Internal Correspondence

NSP

Date January 24, 1983

From R. L. Roy Location Monticello

To Special Distribution Emergency Procedures Location Various

Subject Revised Procedures for Emergency Procedures Book

Revisions to the Emergency Procedures were reviewed in a recent Operations Committee Meeting. Listed below are the procedures superseded and revised. Other pages not revised may have been reprinted with the revised pages to facilitate updating the Book.

Superseded Pages

Procedure A.2-406, (Pages 1 through 17), Revision 5

Revised Pages

Procedure A.2-406, (Pages 1 through 17), Revision 6

Prepared by: R. L. Roy

Reviewed by: [signature]

Op. Com. Final Review: Meeting # 1174 Date 1-13-83

Approved by: [signature] Date 2-2-83

Internal Correspondence

NSP

Date January 31, 1983

From D. V. Bistodeau Location Monticello

To Special Distribution of Emergency Procedures Location Various

Subject Revised Procedures for Emergency Procedures Book

Revisions to the Emergency Procedures were reviewed in a recent Operations Committee Meeting. Listed below are the procedures superseded and revised. Other pages not revised may have been reprinted with the revised pages to facilitate updating the Book.

Superseded Pages

List of Current Pages, (Dated January 1, 1983)
Procedure A.2-422, (Pages 1 through 5), Revision 0
Procedure A.2-423, (Pages 1 through 5), Revision 0

Revised Pages

List of Current Pages, (Dated January 31, 1983)
Procedure A.2-422, (Pages 1 through 5), Revision 1
Procedure A.2-423, (Pages 1 through 5), Revision 1

Prepared by: Bistodeau

Reviewed by: Bob Bey

Op. Com. Final Review: Meeting # 1179 Date 1/27/83

Approved by: L L Tay Date 2/2/83

FORM 17 3467

A.2 EMERGENCY PLAN IMPLEMENTING PROCEDURES
LIST OF CURRENT PAGES

PROCEDURE	PROCEDURE TITLE	REVISION NUMBER
000 Series	Organization	
A.2-001	Emergency Organization	4
100 Series	Activation	
A.2-101	Classification of Emergencies	3
A.2-102	Notification of an Unusual Event	3
A.2-103	Alert	4
A.2-104	Site Area Emergency	3
A.2-105	General Emergency	3
A.2-106	Activation of Technical Support Center	3
A.2-107	Activation of Operations Support Center	4
200 Series	Assessment	
A.2-201	On-Site Monitoring and Protective Action Criteria	2
A.2-202	Off-Site Monitoring During an Emergency	1
A.2-203	Deleted 3-1-82	
A.2-204	Off-Site Protective Action Recommendations	2
A.2-205	Personnel Accountability	1
A.2-206	Deleted 3-1-82	
A.2-207	Sampling Priorities During an Emergency	0
A.2-208	Core Damage Assessment	0
300 Series	Protective Actions	
A.2-301	Emergency Evacuation	1
A.2-302	Assembly Point Activation	2
A.2-303	Search and Rescue	2
A.2-304	Thyroid Prophylaxis	2
400 Series	Radiological Surveillance and Control	
A.2-401	Emergency Exposure Control	2
A.2-402	Contamination Control	1
A.2-403	In-Plant Emergency Surveys	2
A.2-404	Airborne Iodine Sampling and Analysis	3
A.2-405	Release Rate Determination	2
A.2-406	Off-Site Dose Projection	6
A.2-407	Personnel and Vehicle Monitoring	2
A.2-408	Sample Coordination During an Emergency	1
A.2-409	Self-Contained Breathing Apparatus (SCBA) Use During An Emergency	0
A.2-410	Out-of-Plant Surveys	1
A.2-411	Establishment of Secondary Access Control	0
A.2-412	Deleted 1-6-83	
A.2-413	Small Volume Liquid Sample Obtained at the Post Accident Sampling System	0
A.2-414	Large Volume Liquid Sample and/or Dissolved Gas Sample Obtained at Post Accident Sampling System	0
A.2-415	Containment Gas Sample Obtained at Post Accident Sampling System	0

A.2 EMERGENCY PLAN IMPLEMENTING PROCEDURES
LIST OF CURRENT PAGES

PROCEDURE	PROCEDURE TITLE	REVISION NUMBER
400 Series	Radiological Surveillance and Control (Cont'd.)	
A.2-416	Containment Iodine and Particulate Samples Obtained at Post Accident Sampling System	0
A.2-417	Draining the Trap, Sump and Collector of Post Accident Sampling System	0
A.2-418	Post Accident Sampling Station Demin Water Tank Fill Procedure	0
A.2-419	Liquid Radiochemical Analysis	0
A.2-420	Containment Atmosphere Radiochemical Analysis	0
A.2-421	Containment Atmosphere Iodine/Particulate Analysis	0
A.2-422	Stack Iodine/Particulate Sampling & Analysis	1
A.2-423	Reactor Building Vents Iodine/Particulate Sampling and Analysis	1
A.2-424	EOF Count Room Counting Procedure	0
500 Series	Communications and Documentation	
A.2-501	Communication During an Emergency	1
A.2-502	Recordkeeping During an Emergency	0
A.2-503	Emergency Reports and Documentation	0
600 Series	Re-Entry and Recovery	
A.2-601	Re-Entry	0
A.2-602	Deleted 11-19-81	
A.2-603	Repair and Corrective Action	1
700 Series		
A.2-702	Response to an Emergency at Prairie Island	2
A.2-703	Response to Off-Site Situation Involving Radioactive Materials	0

Op. Com. Rev. Req'd. Yes X No ___
Q.A. Review Req'd. Yes ___ No X
ALARA Review Req'd. Yes ___ No X

OFF-SITE DOSE PROJECTION
A.2-406

REVIEW AND APPROVAL

Prepared by: [signature] ALARA Review: Revision 0 Date 3/29/81

Reviewed by: [signature] Q.A. Review: Revision 0 Date 3/29/81

Operations Committee Final Review: Meeting Number 1174 Date 1/13/83

Approved by: [signature] Date 2-2-83

Op. Com. Results Review: Not Required Mtg.# 949 Date 3/26/81

PURPOSE

The purpose of this procedure is to provide guidance and instructions for estimating off-site doses resulting from an unplanned and/or abnormal airborne release of radioactive material. The main body of this procedure identifies criteria and guidelines for dose projection, such as how often it should be performed, and which dose projection method to use. The attachments to this procedure provide instructions for performing dose projection using the various methods. Alternate methods are provided to cover possible contingencies such as offscale monitors, inoperative instrumentation, etc.

