7075 R-019-104.1

COMPLIANCE WITH PERMIT RELATED SUBSTANTIVE REGULATORY REQUIREMENTS - DECONTAMINATION OF PLANT 1 ORE SILO STEEL FOR FREE RELEASE - REMOVAL ACTION 13

07/26/95

DOE-1263-95
DOE-FN EPAS
20
LETTER

- 7075

Department of Energy
Fernald Environmental Management Project
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 648-3155

JUL 26 1995

DOE-1263-95

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region 5 - HRE-8J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Thomas A. Schneider, Project Manager
Ohio Environmental Protection Agency
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

COMPLIANCE WITH PERMIT RELATED SUBSTANTIVE REGULATORY REQUIREMENTS - DECONTAMINATION OF PLANT 1 ORE SILO STEEL FOR FREE RELEASE - REMOVAL ACTION 13

Enclosed is a Permit Information Summary for the decontamination of approximately 75 tons of steel as a result of dismantling the Plant 1 Ore Silos. This steel is primarily the structural members associated with the ore silos. The steel will be decontaminated using a portable vacuum blasting machine located in the new Decontamination & Decommissioning Facility (Bldg. 78).

Section XIII of the Amended Consent Agreement requires the Department of Energy (DOE) to identify those permits that would otherwise be required, along with the standards, requirements, criteria, or limitations that would have to have been met to obtain each permit. The enclosed Permit Information Summary satisfies this requirement.

The Permit Information Summary is being submitted subsequent to the Plant 1 Ore Silos Removal Action Work Plan because a determination has now been made to decontaminate the structural steel for free release. At the time the work plan was prepared, decontamination for free release was identified only as a possibility. The decision to decontaminate the structural steel triggers the requirement to submit a Permit Information Summary identifying the substantive requirements of the permits that would otherwise be required.

If you have any questions concerning the attached summary please contact Ed Skintik at (513) 648-3151.

Sincerely,

for Jack R. Craig
Fernald Remedial Action
Project Manager

FN:Skintik

Enclosure: As Stated

cc w/enc:

K. H. Chaney, EM-423/GTN
B. Skokan, EM-423/GTN
G. Jablonowski, USEPA-V, 5HRE-8J
J. Kwasniewski, OEPA-Columbus
P. Harris, OEPA-Dayton
M. Proffitt, OEPA-Dayton
S. McClellan, PRC
R. Cohen, GeoTrans
F. Bell, ATSDR
R. Owen, ODOH
R. D. George, FERMCO/52-2
T. Hagen, FERMCO/65-2
AR Coordinator, FERMCO

cc w/o enc:

C. Little, FERMCO
M. Yates, FERMCO

PERMIT INFORMATION SUMMARY
OPERABLE UNIT 3
PLANT 1 ORE SILO REMOVAL ACTION
DECONTAMINATION OF STRUCTURAL STEEL FOR FREE RELEASE

CERCLA Section 121(e)(1) states that no Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on site, where such remedial action is selected and carried out in compliance with Section 121.

Section XIII.B of the Amended Consent Agreement requires the DOE to identify those permits that would otherwise be required, along with the standards, requirements, criteria, or limitations that would have to have been met to obtain each permit. The DOE must report these findings to the USEPA, along with an explanation of how the response action will meet these standards, requirements, criteria, or limitations.

The following summarizes the permits, permit requirements, and plans to meet those requirements for the decontamination activities required under the Plant 1 Ore Silo Removal Action.

1. Identification of Each Permit That Would Otherwise be Required.

State Requirements

PERMIT TO INSTALL - Ohio Administrative Code (OAC) 3745-31-02 (A): Unless exempted by OAC 3745-31-03, no person shall cause, permit or allow the installation of a new source of air pollutants or cause, permit, or allow the modification of an air contaminant source without first obtaining a Permit to Install.

PERMITS TO OPERATE - OAC 3745-35-02 (A): Except as otherwise provided in paragraph H (Conditional Permits to Operate) of rule OAC 3745-35-02 and in OAC rules 3745-35-03 (variances) and 3745-35-05 (permit exemptions and registration status), no person may cause, permit, or allow the operation or other use of any air contaminant source without first applying for and obtaining a Permit to Operate.

Federal Requirements

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) -40 CFR PART 61, SECTION 61.07(a): The owner or operator shall submit to the Administrator an application for approval of the construction of any new source or modification of any existing source. Unless exempted in a specific subpart, an application for approval would have to be submitted for sources subject to a National Emission Standards for Hazardous Air Pollutants (NESHAP) standard. These decontamination activities are subject to the requirements of Subpart H of 40 CFR Part 61.

