



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

NRC
Eisenhart
BOOK 2
10

9/9/82

RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP-ECP	Executive Command Post Procedure	4	08-02-82
RERP-EXP	Emergency Exposure Guidelines	1	08-02-82
RERP-FCP	Forward Command Post Procedure	7	08-02-82
RERP-FIELD	Field Monitoring Procedure	2	09-01-82
RERP-HOME	Home Packet for Off-Shift Notifications	1	08-02-82
RERP-ORG	FSV Emergency Organization and Responsibilities	1	08-02-82
RERP-PAG	Protective Action Guideline Recommendations	1	08-02-82
RERP-PCC	Personnel Control Center Procedure	6	08-02-82
RERP-SEOC	State Emergency Operations Center Procedure	4	08-02-82
RERP-SURVEY 	Inplant/Onsite Radiological Monitoring	1	09-09-82
RERP-THYROID	Thyroid Blocking Agent Administration	1	08-02-82

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TITLE: INPLANT/ONSITE RADIOLOGICAL MONITORING

ISSUANCE
AUTHORIZED
BY

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Milt McBride*

PORC
REVIEW

PORC 480 SEP 2 1982

EFFECTIVE
DATE

9-9-82

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* ANYTIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON, COMPLETE THE REPORTING SHEET ATTACHED IN THE TABBED WORKSHEET SECTION AND FORWARD IT TO THE TECHNICAL CLERK AND RECORDER, FORT ST. VRAIN. DO NOT WRITE ON ANY WORKSHEETS, DATASHEETS, CHECKLISTS, OR REPORTING SHEETS IN THE PROCEDURE ITSELF. ALL WORKSHEETS/DATASHEETS/CHECKLISTS ARE TO BE TAKEN FROM THE TABBED SECTION FOLLOWING EACH PROCEDURE.



1.0 Criteria for Implementation

This procedure provides guidelines for the activities of inplant radiological monitoring teams dispatched after the activation of the FSV Emergency Organization, as specified in RERP implementing procedure RERP-ORG.

2.0 Procedure

The purpose of this procedure is to provide generalized instructions for inplant or onsite radiological monitoring teams dispatched from the Personnel Control Center (PCC) (or, from the Health Physics Access Area) during the course of a radiological emergency at Fort St. Vrain. This procedure supplements the routine Health Physics Procedures (HPPs), and requires a working knowledge of their general content.

2.1 Monitoring Teams

Monitoring teams will be dispatched from the Personnel Control Center upon approval of the Technical Support Center (TSC) Director, and under the overall direction of the senior Health Physics representative at the TSC. The team(s) shall be comprised of, as a minimum, two (2) individuals. Under most circumstances, this would be a Health Physics Technician, who leads the team, and an assistant. Two team members are required to assure safety of the team members.

2.2 Equipment

Utilize the existing inplant instrumentation to the maximum extent possible to assess the anticipated general radiation levels and airborne contamination hazards in the area(s) to be surveyed. Utilize this data with an appropriate level of conservatism to determine the appropriate instrumentation needed, as well as to establish stay time requirements (see section 2.3) and protective equipment requirements.

Anticipated equipment requirements are summarized below:

- Ion chamber instrument with adequate range, as determined above

PIC-6A, 1 mR/hr - 1000 R/hr
RO2, 0.2 mR/hr - 200 mR/hr
RO5, 0.1 mR/hr - 1000 R/hr
RO7, 10 R/hr - 10⁴ R/hr

- Portable Air Sampler with sample cartridges.



- Bags for transporting samples to RC Lab or HP Office for analysis.
- Wipes and envelopes.
- Protective Equipment (as determined by senior Health Physics representative at the TSC).
- Personnel Dosimetry (as determined by senior Health Physics representative at the TSC).
- Portable Radio, where practical.
- Appropriate radiation survey forms for the area to be surveyed (see HPP-1).
- Pencil or Pen.
- Stop watch, or equivalent, for timing sample collection times.
- Liquid sample containers, where called for.
- Extension cord, where need is determined.

2.3 Protective Equipment/Dosimetry

The proper selection of dosimetry and protective equipment is the responsibility of the senior Health Physics representative at the TSC (Datasheet 1). He shall utilize the available indications from implant instrumentation to assess the potential exposure and environmental hazards.

External exposure guidelines shall be utilized in accordance with RERP-EXP, "Emergency Exposure Guidelines." Inhalation protection shall be provided in accordance with the guidelines specified in RERP-THYROID, "Thyroid Blocking Agent Administration."

The senior Health Physics representative at the TSC shall also provide stay time requirements for the emergency team members, of the range of minutes to hours (provide a 25% margin of conservatism) and inform the HP Technician of the maximum radiation level anticipated and projected team exposure (utilize Datasheet 1).



2.4 Area Approach

The Health Physics Technician leading a team shall approach any area to be surveyed with an appropriate radiation detection instrument operating. If radiation levels are significantly in excess of the expected radiation levels (+25%, or more), the Technician shall withdraw the team from the area and contact the senior Health Physics representative at the TSC for further instructions and/or stay time calculation.

2.5 Exposure Control

All inplant/onsite monitoring teams deployed shall be provided pocket dosimeters of an adequate range for the anticipated exposure. The Health Physics Technician shall assure that team members check the dosimeter reading at an appropriate interval for the anticipated radiation exposure rates, and report any radiation exposures in excess of projected team exposures to the senior Health Physics representative in the TSC.

2.6 Data Collection

Data to be collected shall be specified by the senior Health Physics representative at the TSC. Generally, this shall consist of:

- General Area Radiation Levels in area where emergency maintenance required;
- General Airborne Concentration Levels in areas where emergency maintenance is required;
- Surface Contamination Levels;
- Contact exposure rate with critical equipment; and
- Collection of any liquid effluent samples for radioisotopic analysis.

Data survey maps are provided on Datasheets 2-23. Additional copies, beyond that stored with the procedure, are available at the Health Physics Access Area on level 7 of the Turbine Building.



3.0 Responsibilities

3.1 Senior Health Physics Representative (TSC)

The senior Health Physics representative at the TSC maintains overall responsibility for the direction and control of any dispatched monitoring teams. Data shall be collected under his guidance, and transmitted to the TSC, via voice links, for his analysis. The senior Health Physics representative is responsible for evaluating the existing exposure rate/airborne concentration data prior to team deployment, to determine maximum stay times for the job, and to brief the Health Physics Technician acting as monitoring team leader. He is also responsible for transmitting pertinent radiological information to the Radiological Assessment Coordinator at the Forward Command Post.

3.2 Team Leader (Health Physics Technician)

The HP Technician acting as team leader shall assure that all data is collected in the safest manner feasible for the situation, and shall assure that team members are made aware of radiological hazards and follow good Health Physics practices. The Team Leader shall also be responsible to assure that team radiation exposures are in accordance with the projected team exposure and as low as reasonably achievable (ALARA), and that stay times are adhered to.

3.3 Personnel Control Center Director

The PCC Director must assure the control and coordination of the dispatch of all emergency teams, including monitoring teams, through the senior Health Physics representative at the TSC.

3.4 TSC Director

The TSC Director has ultimate responsibility over site activities, and shall have the authority to determine when monitoring teams shall be dispatched, and when 10CFR20 radiation exposure limits may be exceeded (see RERP-EXP).



3.5 Radiological Assessment Coordinator (FCP)

The Radiological Assessment Coordinator is responsible for the final determination as to the need for administration of Thyroid Blocking Agent (see RERP-THYROID). The Radiological Assessment Coordinator shall also confer with the senior Health Physics representative at the TSC, with regard to the importance or need for collecting various data points, personnel exposures, plant conditions, ALARA considerations, recovery plans, and other radiological matters as appropriate.

4.0 References

- 4.1 FSV Radiological Emergency Response Plan
- 4.2 Title 10 Code of Federal Regulations, Part 20

5.0 Referenced or Supporting Procedures

- 5.1 RERP-TSC, Technical Support Center Procedure
- 5.2 RERP-PCC, Personnel Control Center Procedure
- 5.3 RERP-EXP, Emergency Exposure Guidelines
- 5.4 RERP-THYROID, Thyroid Blocking Agent Administration
- 5.5 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.6 HPP-1, Intervals of Surveys and Use of Survey Maps
- 5.7 HPP-8, Radiation Surveys
- 5.8 HPP-9, Establishing and Posting Controlled Areas
- 5.9 HPP-12, Portable Air Sample Collection and Analysis
- 5.10 HPP-16, Selection and Use of Respiratory Protection Equipment
- 5.11 HPP-20, Operation and Calibration of Radiation Detection Instruments
- 5.12 HPP-21, Surface Radioactive Contamination Surveys
- 5.13 HPP-27, Personnel Dosimetry
- 5.14 HPP-45, Air Activity Analysis Using the RM 14/15 with HP 210 Probe
- 5.15 HPP-53, RT 7325-1 and RT 73437 Filter and Cartridge Removal (Emergency Accident Conditions)



- 5.16 HPP-56, Reactor Building Exhaust Stack Discharge Activity Calculation
- 5.17 HPP-57, Radiation and Airborne Radioactivity Monitoring During Abnormal Releases in the Plant



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

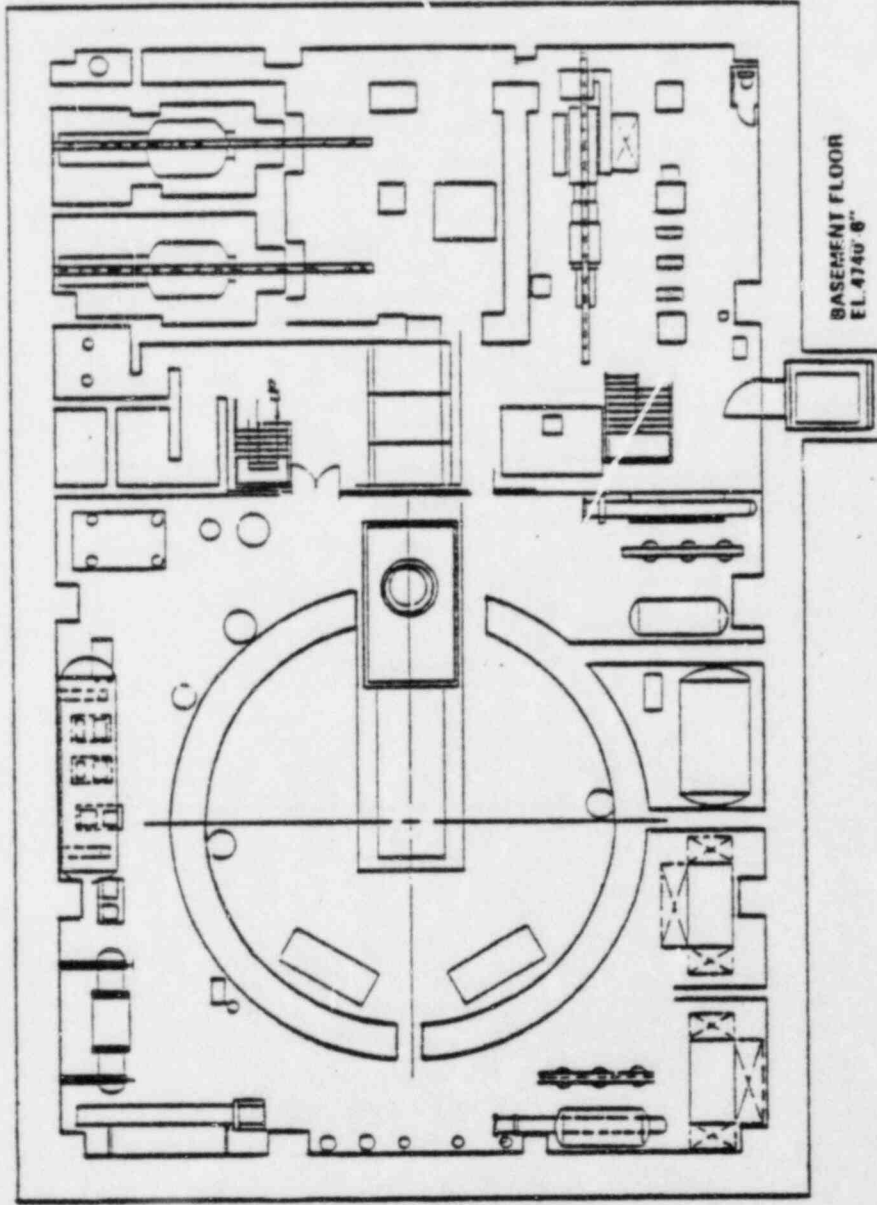
No Respiratory Protection Required



10) Comments:

D-1

FORM 543 373 02 2644



ALL RADIATION READINGS IN MR/HR.

POWER LEVEL _____ N

Wipe Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

Date _____ Time _____

Survey By _____

SURVEY RESULTS		Instrument Number	
No.	Wipe alpha DPM/100CM ²	Serial Number	Other

COMMENTS _____

D-3

FORM IAJ 312 02 26-68

Date _____ Time _____

Survey By _____

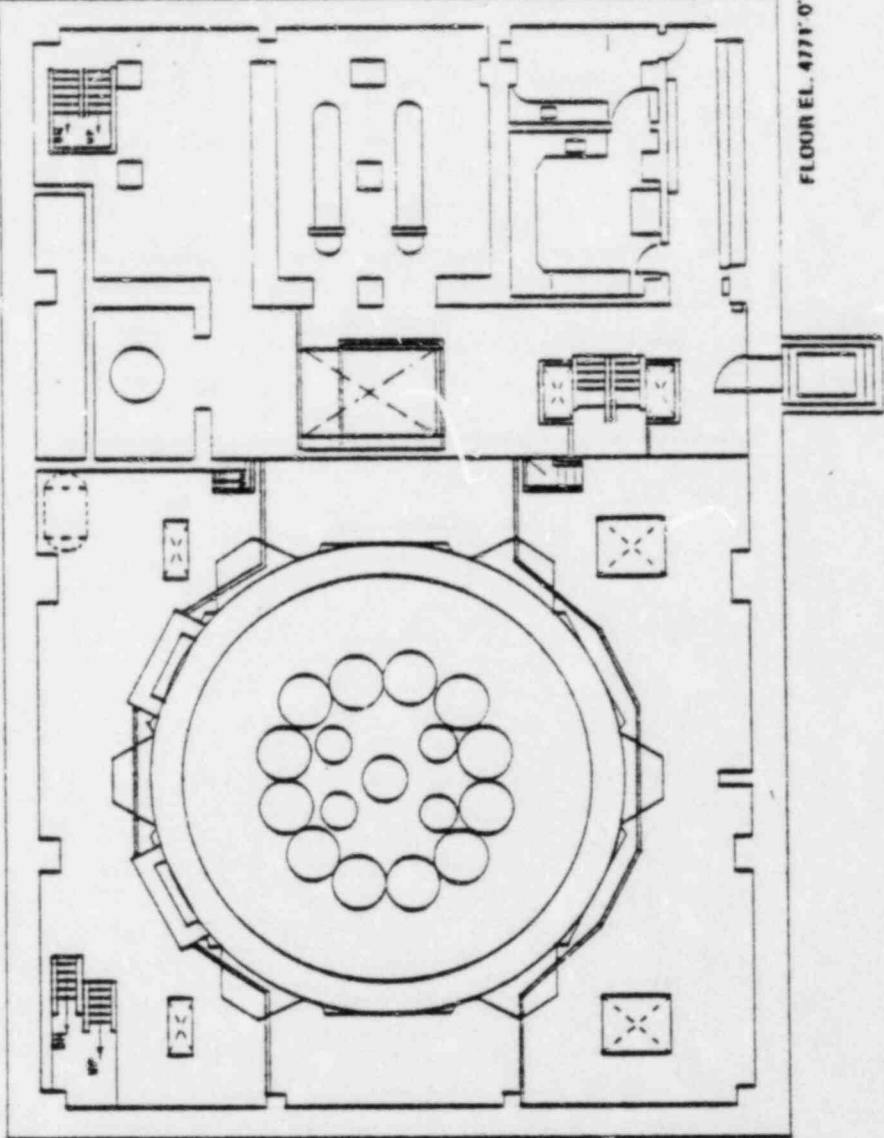
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe site CFM/100CM ²	Wipe site CFM/100CM ²	Air Sampler surface	Other

COMMENTS



ALL RADIATION READINGS IN MIN/M.

POWER LEVEL _____ N

Wipe Legend

□	Wall
△	Equipment
○	Floor

FORM (A) 373 02 2647

Date _____ Time _____

Survey By _____

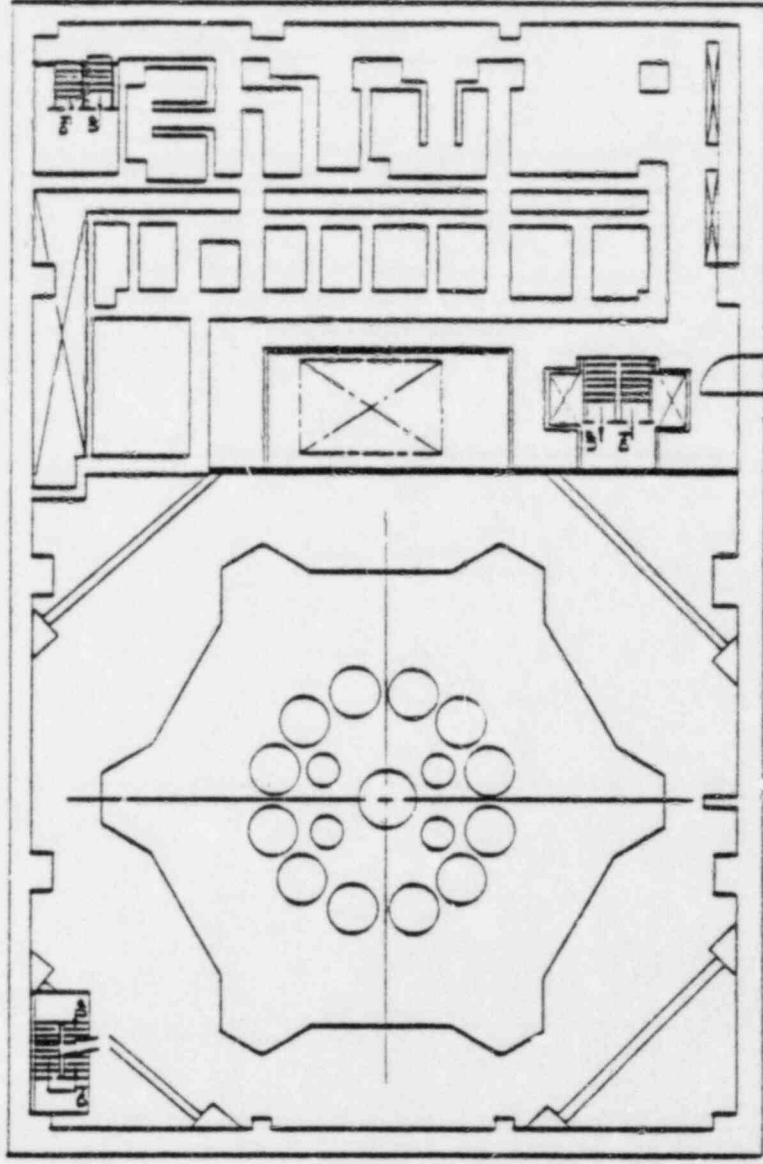
Instrument Number _____

Serial Number _____

No.	Wipe alpha DFM/100CM ²	Wipe beta DFM/100CM ²	As Sample surface	Other

COMMENTS _____

D-4



FLOOR EL. 4781' 0"

ALL RADIATION READINGS IN MR/HR.

POWER LEVEL _____ N

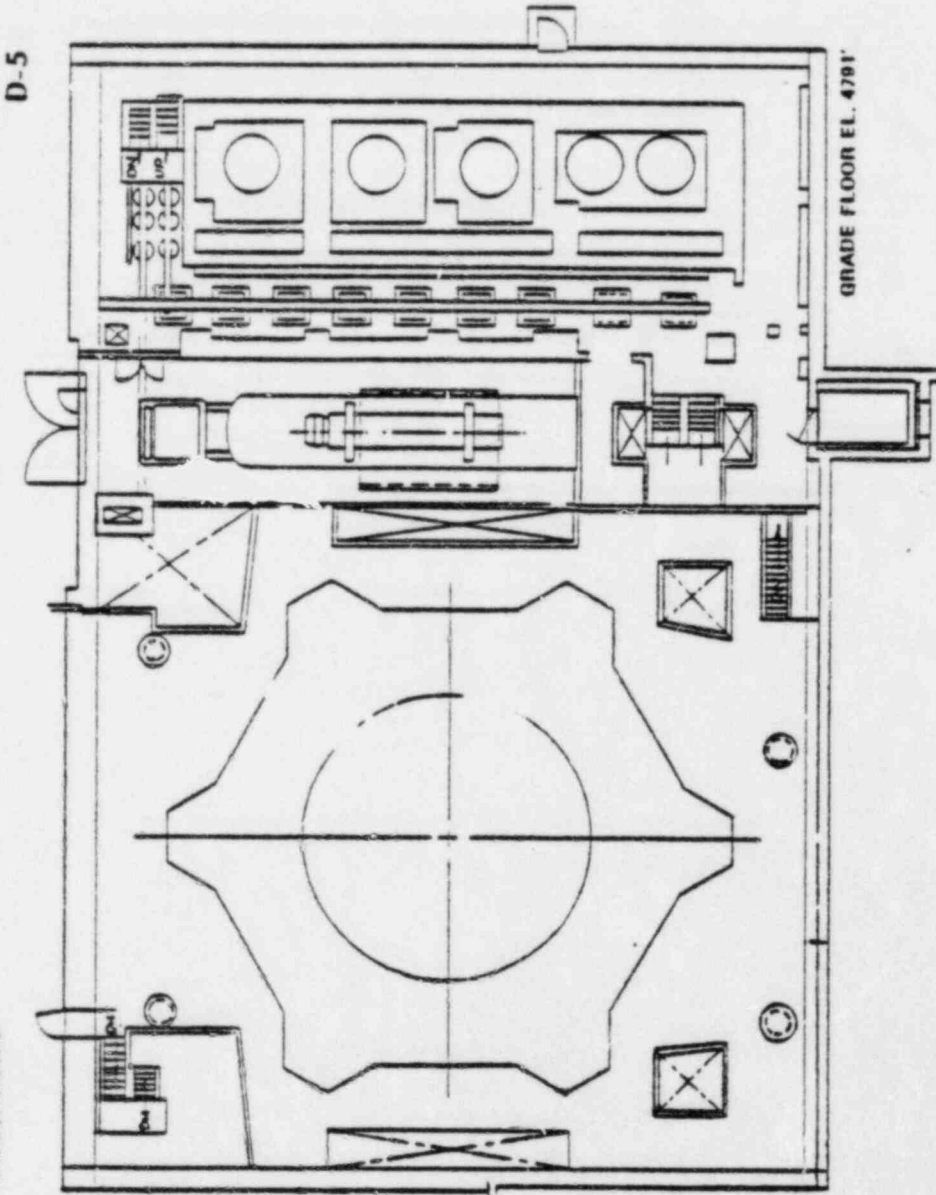
Wipe Legend
<input type="checkbox"/> Wipe
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

FORM IAI 312 02 2548

Date _____ Time _____
 Survey By _____

SURVEY RESULTS			
Instrument Number _____			
Serial Number _____			
No.	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	Other

COMMENTS



Wipe Legend	
□	Wipe
△	Equipment
○	Floor

POWER LEVEL _____ N
 ALL RADIATION READINGS IN MR/HR.