CONDITIONS AND PREREQUISITES

A. An emergency condition has been declared at Monticello Nuclear Generating Plant as provided in the Emergency Plan.

B. An airborne release of radioactive materials in excess of environmental technical specifications has occurred, is suspected to have occurred, or is imminent.

PRECAUTIONS

Precautions are verified in the text of the applicable attachment(s).

ORGANIZATION

Responsible- Radiological Emergency Coordinator
In-Charge - Off-Site Dose Assessment and Chemistry Section Leader
Assistance - Radiation Protection Specialist

DISCUSSION

A. General Applicability

The region surrounding the plant site is divided into sixteen 22 1/2 degree sectors. The regions of interest extend from the effluent release points out to fifty miles in each sector. Contained within the regions of interest are special locations of interest. The special locations are the site

boundary and the nearest receptor. The site boundary and the nearest receptor locations differ for each sector.

B. Dose Projection Methods

This procedure provides 2 different methods for performing dose projections. The method(s) used will depend on the availability of release and meteorology information and the operability of computers. They appear as attachments to this procedure with Attachment 1 being the most preferred method and Attachment 2 being the least preferred.

1. Dose Projection By Computer (MODCOM)

The Monticello Off-Site Dose Computation System (MODCOM) is a computerized atmospheric dispersion and radiological dose assessment software system. The system is specific for the Monticello Nuclear Generating Plant and is structured in the form of an executive main program (MODCOM) and several subprograms. The software system is coded in a high level interpretive language called C.L.A.S.S.. The software runs on Digital Equipment Corporation computer systems which are located at the plant site.

Data required for input to the software system are: (1) meteorlogical information acquired from the meteorological tower (MET Tower) S.E.D.A.R. computer system, and, (2) plant stack and R.B. ventilation radioactive airborne effluents release rate information acquired from effluents monitors or dose rate readings converted to release rates. Wind direction data is used to determine the correct sector. Wind speed data is used to determine the plume dispersion parameters and maximum plume distance. Temperature difference values are used to determine the plume dispersion parameters. The plume is assumed to completely fill the sector in which it is located.

Release rate data is combined with dispersion data to yield dose rate data. The release rate data is input in the form of μCi/sec for noble gases, iodines, and particulates for the plant stack and Reactor Building ventilation release points. Whole body and thyroid dose factors as well as default nuclide concentration ratios are contained in system mass storage files for use in calculating dose rates. Data is accumulated into the program at 15, 30, or 60 minute intervals. The program computes dose rates at the site boundary, the nearest receptor, and out to the maximum plume distance which may be anywhere from one mile to 10 miles in one mile increments.

The dose rate values are reported in mrem/hour. The dose rate values are converted to an accumulated dose for that period. The dose values are then stored according to sector for the whole body and thyroid. During the course of an accident, dose values are accumulated in several sectors, as the stack plume and R.B. vents plume are sometimes not in the same sector, and wind direction shifts will cause the accumulated doses to be

placed into several different sectors over a period of time. Accumulated dose information may be extracted from storage and read out according to sector, or a specific distance from the plant for all sectors. Accumulated dose information is reported in "mrem".

NOTE: Thyroid doses are calculated for the child thyroid.

2. Dose Projection By Hand Calculation

This method calculates the whole body and thyroid doses in the event that the computer systems are not available.

PROCEDURE

STEP 1: When directed by the Radiological Emergency Coordinator or the Emergency Director, perform off-site dose projections in accordance with Attachments 1 or 2. Attachment 1 is the most preferred method and Attachment 2 is the least preferred method.

STEP 2: Continue doing dose projections until otherwise directed by the Radiological Emergency Coordinator or Emergency Director.

REFERENCES

1. Monticello Nuclear Generating Plant Emergency Plan

2. NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans for Preparedness in Support of Nuclear Power Plants"

ATTACHMENTS

1. Dose Projection by Computer (MODCOM)
2. Dose Projection by Hand Calculation
3. Example of Off-Site Dose Projection Worksheet
4. Obtaining Meteorological Data From General Office Eclipse Computer System
5. Obtaining Meteorological Data From Weather Information Service
6. Program Example

WP/kk

ATTACHMENT 1

DOSE PROJECTION BY COMPUTER (MODCOM)

PREREQUISITES

1. Proceed to the Body Count Room and place the computer system in the timesharing mode (TYPE "Control-C", then RUN TSGO).

2. Proceed to the TSC and turn on the MET Tower Data Terminal and the Plant Computer CRTs, if this has not already been done. Release and meteorological data must be available for this method.

PROCEDURE

STEP 1: Turn on the dose projection printer. Depress the return key and the terminal will print:

TSX Version CI07E (Date-Time)

STEP 2: Type in "RUN CLASS" and press carriage return. The terminal will respond with:

CLASS V04.24-RT
(DATE)

NOTE: System operation may be verified by running program and using information from Attachment 6.

STEP 3: Type in "RUN MODCOM" and press carriage return. The terminal will respond with:

INITIAL EVALUATION ? :

STEP 4: Respond as follows:

a. If this is the initial evaluation, type in "Y" and press carriage return. The terminal will respond with a list of the available options in the MODCOM program ending with:

PLEASE ENTER THE OPTION YOU DESIRE:

CAUTION: Do not respond with "Y" unless this is the first post-release execution of this procedure, as all stored data will be lost.

b. If this is a subsequent evaluation, type in "N" and press carriage return. The terminal will respond with:

PLEASE ENTER THE OPTION YOU DESIRE:

ATTACHMENT 1 (Cont'd.)

