



AlliedSignal Inc.  
Nuclear/Fluorine Specialties  
Route 45 North  
P.O. Box 430  
Metropolis, IL 62960 USA

618 524 2111  
618 524 6239 Fax

December 12, 1996

Certified Mail:  
P-250-420-251

Mr. Tim Ridlinger  
Fuel Cycle Inspector Fuel Cycle Branch  
U. S. Nuclear Regulatory Commission  
801 Warrenville Road, Region III  
Lisle, IL 60532-4351


40-3392

Dear Mr. Ridlinger:

Attached for your review is a copy of the Incident & Spill Report Form regarding the power outage incident of 12/3/96 and a copy of the report that summarizes the incident. Also, as part of the report, are our recommendations for corrective action.

If you have questions, contact me at 618-524-6238.

Sincerely,

  
M. L. Shepherd  
Manager, Environmental/Regulatory Affairs

MLS/sm

Attachment

cc: Doc Greer - Union President  
M. Kosmider

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9612240034 961212  
PDR ADOCK 04003392  
C PDR

**METROPOLIS WORKS  
INCIDENT & SPILL REPORT**

DATE OF INCIDENT: 12/3/96

TIME OF INCIDENT: 4:45 pm

TYPE OF INCIDENT: ENVIRONMENTAL ☐ RADIOLOGICAL ☒

REPORTED BY: D. Heine

TIME REPORTED: Approx. 4:50 pm

**Could this incident cause a catastrophic release of a highly hazardous chemical in the workplace? (F<sub>2</sub>, HF, NH<sub>3</sub>, UF<sub>6</sub>, LPG) Yes ☐ No ☒**

**If yes (1) OSHA requires a team investigation to be initiated within 48 hours following the incident;**

**(2) Contact your Department Manager.**

P. Gasperini

**Prepared By**

**LIST PERSON & TIME OF TELEPHONE NOTIFICATION:**

NAME	TIME	NAME	TIME
H. Roberts	approx. 5:30 pm		
	:		:
	:		:
	:		:

AREA OF PLANT: Feed Materials Building (FMB)

MATERIAL SPILLED: Filter Fines, UF<sub>6</sub>, UF<sub>4</sub>, HF APPROXIMATE QUANTITY approx. 2 lbs. total

SPILL OCCURRED TO [CIRCLE RESPONSE(S)] AIR WATER GROUND BUILDING

TIME CONTAINED OR STOPPED 5:15 pm TIME CLEANUP COMPLETED X 12/4/96

MATERIAL(S) USED FOR CLEANUP: Sponges and buckets of water

EMPLOYEES EXPOSED OR MAY HAVE BEEN EXPOSED: T. Harper, C. Blanden, C. Armstrong, T. Robbins, A. Houseright, G. Hines, Dwight Campbell, Dave Campbell, D. Gaines, R. Mathis, D. Heine, P. Bunting, J. Parmer, J. Harris, B. Cohoon, S. Burkhardt, N. Noble, R. Jones, P. Bunch, P. Gasperini

DESCRIPTION OF INCIDENT: Power outage. Filter fines in spar system along with residual UF<sub>4</sub>, UF<sub>6</sub> and HF from Fluorinator dusted out around all spar equipment from fifth floor to basement. See additional sheets.

RESULTS OF INCIDENT: Spar dust on fifth and fourth floors Rotexes. Spar dust on third floor fines hopper. Spar dust on first floor on drum dumper and filter fines drum off and 'C' Fluorinator platform. In basement spar dust on Fluorinator draw off screws, floor, hot glycol pumps and cold glycol pumps.

CAUSE OF INCIDENT: Power failure

CORRECTIVE ACTION TAKEN: Turned on red lights, restarted all equipment when power came back on. Approximately 3 minutes until power came back on. Notified Health Physics to pull all sample targets at 6:15 pm.

ADDITIONAL INFORMATION (EXAMPLE: PROTECTIVE EQUIPMENT USED DURING THE INCIDENT OR CLEANUP) One-half face respirator, full-face respirators used during equipment startup and cleanup.

FOLLOW-UP ACTIONS TO PREVENT A RECURRENCE: \_\_\_\_\_

- Investigation into activation of UF6 Release Control Procedure.
- Use of maintain switches on Ash D/C and H/P vacuum pumps.
- Battery backup for WR 421 and WR 422 [Find out why it didn't work.]