40 CFR PART 61, SUBPART H - NATIONAL EMISSION STANDARDS FOR EMISSIONS OF RADIONUCLIDES OTHER THAN RADON FROM DOE FACILITIES - Section 61.96(b) states that an application for approval does not have to be filed for radionuclide sources if the effective dose equivalent (EDE) caused by all emissions from the new construction or modification is less than 0.1

mrem per year. The EDE shall be determined using an approved USEPA computer model. The source term to be entered into the model, to determine the necessity of an application, shall be developed using Appendix D to Part 61 - Methods for Estimating Radionuclides.

2. **Identification of the Standards, Requirements, Criteria, or Limitations That Would Have to be Met to Obtain Each Permit.**

State Requirements

Air Permits to Install

Pursuant to 3745-31-05, the Director of OEPA will issue a APTI provided the installation of the source will not prevent or interfere with the attainment or maintenance of applicable ambient air quality standards and will not result in the violation of emission standards adopted by OEPA. Pursuant to 3745-31-05, the sources must employ best available technology.

Air Permits to Operate

Pursuant to 3745-35-02, the Director of OEPA will issue an APTO provided the source was constructed in accordance with the terms and conditions of the Permit to Install, or if exempted from a PTI, meets the substantive requirements of a PTI. Additionally, the source must not violate NESHAPs adopted by the Administrator of the USEPA.

Federal Requirements

NESHAP SUBPART H - 40 CFR PART 61, SECTION 61.92: Emissions of radionuclides (except radon^{222} and radon^{220}) to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr.

NESHAP SUBPART H - 40 CFR PART 61, SECTION 61.93: Continuous measurement of radionuclide emissions is required for point sources having the potential to cause an EDE in excess of 0.1 mrem/yr. The EDE is again determined by an approved USEPA computer model. However, for the purposes of determining monitoring requirements, the estimated radionuclide release rates are based on normal facility operations, without the benefit of any pollution control equipment. Additionally, all radionuclides which could contribute greater than 10% of the potential EDE for a release point shall be measured.

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	836	934	1955	1775	1573	1517	1638
N	2.2E-13	1.9E-13	6.2E-14	7.2E-14	8.7E-14	9.2E-14	8.2E-14
NNW	8.0E-14	7.0E-14	2.6E-14	3.0E-14	3.5E-14	3.7E-14	3.3E-14
NW	6.8E-14	5.9E-14	2.0E-14	2.4E-14	2.8E-14	3.0E-14	2.7E-14
WNW	5.5E-14	4.8E-14	1.8E-14	2.0E-14	2.4E-14	2.5E-14	2.3E-14
W	7.4E-14	6.4E-14	2.3E-14	2.6E-14	3.1E-14	3.3E-14	3.0E-14
WSW	2.5E-13	2.2E-13	7.5E-14	8.7E-14	1.0E-13	1.1E-13	9.8E-14
SW	1.5E-13	1.3E-13	4.5E-14	5.2E-14	6.3E-14	6.6E-14	5.9E-14
SSW	2.4E-13	2.0E-13	6.9E-14	8.0E-14	9.6E-14	1.0E-13	9.1E-14
S	2.1E-13	1.8E-13	6.1E-14	7.0E-14	8.4E-14	8.9E-14	7.9E-14
SSE	2.2E-13	1.9E-13	6.0E-14	7.0E-14	8.4E-14	8.9E-14	7.9E-14
SE	1.5E-13	1.3E-13	4.5E-14	5.1E-14	6.1E-14	6.4E-14	5.8E-14
ESE	2.6E-13	2.2E-13	7.4E-14	8.5E-14	1.0E-13	1.1E-13	9.7E-14
E	1.9E-13	1.6E-13	5.1E-14	5.9E-14	7.1E-14	7.5E-14	6.7E-14
ENE	2.0E-13	1.7E-13	5.9E-14	6.9E-14	8.2E-14	8.7E-14	7.7E-14
NE	2.3E-13	1.9E-13	6.5E-14	7.6E-14	9.1E-14	9.6E-14	8.6E-14
NNE	3.8E-13	3.3E-13	1.1E-13	1.3E-13	1.6E-13	1.7E-13	1.5E-13