Page 2 of 4

STEP 5: Select one of the following options:

OPTION	DESCRIPTION
1	PERFORM TYPICAL DOSE RATE CALCULATION
2	LIST ACCUMULATED DOSES FOR ANY SECTOR (A-R)
3	SEARCH ALL SECTORS FOR HIGHEST DOSE AND REPORT DOSE DATA
4	PRINT ALL SECTOR DOSES (A-R) AT A SPECIFIED DISTANCE
5	UPDATE THE NUCLIDE DATA FILE
6	PERFORM DOSE PROJECTION (NO DATA STORAGE)
7	LIST ACCUMULATED POPULATION DOSES FOR ANY SECTOR (A-R)
8	LIST ACCUMULATED GROUND CONTAMINATION FOR ANY SECTOR (A-R)
9	STOP PROGRAM EXECUTION

and proceed to the appropriate portion of this procedure.

NOTE: Option 1 should be used unless specific information available through one of the other options is sought.

STEP 6: PERFORM TYPICAL DOSE RATE CALCULATION:

a. Type in "1" and press carriage return. The terminal will respond by requesting that you enter current date information. Type in this information as it is requested. The terminal will then respond with:

PLEASE ENTER THE FOLLOWING METEOROLOGICAL DATA FROM
THE SEDAR COMPUTER PRINTOUT:

NOTE: If the meteorological tower met data printer is unavailable, refer to Attachment 4 and enter starting and ending day and time data such that 15 minute summary data is printed.

If the meteorological tower met system data is unavailable, use backup tower data or refer to Attachment 5 and use the St. Cloud reporting station data for stability class, windspeed and wind direction data. Enter a Zero for the requested day and time information.

WP/kk

ATTACHMENT 1 (Cont'd.)

PLEASE ENTER THE FOLLOWING EFFLUENTS RELEASE RATE DATA:

The terminal will request specific numerical information. Obtain this information from the Plant Computer CRTs and type it in as requested. If release rate data is not available, refer to Procedure A.2-405.

NOTE: During the early stages of an accident when Iodine release rates are not available, enter Iodine release rate values corresponding to about 2% of that release points noble gas release rate. This should be done until grab samples have been taken and analyzed. Grab samples should be taken and anlayzed as soon as possible.

b. The terminal will respond with a printout of off-site dose projections for the affected sector(s) from the Site Boundary to a distance of 10 miles. Communicate this information to the Radiological Emergency Coordinator.

c. The terminal will then print:

PLEASE ENTER THE OPTION YOU DESIRE:

d. Type in the option number per STEP 5 or STEP 9.

NOTE: MET data is updated every 15 minutes and that should be the frequency with which Option 1 is run during an emergency condition with an airborne release. You should continue to update dose rate data every 15 minutes until the Radiological Emergency Coordinator directs otherwise.

STEP 7: LIST ACCUMULATED DOSES FOR ANY SECTOR

a. Type in "2" and press carriage return. The terminal will respond with:

ENTER THE SECTOR (A-R) FOR WHICH YOU WANT THE ACCUMULATED DOSES REPORTED.

SECTOR:

ATTACHMENT 1 (Cont'd.)

b. Type in the sector letter (A-R). The terminal will ask you if you wish to perform dose projection calculations. Answer Y or N, then the terminal will respond with a printout of the accumulated doses for the affected sector from the Site Boundary to a distance of 10 miles. Communicate this information to the Radiological Emergency Coordinator.

c. The terminal will then print:

PLEASE ENTER THE OPTION YOU DESIRE:

d. Type in the option number per STEP 5 or STEP 9.

STEP 8: SEARCH ALL SECTORS FOR HIGHEST DOSE AND REPORT DOSE DATA

a. Type in "3" and press carriage return. The terminal will respond with a printout of the accumulated dose values to the highest sector(s) as well as a list of the sectors where accumulated whole body or thyroid doses exceeded pre-programmed limits. Communicate this information to the Radiological Emergency Coordinator.

b. The terminal will then print:

PLEASE ENTER THE OPTION YOU DESIRE:

c. Type in the option numbers per STEP 5 or STEP 9.

STEP 9: Should it be desirable to cease dose projection activities for extended periods of time (with the concurrence of the Radiological Emergency Coordinator), when the terminal prints:

PLEASE ENTER THE OPTION YOU DESIRE:

Type in "9" and press carriage return. You may subsequently re-enter the program by typing in "RUN MODCOM".

STEP 10 Upon receiving instructions from the Radiological Emergency Coordinator to secure from dose projection activities, turn off all equipment and ensure that all data is appropriately filed.

WP/kk

ATTACHMENT 2

DOSE PROJECTION BY HAND CALCULATION

EQUIPMENT REQUIRED

1. Calculator (with scientific notation capability)
2. Supply of OFF-SITE DOSE RATE PROJECTION WORKSHEET Forms (TSC), Form 5790-406-4 (Attachment 4)

PROCEDURE

STEP 1: In the INPUT DATA section of the worksheet, enter the date and time for which this projection will be made.

STEP 2: Enter the TIME AFTER REACTOR TRIP value. This is the elapsed time from the reactor trip to the time recorded in STEP 1. If there has not been a reactor trip, enter ZERO.

STEP 3: Determine the necessary meteorological parameters and record as indicated on the worksheet. This data should be taken from the meteorological tower printer. If the printer is unavailable, refer to Attachment 4.

NOTE: If meteorological tower met data printer is unavailable, refer to Attachment 4 and enter starting and ending day and time data such that 15 minute summary data is printed.

If the meteorological tower met system data is unavailable, refer to Attachment 5 and use the St. Cloud reporting station data for stability class, windspeed and wind direction data. Enter a Zero for the requested day and time information and enter requested data.

a. RB Vent Stability Class - Divide the value for DT1 by 100, paying attention to whether the value is positive or negative. Use the result to enter Table I. Record the class designation.

b. Stack Stability Class - Divide the value for DT2 by 100, paying attention to whether the value is positive or negative. Use the result to enter Table I. Record the class designation.

c. RB Vent Windspeed - Record the windspeed at the 33 feet level (use 1 mph when indication is zero).

d. Stack Windspeed - Record the windspeed at the 330 feet level (use 1 mph when indication is zero).

e. Stack Wind Direction - Record the wind direction at the 330 feet level. (If value is greater than 360, subtract 360 before recording.)

ATTACHMENT 2 (Cont'd.)