D-6

FORM 312 02 3034

Date _____ Time _____

Survey By _____

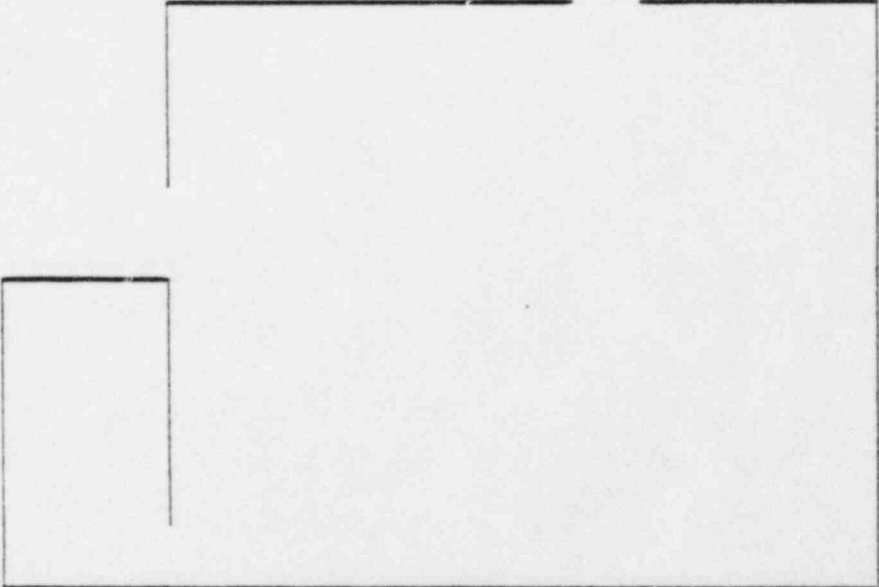
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wire alpha DPM/100CM ²	Wire beta DPM/100CM ²	Al _K Sample surface	Other

COMMENTS



CAFETERIA EL. 4829'-0"

Wipe Legend

<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

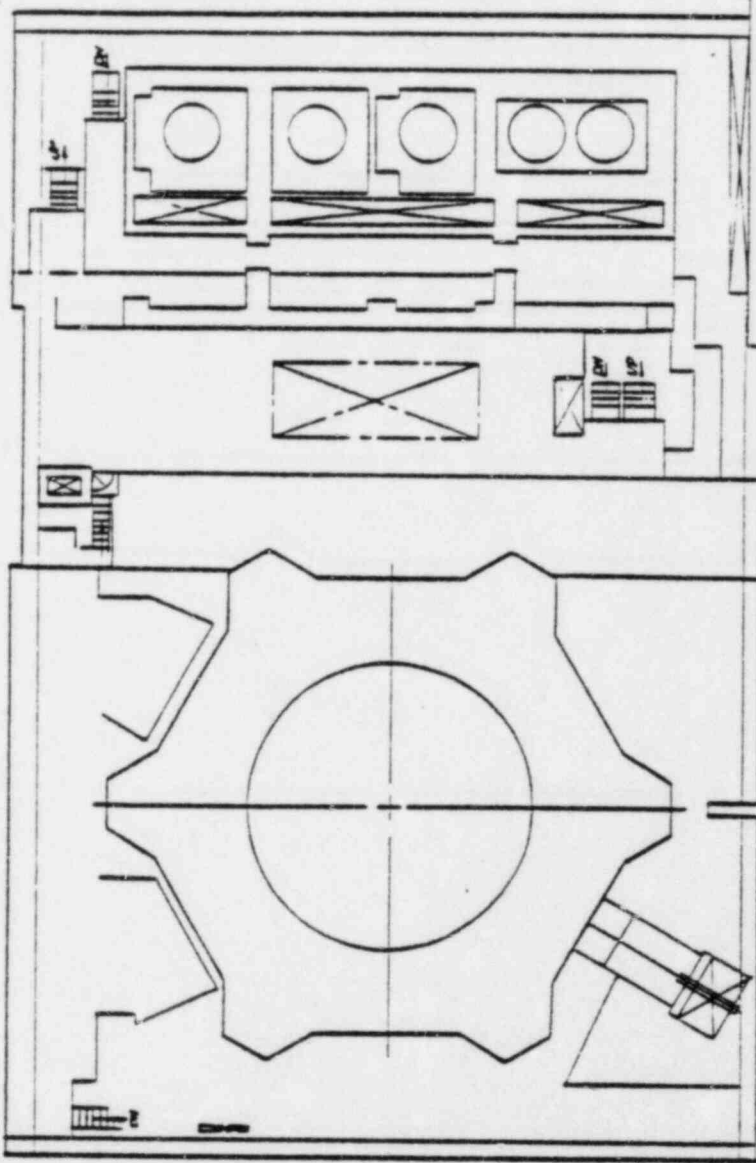
POWER LEVEL _____

ALL RADIATION READINGS IN MIRAIR.

D-7

FORM (A) 373 02 2600

Date _____ Time _____
 Survey By _____



FLOOR EL. 4816' 0"

Wipes Legend	
□	Wet
Δ	Equipment
○	Floor

ALL RADIATION READINGS IN MR/HR

POWER LEVEL _____ N

SURVEY RESULTS		Instrument Number		
Site	Wipe alpha DFM/100CM ²	Wipe beta DFM/100CM ²	Air Sampler wt/ice	Other

COMMENTS

D-8

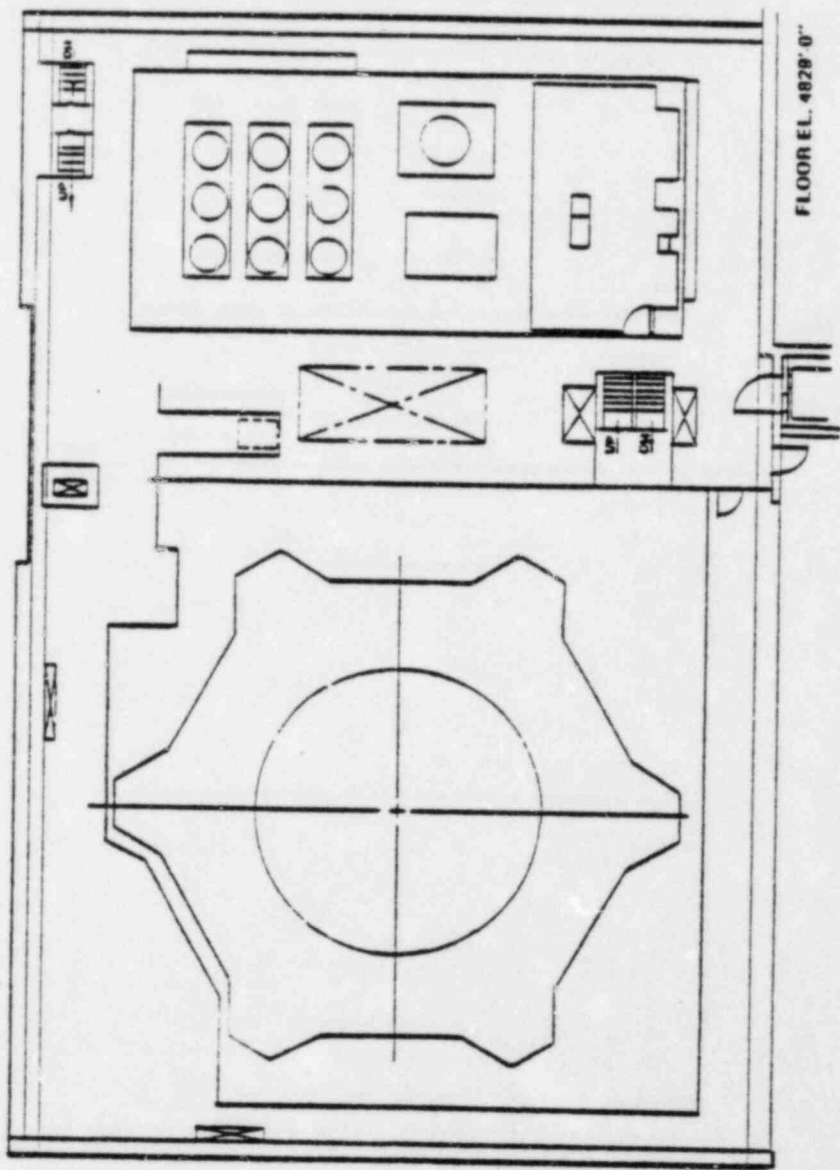
FORM (A) 312 02 2051

Date _____ Time _____
 Survey By _____

SURVEY RESULTS

No.	Wipe alpha (DPM/100CM ²)	Wipe beta (DPM/100CM ²)	Air Sampler value	Dialer

COMMENTS



FLOOR EL. 4828'-0"

Wipe Legend

- Wall
- △ Equipment
- Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MIN/AIR.

D-9

FORM (A) 373 01 2882

Date _____ Time _____

Survey By _____

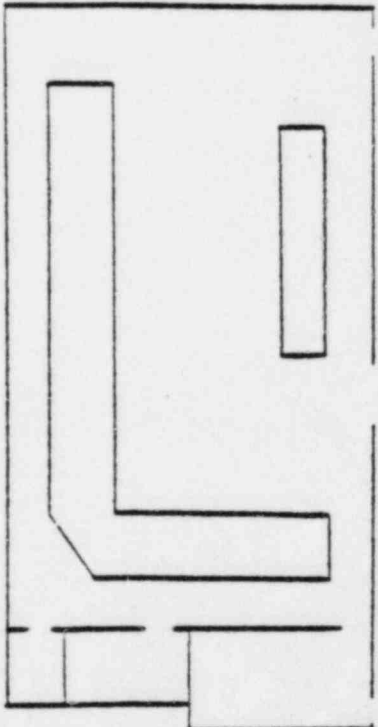
Instrument Number _____

Serial Number _____

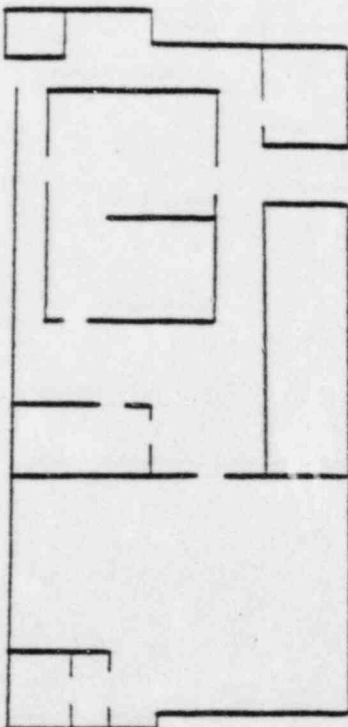
SURVEY RESULTS

No.	Wipe Alpha CPM/100CM ²	Wipe beta CPM/100CM ²	Air Sampler w/face	Other

COMMENTS



CONTROL ROOM EL. 4829' 0"



HEALTH PHYSICS, DECON EL. 4829' 0"

Wipe Legend

<input type="checkbox"/>	W/ff
<input type="checkbox"/>	Equipm
<input type="checkbox"/>	Floor

POWER LEVEL _____

ALL RADIATION READINGS IN MIN.

FORM IAI 312 02 2853

Date _____ Time _____

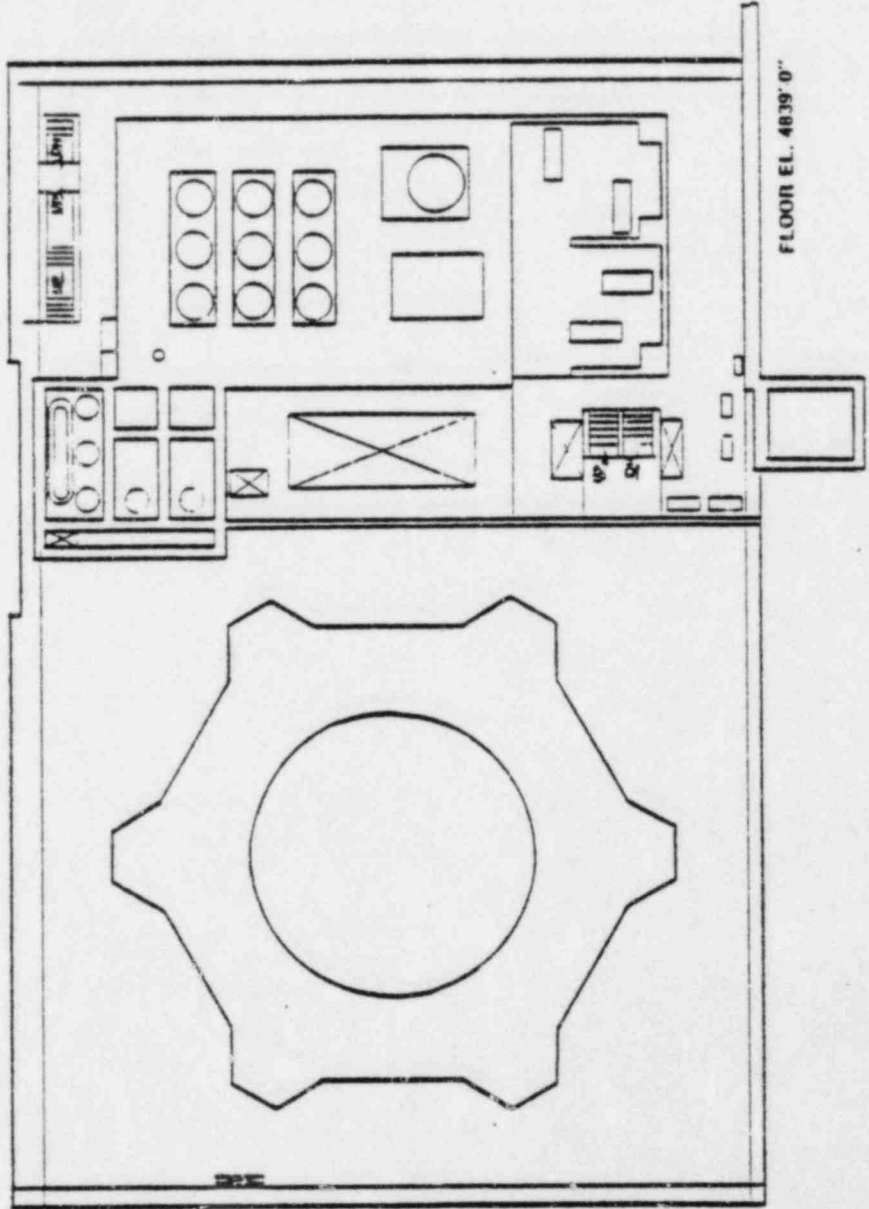
Survey By _____

SURVEY RESULTS

No.	Instrument Number		Ala Sample ref/loc	Other
	Wipe sets DPH/100CM ²	Serial Number		

COMMENTS

D-10



Wipe Layout

Wall

Equipment

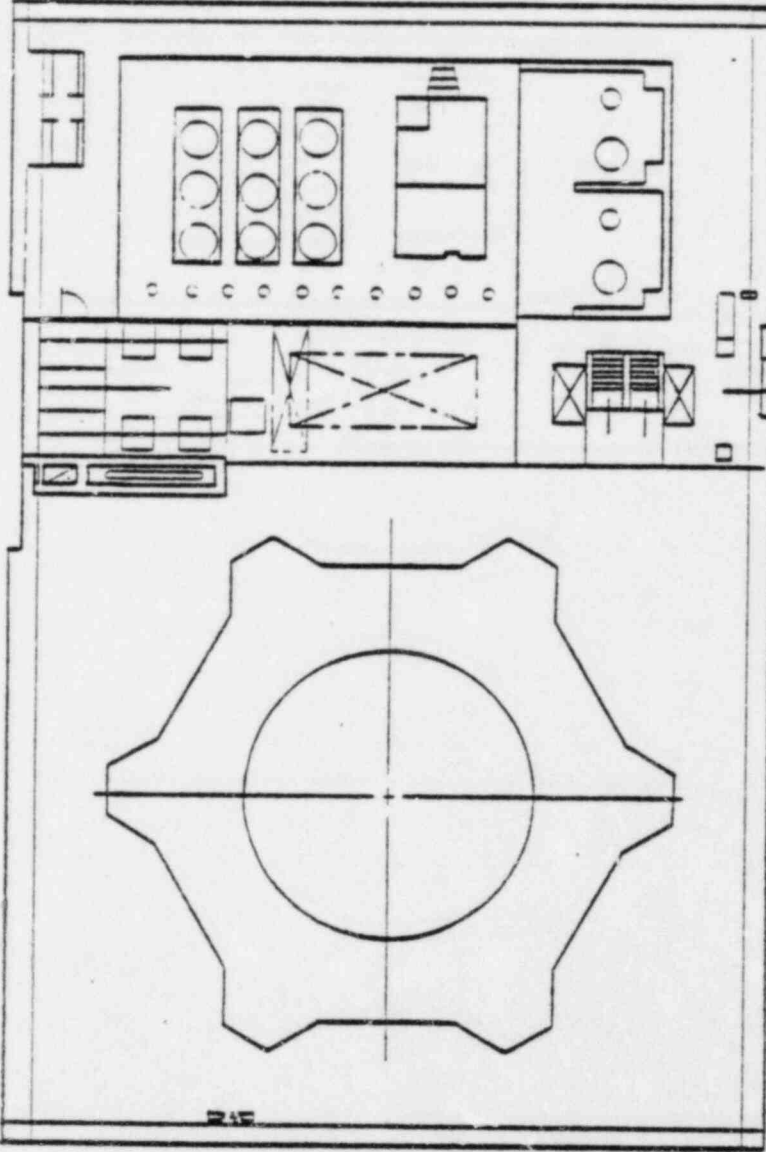
Floor

ALL RADIATION READINGS IN MR/HR.

POWER LEVEL

FLOOR EL. 4839'-0"

D-II



FLOOR EL. 4849' 0"

ALL RADIATION READINGS IN MR/HR.

POWER LEVEL _____ %

Wipe Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Flint

FORM IA1 373 03 2064

Date _____ Time _____

Survey By _____

SURVEY RESULTS		Instrument Number	Serial Number	Wipe alpha DPM/100CM ²	Wipe beta DPM/100CM ²	Air Sampler net/cf	Other

COMMENTS

D-12

FORM 161 372 03 2008

Date _____ Time _____

Survey By _____

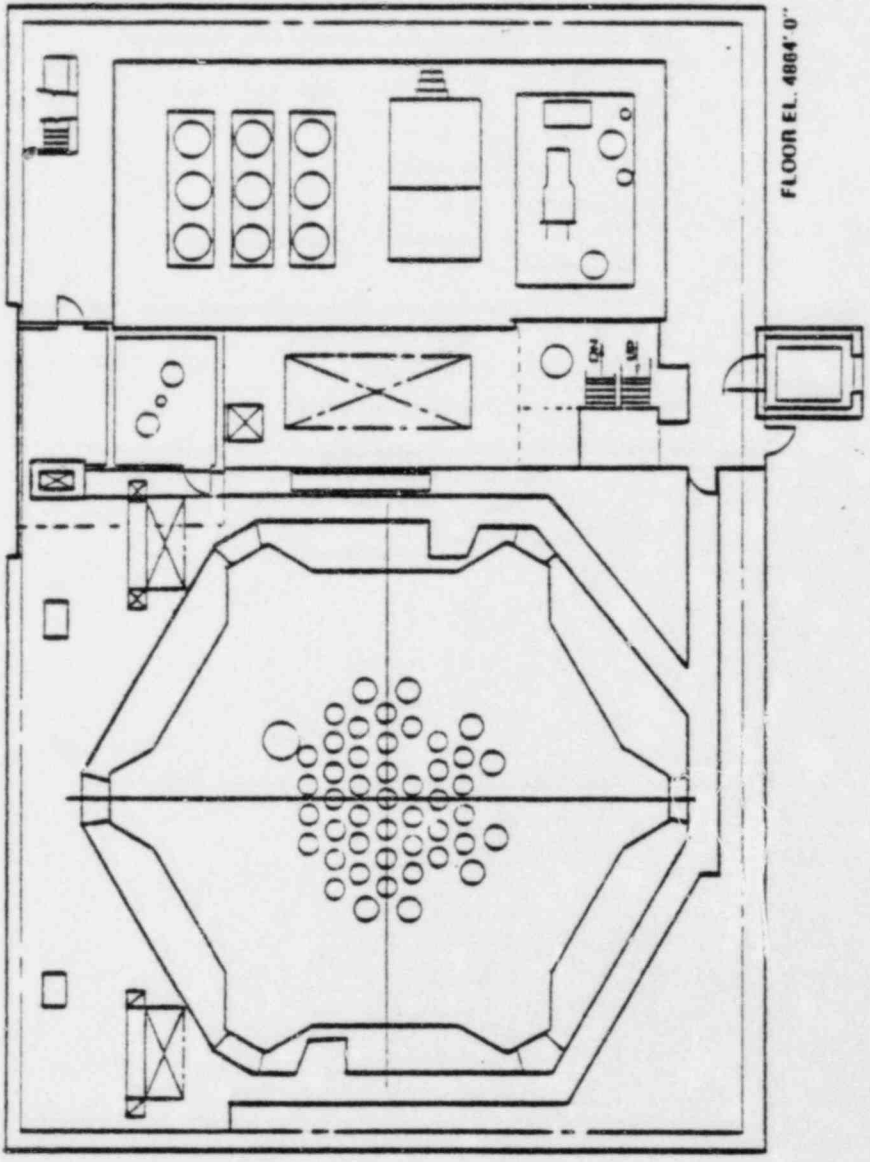
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha DFM/100CM ²	Wipe beta DFM/100CM ²	Air Sampler surface	Other

COMMENTS



Wipe Legend

- Wall
- Equipment
- Floor

POWER LEVEL _____ **m**

ALL RADIATION READINGS IN mR/HR.

D-16

FDPM (A) 372 02 2699

Date _____ Time _____

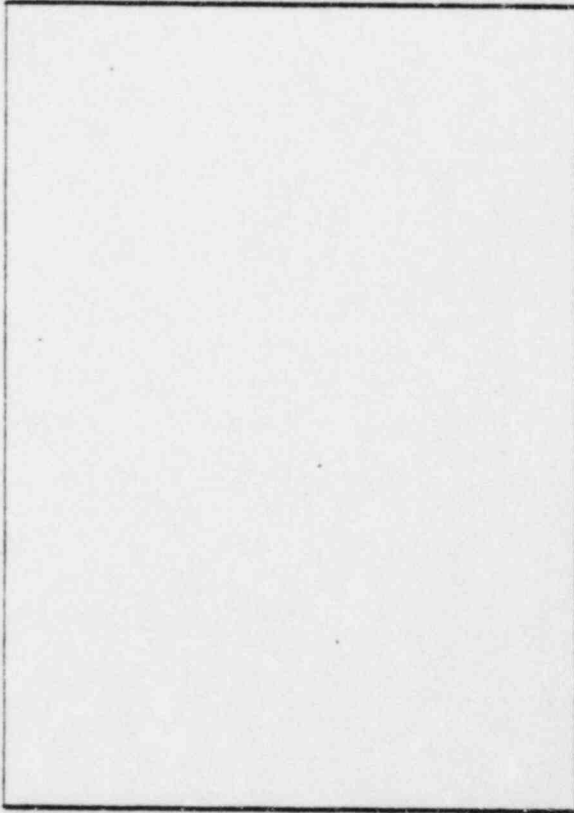
Survey By _____

Instrument Number _____

SURVEY RESULTS

Serial Number _____

No.	Wipe tests DPM/100CM ²	Wipe tests DPM/100CM ²	Air Sampler set/ce	Other



ELEVATION 4960'-0"

COMMENTS

Wipe Legend	
<input type="checkbox"/>	Wipe
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MIN./HR.

W-1

FORM (A) 373 02 2439

Date _____ Time _____

Survey By _____

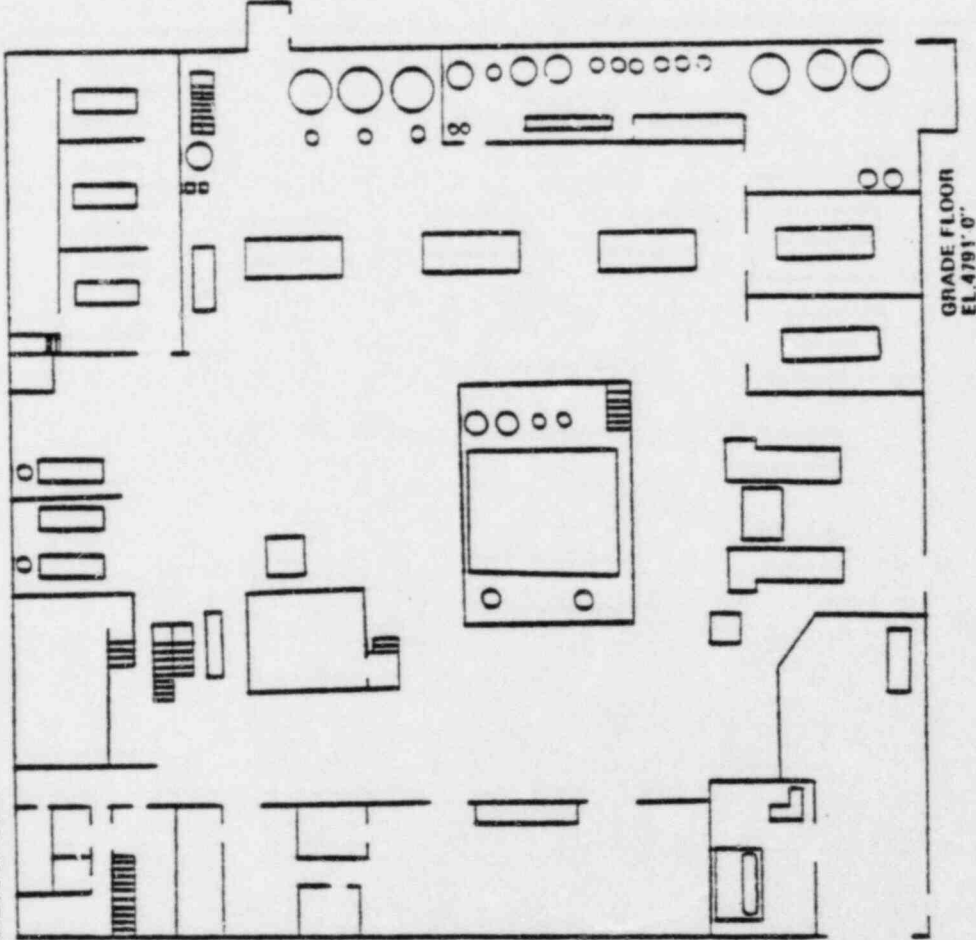
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha DPM/100CM ²	Wipe beta DPM/100CM ²	Alk Sampler net/line	Other

COMMENTS



GRADE FLOOR
EL. 479' 0"
ALL RADIATION READINGS IN MIRAIR.