	Distance (m)						
Direction	1769	1572	1466	946	1511	1825	1163
N	7.3E-14	8.7E-14	9.6E-14	1.8E-13	9.2E-14	6.9E-14	1.4E-13
NNW	3.0E-14	3.5E-14	3.9E-14	6.8E-14	3.7E-14	2.8E-14	5.3E-14
NW	2.4E-14	2.8E-14	3.1E-14	5.8E-14	3.0E-14	2.3E-14	4.3E-14
WNW	2.0E-14	2.4E-14	2.6E-14	4.7E-14	2.5E-14	2.0E-14	3.6E-14
W	2.7E-14	3.1E-14	3.5E-14	6.3E-14	3.3E-14	2.5E-14	4.8E-14
WSW	8.7E-14	1.0E-13	1.2E-13	2.1E-13	1.1E-13	8.3E-14	1.6E-13
SW	5.3E-14	6.3E-14	6.9E-14	1.3E-13	6.6E-14	5.0E-14	9.7E-14
SSW	8.1E-14	9.6E-14	1.1E-13	2.0E-13	1.0E-13	7.7E-14	1.5E-13
S	7.0E-14	8.4E-14	9.3E-14	1.7E-13	8.9E-14	6.7E-14	1.3E-13
SSE	7.0E-14	8.4E-14	9.4E-14	1.8E-13	9.0E-14	6.7E-14	1.3E-13
SE	5.2E-14	6.1E-14	6.8E-14	1.2E-13	6.5E-14	4.9E-14	9.4E-14
ESE	8.6E-14	1.0E-13	1.1E-13	2.2E-13	1.1E-13	8.2E-14	1.6E-13
E	5.9E-14	7.1E-14	7.9E-14	1.5E-13	7.6E-14	5.7E-14	1.1E-13
ENE	6.9E-14	8.2E-14	9.1E-14	1.7E-13	8.7E-14	6.6E-14	1.3E-13
NE	7.6E-14	9.1E-14	1.0E-13	1.9E-13	9.7E-14	7.3E-14	1.4E-13
NNE	1.3E-13	1.6E-13	1.7E-13	3.2E-13	1.7E-13	1.3E-13	2.4E-13

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)	
Direction	197	1154
N	7.5E-08	1.7E-08
NNW	2.6E-08	6.6E-09
NW	1.8E-08	5.5E-09
WNW	1.9E-08	4.6E-09
W	4.2E-08	6.0E-09
WSW	9.4E-08	2.0E-08
SW	6.8E-08	1.2E-08
SSW	1.0E-07	1.9E-08
S	9.8E-08	1.6E-08
SSE	1.2E-07	1.7E-08
SE	6.4E-08	1.2E-08
ESE	1.3E-07	2.0E-08
E	9.0E-08	1.4E-08
ENE	9.1E-08	1.6E-08
NE	1.1E-07	1.8E-08
NNE	1.2E-07	3.0E-08

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	836	934	1955	1775	1573	1517	1638
N	2.7E-08	2.3E-08	7.7E-09	9.0E-09	1.1E-08	1.1E-08	1.0E-08
NNW	9.9E-09	8.6E-09	3.2E-09	3.7E-09	4.4E-09	4.6E-09	4.1E-09
NW	8.5E-09	7.3E-09	2.6E-09	3.0E-09	3.5E-09	3.7E-09	3.3E-09
WNW	6.8E-09	6.0E-09	2.2E-09	2.6E-09	3.0E-09	3.2E-09	2.9E-09
W	9.2E-09	8.0E-09	2.9E-09	3.3E-09	3.9E-09	4.1E-09	3.7E-09
WSW	3.1E-08	2.7E-08	9.4E-09	1.1E-08	1.3E-08	1.4E-08	1.2E-08
SW	1.9E-08	1.5E-08	5.7E-09	6.5E-09	7.8E-09	8.2E-09	7.3E-09
SSW	2.9E-08	2.5E-08	8.6E-09	1.0E-08	1.2E-08	1.3E-08	1.1E-08
S	2.6E-08	2.2E-08	7.5E-09	8.7E-09	1.0E-08	1.1E-08	9.8E-09
SSE	2.7E-08	2.3E-08	7.5E-09	8.7E-09	1.0E-08	1.1E-08	9.8E-09
SE	1.8E-08	1.5E-08	5.6E-09	6.4E-09	7.6E-09	8.0E-09	7.2E-09
ESE	3.3E-08	2.8E-08	9.2E-09	1.1E-08	1.3E-08	1.3E-08	1.2E-08
E	2.3E-08	2.0E-08	6.3E-09	7.4E-09	8.9E-09	9.4E-09	8.3E-09
ENE	2.5E-08	2.2E-08	7.4E-09	8.5E-09	1.0E-08	1.1E-08	9.6E-09
NE	2.8E-08	2.4E-08	8.2E-09	9.4E-09	1.1E-08	1.2E-08	1.1E-08
NNE	4.7E-08	4.0E-08	1.4E-08	1.6E-08	2.0E-08	2.1E-08	1.8E-08