TABLE I

Stability Class	RB Vent (DT1/100)	Stack (DT2/100)
A	Less than -0.62	Less than -1.71
B	-0.62 to -0.56	-1.71 to -1.53
C	-0.55 to -0.49	-1.52 to -1.35
D	-0.48 to -0.16	-1.34 to -0.45
E	-0.15 to +0.49	-0.44 to +1.35
F	+0.50 to +1.31	+1.36 to +3.60
G**	Greater than +1.31	Greater than +3.60

** Stability Class G is not to be used. (Ref: Letter of 3/9/81 from certified consulting meteorologist to Bert Clark.) Use Class F when G is indicated.

STEP 4: Determine and record the SECTOR designation (A-R). Use the 330 feet wind direction and Table II to find the letter designation for the area directly downwind from the plant.

NOTE: If the wind speed indicates zero, use Sector designation "L" (most critical sector based on nearest receptor).

TABLE II

Wind Direction	Sector
168.75 to 191.25	A
191.25 to 213.75	B
213.75 to 236.25	C
236.25 to 258.75	D
258.75 to 281.25	E
281.25 to 303.75	F
303.75 to 326.25	G
326.25 to 348.75	H
348.75 to 11.25	J
11.25 to 33.75	K
33.75 to 56.25	L
56.25 to 78.75	M
78.75 to 101.25	N
101.25 to 123.75	P
123.75 to 146.25	Q
146.25 to 168.75	R

STEP 5: From Table III select and record the $X\bar{U}/Q$ values as required.

WP/kk

ATTACHMENT 2 (Cont'd.)

TABLE III

R.B. VENTS $X\bar{U}/Q$
Stab. Class

Distance	A-B-C	D	E	F-G
SB	6.4E-5	9.4E-5	1.2E-4	2.1E-4
NR	6.4E-5	9.4E-5	1.2E-4	2.1E-4
1	1.9E-5	4.3E-5	5.8E-5	1.9E-4
2	5.7E-6	1.7E-5	2.6E-5	1.0E-4
3	2.9E-6	1.0E-5	1.8E-5	7.4E-5
4	1.9E-6	7.2E-6	1.3E-5	5.9E-5
5	1.3E-6	5.1E-6	9.9E-6	4.8E-5
10	4.6E-7	2.1E-6	4.6E-6	2.6E-5

STACK $X\bar{U}/Q$
Stab. Class

Distance	A-B-C	D	E	F-G
SB	2.74-4	4.03E-7	6.17E-10	2.54E-18
NR	2.74-4	4.03E-7	6.17E-10	2.5E-18
1	1.2E-5	6.4E-6	1.6E-6	1.1E-9
2	5.0E-6	9.0E-6	7.0E-6	4.4E-7
3	2.7E-6	6.7E-6	6.4E-6	1.1E-6
4	1.8E-6	5.4E-6	6.2E-6	1.7E-6
5	1.3E-6	4.2E-6	5.4E-6	2.1E-6
10	4.5E-7	2.0E-6	3.6E-6	3.2E-6

STEP 6: From Table IV, determine and record the Noble Gases Factor and the Iodines Factor as appropriate for the elapsed time value previously recorded.

TABLE IV

Elapsed Time (Hours) From	To	Noble Gases Factor	Iodines Factor
0.00	0.49	6.49E-01	254
0.50	0.99	5.48E-01	282
1.00	1.99	4.06E-01	329
2.00	3.99	3.43E-01	398
4.00	7.99	2.93E-01	485
8.00	15.99	1.65E-01	607
16.00	23.99	8.70E-02	705
24.00	47.99	6.10E-02	923
48.00	95.99	3.90E-02	1117
96.00	167.99	3.30E-02	1270
168.00	335.99	3.30E-02	1280
336.00	719.99	3.20E-02	1280
720.00	1439.99	2.60E-02	1280
1440.00	Beyond	3.60E-03	1280

WP/kk

ATTACHMENT 2 (Cont'd.)

Page 4 of 4

STEP 7: Record the release rates (μCi/sec) for the gas and iodine portions of the stack and vent effluents. The gas portion release rates may be obtained directly from effluent monitor readings. If direct monitor readings are unavailable, obtain release rates from procedure A.2-405 (Release Rate Determination). The iodine portions will be determined by Radiation Protection Group personnel through actual samples. If sample analysis data is not available, use a value of 2% of the noble gas release rate values.

STEP 8: Using the values recorded in the INPUT DATA section, complete calculations for the location of interest as required.

WP/kk

ATTACHMENT 3

Form 5790-406-4
Revision 1, 05/10/82
Page 1 of 1

Example of
OFF-SITE DOSE RATE PROJECTION WORKSHEET
(For use with Procedure A.2-406, Attachment 3)

INPUT DATA

Time _____ Date _____
Time After Reactor Trip _____ hours
Stability Class: RB Vent _____ Stack _____
Windspeed: RB Vent _____ mph (c) Stack _____ mph (c)
Wind Direction: _____ Sector _____

Location (S.B., N.R., or distance): _____

$X\bar{U}/Q$ Value for Location: _____
Noble Gas Release Rate μCi/sec: _____ (a)
Noble Gas Factor: _____ (b)
Iodines Release Rate μCi/sec: _____ (d)
Iodines Factor: _____ (e)

WHOLE BODY DOSE RATE

Multiply (a) x (b) x $X\bar{U}/Q$ x (C) x .447: _____ mrem/hr

THYROID DOSE RATE

Multiply (d) x (e) x $X\bar{U}/Q$ x (C) x .447: _____ committed mrem/hour of exposure.

REVIEW AND APPROVAL

Completed by: _____/_____ Date _____

Reviewed by: _____ Date _____
Radiological Emergency Coordinator

NOTE: After this checklist is completed and is not required for immediate use, it shall be placed in the appropriate container provided for Emergency Records.

WP/kk

ATTACHMENT 4

Obtaining Meteorological Data From General Office Eclipse Computer System

(READ ALL INSTRUCTIONS CAREFULLY BEFORE STARTING)

STEP 1 Turn terminal on (back right of terminal).
Set terminal to MED Speed.
Set terminal to full duplex, modem set to full duplex.
Set all caps key to ON.
Depress on-line button.

STEP 2 Dial DELETED (if no answer use DELETED
When tone is heard, place phone in terminal coupler with the cord to the rear. Green light on coupler in 5-15 seconds.

