



# U. S. Nuclear Regulatory Commission

Augmented Inspection Team

Inspection of Uranium Hexafluoride  
(UF<sub>6</sub>) Release at Honeywell Site

December 22, 2003

D-9



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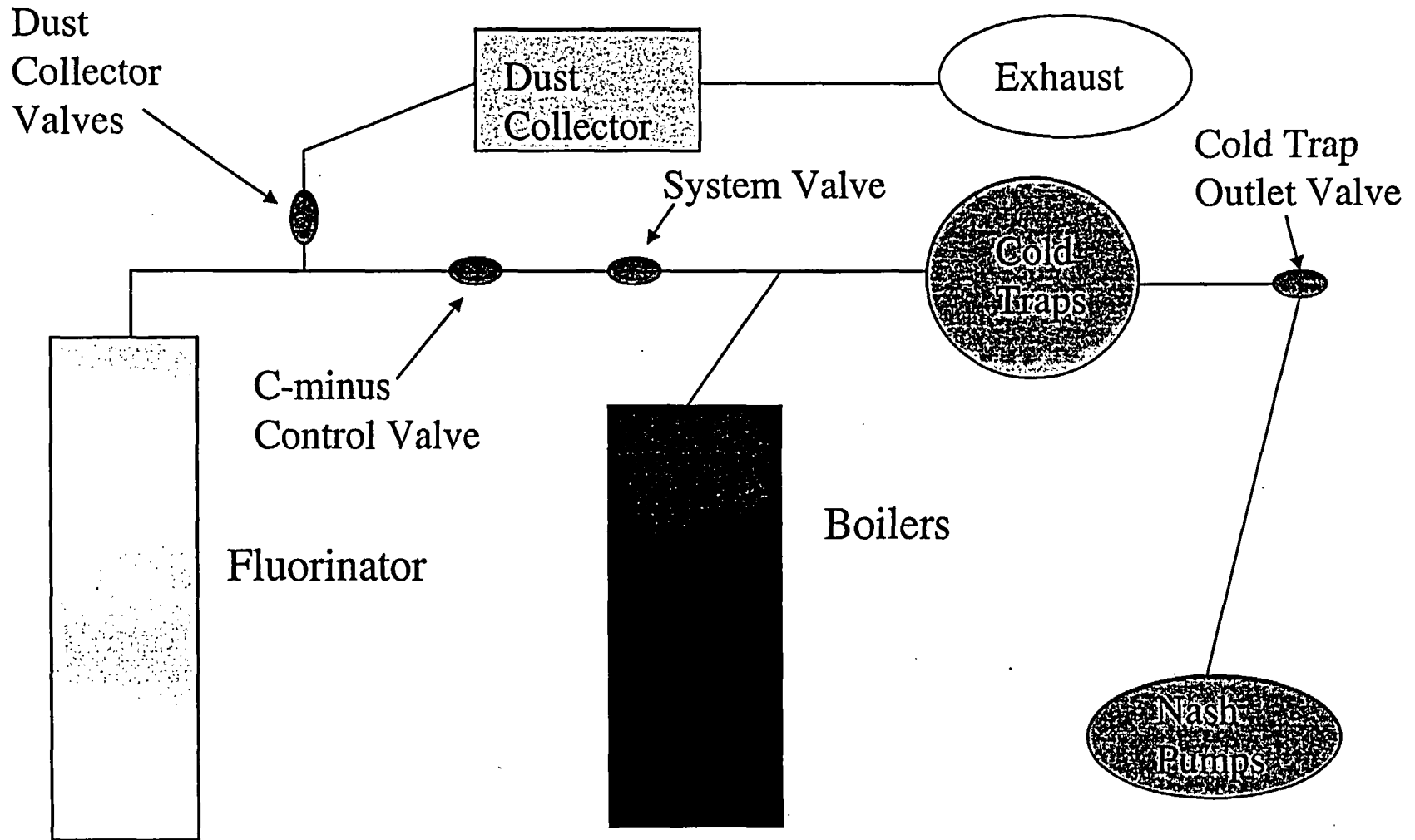
- NRC License No. SUB-526
- Convert uranium ore concentrates into uranium hexafluoride ( $\text{UF}_6$ )
- When  $\text{UF}_6$  is released to the atmosphere, it forms uranyl fluoride and hydrofluoric acid
- The hydrofluoric acid presents the greatest hazard