C. Barden 12/13/96  
General Foreman Date

Robert Adams 12/13/96  
Area Tech. Supervisor Date

Roberta [unclear] 13 Dec 96  
Health Physics Supv. Date

[unclear] 12/12/96  
Department Manager Date

L. S. Bruce 12/12/96  
Environmental Supv. Date

My [unclear] 12/12/96  
Regulatory Affairs Manager Date

DISTRIBUTION ENVIRONMENTAL INCIDENTS -ORIGINAL TO ENVIRONMENTAL SUPV.

RADIOLOGICAL INCIDENTS -ORIGINAL TO HEALTH PHYSICS SUPV.

## Power Outage - 12/3/96

### Description of Incident:

A power outage, lasting three (3) minutes, occurred on 12/3/96 causing filter fines in the spar system to dust out around spar equipment from fifth floor to the basement of the UF<sub>6</sub> building. (Time: 4:45 pm) Filter fines normally contain UF<sub>4</sub> as well as trace quantities of UF<sub>6</sub> and HF.

### Eye Witness Accounts (Time: 7:30 pm) - 12/3/96 - Interviewer: P. Gasperini

1. Decon employees on South Pad
  - a) Looked into FMB hoistwell and saw dust coming out around drum dumper on first floor. They could hardly see any equipment on the first floor.
  - b) They went to distillation door and looked in and could not see the refrigeration equipment on first floor.
2. Fluorination operators and assistants
  - a) Operators did not leave control room via west door because dust was too bad.
  - b) Operators and assistants went out east door to go to fourth floor to open and shut various valves on fluorination system. On the way to fourth, they looked in on the third and saw only dust and smoke. Could not see across the floor.
3. Various forepersons and manager went to first floor and basement
  - a) Floor (first) and basement - hazy around lights.
  - b) Hazy around first floor refrigeration equipment.
4. Review of FMB
  - a) Manager and Shift Supervisor reviewed all floors at 6:00 pm. All floors were clear and H/P called at 6:15 pm to "take up" targets.
  - b) Manager anticipates that floors were completely clear by 5:15 to 5:30 pm.

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- c) Review of floors where incident occurred revealed spar dust only (a particle/granular material). No  $\text{UO}_2\text{F}_2$  materials could be seen.

### Further Interviews of Incident - (12/6/96)

1. Distillation Operator & Assistant - 12/6/96

When the power outage started, they went to basement to wait for the power to come back on. On the way to basement, everything was clear. When the power came back on, they started the tempered  $\text{H}_2\text{O}$  pumps and returned to the control room. Per their estimation, they were back in the control room seven (7) to eight (8) minutes after the power outage started. On the way back into the control room, they saw some dust or smoke but not very bad. They stayed in the control room for an estimated one (1) to two (2) minutes. They then went back into distillation to start evacuation of the lines. At this time, they saw that the building was starting to fog up. This was on second and third floors.

2. Fluorination and Distillation Foreperson - 12/4/96

One of the FMB Day Forepersons was in the fluorine plant when the power outage started. He proceeded to the powerhouse to wait for the power to come back on. When it did (approximately 4:50 pm), he went at a fast pace to the first floor FMB. He went in and saw dusting from the filter fines drum off. He called the control room to turn on the radiological lights.

3. Fluorination Operator - 12/6/96

The Fluorination Operator could not enter into the second floor from the west door of the FMB control room due to dust out and smoke. He didn't remember the exact time, but felt it was five (5) to ten (10) minutes after the power failure had occurred. He later made an entry into log book at approximately 5:20 pm that he was relighting furnaces. He said at that

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time that second floor was still foggy, but it was starting to clear up "pretty good".

4. Waste Handler - 12/6/96

At the time of power outage, the Waste Handler was located in the crusher building. He and others came out and started to walk north on the road that goes in front of cylinder wash. At the point that the lights came on, he said that he saw light smoke or haze at the third floor pipe rack in the south pad. He could not see where it was coming from, just that there was a "haze". He said it looked like it was just hanging.