STEP 3 You will see the following:

**** NORTHERN STATES POWER / TYPE NEW-LINE TO BEGIN LOGGING ON ****

STEP 4 Type: RETURN

STEP 5 You will then see the following:

USERNAME:

STEP 6 Type: MONTI.SEDAR

STEP 7 See---PASSWORD:

STEP 8 Type: MONTI.SEDAR
(note password will not print)

STEP 9 System will display the current time in JULIAN form.

STEP 10 System will ask for beginning and ending time in JULIAN form, enter data with NO SPACES.

NOTE: Report is formatted by your entry.

(82DDDHHMM) ------- will give 15 minute samples
(82DDDHH) ------- will give hourly summaries
(82DDD) ------- will give daily summaries

(Data is only available for the current day starting at 0200.)

STEP 11 The report will take several minutes to print out, there will be several bits of meaningless information printed after which the report will be printed.

WP/kk

ATTACHMENT 5

PROCEDURE FOR USE OF THE WEATHER INFORMATION SERVICE

EQUIPMENT: Western Union Terminal, Telephone and Accoustic Coupler

1. Turn terminal on (back right of terminal).
   Set terminal to MED Speed.
   Set terminal to full duplex, modem set to full duplex.
   Set all caps key to ON.
   Depress on-line button.

2. Dial DELETED
   When tone is heard, place phone in terminal coupler with the cord to the rear. Green light on coupler in 5-15 seconds.

NOTE: If no green light, hang-up and re-do STEP 2.

	OPERATOR ACTION	PRINTER OUTPUT
3.	Press return twice.	TELENET TERMINAL=
4.	Type "D1" Press return	@
5.	Type "C 617133" Press return.	617 133B CONNECTED
6.	Press return.	PLEASE LOG IN
7.	Type "LOGIN NSM". Press return.	PASSWORD
8.	Type "POWER". Press return.	LOGGED INTO WEATHER SERVICES ------- ---------- +

+ Indicates computer awaiting instructions.

9. Type"MONT".
   Press return.

10. When printout is completed type "LOGOUT".
    Press return.

When computer prints out that it is disconnected immediately hang-up phone.

NOTE: Use this service only as needed.

WP/kk

ATTACHMENT 6

CLASS V04.24.24-RT
16-NOV-77

SYSTEM VERIFICATION
EXAMPLE

*RUN MODCOM

INITIAL EVALUATION ? " YES

ARE YOU SURE ? (IF SO ANSWER YES) : YES

FREQUENCY AT WHICH YOU WISH TO PERFORM COMPUTATIONS
(15,30,OR 60 MINUTES) : 15

THE AVAILABLE OPTIONS ARE AS FOLLOWS:

OPTION DESCRIPTION

1 PERFORM TYPICAL DOSE RATE CALCULATION
2 LIST ACCUMULATED DOSES FOR ANY SECTOR (A-R)
3 SEARCH ALL SECTORS FOR HIGHEST DOSE AND REPORT DOSE DATA
4 PRINT ALL SECTOR DOSES (A-R) AT A SPECIFIED DISTANCE
5 UPDATE THE NUCLIDE DATA FILE
6 PERFORM DOSE PROJECTION (NO DATA STORAGE)
7 LIST ACCUMULATED POPULATION DOSES FOR ANY SECTOR (A-R)
8 LIST ACCUMULATED GROUND CONTAMINATION FOR ANY SECTOR (A-R)
9 STOP PROGRAM EXECUTION

PLEASE ENTER THE OPTION YOU DESIRE: 6

THIS IS EVALUATION # 1
PLEASE ENTER THE FOLLOWING :
CURRENT YEAR 1982
CURRENT MONTH OF YEAR (1-12) : 07
CURRENT DAY OF MONTH (1-31) : 28

PLEASE ENTER THE FOLLOWING METEOROLOGICAL DATA FROM SEDAR
COMPUTER PRINTOUT :

DAY AND TIME (7 DIGIT NUMBER)	:	2090830
33' WINDSPEED	:	8
330' WINDSPEED	:	5
33' WIND DIRECTION	:	337
330' WIND DIRECTION	:	6
DT1 (VALUE MAY BE NEGATIVE)	:	-43
DT2 (VALUE MAY BE NEGATIVE)	:	-76

PLEASE ENTER THE FOLLOWING EFFLUENTS RELEASE RATE DATA :

STACK GAS µCI/SEC.	:	1.0E7
STACK IODINES µCI/SEC.	:	2.0E5
STACK PARTICULATES µCI/SEC.	:	1.0E4
R.B.V. GAS µCI/SEC.	:	1.0E7
R.B V. IODINES µCI/SEC.	:	2.0E5
R.B. PARTICULATES µCi/SEC.	:	1.0E4

WP/kk

ATTACHMENT 6 (Cont'd.)

MONTICELLO NUCLEAR GENERATING PLANT
OFFSITE DOSE RATE COMPUTATIONS

SPECIAL CALCULATION :

7-28-82 0830

STACK SECTOR = J S. VENTS SECTOR = H SSE
STACK WINDSPEED = 5 MPH, VENTS WINDSPEED = 8 MPH
MAX PLUME DISTANCE = 10 MILES.
STACK STABILITY CLASS = D. VENTS STABILITY CLASS = D
NO STACK FUMIGATION
THE CALCULATED WHOLE BODY DOSE RATE VALUES ARE IN MREM/HOUR.
THE CALCULATED THYROID DOSE RATE VALUES ARE COMMITTED MREM PER HOUR OF EXPOSURE.

	STACK W. BOD. MREM/HR FINITE	STACK W.BOD. MREM/HR SEMINF	STACK THYROID MREM/HR	EST'D PLUME ARRIV	VENTS W.BOD. MREM/HR	VENTS THYROID MREM/HR
S.B.	9.7	5.33E-04	4.92E-03	8:32	4.51E+02	3.64E+03
N.R.	7.3	0.2	2.4	8:36	96.	1.05E+03
1 MI	5.0	9.1	1.46E+02	8:37	56.	7.52E+02
2 MI	2.8	8.5	1.78E+02	8:45	16.	2.66E+02
3 MI	1.9	5.9	1.54E+02	8:52	7.5	1.45E+02
4 MI	1.2	3.7	1.18E+02	9: 0	4.2	95.
5 MI	0.7	2.3	90.	9: 7	2.7	68.
6 MI	0.5	1.4	72.	9:15	1.8	52.
7 MI	0.3	0.9	60.	9:22	1.2	42.
8 MI	0.2	0.5	50.	9:30	0.8	34.
9 MI	0.1	0.3	43.	9:37	0.6	29.
10MI	9.90E-02	0.2	37.	9:45	0.4	25.