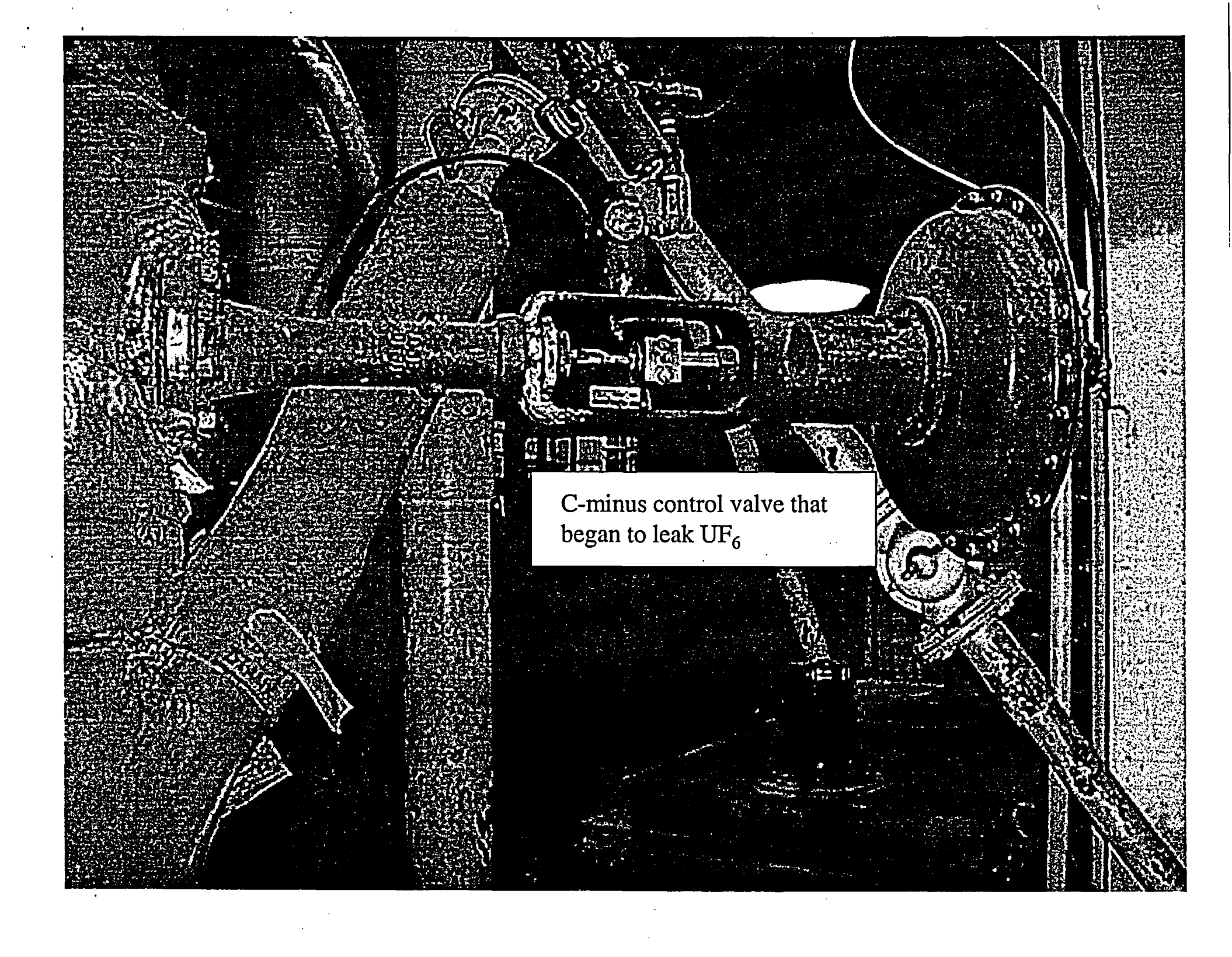


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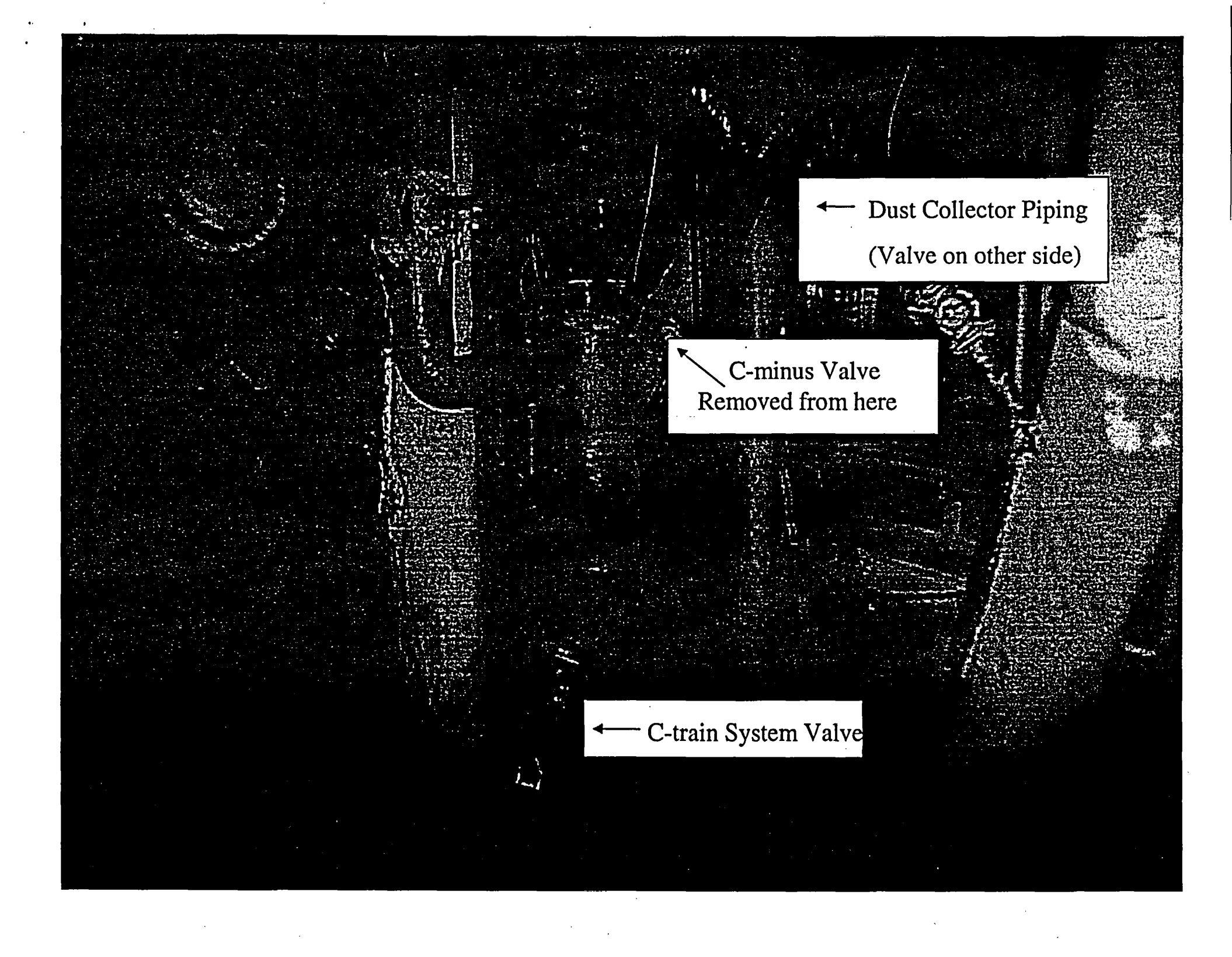
- AIT Team
  - David Hartland, Manuel Crespo, Richard Gibson, and Nick Baker
- AIT Inspection Objectives
  - determine facts surrounding event
  - assess the licensee's response to event
  - assess the licensee's activities during their event review and recovery
  - identify root causes
  - assess the public health and safety impact