POWER LEVEL _____ N

Wipe Legend
□ Wipe
△ Equipment
○ Floor

W-2

FORM (A) 372 03 2040

Date _____ Time _____

Survey By _____

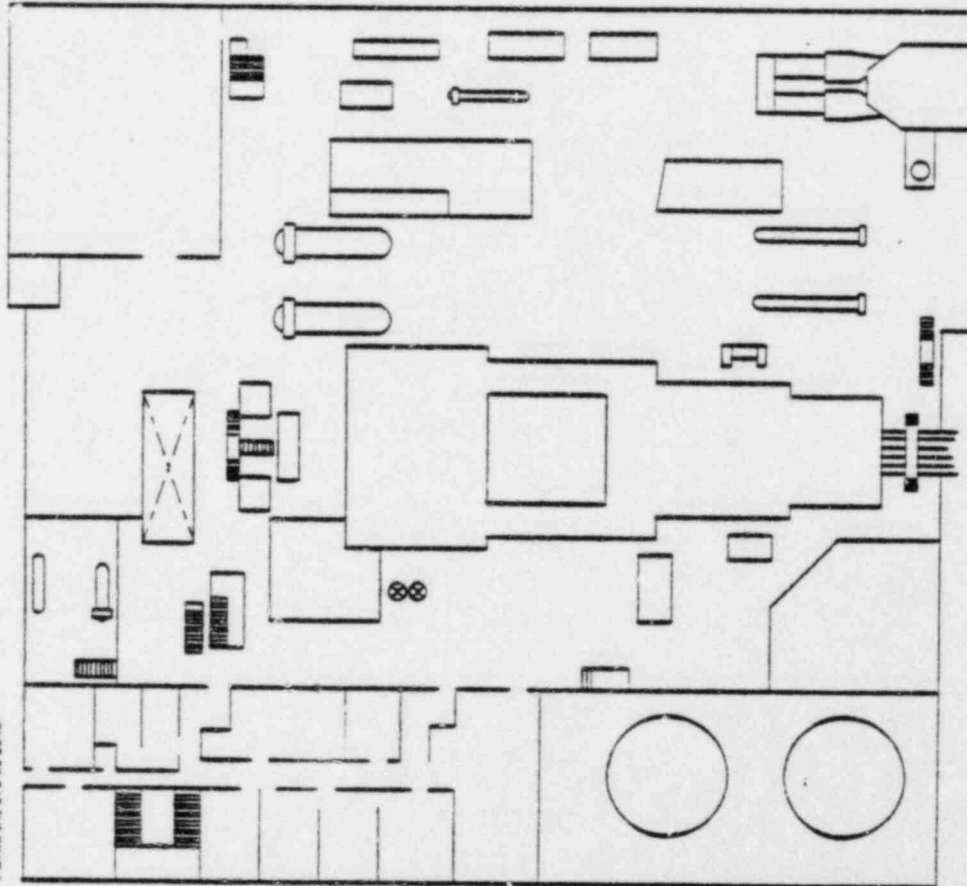
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No	Wire alpha DPM/100CM ²	Wire beta DPM/100CM ²	Alc Scintiger ct/cr	Other

COMMENTS



Wire Layout	
<input type="checkbox"/>	Trail
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Power

MEZZANINE FLOOR
EL. 481' 0"

ALL RADIATION READINGS IN MR/HR.

W-4

FORM IAI 312-03 7942

Date _____ Time _____

Survey By _____

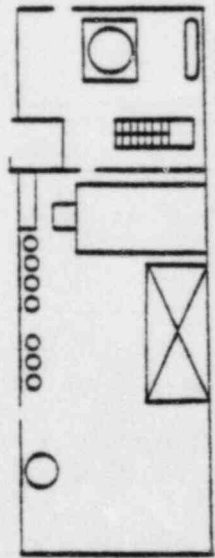
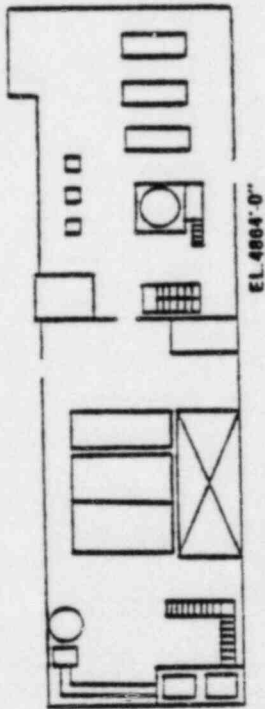
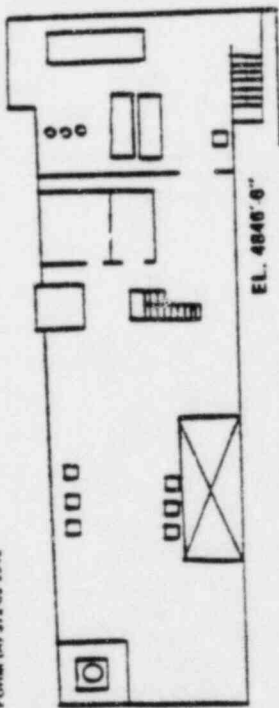
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha (DPM/100CM ²)	Wipe beta (DPM/100CM ²)	Air Sampler surface	Other

COMMENTS



Wipe Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

ALL RADIATION READINGS IN MIN/AIR

POWER LEVEL _____ %

W-5

FORM IAI 377-03 7643

Date _____ Time _____

Survey By _____

Instrument Number _____

Serial Number _____

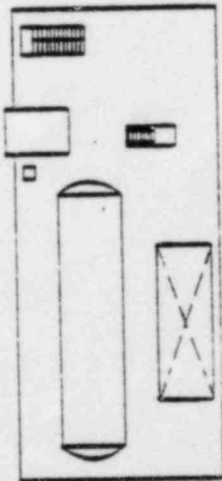
SURVEY RESULTS

No.	Wipe alpha DPM/100CM ²	Wipe beta DPM/100CM ²	Air Sampler cpm/cf	Other

COMMENTS



EL. 4921' 6"



EL. 4904' 0"
 TURBINE BUILDING

Wipe Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MR/HR.

W-6

FORM (A) 312 03 2008

Date _____ Time _____

Survey By _____

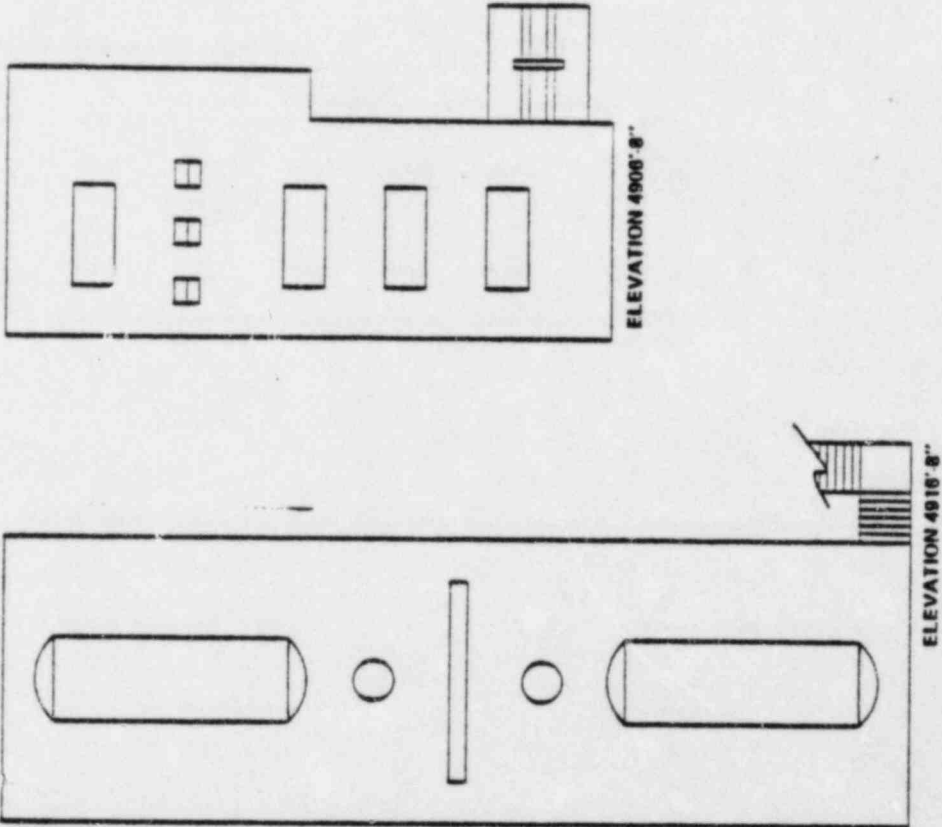
SURVEY RESULTS

Instrument Number _____

Serial Number _____

No.	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	Air Sample cpm/ft ³	Other

COMMENTS



Wipe Legend
 Wipe
 Equipment
 Floor

POWER LEVEL _____

ALL RADIATION READINGS IN MR/HR.

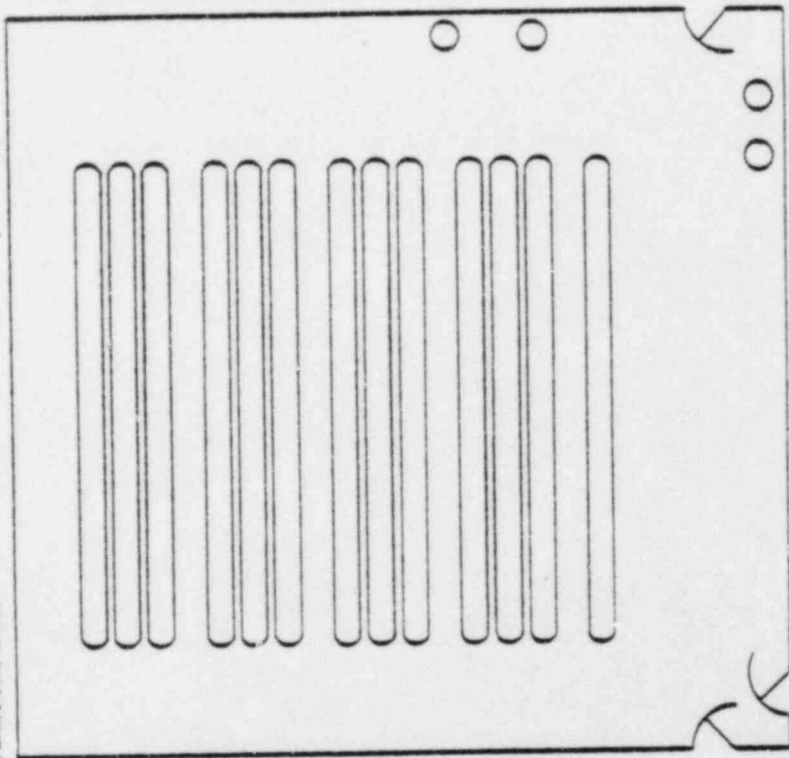
W-7

FORM IAI 312 03 2008

Date _____ Time _____
 Survey By _____

SURVEY RESULTS			
No.	Whee alpha DPM/100CM ²	Whee beta DPM/100CM ²	Other

COMMENTS _____



Rx BUILDING HELIUM STORAGE
 EL 4791'-0"

Whee Legend

- Wall
- Equipment
- Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MRR/M.

M-1

FORM 372.07 2037

Date _____ Time _____

Survey By _____

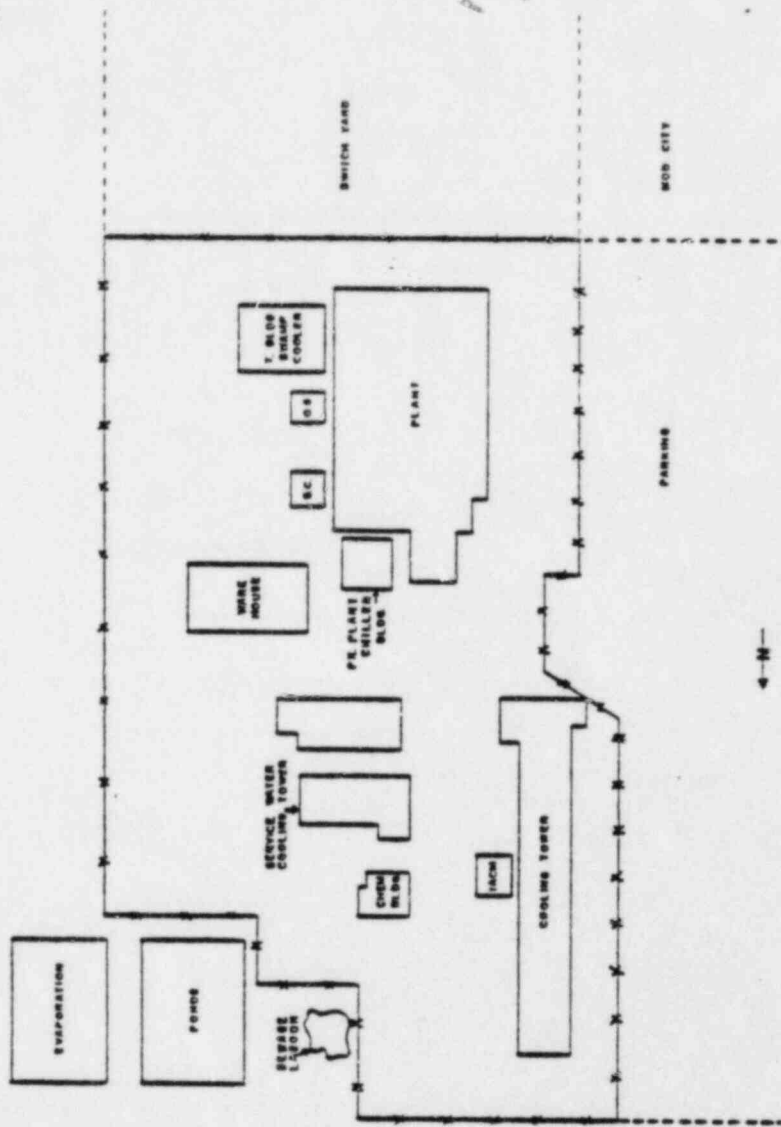
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	Al Sample wt/ct	Other

COMMENTS



Wipe Level

- Wall
- Equipment
- Floor

POWER LEVEL _____ %

ALL RADIATION READINGS IN MRHR.



Work/Datasheet/Checklist Control List

Worksheet No.

Title

Number Copies

None

N/A

N/A

Datasheet No.

1

Inplant/Onsite Monitoring Team
Deployment

10

2-23

Survey Maps

2 each

Checklist No.

None

N/A

N/A

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NO. _____, located at _____ . The following forms have been utilized from this copy:

Worksheet Numbers

Copies Used

Datasheet Numbers

Copies Used

Checklist Numbers

Copies Used

The procedure affected by this sheet is shown in the header to this page, unless otherwise noted below in the comments to this reporting form. When this form is received, it will be necessary to replace the noted number of forms, as well as this "Forms Use Reporting Sheet" for the affected procedure in the affected book.



FORMS USE REPORTING SHEET(Continued)

COMMENTS

Reported By: _____

Date: _____

Technical Clerk and Recorder _____ *

Date Received _____

Date Replaced _____

* Technical Clerk and Recorder will transmit this form to the originating individual/department upon completion of this form to notify users that the procedure has been updated and that all worksheets, checklists, and datasheets are present in the required number of copies.



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC
Director's Concurrence, the guidelines of RERP-EXP, Emergency
Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
Datasheet 1
Issue 1
Page 3 of 3

10) Comments:



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (uci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 25 = _____ (mrem)

5) Maximum Survey Time (based upon 10CFR20 limits or, with the TSC
Director's Consent, the guidelines of RERP-EXP, Emergency
Exposure Guidelines)
_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
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Page 3 of 3

10) Comments:



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (rem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC
Director's Concurrence, the guidelines of RERP-EXP, Emergency
Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
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Page 3 of 3

10) Comments:



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC
Director's Concurrence, the guidelines of RERP-EXP, Emergency
Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
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Page 3 of 3

10) Comments:



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY

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Page 3 of 3

10) Comments:

Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)

Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)

Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
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10) Comments:



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
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Page 3 of 3

10) Comments:

Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)

Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)

Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
Datasheet 1
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Page 3 of 3

10) Comments:

Datasheet 1

Inplan / Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (uci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



10) Comments:



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC
Director's Concurrence, the guidelines of RERP-EXP, Emergency
Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of HP Technician Team Leader By:
_____ (senior HP representative at TSC).

8) Dosimetry requirements (Circle):

Film Badge

Pocket Dosimeter - Low Range

Pocket Dosimeter - High Range

TLD Finger Ring

9) Protective Equipment requirements
(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



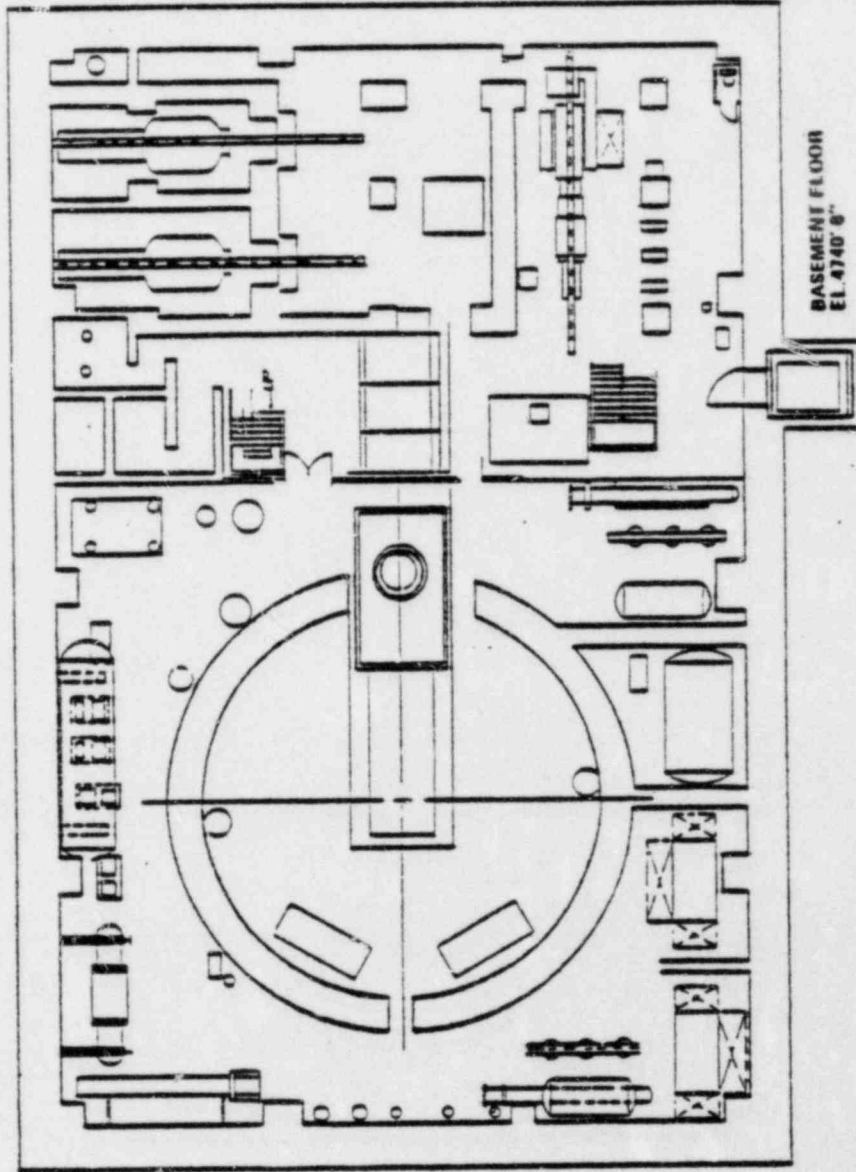
PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
Datasheet 1
Issue 1
Page 3 of 3

1) Comments:

D-1



FORM SA 512 01 2844

ALL RADIATION READINGS IN MINAIR.

POWER LEVEL _____ N

WPA Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

Date _____ Time _____

Survey By _____

No.	SURVEY RESULTS		Other
	Wireless (PM) / (DCM)*	Instrument Number / Serial Number	

COMMENTS _____

D-1

FORM (A) 312 02 2544

Date _____ Time _____

Survey By _____

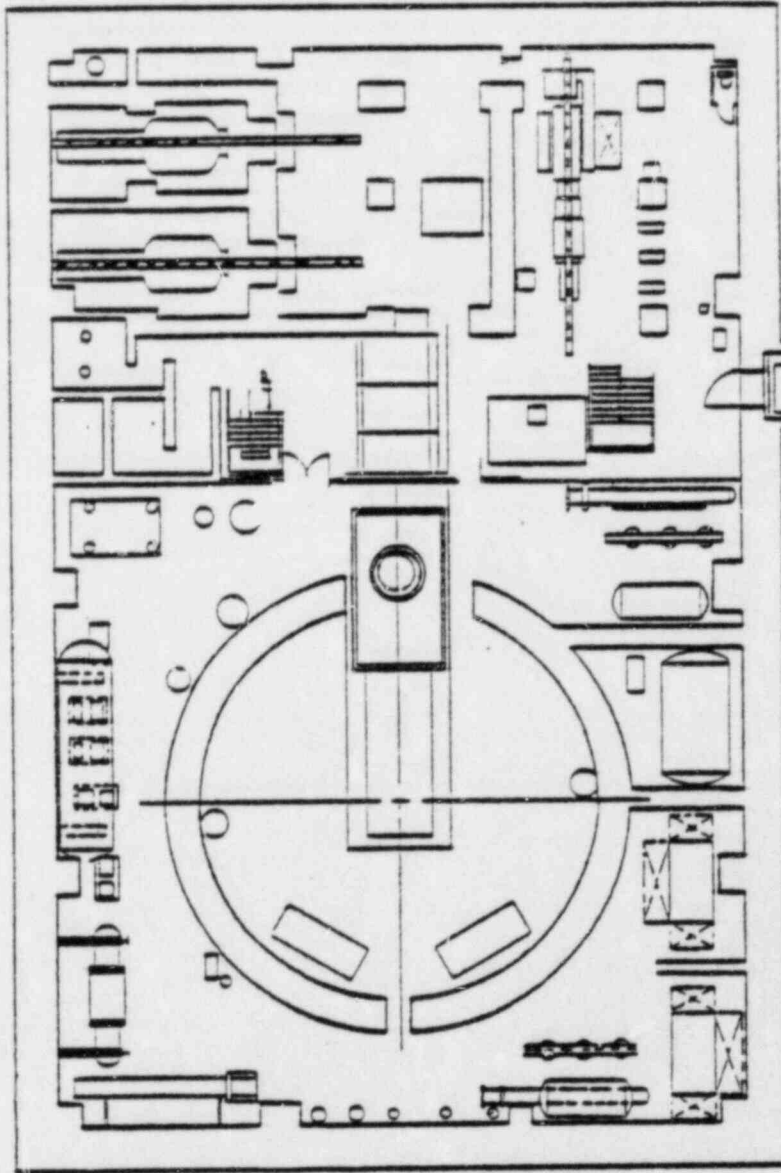
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wire type DFM/EDC/M	Wire type DFM/EDC/M	Air Sample units	Dishes

COMMENTS



BASEMENT FLOOR
 EL. 4740' 6"

ALL RADIATION READINGS IN MBMHR.