5. Instrument Mechanic - 12/9/96

An Instrument Mechanic that was walking near the foreperson's office coming from the powerhouse. He said he saw a light haze at the south door of the FMB. He said the material was just "oozing" out.

### Summary of Timing

From the interviews with Distillation Operator, Distillation/Fluorination Foreperson, Fluorination Operator, Waste Handler and Instrument Mechanic, the material started leaking at approximately 4:50 to 4:55 pm. The building haze reached its worst point around 5:00 pm to 5:05 pm and was starting to clear around 5:15 - 5:20 pm. There were also eye witness accounts that material had exited the building just above the fluorination and G/S south pad areas. This is contrary to the initial reports just after the incident.

### Sampling/PPE

The red lights were initiated as soon as power was available for the basement and six other floors (approximately 4:50 pm). The Fluorination Assistant turned the Health Physics pumps back on between 5:15 and 5:30 pm. The building haze reached its worst point around 5:00 pm and was starting to clear around 5:15 - 5:20 pm. The Manager asked for all targets to be checked around 6:15 pm and samples were pulled between 7:00 - 8:00 pm. Results were called in



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between 9:30-9:45<sup>\*</sup> pm and red lights were turned off on first, second, third and fourth floors. At 10:15 pm results were called in to turn off the remainder of the red lights. Sample results from the 8:00 am sampling on 12/4/96 were found to be below action levels as well.

The alarms were never sounded; therefore, personnel entered various areas with half-face respirators, except for the Fluorination Operator, who wore a full-face respirator. It should be noted that under the RCP and ERP on Page A-1 it is stated that "If a Metropolis employee is witness to an event that would result in the uncontrolled release of radiological or non-radiological hazardous materials and present a danger to either employees or the general public, that individual should contact the control room operator in either the Feed Materials Building, South Fluorine Plant or Powerhouse, identify themselves and give a brief description of the affected area and request that the evacuation alarm be sounded." Training was provided in June and October "B" Council meetings.

### Potentially Exposed Personnel

Due to dust out after the power outage on December 3, 1996, special urine samples were received by potentially exposed employees. These nineteen (19) samples were analyzed for uranium and fluoride content. After internal post-shift samples were analyzed, thirteen (13) employees were required to leave confirmatory samples. Two individuals' exposures were confirmed at 0.2 rem and 0.1 rem; the NRC annual limit is 5 rem. These employees were required to leave additional samples until their results were below the plant evaluation level.

For informational purposes, all samples taken December 3 were left post-shift, and have potential for contamination. All other samples were left pre-shift.

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<sup>\*</sup> Operators feel that the initial removal of red lights occurred between 8:30 - 8:45 pm and remainder of red lights removed at 10:00 pm versus what the HP Technicians have documented. (Dispute cannot be resolved.)

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### Conclusions/Recommendations

The release was a mixture of Calcium Fluoride,  $UF_6$  and  $UF_4$ . Dose calculations using Class "Y" materials is the correct and conservative method of choice calculations. Use of the evacuation alarm may have reduced potential exposures and employee concerns.

### Recommendations at this time:

1. Install a "maintain switch" on the Ash D/C Blower. (Completed)
2. Install "maintain switches" on the H/P vacuum pumps.
3. Check feasibility of battery backup for power supplies on Distillation Instrumentation. (WR-421 & WR-422).
4. Review the following points with MTW employees:
  - a) Letter published verifying that any MTW employee can sound the alarm. (Complete)
  - b) Plant Manager review with all forepersons the importance of equipment taking second focus to people safety, evacuation, etc. (Complete)
5. Modify H/P Procedure for air sampling after power failure to possibly include leaving lights on for a minimum of four (4) hours after power is restored. (Complete)
6. Hold information meetings with the Union Committee to keep the Committee apprised of the situation and to receive input on recommendations. (Completed 12/4 and 12/12)



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List of Names - Power Outage Incident

Manager	-	Perry Gasperini
Shift Supervisor	-	Craig Armstrong
Fluorination/Distillation Foreperson	-	Don Heine
Fluorination Operation	-	Dwight Campbell
Distillation Operator	-	Bill Cohoon
Distillation Assistant	-	Sam Burkhart
Waste Handler	-	Kevin Kinser
Instrument Mechanic	-	Ken Trabucco
Decon	-	James Harris
Decon	-	Norman Noble