

_____ _____

_____ _____

_____ Driver _____

Time of arrival on site_____ Time of departure from site_____

Please initial when completed, Worker (W), Supervisor (S)

1.	Disposal liner closure devices replaced	_____	(W) _____	(S)
2.	Primary lid gasket inspected	_____	(W) _____	(S)
3.	Secondary lid gasket inspected	_____	(W) _____	(S)
4.	Primary lid fasteners torqued *	_____	(W) _____	(S)
5.	Secondary lid fasteners torqued	_____	(W) _____	(S)
6.	Cask sealed with lead seals	_____	(W) _____	(S)
7.	Cask lie down inspected	_____	(W) _____	(S)
8.	Cask hold-down fasteners torqued	_____	(W) _____	(S)
9.	Vehicle placarted	_____	(W) _____	(S)

I hereby certify that the above statements are correct and the cask has been loaded and tested in accordance with approved procedures.

Worker(s) _____

_____

_____

Health physics Team(s)_____

_____

Supervisor(s) _____

* CASK ID	TORQUED VALUES (FT. LBS.)
CNSI 14-195	Large lid 200 ± 10
CNSI 21-300	Small lid 50 ± 5
CNSI 8-120	420 ± 42
NUPAC 14/210	(Refer to NUPAC procedure for torqued values)

FIGURE 1
Page 6 of 6.

manual set

PROCEDURE DATA PACKAGE

DOCUMENT NO: HNP-8016-2

SERIAL NO: R14

MPL NO: N/A

RTYPE: G15.14

XREF: N/A

TOTAL SHEETS: 2

FREQUENCY: As Required

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 2
Page 1 of 2

manual set

DATA PACKAGE 2

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (YEAR)_____

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
FOR UNIT _____

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste	Unit	6-month Period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	. E	
	Ci	. E	. E
b. Dry compressible waste, contaminated equip, etc.	m^3	. E	
	Ci	. E	. E
c. Irradiated components, control rods, etc.	m^3	. E	
	Ci	. E	. E
d. Other (describe)	m^3	. E	
	Ci	. E	. E

2. Estimate of major nuclide composition (by type of waste)

ISOTOPE	PERCENT	CURIES
a.		
b.		
c.		
d.		

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination

COMPLETED BY	DATE

FIGURE 2
Page 2 of 2

manual set