POWER LEVEL _____

<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

D-2

FORM IAI 372 07 20 16

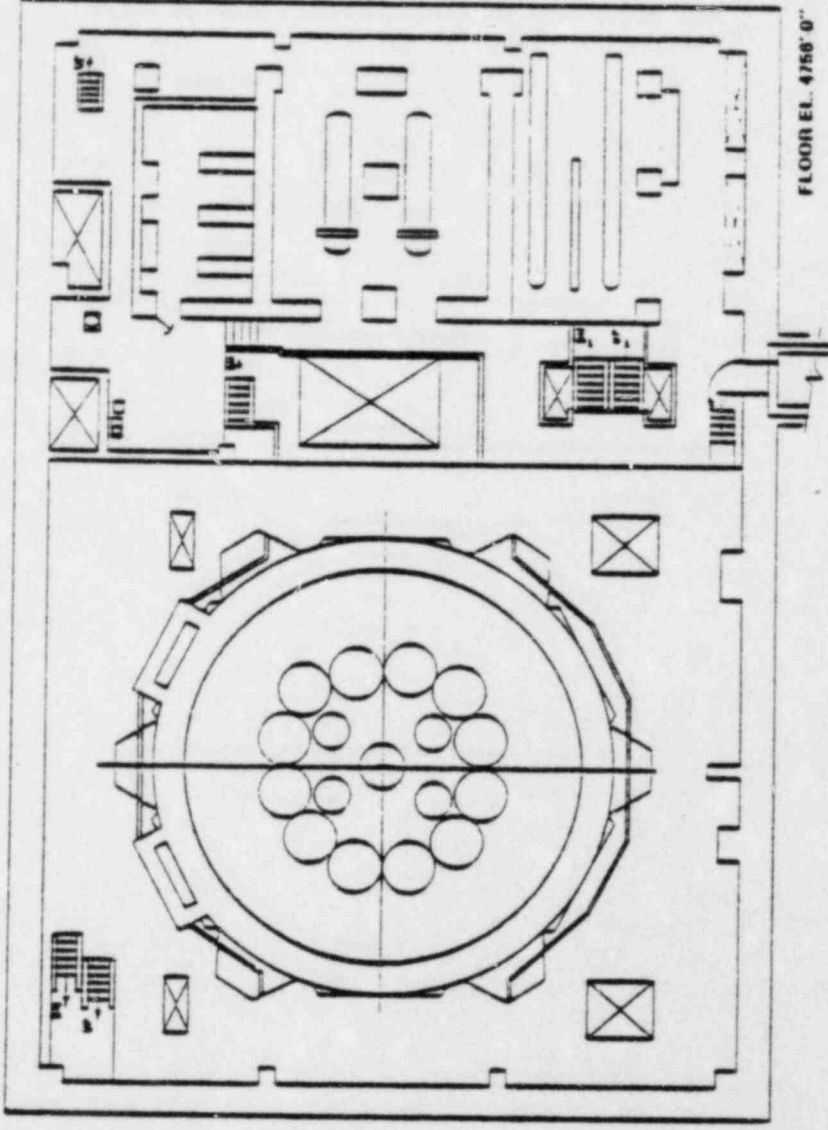
Date _____ Time _____

Survey By _____

Instrument Number _____
 Serial Number _____

No.	Wire Alpha DPM/100CS*	Wire Beta DPM/100CS*	Al Sample uCi/g	Disk

COMMENTS



ALL RADIATION READINGS IN MIN/R.

POWER LEVEL _____ N

Wire Legend
□ Wall
△ Equipment
○ Floor

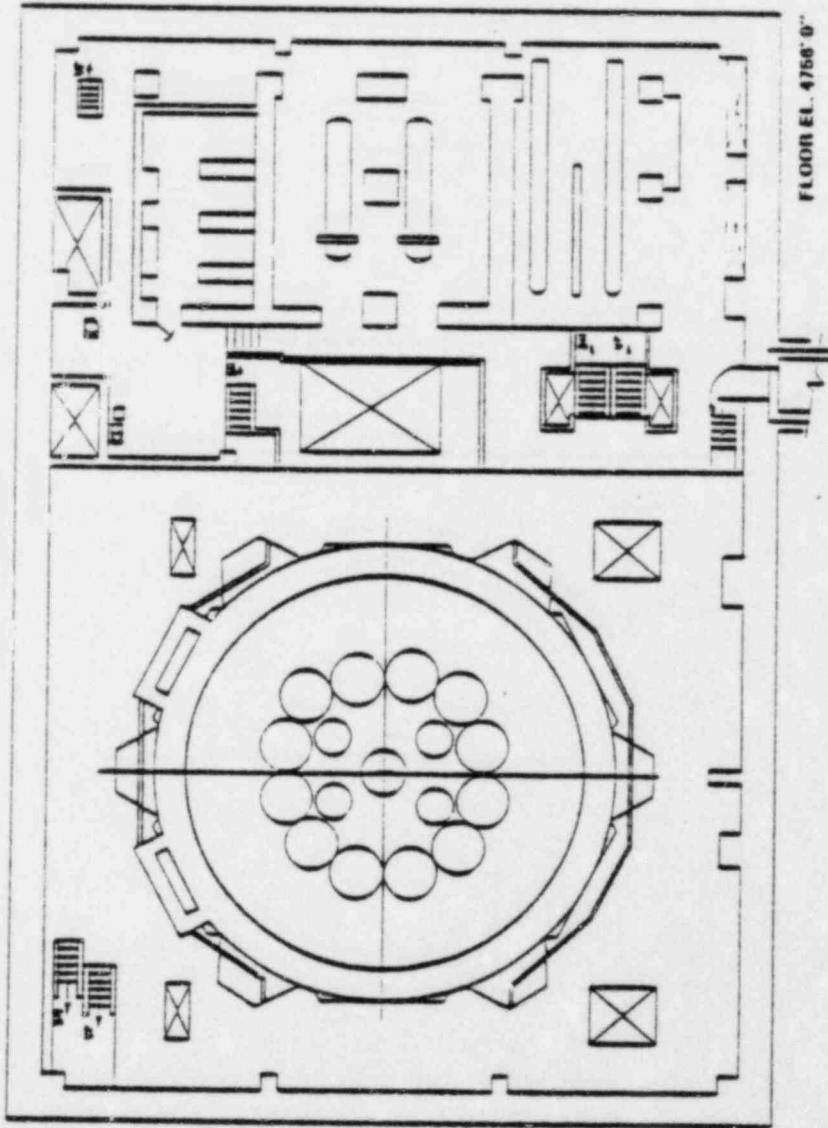
D-2

FORM 641 372 03 2846

Date _____ Time _____
Survey By _____

SURVEY RESULTS			
No.	Wipe alpha cpm/100cm ²	Wipe beta cpm/100cm ²	Disk

COMMENTS



Wipe Legend	
U	Wall
A	Equipment
O	Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MD/AIR

D-3

FORM (A) 312 02 2646

Date _____ Time _____

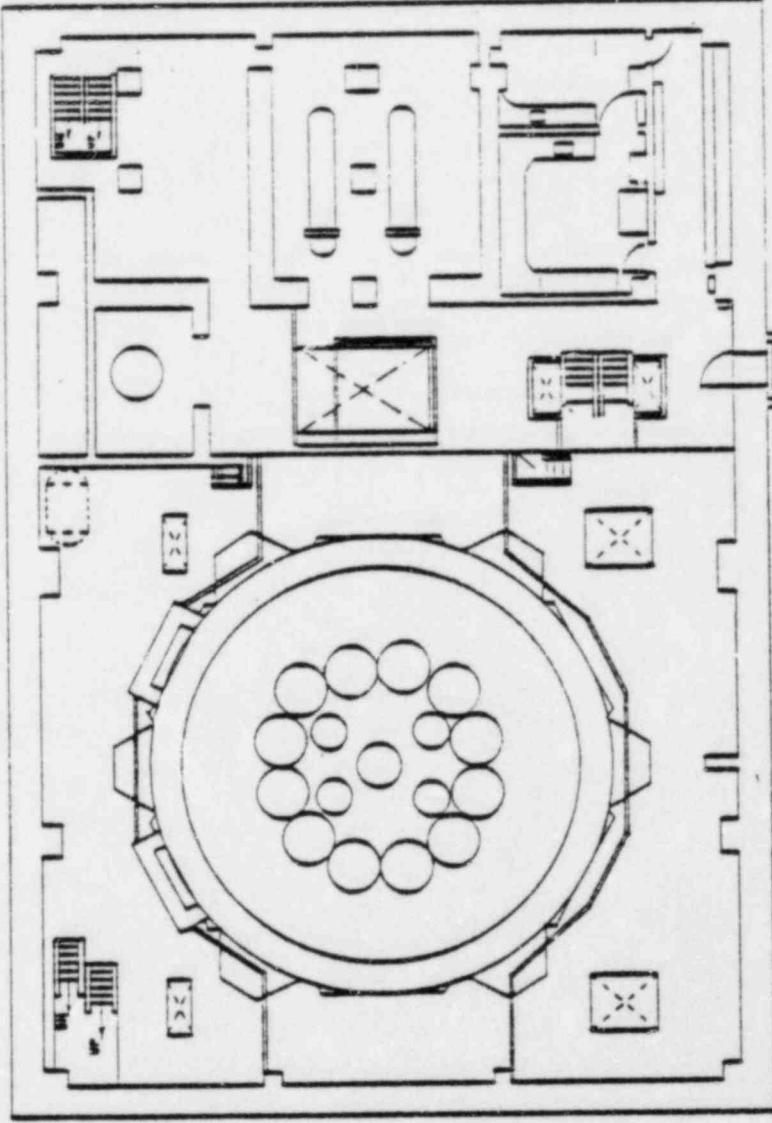
Survey By _____

Instrument Number _____

SURVEY RESULTS

No	Wipe alpha TAM/100CM ²	Wipe beta TAM/100CM ²	Air Sampler ml/ft ³	Other

COMMENTS



ALL RADIATION READINGS IN MR.AIR.

POWER LEVEL _____ N

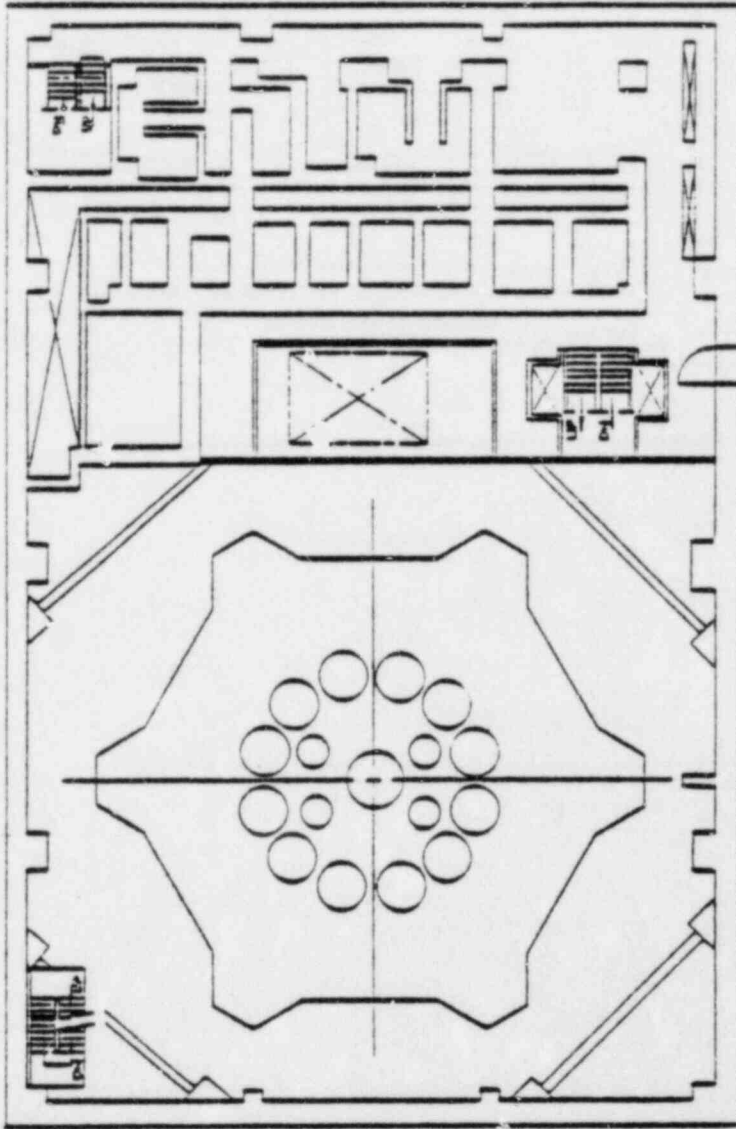
Wipe Legend
\square Wall
Δ Equipment
\circ Floor

D-4

FORM IAI 373 02 2647

Date _____ Time _____

Survey By _____



FLOOR EL. 4781' 0"

ALL RADIATION READINGS IN MR/HR

POWER LEVEL _____ N

Wipe Legend
<input type="checkbox"/> Wipe
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

SURVEY RESULTS		Instrument Number	
No.	Wipe alpha CPM/100C/M ²	Wipe beta CPM/100C/M ²	Other

COMMENTS

D-4

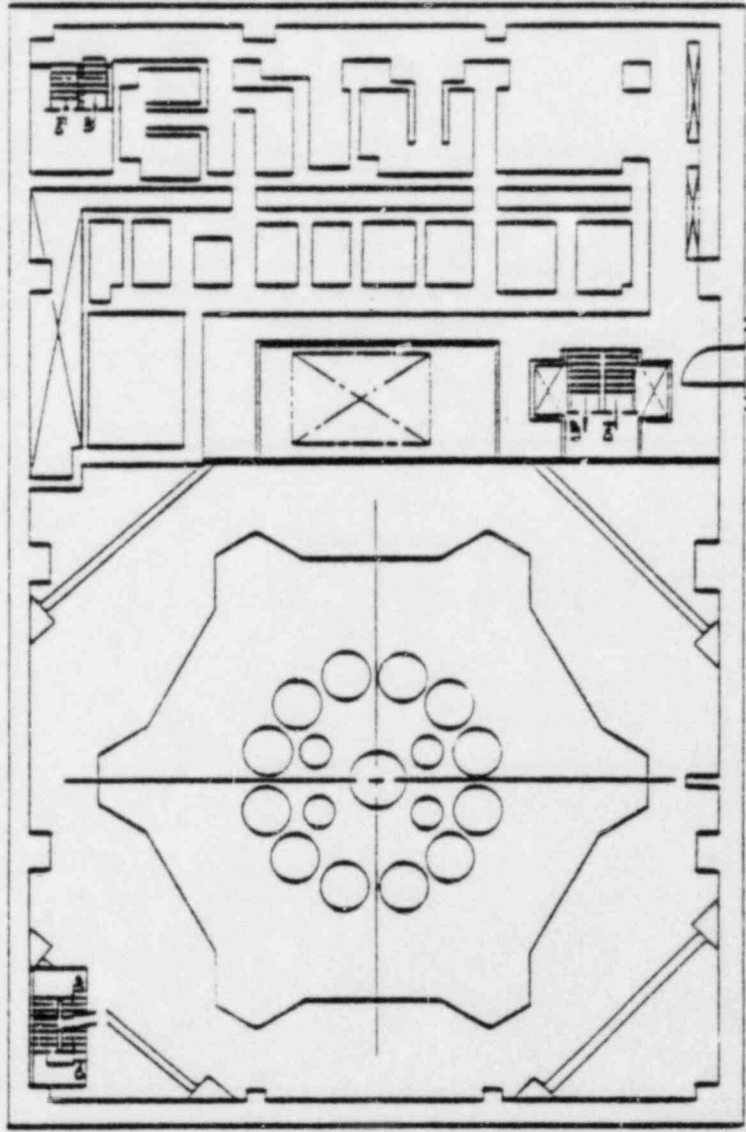
FORM (A) 372 03 2642

Date _____ Time _____
Survey By _____

Instrument Number _____
Serial Number _____

Wipe alpha DP-30/100CM*	Wipe beta DP-30/100CM*	As Sample utilize	Other

COMMENTS



FLOOR EL. 4781' 0"

Wipe Legend
□ Wall
△ Equipment
○ Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MIRD

D-5

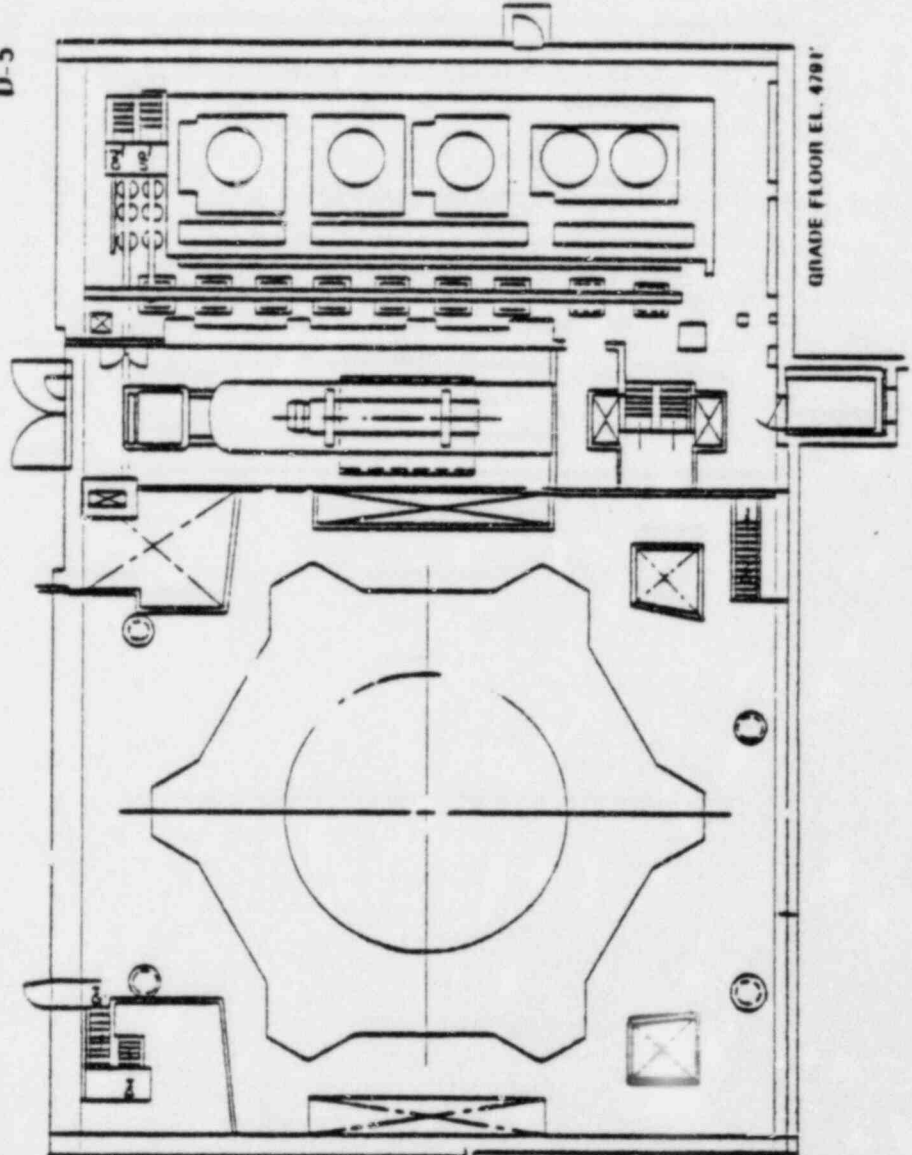
FORM (A) 312 82 2848

Date _____ Time _____
 Survey By _____

Investment Number _____
 Serial Number _____

No.	What sight used/located?	What hole used/located?	Air Sampler used?	Other

COMMENTS



Wipe Legend

- Wall
- Equipment
- Floor

POWER LEVEL _____ N
 ALL RADIATION READINGS IN MRR/HR

D-6

FORM 313 82 2634

Date _____ Time _____

Survey By _____

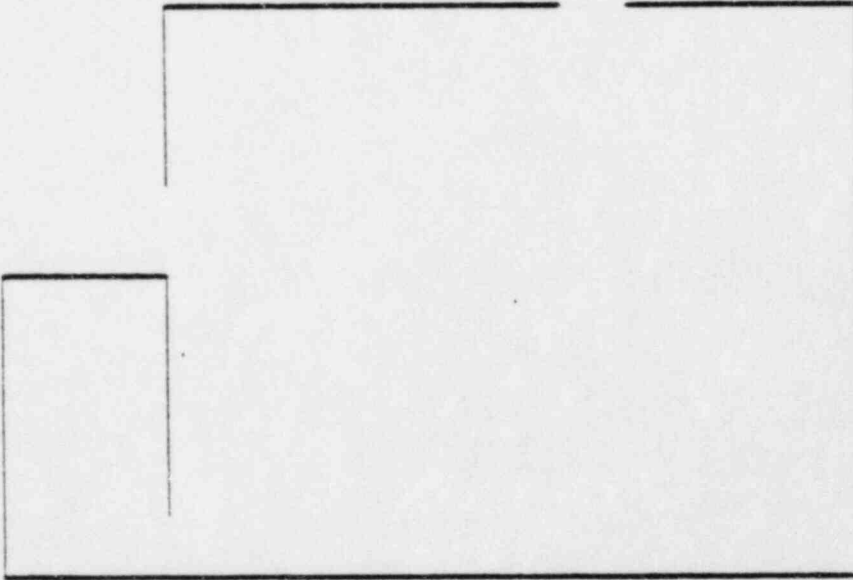
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha DFM/100Cpl*	Wipe beta DFM/100Cpl*	Alc Sample w/Use	Disk

COMMENTS



CAFETERIA EL. 4828' 0"

Wipe Legend

<input type="checkbox"/>	Wd
<input type="checkbox"/>	Eq
<input type="checkbox"/>	F

POWER LEVEL _____ B

ALL RADIATION READINGS IN MILLIR.

D-6

FORM 313 82 2834

Date _____ Time _____

Survey by _____

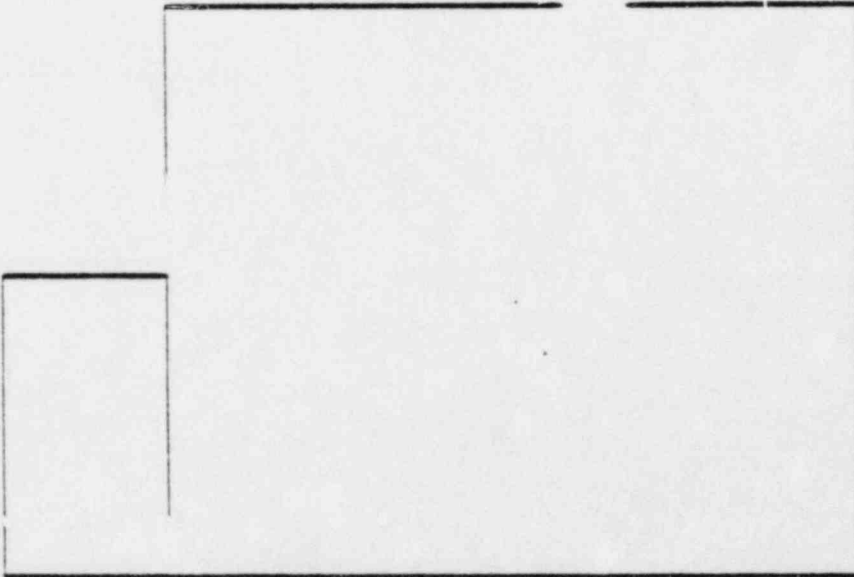
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha DPM/100CM ²	Wipe beta DPM/100CM ²	Alc Sample surface	Other

COMMENTS



CAFETERIA EL. 4829' 0"

Wipe Legend	
<input type="checkbox"/> D	Wet
<input type="checkbox"/> A	Equipment
<input type="checkbox"/> O	Floor

POWER LEVEL _____

ALL RADIATION READINGS IN MILLIR.