	STACK PLUME WIDTH METERS	STACK X/Q SEC/M3	VENTS PLUME WIDTH METERS	VENTS X/Q SEC/M3
S.B	1.72E+02	1.10E-10	1.97E+02	8.11E-05
N.R.	2.51E+02	5.33E-08	4.05E+02	2.34E-05
1 MI	4.95E+02	3.25E-06	4.95E+02	1.68E-05
2 MI	9.26E+02	3.96E-06	9.26E+02	5.92E-06
3 MI	1.34E+03	3.43E-06	1.34E+03	3.24E-06
4 MI	1.73E+03	2.64E-06	1.73E+03	2.12E-06
5 MI	2.12E+03	2.01E-06	2.12E+03	1.52E-06
6 MI	2.50E+03	1.60E-06	2.50E+03	1.17E-06
7 MI	2.87E-03	1.33E-06	2.87E+03	9.30E-07
8 MI	3.24E+03	1.11E-06	3.24E+03	7.65E-07
9 MI	3.60E+03	9.48E-07	3.60E+03	6.45E-07
10MI	3.96E+03	8.21E-07	3.96E+03	5.53E-07

WP/kk

ATTACHMENT 6 (Cont'd.)

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NOTE TO SHIFT SUPERVISOR OR R.E.C.

WHOLE BODY PROTECTIVE ACTION GUIDELINE = 1000 MREM.
THYROID PROTECTION ACTION GUIDELINE = 5000 MREM.

	SECTOR J S		SECTOR H SSE
DISTANCE	HOURS TO REACH A PAG	EST'D PLUME ARRIVAL TIME	HOURS TO REACH A PAG
S.B.	1.03E+02	8:32	1.4
N.R.	1.37E+02	8:36	4.8
1 MI	34.	8:37	6.7
2 MI	28.	8:45	19.
3 MI	33	8:52	34.
4 MI	42.	9: 0	53.
5 MI	55.	9: 7	73.
6 MI	70.	9:15	96.
7 MI	84.	9:22	1.20E+02
8 MI	1.00E+02	9:30	1.46E+02
9 MIN	1.18E+02	9:37	1.73E+02
10 MIN	1.36E+02	9:45	2.02E+02

INITIATE EMERGENCY PROCEDURE A.2-105, ATTACHMENT 2.
CONSIDER PROTECTIVE ACTION FOR SECTOR H SSE

PLEASE ENTER THE OPTION YOU DESIRE : 9

WP/kk

Op. Com. Rev. Req'd. Yes X No ___
Q.A. Review Req'd. Yes ___ No X
ALARA Review Req'd. Yes X No ___

STACK IODINE/PARTICULATE SAMPLING AND ANALYSIS

Procedure A.2-422

Prepared by: [signature] ALARA Review: C. Mathian Date 1/26/83
Reviewed by: [signature] Q.A. Review: D. R. Nordell Date 07/28/82
Operations Committee Final Review: Meeting Number: 1179 Date 1/27/83
Approved by: [signature] for [signature] Date 1/27/83
Op. Com. Results Review: Not Required Mtg. # 1100 Date 07/29/82

PURPOSE

The purpose of this procedure is to provide special instructions, precautions, and guidance for collection, handling and analysis of stack iodine/particulate samples during and following an emergency at Monticello Nuclear Generating Plant.

CONDITIONS AND PREREQUISITES

Actual or potential radiological conditions are such that special methods and/or precautions are necessary in order to collect and analyze samples under conditions which may present a much greater than normal radiation hazard to individuals performing the sampling and analyses. Unless directed otherwise, this procedure should be used in lieu of routine sampling and analysis procedures whenever an Alert or higher emergency classification is declared.

ORGANIZATION AND RESPONSIBILITIES

Emergency Director - Overall responsibility

REC/CSL - Responsible for assigning sample priority and frequency and results review.

Chemistry Technicians - Responsible for sample collection, analysis and results reporting

PRECAUTIONS

A. Exposures of sampling and analysis personnel shall be in accordance with A.2-401, "Emergency Exposure Control".

B. Exposures to all personnel due to sampling and analysis operations should be maintained as low as is reasonably achieveable. Techniques such as temporary shielding, remote handling and sample dilution prior to analysis should be considered to reduce exposure to personnel.

WP/kk

PRECAUTIONS (Cont'd.)

C. When actual or potential radiation levels so warrant, high range portable survey instruments, and self-reading dosimeters shall be provided to sampling and analysis personnel to permit rapid assessment of high exposure rates and accumulated personnel exposure. Alarming dosimeters should also be considered.

D. Appropriate extremity dosimeters should be provided and worn when handling samples which themselves represent high level radiation sources.

REMARKS

1. Prior to sampling, notify the Control Room and advise Shift Supervisor of your intentions.

2. Two-man teams should be used to obtain a post-accident sample when possible.

EQUIPMENT REQUIRED

Radector III or equivalent
Pair of tongs (or other remote handling device as appropriate)
Filter set with silver zeolite filters loaded if one set already removed

PROCEDURE

NOTE 1 Obtain key #9 from R.P. Coord. to access stack.

STEP 1 Verify that the Hot Lab South hood exhaust is functioning (use small piece of paper to check air flow), if not contact Radiological Emergency Director and continue.

STEP 2 Go to the control room and note process flow (monitor item #029), and sample flow (monitor items #028 or #033) on the stack wide range gas monitor. Set the appropriate timer on the stack wide range gas monitor according to the following chart.

Activity	Timer Setting
<1E4 µCi/sec	5 minutes
>1E4 µCi/sec <1E5 µCi/sec	90 seconds
>1E5 µCi/sec <1E6 µCi/sec	30 seconds
>1E6 µCi/sec	10 seconds

STEP 3 Don all protective clothing, equipment and dosimetry devices as required by the OSC Coordinator.