# Simplified Process Drawing





C-minus control valve that  
began to leak  $\text{UF}_6$

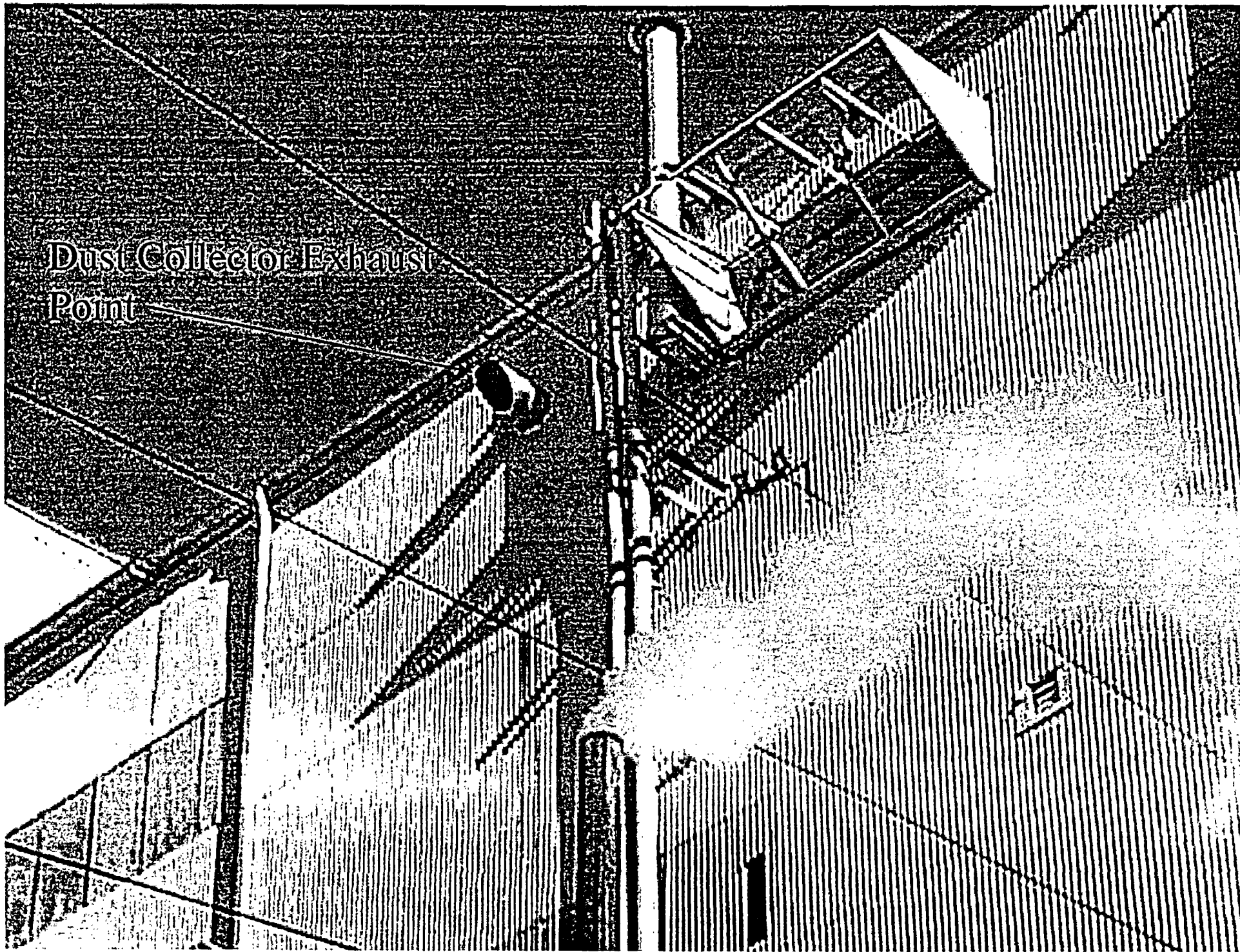


← Dust Collector Piping  
(Valve on other side)

← C-minus Valve  
Removed from here

← C-train System Valve

Dust Collector Exhaust  
Point





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## Event Response

- Licensee initial response actions on site were in accordance with emergency response plan
- Declaration of Site Area Emergency done in timely fashion but inadequate information provided to local emergency response personnel
- Room for improvement in some emergency response positions and implementation





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## Root Causes/Contributing Factors

- The AFO did not place the dust collector valves and the system valves in the correct positions
- The AFO had no procedure or checklist that designated the proper valve positions for the reconfiguration
- No management oversight/review to ensure valves were in correct positions
- Reconfiguration from one to two fluorinator lines performed infrequently



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## Root Causes/Contributing Factors

- AFO was working a double shift
- System pressure indicators do not have a visible or audible alarm to indicate when pressure is approaching positive
- The boiler/distillation operator was not informed that the vacuum system would be taken off line during the shift
- Pump/motor coupling needed to start the Nash pumps failed, which contributed to the duration of the release



## U.S. Nuclear Regulatory Commission Public Health and Safety Impacts

- Impact low based on review and analysis of:
  - Licensee and State of Illinois air, soil and vegetation sample results
  - Worker and members of public bioassays
  - Licensee release calculation (70 pounds)
  - RASCAL assessment of release (42 pounds)
  - Four members of public reported to local hospital; one kept 24 hours for treatment of possible HF exposure



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- AIT exited with licensee at public meeting on January 6, 2004
- Approximately 130 members of public present
- Majority of public concerns focused on emergency response actions and communications



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## Licensee Restart Focus Area

- Revise Emergency Response Plan
- Involve local emergency response officials
- Improve emergency response notification
- Improve communications between plant and off-site emergency response personnel
- Public outreach and education
- Conduct emergency drill before re-start



## U.S. Nuclear Regulatory Commission NRC Follow-up Actions

- Frequent communications with licensee, State and local governments and NRC Senior Management
- Management meeting on 2/11 in NRC HQ
- Public meetings on March 18 and April 21
- Restart inspection team on site several weeks during phased restart
- NRC approval before restart of each phase
- Site in full production as of April 26