FORM IAJ 373 03 2060

Date _____ Time _____

Survey By _____

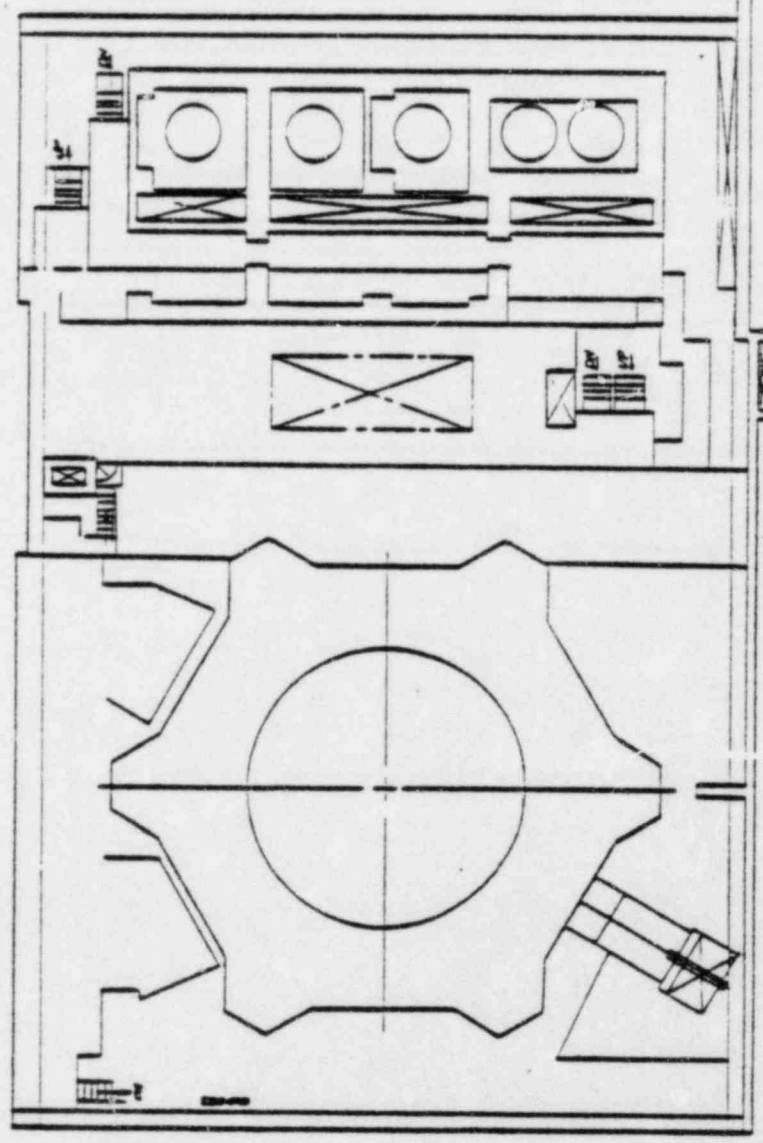
Instrument No. _____

Serial Number _____

No.	Wipe Area (CM ² /100CM ²)	Wipe Sets (CM ² /100CM ²)	Als Sample wt/gm	Other

COMMENTS _____

D-7



FLOOR EL. 4818' 0"

Wipe Legend
□ Wall
△ Equipment
○ Floor

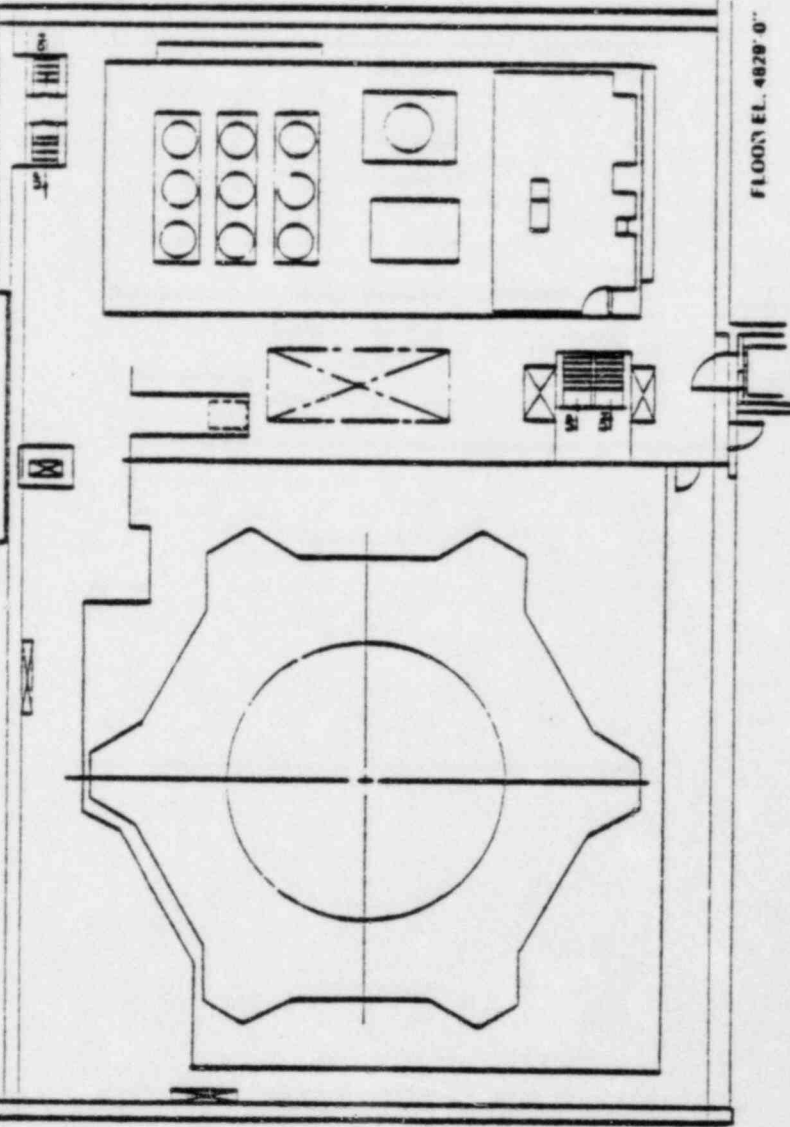
ALL RADIATION READINGS IN MIN/AIR

POWER LEVEL _____ N

FORM IAI 312 61 3043

D-8

Date _____ Time _____
 Survey By _____



Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha DPM/100CM ²	Wipe beta DPM/100CM ²	Area Sampler cpd/ra	Dikes

COMMENTS

Wipe Speed
Wall
Equipment
Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MRAIR

FLOOR EL. 4829'-0"

D-9

FORM 03 913 02 2052

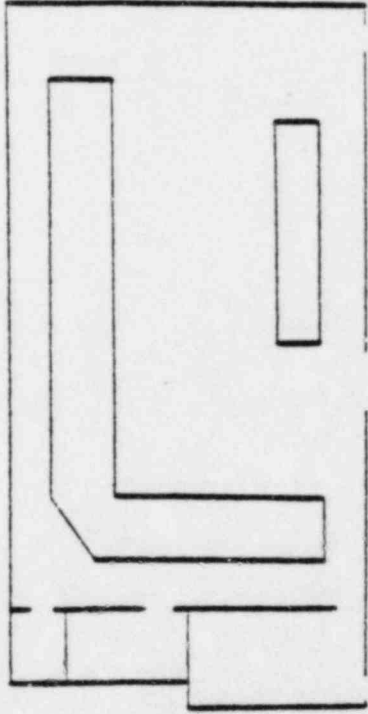
Date _____ Time _____

Survey By _____

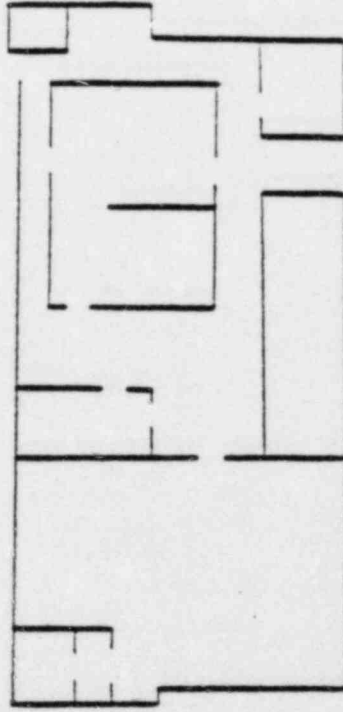
Survey RESULTS
Instrument Number
Serial Number

No.	Where Alpha Source Located	Where beta Source Located	Alpha Sample volume	Other

COMMENTS



CONTROL ROOM EL. 4828' 0"



HEALTH PHYSICS, DECON EL. 4828' 0"

<input type="checkbox"/>	Wet
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

CONCENTRATION LEVEL _____ M

ALL RADIATION READINGS IN MR/HR

D-9

FORM (A) 312 02 2652

Date _____ Time _____

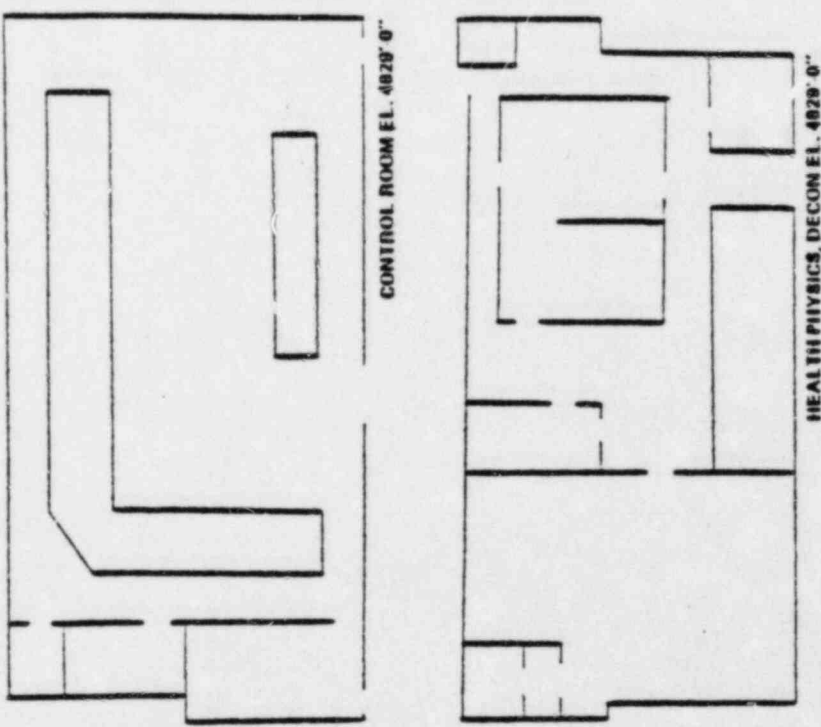
Survey By _____

Instrument Number _____

Serial Number _____

No.	When alpha count started	When beta count started	Air Sample volume	Other

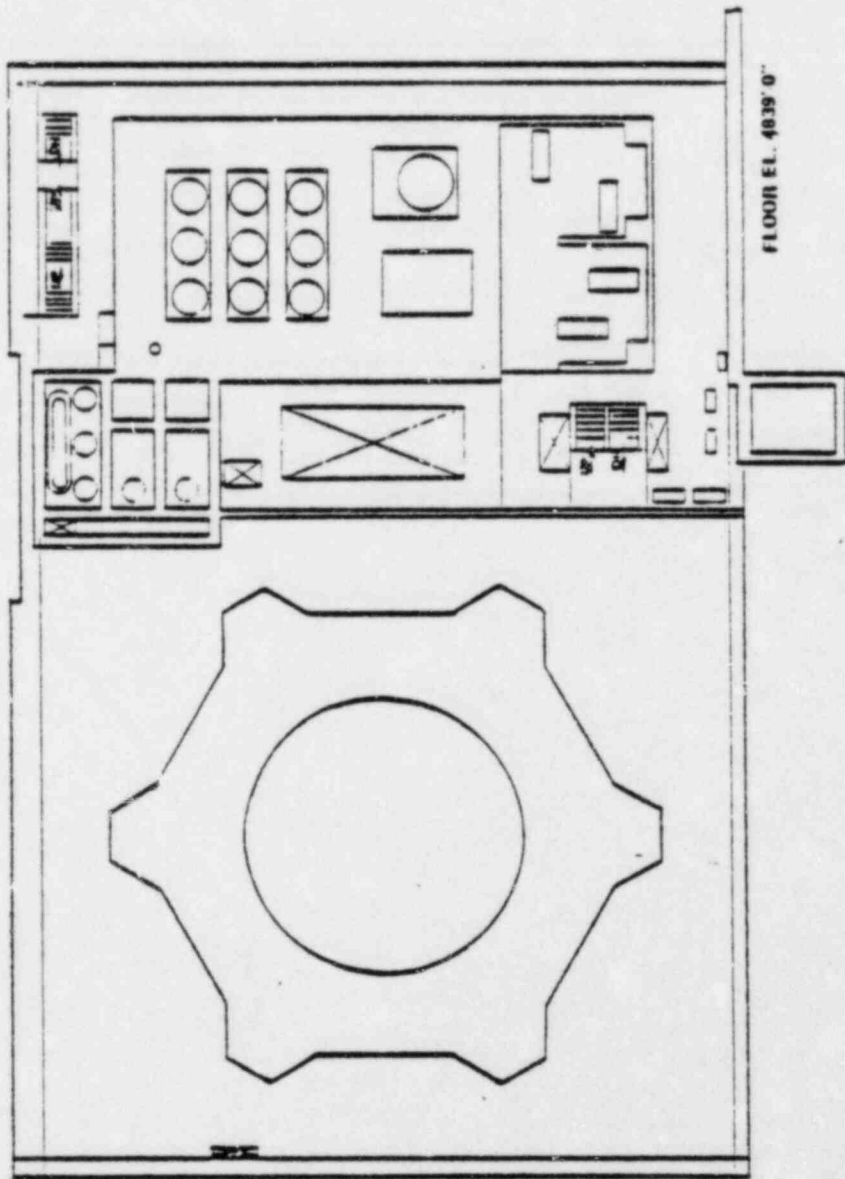
COMMENTS



When Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

POWER LEVEL _____ M ALL RADIATION READINGS IN MBq/l.

D-10



FLOOR EL. 4839' 0"

ALL RADIATION READINGS IN MRR/R.

Wipe Spread
W.R.
Equipment
Floor

POWER LEVEL

FORM 341 373 02 2883

Date _____ Time _____

Survey By _____

Instrument Number _____

Serial Number _____

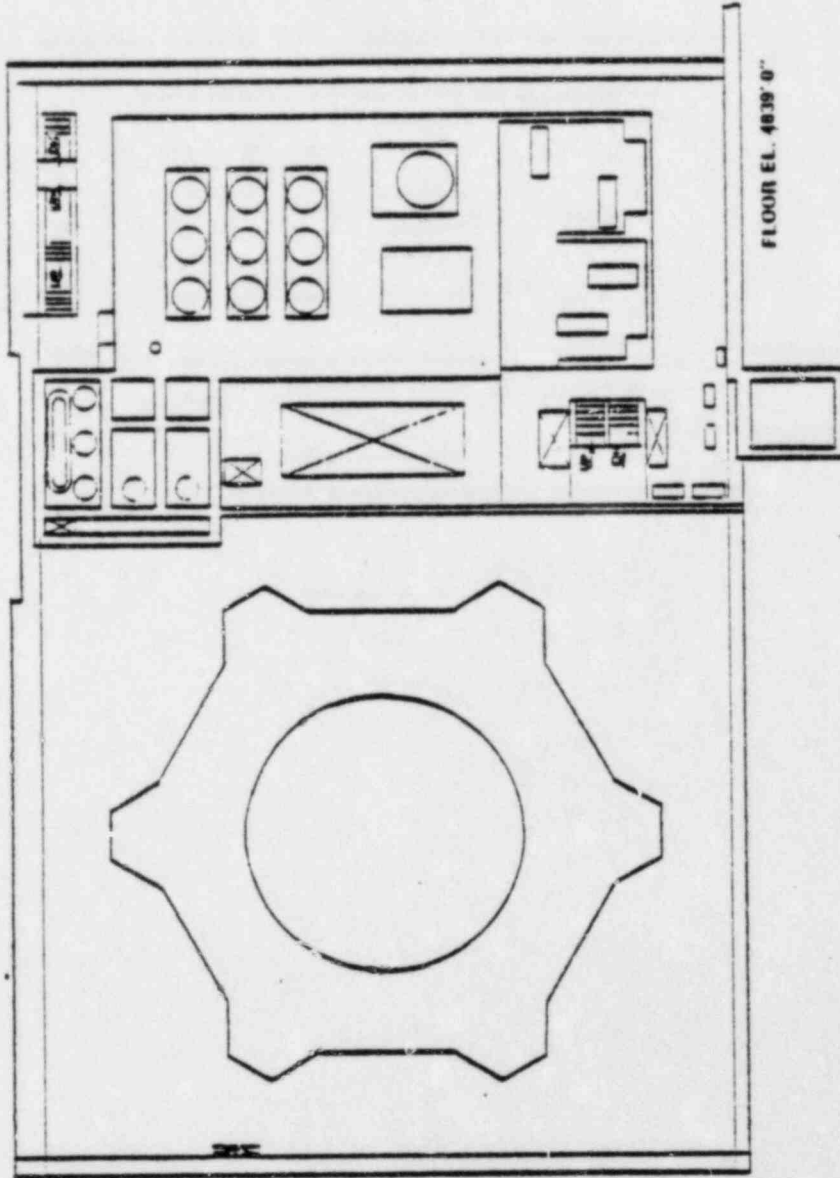
SURVEY RESULTS

No.	Wipe site (DATE/TIME)	Wipe site (DATE/TIME)	Ab Sample surface	Dist'd

COMMENTS

D-10

FORM (A) 312 02 2083



ALL RADIATION READINGS IN MR/HR

POWER LEVEL

<input type="checkbox"/>	Wsp. Legend
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

Date _____ Time _____

Survey By _____

Instructions Number _____

Serial Number _____

No.	Wsp. alpha DPM/100CM ²	Wsp. beta DPM/100CM ²	Als Sample mSv/hr	Distr.

COMMENTS

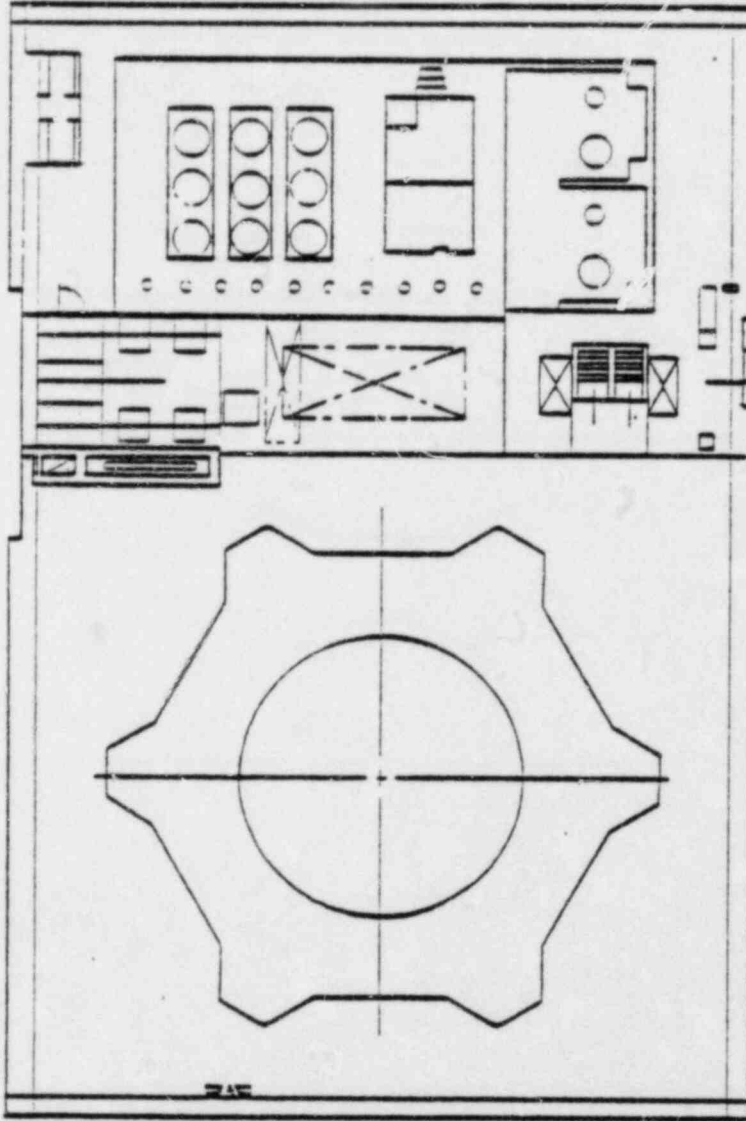
FORM IAI 373 02 2064

Date _____ Time _____
 Survey By _____

No.	SURVEY RESIN IS		Other
	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	

COMMENTS

D-II



FLOOR EL. 4849' 0"

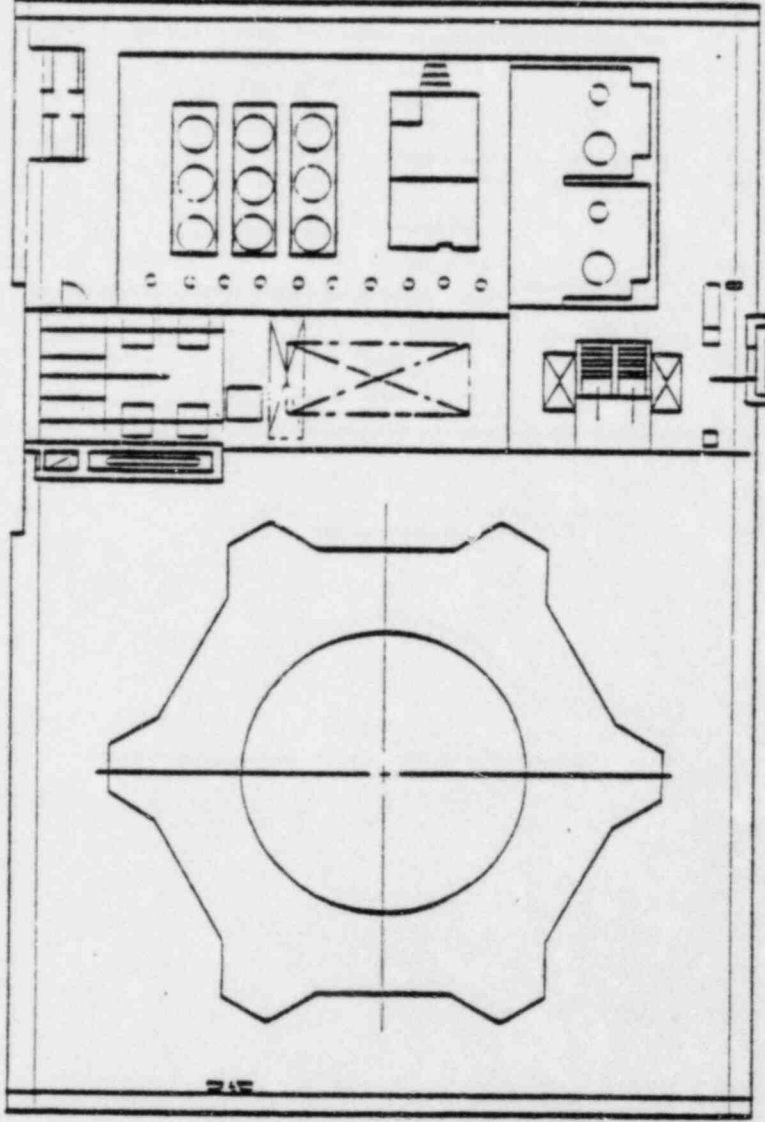
ALL RADIATION READINGS IN MARIN.

POWER LEVEL _____ N

Wipe Legend
<input type="checkbox"/> Wall
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

D-11

FORM IAI 372 82 2064



FLOOR EL. 4649' 0"

ALL RADIATION READINGS IN MR/RH.