STEP 4 Proceed to the stack sample area as directed by the Emergency Director or his designee while observing Health Physics precautions.

STEP 5 Close the four valves on the Grab Sample Filter apparatus. Disconnect and remove the Grab Sample filter holder. Replace previous set if already removed.

WP/kk

PROCEDURE (Cont'd.)

CAUTION: During filter holder changeout monitor radiation levels to ensure levels are below 200 mR/hour. If levels are above 200 mR/hr, use remote handling device to minimize exposure.

STEP 6 Proceed to the hot lab and place the filter set into the south hood.

STEP 7 Connect the sample filter holder to the purge air fitting in south hood of hot lab. Open fully the plant air supply valve in the hood and purge the filter holder set into the hood for about 2-3 minutes. If instrument air is not available, use compressed air from the compressed air cylinder located in the Hot Lab.

STEP 8 Measure the contact dose rate from the iodine filter. If $\leq$ 10 mR/hr proceed to STEP 10.

STEP 9 If $\geq$ 10 mR/hr at contact then measure the dose rate at 1 foot. Calculate the µCi/cc as I-131 using the equation below. Proceed to STEP 11.

I-131 µCi/cc = 420 µCi/mR/hr x dose rate (mR/hr) ÷ sample vol (cc)

STEP 10 Place the iodine filter into a labeled poly bag and count on the Ge(Li) System for $\leq$ 1000 seconds. When the count is complete analyze the resulting spectrum.

STEP 11 Calculate the iodine release rate via the stack.

STEP 12 Place the iodine filter into the shielded storage area.

STEP 13 Place the particulate filter in a labeled petri dish.

STEP 14 Measure the contact dose rate of the filter. If $\leq$ 10 mR/hr, proceed to STEP 16.

STEP 15 If the measured dose rate is $\geq$ 10 mR/hr measure the dose rate of the filter at one foot. Calculate the particulate activity in µCi/cc using the equation below. Proceed to STEP 17.

Particulate µCi/cc = 610 µCi/mR/hr x dose rate (mR/hr) ÷ sample vol. (cc)

STEP 16 Place the particulate filter in a labeled petri dish and count on the Ge(Li) System for $\leq$ 1000 seconds. When the count is complete analyze the resulting spectrum.

STEP 17 Calculate the release rate for particulates from the stack.

WP/kk

PROCEDURE (Cont'd.)

STEP 18 Place the sample into the shielded storage area.

STEP 19 Provide the release rate information to the Radiological Emergency Coordinator and submit the checklist to the Chemistry Section Leader or Radiological Emergency Coordinator.

STEP 20 Install fresh silver zeolite cartridge and particulate filter into filter holder.

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Revision 1, 1/27/83
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Example of

STACK IODINE/PARTICULATE ANALYSIS CHECKLIST

		Initial
1.	Hot lab hood readied.	_____
2.	Process Flow _____CFM, Sample Flow _____CFM	_____
3.	Grab Sample Timer set _____min/sec.	_____
	Time Set _____	
4.	Protective clothing and dosimetry.	_____
5.	Sample to hot lab and purged.	_____
6.	If iodine filter $\leq$ 10 mR/hr, collect spectrum.	_____
	If $>$ 10 mR/hr, calculated iodine activity = _____ µCi/cc	_____
7.	Analyze spectrum, calculate release rate. (Iodine release rate = _____ µCi/sec.)	_____
8.	If particulate filter $\leq$ 10 mr/hr; collect spectrum.	
	If $>$ 10 mR/hr then calculated particulate activity = _____ µCi/cc	_____
9.	Analyze spectrum, calculate release rate. (Particulate release rate = _____ µCi/sec)	_____
10.	Provided results for Chemistry Section Leader or Radiological Emergency Coordinator.	_____

Performed by: _____ Date _____

Reviewed by: CSL or REC _____ Date _____

NOTE: After this checklist is completed and is not required for immediate use, it shall be placed in the appropriate container provided for Emergency Records.

WP/kk

Op. Com. Rev. Req'd. Yes X No ___
Q.A. Review Req'd. Yes ___ No X
ALARA Review Req'd. Yes X No ___

REACTOR BUILDING VENTS IODINE/PARTICULATE SAMPLING & ANALYSIS

Procedure A.2-423

Prepared by: [signature] ALARA Review: CSmathers Date 1/26/83
Reviewed by: [signature] Q.A. Review: D. R. Nordell Date 7/28/82
Operations Committee Final Review: Meeting Number: 1179 Date 1/27/83
Approved by: [signature] for TL Tay Date 1/27/83
Op. Com. Results Review: Not Required Mtg. # 1100 Date 7/29/82

PURPOSE

The purpose of this procedure is to provide special instructions, precautions, and guidance for collection, handling and analysis of reactor building vent iodine/particulate samples during and following an emergency at Monticello Nuclear Generating Plant.

CONDITIONS AND PREREQUISITES

Actual or potential radiological conditions are such that special methods and/or precautions are necessary in order to collect and analyze samples under conditions which may present a much greater than normal radiation hazard to individuals performing the sampling and analyses. Unless directed otherwise, this procedure should be used in lieu of routine sampling and analysis procedures whenever an Alert or higher emergency classification is declared.

ORGANIZATION AND RESPONSIBILITIES

Emergency Director - Overall responsibility

REC/CSL - Responsible for assigning sample priority and frequency and results review.

Chemistry Technicians - Responsible for sample collection, analysis and results reporting

PRECAUTIONS

A. Exposures of sampling and analysis personnel shall be in accordance with A.2-401, "Emergency Exposure Control".

B. Exposures to all personnel due to sampling and analysis operations should be maintained as low as is reasonably achieveable. Techniques such as temporary shielding, remote handling and sample dilution prior to analysis should be considered to reduce exposure to personnel.

WP/kk

PRECAUTIONS (Cont'd.)

C. When actual or potential radiation levels so warrant, high range portable survey instruments, and self-reading dosimeters shall be provided to sampling and analysis personnel to permit rapid assessment of high exposure rates and accumulated personnel exposure. Alarming dosimeters should also be considered.