POWER LEVEL _____ N

WFO Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

Date _____ Time _____

Survey By _____

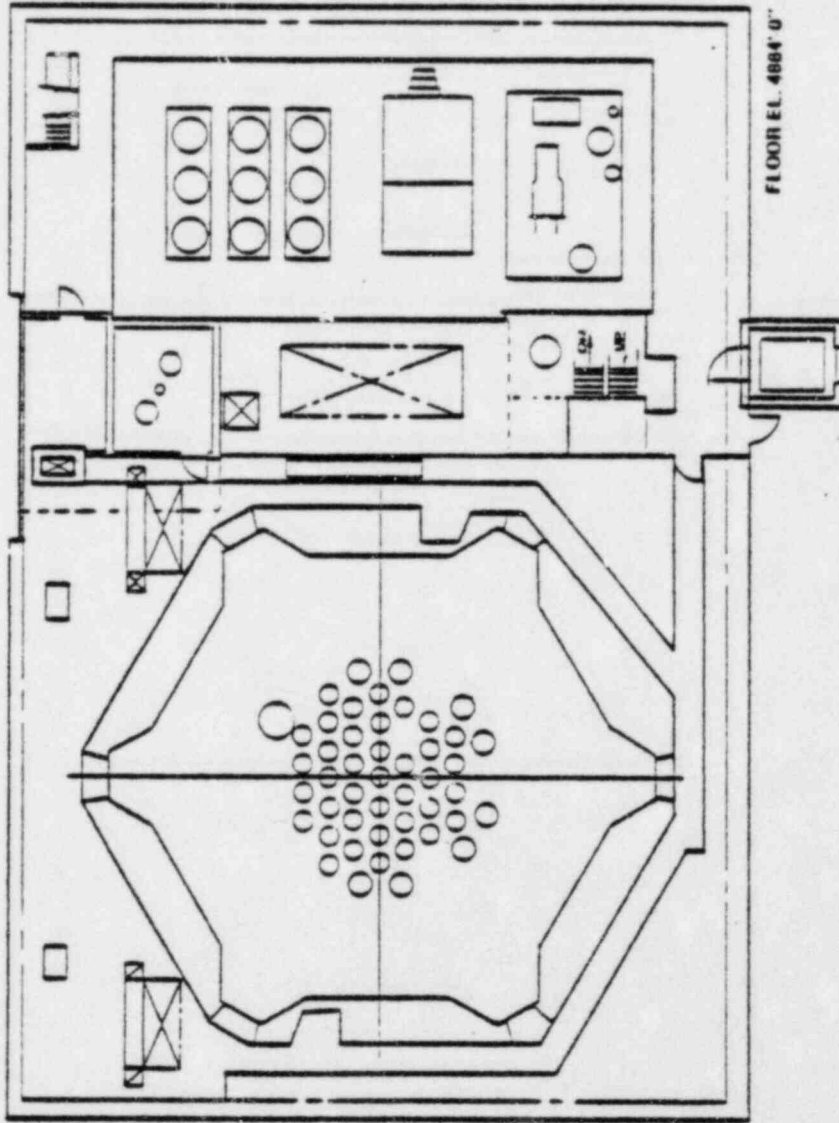
INSTRUMENT NUMBER
 SURVEY RESIN IS
 SERIAL NUMBER

No.	WFO alpha CPM/100CM ²	WFO beta CPM/100CM ²	Air Sampler efficiency	Other

COMMENTS

D-12

FORM 141 312 01 2008



ALL RADIATION READINGS IN MINAIR

POWER LEVEL _____ M

Wipe Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

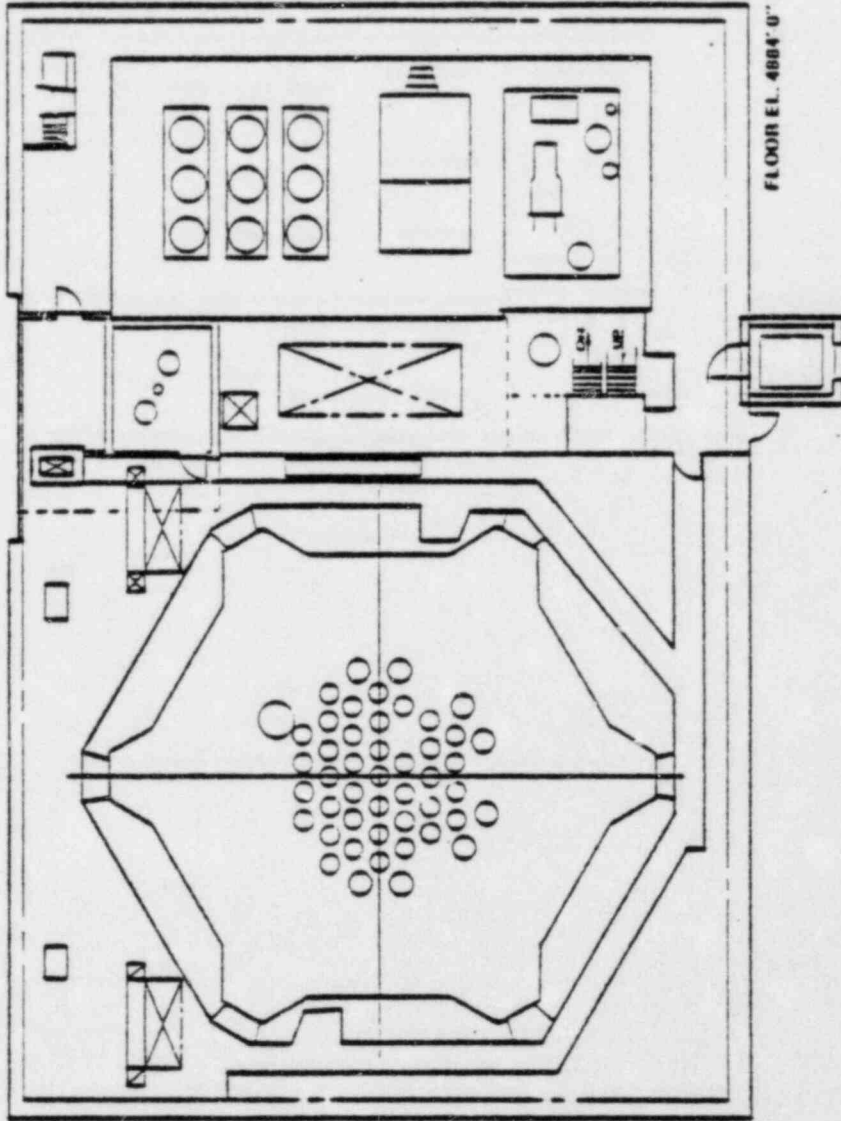
Date _____ Time _____
 Survey By _____

SURVEY RESULTS		Instrument Number	Serial Number	Alt Sample	Other
No.	Wipe area ORU/POC/	Wipe area ORU/POC/	Alt Sample surface		

COMMENTS

D-12

FORM (A) 313-02 2008



ALL RADIATION READINGS IN MINAIR.

POWER LEVEL _____ W

Wipe Legend	
□	Wall
△	Equipment
○	Floor

Date _____ Time _____

Survey By _____

Instrument Number _____

Serial Number _____

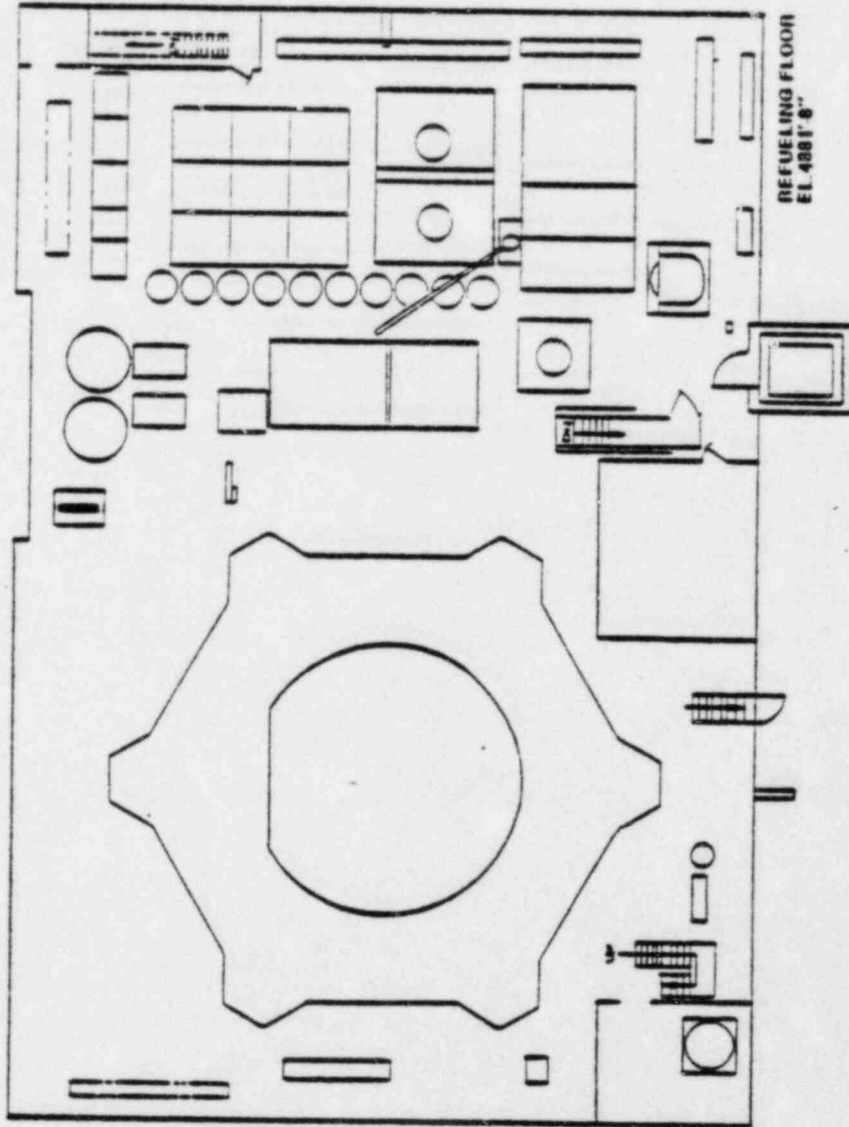
SURVEY RESULTS

No.	Wipe sites (PMI/100CM ²)	Wipe kits (PMI/100CM ²)	Air Sampler status	Other

COMMENTS

D-13

FORM (A) 312 02 2018



POWER LEVEL _____ M ALL RADIATION READINGS IN MILI/R.

Date _____ Time _____

Survey By _____

Instrument Number _____

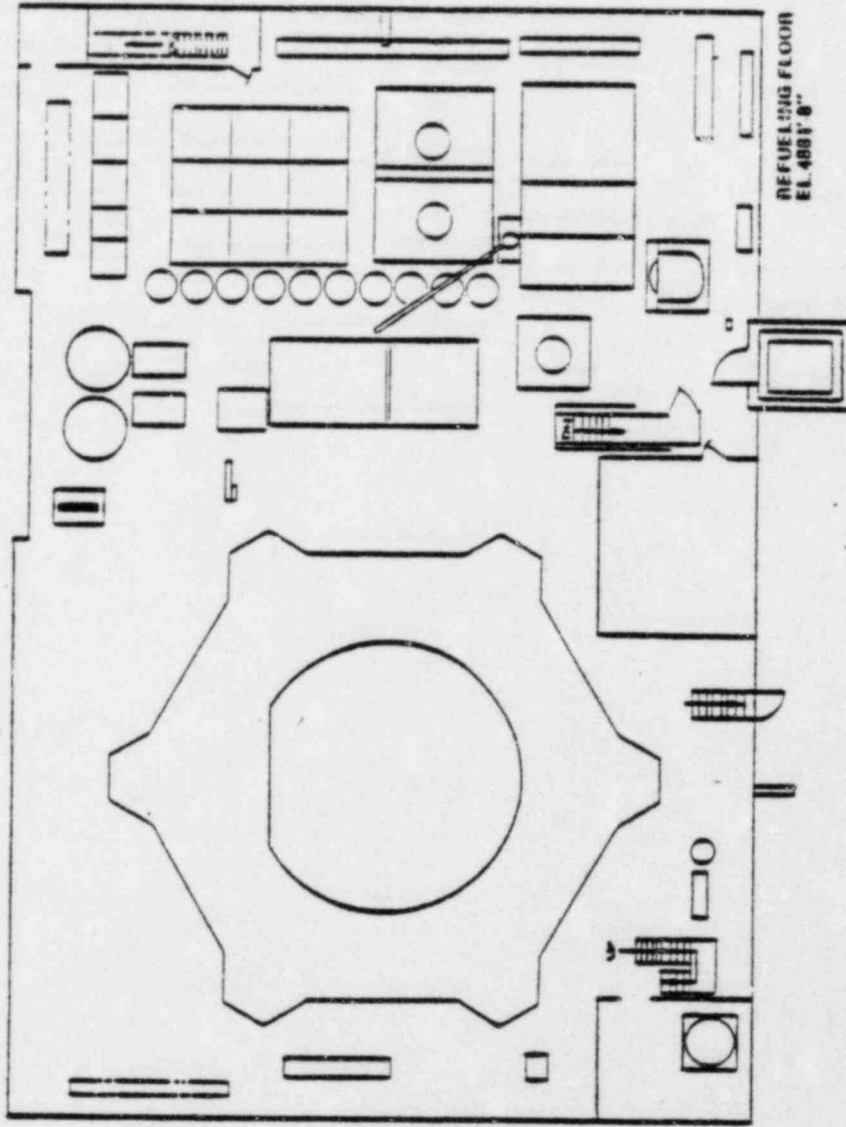
Serial Number _____

No.	Wipes alpha CPM/100CM ²	Wipes beta CPM/100CM ²	Air Sample uCi/L	Other

COMMENTS

D-13

FORM IAC 373 03 2008



POWER LEVEL — F — ALL RADIATION READINGS IN MRAIR.

Date _____ Time _____

Survey By _____

Instrument Number _____

Serial Number _____

No.	Wire Alpha EPM/100CM*	Wire Beta EPM/100CM*	Air Sampler with/ra	Other

COMMENTS

D-16

FORM (A) 373 02 2009

Date _____ Time _____

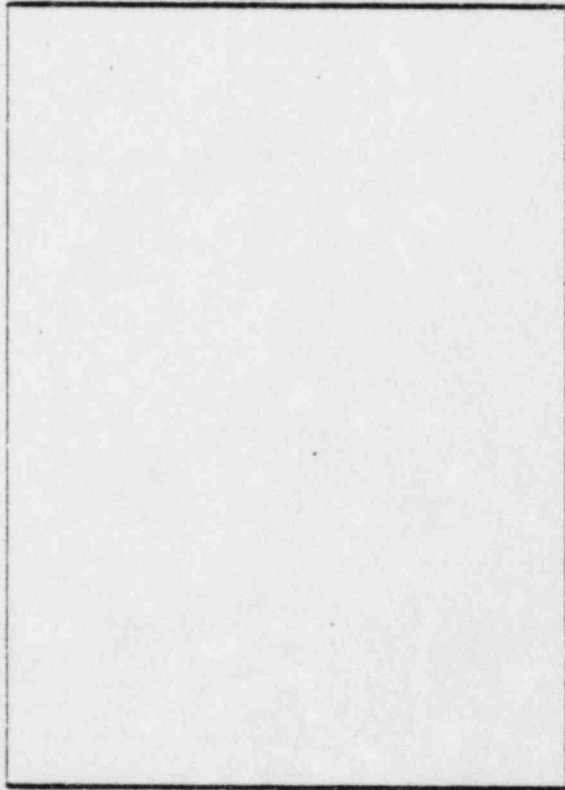
Survey By _____

Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wire Alpha DPH/100CAL*	Wire Beta DPH/100CAL*	Alc Sampler wt/1cc	Other



ELEVATION 4000' 0"



COMMENTS

Wire Legend
<input type="checkbox"/> Wet
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

POWER LEVEL _____ S

ALL RADIATION READINGS IN MR/HR.

D-16

FORM 347 372 02 2008

Date _____ Time _____

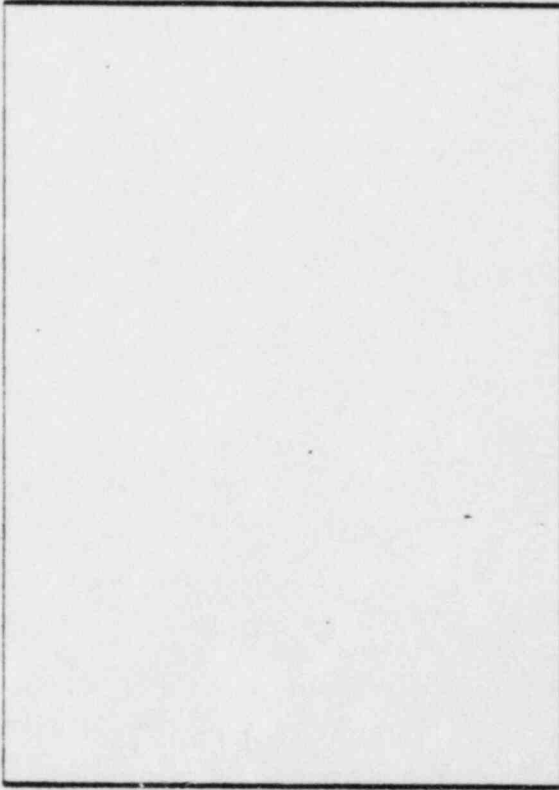
Survey By _____

Instrument Number _____
 Serial Number _____

SURVEY RESULTS

No.	Wire Alpha CPM/100CM ²	Wire Beta CPM/100CM ²	Al Sampler wt/cm ²	Other

COMMENTS



ELEVATION 4880' 0"

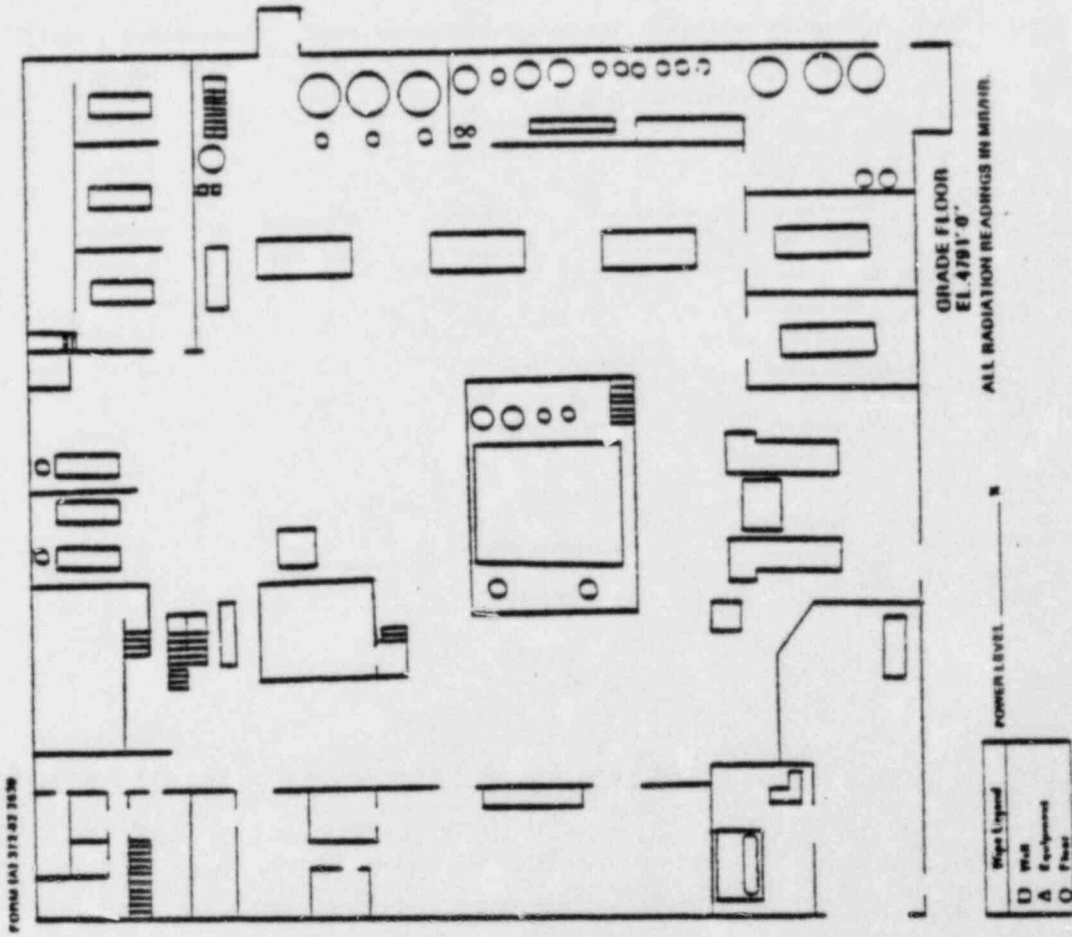
Wire Legend

<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MR/HR.

W-1



Date _____ Time _____

Survey By _____

Instrn. and Number / Serial Number

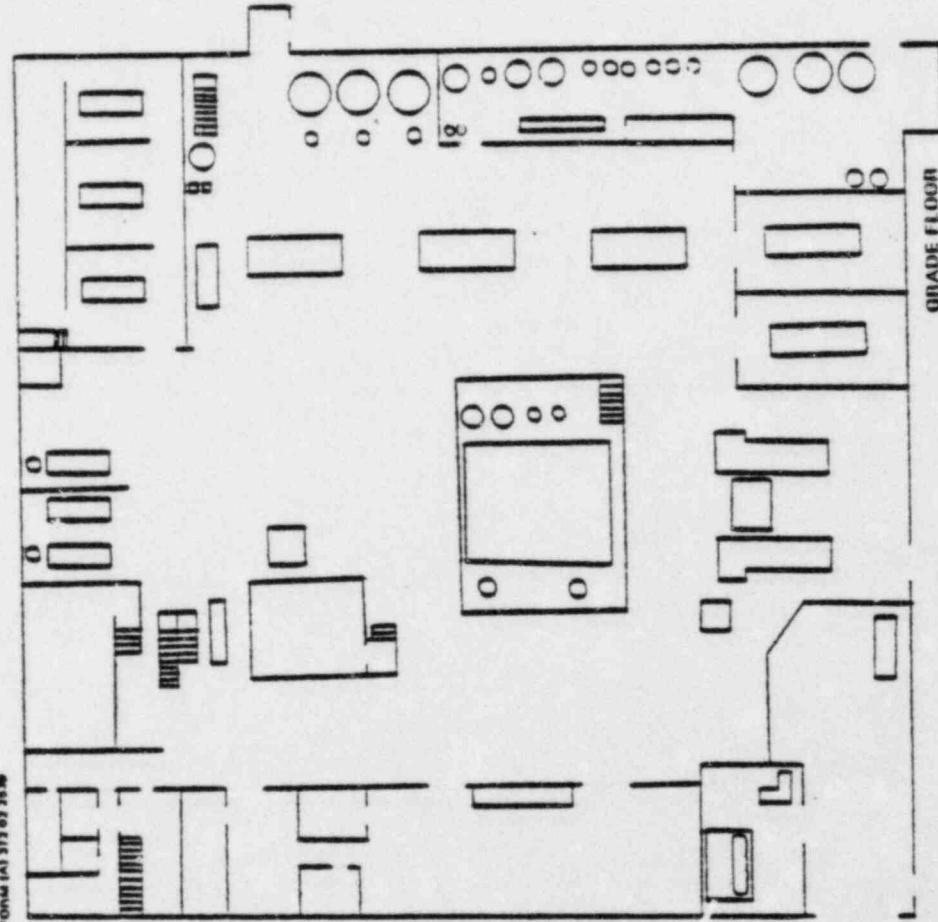
SURVEY RESULTS

No.	Whee alpha (cpm/100CM ²)	Whee beta (cpm/100CM ²)	Ed. Equivalent (cpm)	Dirkde

COMMENTS

W-1

FORM (A) 312 02 25 30



GRADE FLOOR
 EL. 4781' 0"
 ALL ELEVATION READINGS IN MDD/11R

W-1 Legend	
□	W-1R
△	Equipment
○	Notes

POWER LEVEL _____

Date	Time	Survey By	Instrument Number	Serial Number	W-1R DPM/100C/US	W-1R DPM/100C/US	Alk Sampler -10 liter	Circle

COMMENTS

W-2

FORM (A) 373 03 26-00

Date _____ Time _____

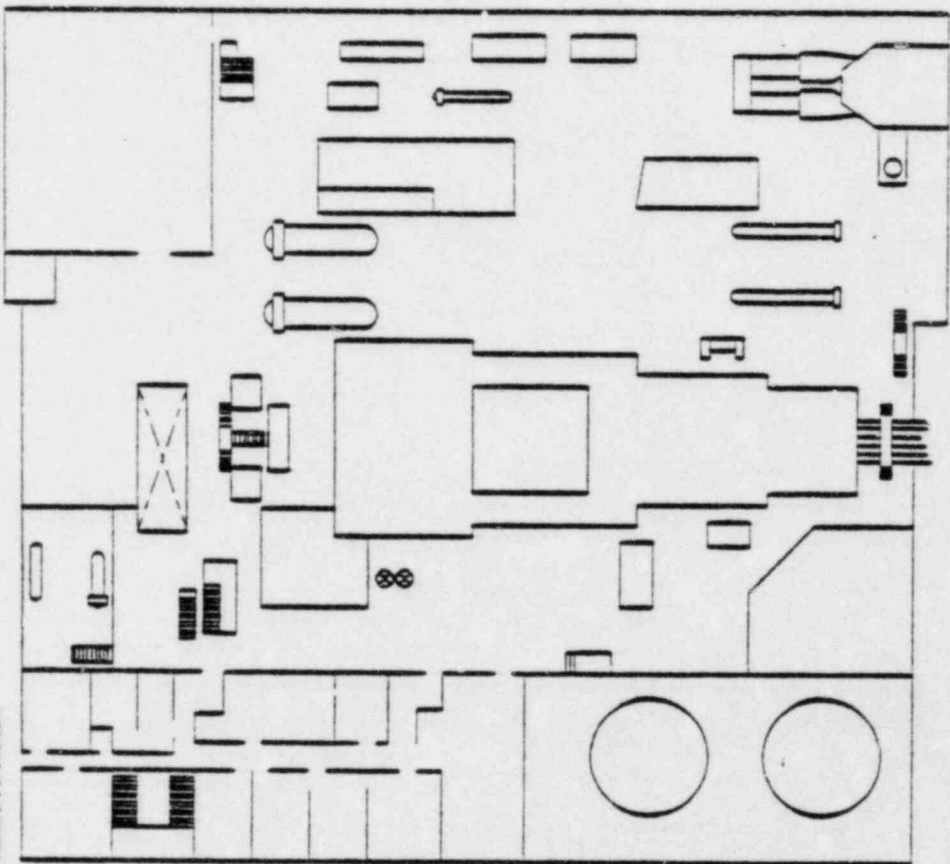
Survey By _____

Instrument Number _____

Serial Number _____

No.	Wipe alpha (DPM)/100CM ²	Wipe beta (DPM)/100CM ²	Air Sampler activity	Dikes

COMMENTS



MEZZANINE FLOOR
 EL 481'-0"

POWER LEVEL _____

Wipe Legend
<input type="checkbox"/> Wall
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

ALL RADIATION READINGS IN MRAIR.

W-2

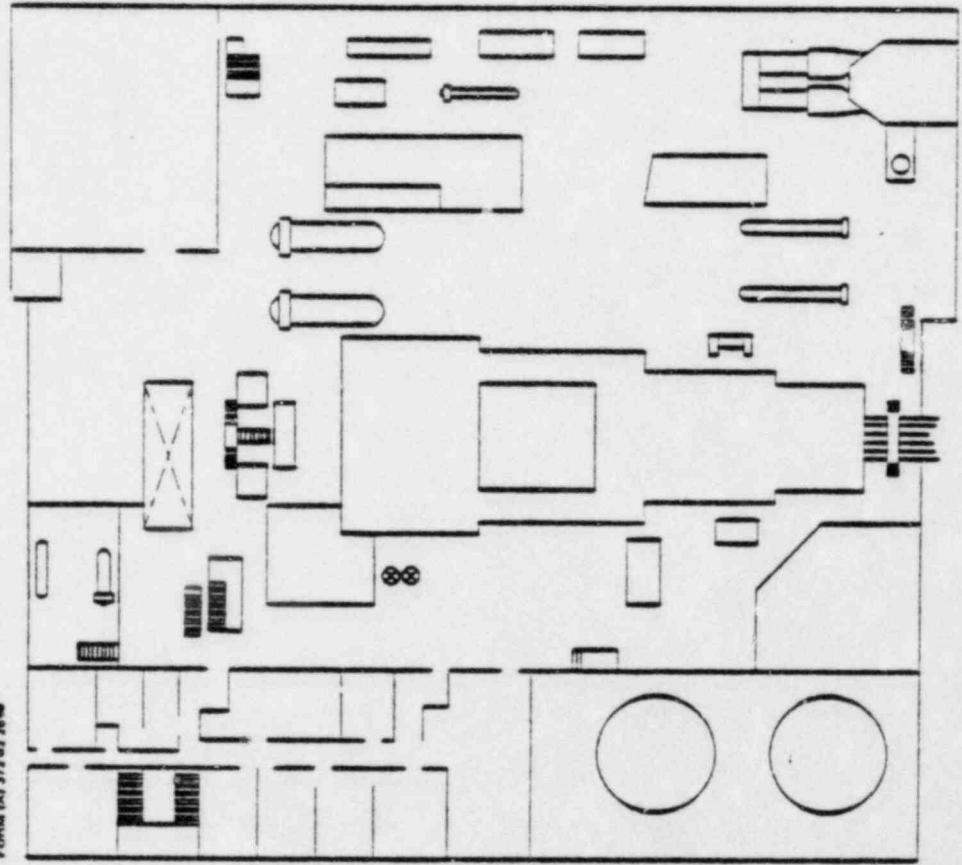
FORM (A) 372 02 26 00

Date _____ Time _____
 Survey By _____

SURVEY RESULTS
 Instrument Number _____
 Serial Number _____

No.	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	Air Sampler w/100	Ditch

COMMENTS



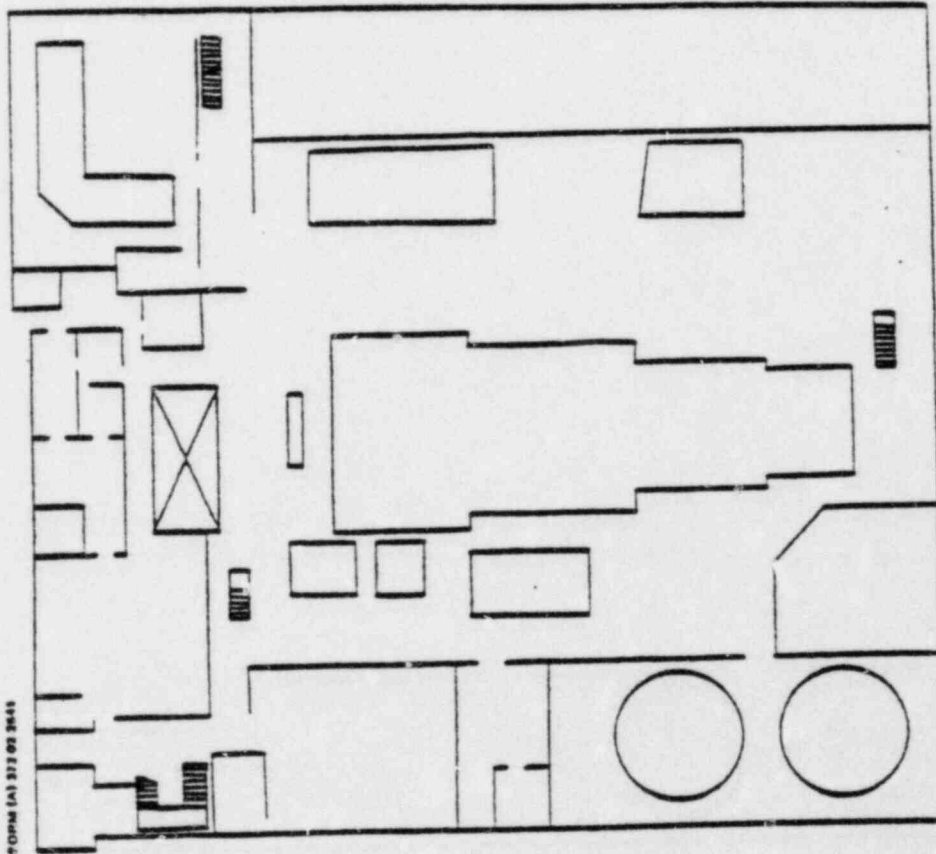
MEZZANINE FLOOR
 EL. 481'-0"

ALL RADIATION READINGS IN AIR.

Wipe Legend
 Wall
 Equipment
 Floor

POWER LEVEL _____

W-3



OPERATING FLOOR
 EL. 4829' 0"

ALL RADIATION READINGS \leq 1 MR/HR.

FORM SA 372 00 2641

Wipe Legend	
□	Wall
△	Equipment
○	Floor

POWER LEVEL _____ N

Date _____ Time _____

Survey By _____

Survey Instrument Number _____

Serial Number _____

No.	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	Air Sampler c/m ³ /hr	Other

COMMENTS _____

W-3

FORM SAJ 312 02 3041

Date _____ Time _____

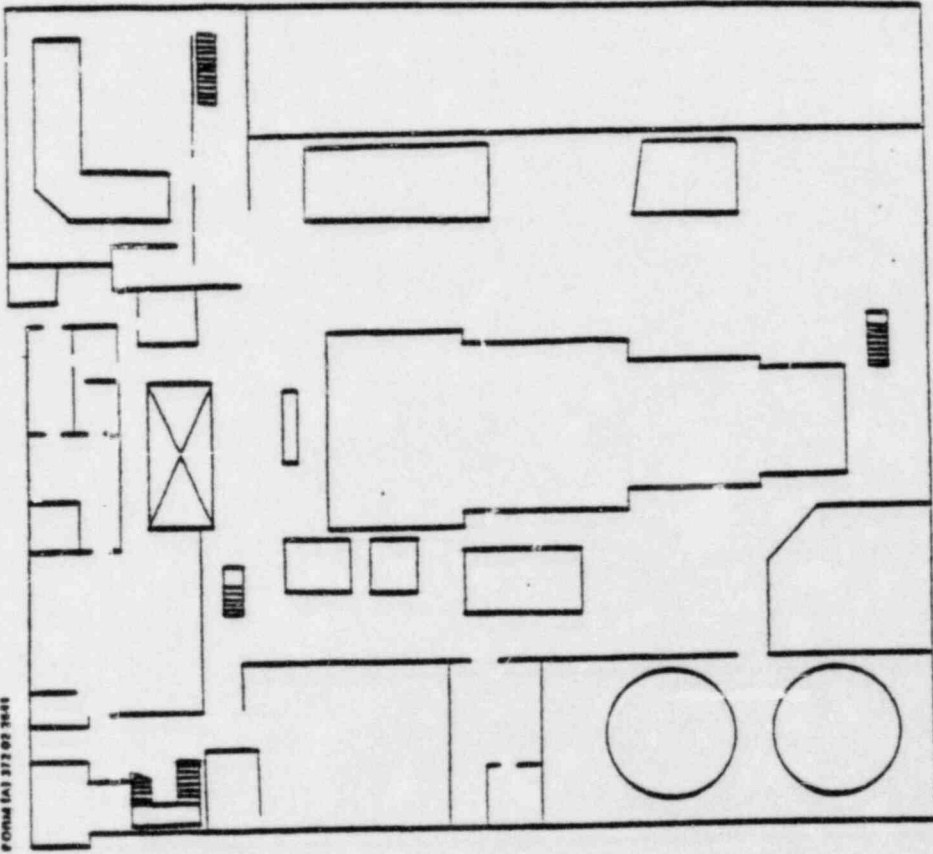
Survey By _____

Instrument Number _____

Serial Number _____

No.	Wipe Area ID#(M) / IROC#(N)	Wipe Area ID#(M) / IROC#(N)	Air Sampler ID#(M)	Other

COMMENTS



OPERATING FLOOR
 EL 4829'-0"

POWER LEVEL _____

Wipe Legend

- Wall
- △ Equipment
- Floor

ALL RADIATION READINGS IN MRAIR.

W-4

FORM 141 312 02 2042

Date _____ Time _____

Survey By _____

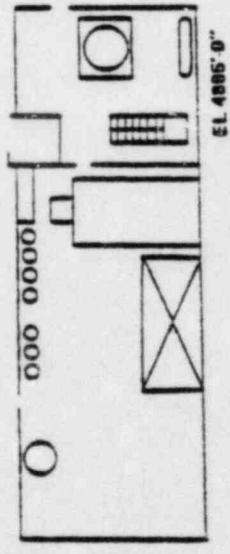
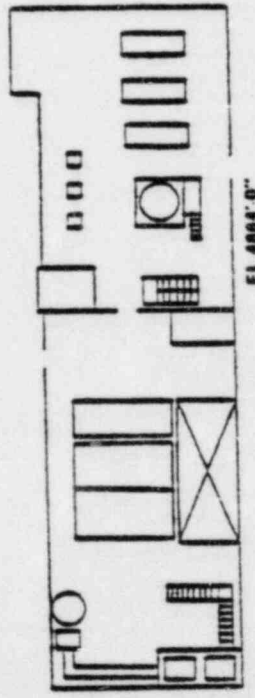
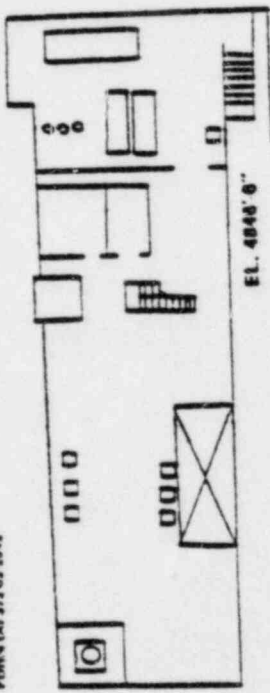
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha CPM/100CM²	Wipe beta CPM/100CM²	As Sampler cpm	Other

COMMENTS



Wipe Legend

- ☐ Wipe
- △ Equipment
- Floor

ALL RADIATION READINGS IN MRAIR.

W-4

FORM 11 372 02 7613

Date _____ Time _____

Survey By _____

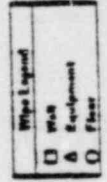
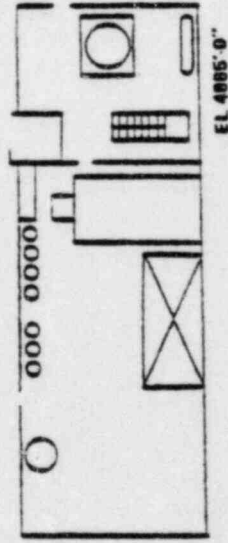
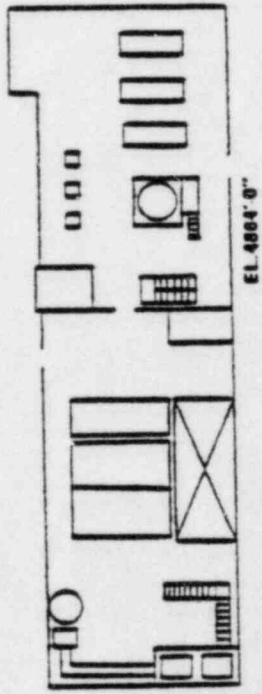
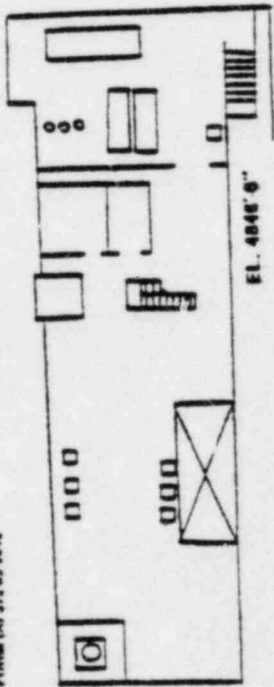
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe alpha CPM/100CM ²	Wipe beta CPM/100CM ²	AL Sample uR/hr	Other

COMMENTS



POWER LEVEL _____ x
 ALL RADIATION READINGS IN MR/HR.

W-5

FORM IAI 373 02 2613

Date _____ Time _____

Survey By _____

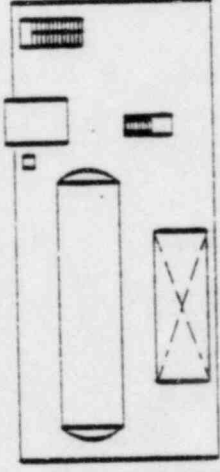
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe Area (IPM/100CM ²)	Wipe Area (IPM/100CM ²)	Air Sampler or/for	Other

COMMENTS



ALL RADIATION READINGS IN MR/HR.

POWER LEVEL _____ N

Map Legend	
<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Flow

W-5

FORM SAJ 372 03 2043

Date _____ Time _____

Survey By _____

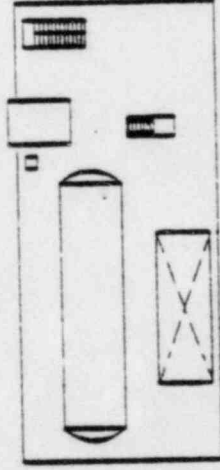
Instrument Number _____

Serial Number _____

No.	Wipe Area (DIA/100CM ²)	Wipe Area (DIA/100CM ²)	Air Sampler utilize	Other



EL. 4921.0"



EL. 4904.0"
TURBINE BUILDING

COMMENTS _____

<input type="checkbox"/> Wipe Logged
<input type="checkbox"/> Peak
<input type="checkbox"/> Background
<input type="checkbox"/> Floor

POWER LEVEL _____ N

ALL RADIATION READINGS IN MIN/HR.

W-6

FORM (A) 313-01 2000

Date _____ Time _____

Survey by _____

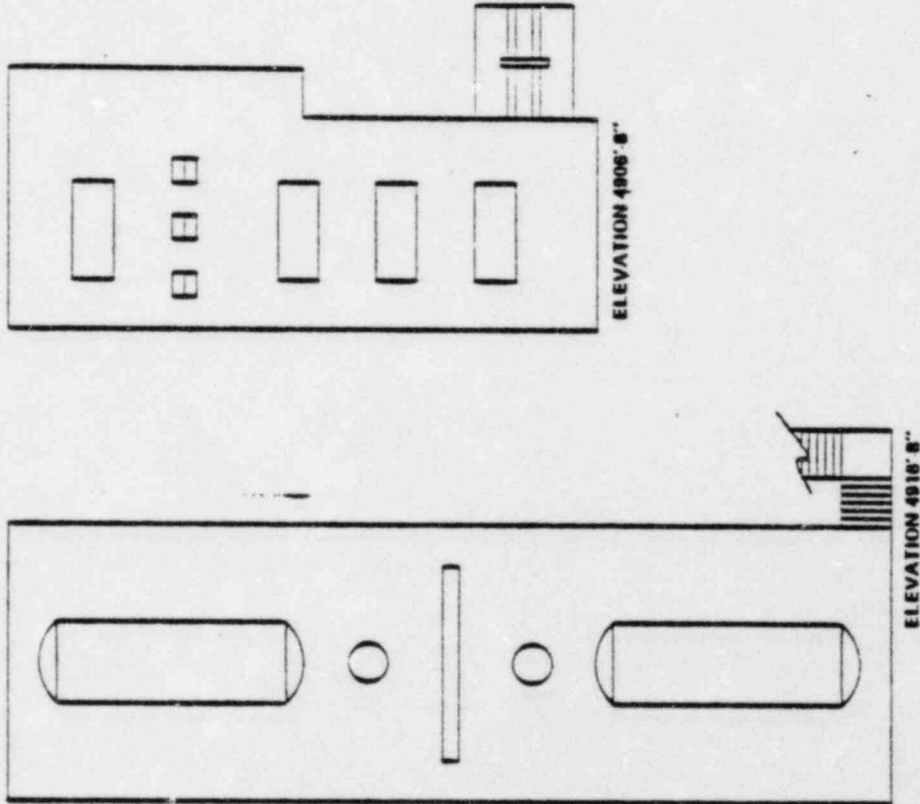
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wire alpha CPM/100CM ²	Wire beta CPM/100CM ²	Air Sample cpm	Other

COMMENTS



<input type="checkbox"/>	Walls
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floors

ALL RADIATION READINGS IN MR/HR

POWER LEVEL _____

W-6

FD-101 (A) 373 03 2000

Date _____ Time _____

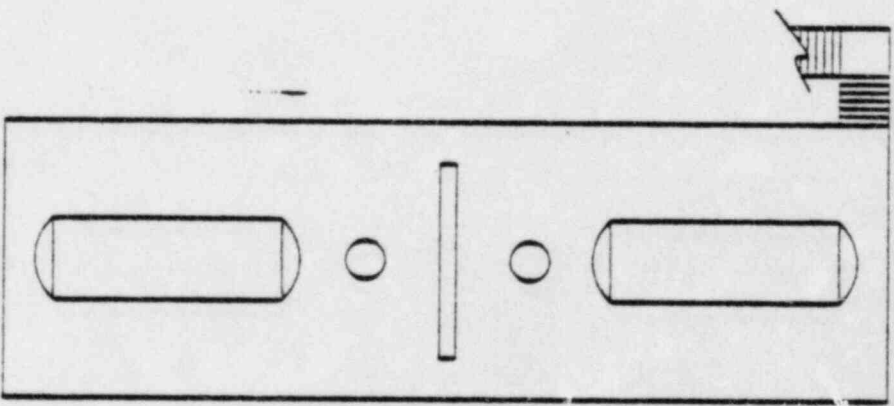
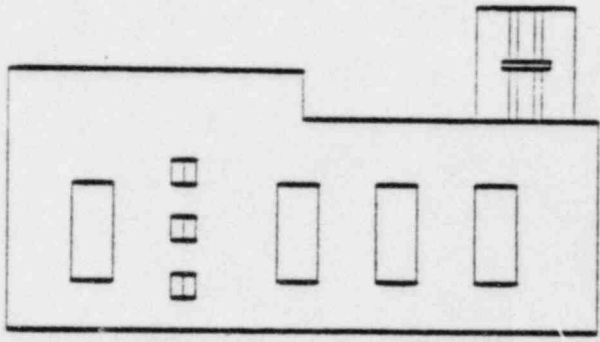
Survey By _____

Instrument Number _____

Serial Number _____

No.	Wipe alpha (DPM/100CM ²)	Wipe beta (DPM/100CM ²)	As Sample surface	Other

COMMENTS



Wipe Legend

- Wipe
- △ Equipment
- Floor

POWER LEVEL _____

ALL RADIATION READINGS IN MIRAIR.

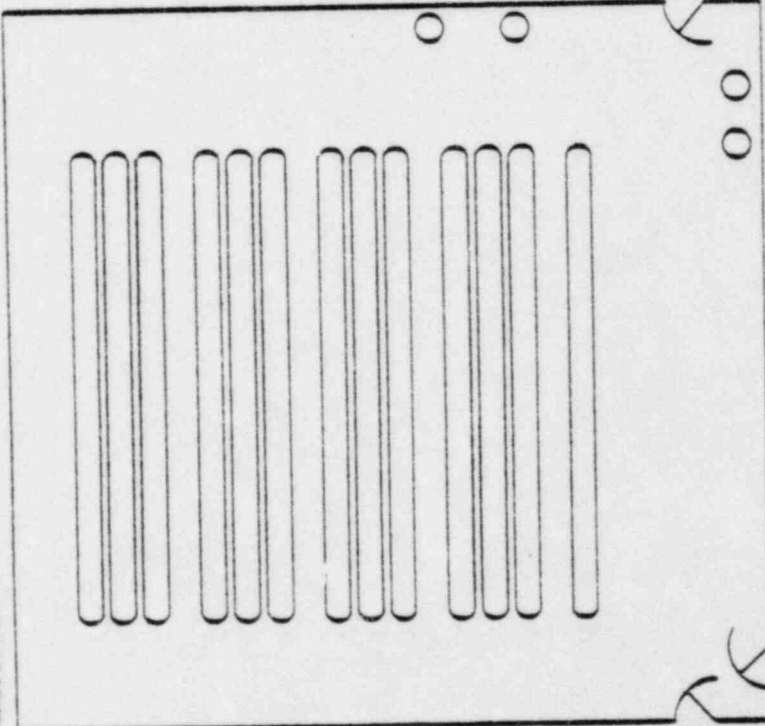
FORM IAI 312 03 2645

Date _____ Time _____
Survey By _____ Instrument Number _____

SURVEY RESULTS

No.	Serial Number		Other
	Wire leads DPN/100CM*	Alc Sample wire	

COMMENTS



Rx BUILDING HELIUM STORAGE
EL 4781'-0"

Pipe Legend

<input type="checkbox"/>	Well
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

POWER LEVEL _____

N

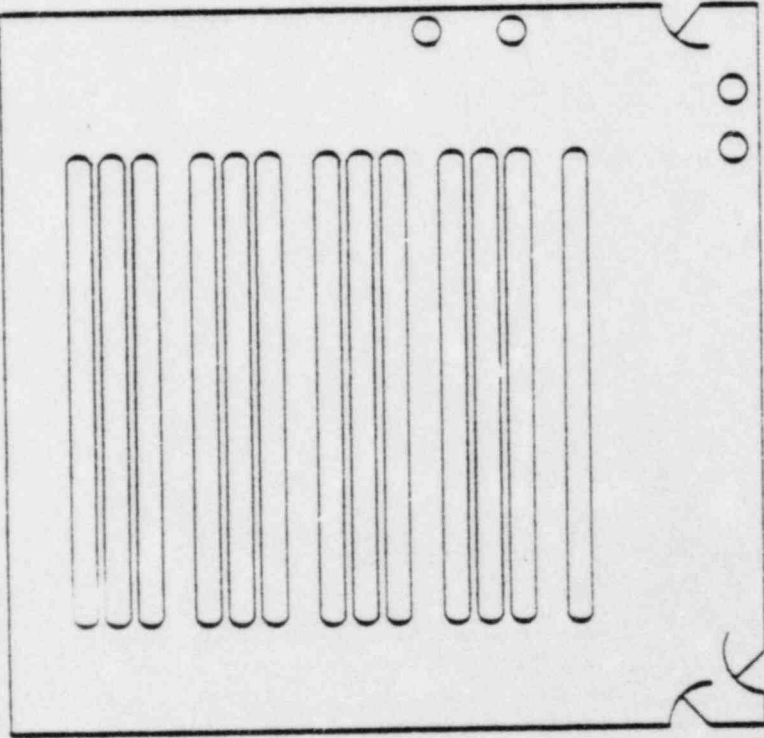
ALL RADIATION READINGS IN MRAIR.