D. Appropriate extremity dosimeters should be provided and worn when handling samples which themselves represent high level radiation sources.

E. Plenum effluent is sampled on the 1001' level of the reactor building. Two matters to be considered are the route to the sample point and how to handle the sample filters. The problem of getting to 1001' reduces to a problem of getting to the 985' level, above which radiation levels are tolerable. It seems that the best way to approach the RB Vent WRGM is to enter secondary containment via the M.G. Set Room on 962'. From the air lock on 962', it is important to move as quickly as possible to the stairs in the northeast corner and to climb as fast as possible to the next level, 985'. Continue up the northeast stairs to the 1001' level and from there on the radiation levels permit a slower pace. The filters could be a problem if removed from the filter holder and handled directly. We do not expect the whole body dose rate to be significant compared to levels encountered enroute to and from the sample stations. Precautions should be taken, however, after exiting containment.

REMARKS

1. Prior to sampling, notify the Control Room and advise Shift Supervisor of your intentions.

2. Two-man teams should be used to obtain a post-accident sample when possible.

EQUIPMENT REQUIRED

Radector III or equivalent
Pair of tongs (or other remote handling device as appropriate)
Filter set with silver zeolite filters loaded if one set already removed

PROCEDURE

NOTE 1 Obtain Vital Key #211 from Shift Supervisor to access emergency sample route.

STEP 1 Verify that the Hot Lab South hood exhaust is functioning (use small piece of paper to check air flow), if not contact Radiological Emergency Director and continue.

WP/kk

PROCEDURE (Cont'd.)

STEP 2 Go to the Control Room and verify that the Reactor Building Wide Range Gas Monitors are selected to Operating Vent Exhaust Fans, then note process flow on both channels (monitor item #029) and sample flow on channel being sampled (monitor item #028 or #033) on the reactor building vent wide range gas monitor. Set the appropriate timer on the reactor building vent wide range gas monitor according to the following chart.

Activity		Timer Setting
< 1E4 µCi/sec		5 minutes
> 1E4 µCi/sec	< 1E5 µCi/sec	90 seconds
> 1E5 µCi/sec	< 1E6 µCi/sec	30 seconds
> 1E6 µCi/sec		10 seconds

STEP 3 Don all protective clothing, equipment dosimetry devices as required by the OSC Coordinator.

STEP 4 Proceed to the vent sample area as directed by the Emergency Director or his designee while observing Health Physics precautions.

STEP 5 Close the four valves on the Grab Sample Filter apparatus. Disconnect and remove the Grab Sample filter holder. Replace previous set if already removed.

CAUTION: During filter holder changeout monitor radiation levels to ensure levels are below 200 mR/hour. If levels are above 200 mR/hr, use remote handling device to minimize exposure.

STEP 6 Proceed to the hot lab and place the filter set into the south hood.

STEP 7 Connect the sample filter holder to the purge air fitting in south hood of hot lab. Open fully the plant air supply valve in the hood and purge the filter holder set into the hood for about 2-3 minutes. If instrument air is not available, use compressed air from the compressed air cylinder located in the hot lab.

STEP 8 Measure the contact dose rate from the iodine filter. If $\leq$ 10 mR/hr proceed to STEP 10.

STEP 9 If $\geq$ 10 mR/hr at contact then measure the dose rate at 1 foot. Using the equation below, calculate the µCi/cc as I-131. Proceed to STEP 11.

I-131 µCi/cc = 420 µCi/mR/hr x dose rate (mR/hr) ÷ sample vol. (cc)

WP/kk

PROCEDURE (Cont'd.)

STEP 10 Place the iodine filter into a labeled poly bag and count on the GeLi System for ≤ 1000 seconds. When the count is complete, analyze the resulting spectrum.

STEP 11 Calculate the iodine release rate via the reactor building vents.

STEP 12 Place the iodine filter into the shielded storage area.

STEP 13 Place the particulate filter in a labeled petri dish.

STEP 14 Measure the contact dose rate of the filter. If ≤ 10 mR/hr proceed to STEP 16.

STEP 15 If the measured dose rate is ≥ 10 mR/hr, measure the dose rate of the filter at one foot Using the equation below calculate the particulate µCi/cc. Proceed to STEP 17.

Particulates µCi/cc = 620 µCi/mR/hr x dose rate (mR/hr) ÷ sample vol. (cc)

STEP 16 Place the particulate filter in a labeled petri dish and count on the GeLi System for ≤ 1000 seconds. When the count is complete, analyze the spectrum.

STEP 17 Calculate the release rate for particulates from the reactor building vent.

STEP 18 Place the sample into the shielded container in the sample storage area.

STEP 19 Provide the release rate information to the Radiological Emergency Coordinator and submit the checklist to the Chemistry Section Leader or Radiological Emergency Coordinator.

STEP 20 Install fresh silver zeolite cartridge and particulate filter into filter holder.

WP/kk

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Example of

REACTOR BUILDING VENTS IODINE/PARTICULATE ANALYSIS CHECKLIST

		Initial
1.	Hot lab hood readied.	_____
2.	Process flow Channel A _____CFM, Channel B _____CFM	
	Sample Flow _____CFM, Total process flow _____CFM	_____
3.	Grab sample timer set _____min/sec Time set _____	_____
4.	Protective clothing and dosimetry.	_____
5.	Sample to hot lab and purged.	_____
6.	If iodine filter $\leq$ 10 mR/hr; collect spectrum.	_____
	If > 10 mR/hr then calculated iodine activity = _____ µCi/cc	_____
7.	Analyze spectrum, calculate release rate. (Iodine release rate _____ µCi/sec)	_____
8.	If particulate filter $\leq$ 10 mR/hr; collect spectrum.	
	If > 10 mR/hr, then calculated particulate activity = _____ µCi/cc	_____
9.	Analyze spectrum, calculate release rate. (Particulate release rate = _____ µCi/sec)	_____
10.	Provided results to Radiological Emergency Coordinator or Chemistry Section Leader.	_____

Performed by: _____ Date _____

Reviewed by: CSL or REC _____ Date _____

NOTE: After this checklist is completed and is not required for immediate use, it shall be placed in the appropriate container provided for Emergency Records.

WP/kk