W-7

FORM (A) 3/72 03 2649

Date _____ Time _____
Survey By _____

No.	Who sets or/adj/locates*	Who sets or/adj/locates*	Who sets or/adj/locates*	Other



Bx BUILDING HELIUM STORAGE
EL 4791.9''

<input type="checkbox"/>	Wall
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	Floor

POWER LEVEL _____ S

ALL RADIATION READINGS IN MINIR.

COMMENTS

MM-1

FORM 372 02 2037

Date _____ Time _____

Survey By _____

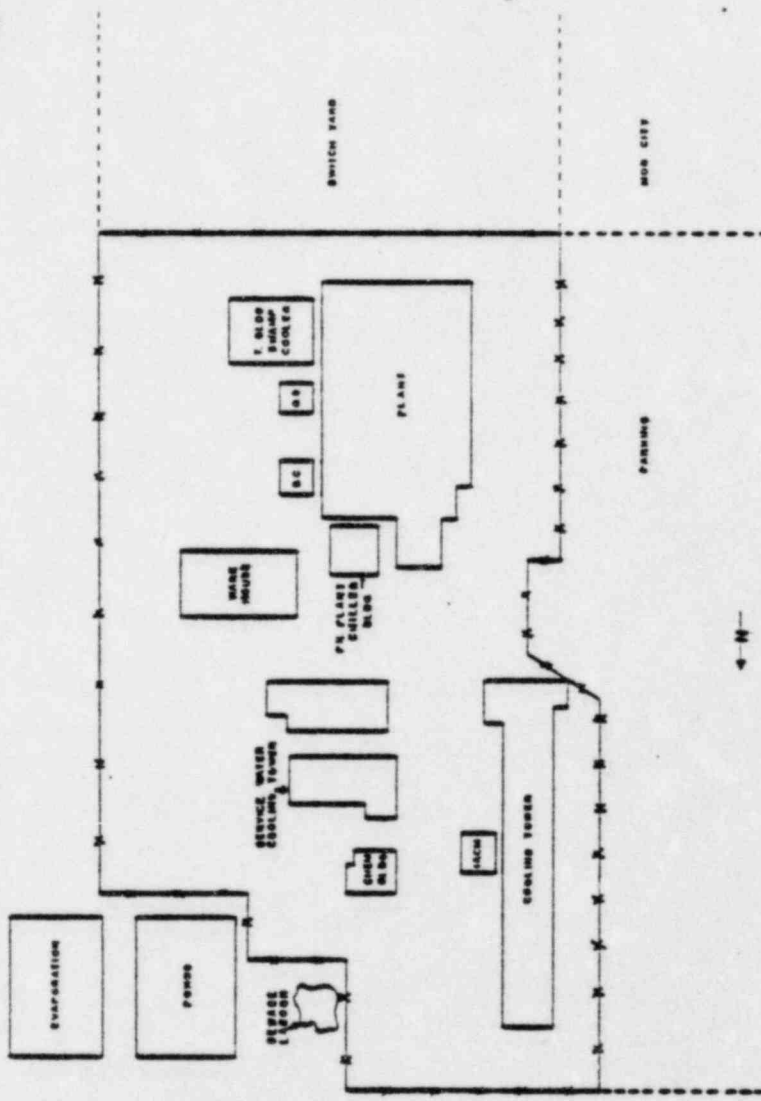
Instrument Number _____

Serial Number _____

SURVEY RESULTS

No.	Wipe site DFM/100CM ²	Wipe site DFM/100CM ²	Air Sampler with/without	Other

COMMENTS



Wipe Legend

□	Wall
△	Equipment
○	Floor

POWER LEVEL _____

ALL RADIATION READINGS BY MRAIR.

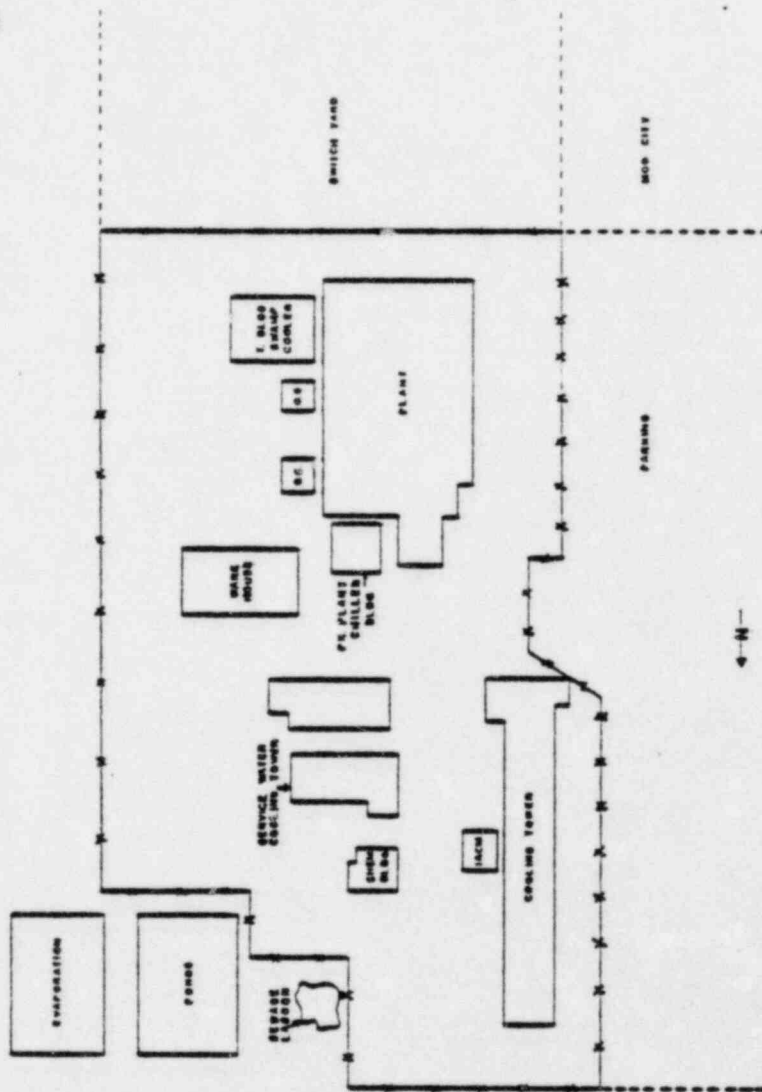
M-1

FORM 372 07 3837

Date _____ Time _____
 Survey By _____

SURVEY RESULTS				
Instrument Number _____				
Serial Number _____				
No.	Whe beta DPM/100CM ²	Whe beta DPM/100CM ² *	Ah Sampler effice	Distn

COMMENTS



Whe Legend
<input type="checkbox"/> Wet
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

POWER LEVEL _____

← N →

ALL RADIATION READINGS IN MRAVR.



TITLE: FIELD MONITORING PROCEDURE

ISSUANCE
AUTHORIZED
BY

Lilly M. Blode

PORC
REVIEW

PORC 479 AUG 25 1982

EFFECTIVE
DATE

9-01-82

<u>Section</u>	<u>Description</u>	<u>Page</u>
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2.0	<u>Procedure</u>	2
3.0	<u>Responsibilities</u>	5
4.0	<u>References</u>	6
5.0	<u>Referenced or Supporting Procedures</u>	6
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Datasheet 1	In-field Sampling Results	1
	Work/Datasheet/Checklist Control List	1
	Forms Use Reporting Sheet*.....	2

* ANYTIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON, COMPLETE THE REPORTING SHEET ATTACHED IN THE TABBED WORKSHEET SECTION AND FORWARD IT TO THE TECHNICAL CLERK AND RECORDER, FORT ST. VRAIN. DO NOT WRITE ON ANY WORKSHEETS, DATASHEETS, CHECKLISTS, OR REPORTING SHEETS IN THE PROCEDURE ITSELF. ALL WORKSHEETS/DATASHEETS/CHECKLISTS ARE TO BE TAKEN FROM THE TABBED SECTION FOLLOWING EACH PROCEDURE.



General

Emergency offsite radiological monitoring, in the event of a radiological emergency at Fort St. Vrain, will be performed by FSV monitoring teams until field monitoring teams from the Colorado Department of Health (CDH) respond to the scene. The data collected by these field teams will be relayed directly to the Technical Support Center to aid in the assessment of offsite radiological consequences. The TSC will transmit field measurement data to the Forward Command Post for use by PSC and state radiological assessment personnel.

The PSC Field Monitoring Teams are deployed from the Personnel Control Center. The teams are in radio communication with the senior Health Physics representative at the TSC and report directly to him with all data. In addition, the field teams are directed by the senior Health Physics representative after initial deployment.

1.0 Criteria For Implementation

The Field Monitoring Teams are assembled at the Personnel Control Center anytime that the full FSV emergency organization is activated. The initial deployment of these teams is at the direction of the TSC Director.

2.0 Procedure

The Field Monitoring Teams shall be composed of a driver and an HP Technician. There is provision for the deployment of two field teams, one with survey responsibilities near site, primarily out to the site Exclusion Area Boundary (EAB), and the other from the EAB to the outer perimeter of the plume exposure Emergency Planning Zone (EPZ), approximately a five (5) mile radius.

2.1 The decision to deploy Field Monitoring Teams is the responsibility of the TSC Director. He shall make this decision, based upon projected offsite doses, as advised by the TSC Radiological Assessment individual, and the consideration of the ability to effectively assess these dose rates in the field (lower level of detection, weather conditions, etc.) as advised by the senior Health Physics representative at the Technical Support Center.



2.2 The monitoring teams shall assure that all required instruments, equipment, and supplies are present in the survey vehicle prior to departure. This equipment shall include:

- RM-14 or RM-15
- PIC-6A, or equivalent
- SAM-2 scaler
- 5 piece SAM-2 shield and detector
- Air sampler with Silver Zeolite cartridges and pre-filters
- Portable Electric Generator with gasoline
- Field Use Maps
- Wipes
- Pencil
- Field Radio
- Copy of RERP-FIELD
- Spare Batteries

2.3 The Personnel Control Center Director shall ascertain that the field monitoring teams have been provided protective clothing, protective equipment, and dosimetry as directed by the senior Health Physics representative at the TSC.

2.4 Field Monitoring teams act under the direction of the senior Health Physics representative after their initial deployment from the PCC. The Health Physics Technician assigned to each team shall ensure that good health physics practices are employed while in the field. This is to include:

- Keeping RM-14/15 or PIC-6A (as appropriate to radiation levels) operating at all times to evaluate ambient radiation conditions and plume location;
- Wearing all protective clothing and equipment prescribed by the senior Health Physics representative at the TSC;
- Spending as little time as necessary in elevated radiation exposure areas; and,



- Travelling outside of predicted plume trajectory whenever possible, to minimize exposure and spread of contamination.
- 2.5 The senior Health Physics representative shall communicate the sampling location designations by utilizing easily recognizable landmarks, in particular, the intersections of county roadways (e.g., Weld County Roads 19 and 38, the confluence, meteorological monitoring towers, etc.).
- 2.6 The Field Monitoring Teams, in the interest of dose reduction and facilitating rapid data transmission, may transmit raw field monitoring data directly to the senior Health Physics representative at the TSC, where calculations may be performed. Worksheet 1 is provided for both data collection and calculations.
- 2.7 The Field Monitoring teams shall collect the following data at each sampling location:
- Ambient Radiation Level (mrem/hr)
 - I-131 Air Concentration ($\mu\text{Ci/cc}$)
 - Gross Particulate Concentration (cpm/cc)
- 2.8 The senior Health Physics representative at the Technical Support Center shall accumulate data on Worksheet 1 and complete all required calculations. After calculations are completed, data should be recorded on Datasheet 1, a partial scale survey map of the plume exposure EPZ. This map should be utilized in concert with dose projection results to keep the TSC Director and FCP personnel abreast of current data dose assessment results.
- 2.9 Operation of Eberline SAM-2 counters is outlined below.
- Install Detector in 5 piece shield.
 - Plug Scaler into 110 V AC receptacle of portable electric generator.
 - Verify switch settings on front of instrument as matching those posted on the top of the instrument.
 - Turn on SAM-2 and allow two minutes for the instrument to warm up.
 - Take a one minute background count and record on Worksheet 1 (or transmit to TSC via radio communication).



- Collect Air Sample on Silver Zeolite Cartridge (HPP-12) and determine sample volume.
- Load cartridge in detector shield and close shield door.
- Take a one minute count of air sample cartridge and record on worksheet 1 (or transmit to TSC via radio communication).

- I-131 concentration ($\mu\text{Ci}/\text{cc}$ or Ci/m^3) =

$$\frac{\mu\text{Ci I-131}}{\text{cc}} = \frac{(\text{CPM}_S - \text{CPM}_B) \times 1.0\text{E-}10 \times 15}{V}$$

Where:

CPM_S = Gross counts per minute of sample

CPM_B = Counts per minute of background

1.0E-10 - Unit Conversion Factor

V = Sample Volume in ft^3

- 2.10 At the conclusion of FSV field monitoring activities, the driver shall return the vehicle, passengers, and contents to the Personnel Control Center, inform the PCC Director of the team's arrival, and request a contamination survey of the vehicle, its passengers, and its contents. Decontamination shall be handled in accordance with FSV Health Physics Procedures (HPP-10 and HPP-11) with area posting and control as required in accordance with HPP-9.

3.0 Responsibilities

3.1 Health Physics Technician (Field)

Perform surveys as directed by the senior Health Physics representative at the TSC. Ensure that good health physics practices are employed throughout the course of field monitoring efforts.

3.2 Health Physics Technician (PCC)

Perform contamination surveys as required on returning field monitoring personnel and equipment.

3.3 Senior Health Physics Representative (TSC)

Assume overall responsibility for the conduct of field monitoring activities. Direct field teams to appropriate sampling locations utilizing TSC dose projections and current meteorological conditions as a basis.



3.4 TSC Director

Assume ultimate responsibility for all activities centered from site, including the initial dispatch of field monitoring teams.

3.5 PCC Director

Ensure adequate contamination survey (and decontamination) of returning field monitoring personnel and equipment.

4.0 References

4.1 Instruction manuals for Eberline SAM-2 counting equipment.

5.0 Referenced or Supporting Procedures

5.1 RERP-EXP, Emergency Exposure Guidelines.

5.2 RERP-DOSE, Offsite Dose Calculation Methodology.

5.3 RERP-ORG, FSV Emergency Organization and Responsibility.

5.4 TSC, Technical Support Center Procedure.

5.5 PCC, Personnel Control Center Procedure.

5.6 HPP-9, Establishing and Posting Controlled Areas.

5.7 HPP-10, Area and Equipment Decontamination

5.8 HPP-11, Personnel Decontamination.

5.9 HPP-12, Portable Air Sample Collection and Analysis.



Worksheet 1 - In-Field Sampling Data

Sample No. _____

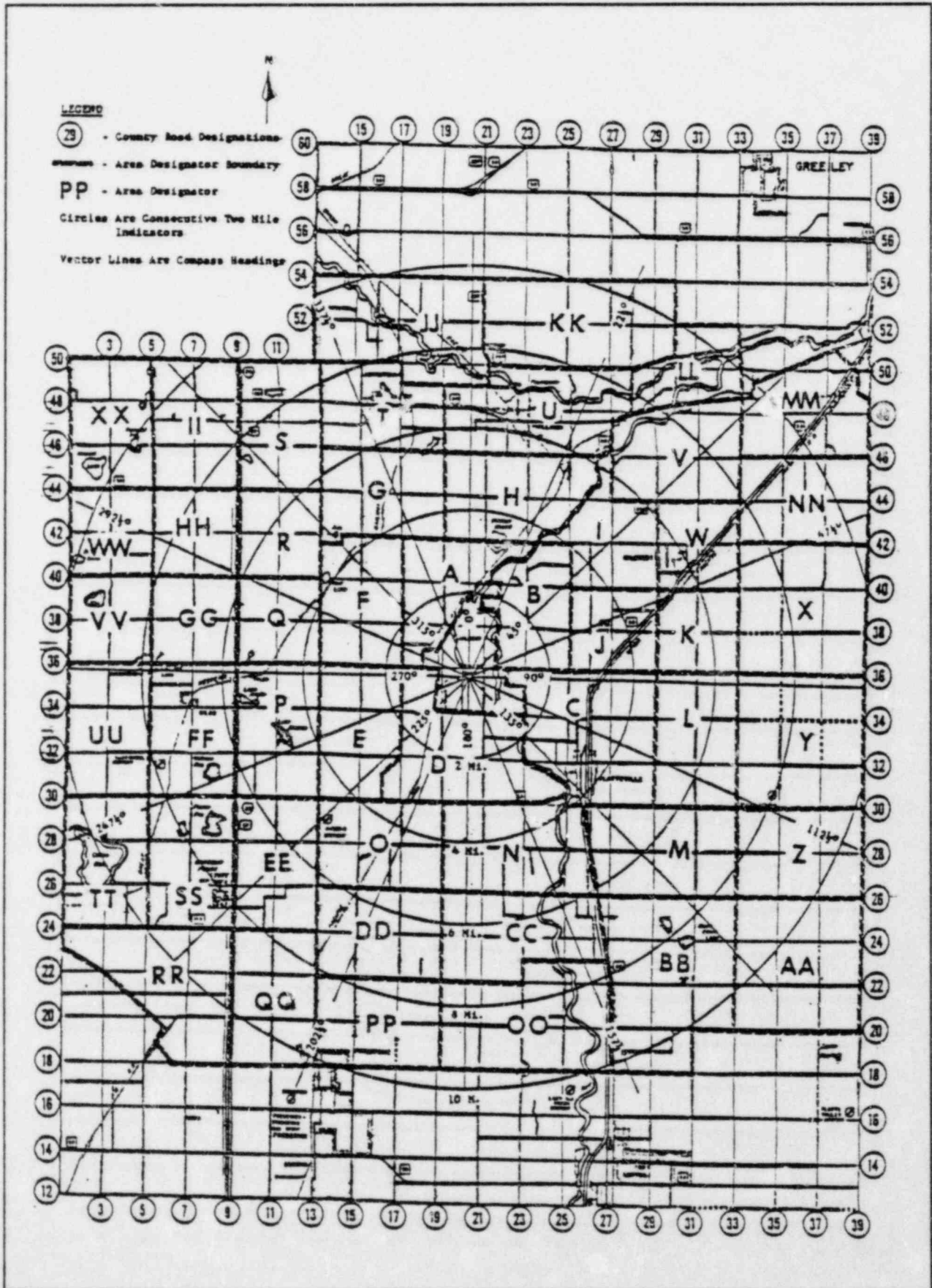
- 1) Date: ____ / ____ / ____
- 2) Time: ____ : ____
- 3) Field Team _____ (EAB or EPZ)
- 4) Sampling Location _____ (describe)
- 5) Ambient Radiation Level _____ (mrem/hr)
- 6) Air Sample Volume
 - a) Sample Flow Rate _____ (ft³/min)
 - b) Sample Collection Time _____ (min)
 - c) Sample Volume (ft³) = 6a) x 6b) _____ ft³
 - d) Sample Volume (cc) = 6c) x 28317 cc/ft³ _____ (cc)
- 7) Pre-filter Particulate Gross Activity Concentration
 - a) Pre-filter Gross Count rate _____ (cpm)
 - b) Background Count rate _____ (cpm)
 - c) Prefilter Particulate Gross Activity Concentration
[7a) - 7b)]/6d) _____ (cpm/cc)
- 8) I-131 Air Concentration
 - a) Silver Zeolite Cartridge Count _____ (cpm)
(1 minute count)*
 - b) Background Count _____ (cpm)
(1 minute count)*
 - c) I-131 Air Concentration
[8a) - 8b)] x 10⁻¹⁰/6c) _____ (μCi/cc)
15

* Verify that information received is either a one (1) minute count, or a count rate in cpm.



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

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Datasheet 1 - In-field Sampling Results

Sample Number (See Work- sheet No. 1)	Ambient Radiation Levels (mR/hr)	Gross Particulate Activity (cpm/cc)	I-131 Air Concentra- tion (μ ci/cc)	Location (Use simple description)



Work/Datasheet/Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
1	In-Field Sampling Data	15
 <u>Datasheet No.</u>		
1	In-Field Sampling Results	3
 <u>Checklist No.</u>		
None	N/A	N/A



FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NO. _____, located at _____ . The following forms have been utilized from this copy:

Worksheet Numbers

Copies Used

Datasheet Numbers

Copies Used

Checklist Numbers

Copies Used

The procedure affected by this sheet is shown in the header to this page, unless otherwise noted below in the comments to this reporting form. When this form is received, it will be necessary to replace the noted number of forms, as well as this "Forms Use Reporting Sheet" for the affected procedure in the affected book.



FORMS USE REPORTING SHEET(Continued)

COMMENTS

Reported By: _____

Date: _____

Technical Clerk and Recorder _____ *

Date Received _____

Date Replaced _____

* Technical Clerk and Recorder will transmit this form to the originating individual/department upon completion of this form to notify users that the procedure has been updated and that all worksheets, checklists, and datasheets are present in the required number of copies.



Worksheet 1 - In-Field Sampling Data

Sample No. _____

- 1) Date: ____ / ____ / ____
- 2) Time: ____ : ____
- 3) Field Team _____ (EAB or EPZ)
- 4) Sampling Location _____ (describe)
- 5) Ambient Radiation Level _____ (mrem/hr)
- 6) Air Sample Volume
 - a) Sample Flow Rate _____ (ft³/min)
 - b) Sample Collection Time _____ (min)
 - c) Sample Volume (ft³) = 6a) x 6b) _____ ft³
 - d) Sample Volume (cc) = 6c) x 28317 cc/ft³ _____ (cc)
- 7) Pre-filter Particulate Gross Activity Concentration
 - a) Pre-filter Gross Countrate _____ (cpm)
 - b) Background Countrate _____ (cpm)
 - c) Prefilter Particulate Gross Activity Concentration
[7a) - 7b)]/6d) _____ (cpm/cc)
- 8) I-131 Air Concentration
 - a) Silver Zeolite Cartridge Count _____ (cpm)
(1 minute count)*
 - b) Background Count _____ (cpm)
(1 minute count)*
 - c) I-131 Air Concentration
[8a) - 8b)] x 10⁻¹⁰/6c) _____ (uCi/cc)

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(1 minute count)*
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[8a) - 8b)] x 10⁻¹⁰/6c) _____ (μCi/cc)
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Worksheet 1 - In-Field Sampling Data

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Worksheet 1 - In-Field Sampling Data

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(1 minute count)*
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(1 minute count)*
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[8a) - 8b)] x 10⁻¹²/6c) _____ (uCi/cc)

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Worksheet 1 - In-Field Sampling Data

Sample No. _____

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Worksheet 1 - In-Field Sampling Data

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Worksheet 1 - In-Field Sampling Data

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Datasheet 1 - In-field Sampling Results

Sample Number (See Work- sheet No. 1)	Ambient Radiation Levels (mR/hr)	Gross Particulate Activity (cpm/cc)	I-131 Air Concentra- tion (uci/cc)	Location (Use simple description)
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