	Distance (m)						
Direction	1769	1572	1466	946	1511	1825	1163
N	9.0E-09	1.1E-08	1.2E-08	2.3E-08	1.1E-08	8.6E-09	1.7E-08
NNW	3.7E-09	4.4E-09	4.8E-09	8.5E-09	4.6E-09	3.6E-09	6.5E-09
NW	3.0E-09	3.5E-09	3.9E-09	7.2E-09	3.7E-09	2.9E-09	5.4E-09
WNW	2.6E-09	3.0E-09	3.3E-09	5.9E-09	3.2E-09	2.5E-09	4.5E-09
W	3.4E-09	3.9E-09	4.3E-09	7.8E-09	4.2E-09	3.2E-09	6.0E-09
WSW	1.1E-08	1.3E-08	1.4E-08	2.6E-08	1.4E-08	1.0E-08	2.0E-08
SW	6.6E-09	7.8E-09	8.6E-09	1.6E-08	8.3E-09	6.3E-09	1.2E-08
SSW	1.0E-08	1.2E-08	1.3E-08	2.5E-08	1.3E-08	9.6E-09	1.9E-08
S	8.8E-09	1.0E-08	1.2E-08	2.2E-08	1.1E-08	8.4E-09	1.6E-08
SSE	8.7E-09	1.0E-08	1.2E-08	2.3E-08	1.1E-08	8.3E-09	1.7E-08
SE	6.4E-09	7.6E-09	8.4E-09	1.5E-08	8.1E-09	6.1E-09	1.2E-08
ESE	1.1E-08	1.3E-08	1.4E-08	2.7E-08	1.4E-08	1.0E-08	2.0E-08
E	7.4E-09	8.9E-09	9.9E-09	1.9E-08	9.4E-09	7.0E-09	1.4E-08
ENE	8.6E-09	1.0E-08	1.1E-08	2.1E-08	1.1E-08	8.2E-09	1.6E-08
NE	9.5E-09	1.1E-08	1.3E-08	2.4E-08	1.2E-08	9.1E-09	1.8E-08
NNE	1.6E-08	2.0E-08	2.2E-08	4.0E-08	2.1E-08	1.6E-08	3.0E-08

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Jun 21, 1995 1:20 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45239-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1995

Comments: FEMP TEMPLATE

Dataset Name: d&dcon
Dataset Date: Jun 21, 1995 1:19 pm
Wind File: WNDFILES\FEMPSTD.WND

RADIONUCLIDE EMISSIONS DURING THE YEAR 1995

Calculated per Appendix D to Part 61 - "Methods for Estimating Radionuclide Emissions."

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	5.2E-12	5.2E-12
U-235	Y	1.00	3.0E-13	3.0E-13
U-238	Y	0.30	6.1E-12	6.1E-12
TH-228	Y	1.00	6.2E-12	6.2E-12
TH-230	Y	1.00	8.2E-10	8.2E-10
TH-232	Y	1.00	5.7E-11	5.7E-11

SITE INFORMATION

Temperature: 13 degrees C
Precipitation: 97 cm/y
Mixing Height: 950 m

SOURCE INFORMATION

Source Number: 1

Stack Height (m): 17.67
Diameter (m): 0.92

Plume Rise Momentum (m/s): 1.35E+01
(Exit Velocity)

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

836 934 1955 1775 1573 1517 1638 1769 1572 1466
946 1511 1825 1163 197 1154

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment

Jun 21, 1995 1:20 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45239-8704

Effective Dose Equivalent
(mrem/year)

3.0E-08

At This Location: 1154 Meters North North-East

The effective dose equivalent to the maximally exposed individual in fifteen directions is highlighted in the "Dose and Risk Equivalent Summaries." There is no receptor in the northeast direction. A distance of 197 meters represents the distance in the northeast direction from the Bldg. 78 stack to the fence line.

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1995

Comments: FEMP TEMPLATE

Dataset Name: d&dcon
Dataset Date: Jun 21, 1995 1:19 pm
Wind File: WNDFILES\FEMPSTD.WND

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)	
Direction	197	1154
N	6.1E-10	1.4E-10
NNW	2.1E-10	5.3E-11
NW	1.5E-10	4.4E-11
WNW	1.5E-10	3.6E-11
W	3.4E-10	4.8E-11
WSW	7.6E-10	1.6E-10
SW	5.5E-10	9.8E-11
SSW	8.2E-10	1.5E-10
S	7.9E-10	1.3E-10
SSE	1.0E-09	1.4E-10
SE	5.1E-10	9.5E-11
ESE	1.1E-09	1.6E-10
E	7.3E-10	1.1E-10
ENE	7.3E-10	1.3E-10
NE	8.9E-10	1.4E-10
NNE	9.5E-10	2.4E-10

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m)						
	836	934	1955	1775	1573	1517	1638
N	2.2E-10	1.9E-10	6.2E-11	7.2E-11	8.7E-11	9.2E-11	8.2E-11
NNW	8.0E-11	7.0E-11	2.6E-11	3.0E-11	3.5E-11	3.7E-11	3.3E-11
NW	6.8E-11	5.9E-11	2.0E-11	2.4E-11	2.8E-11	3.0E-11	2.7E-11
WNW	5.5E-11	4.8E-11	1.8E-11	2.0E-11	2.4E-11	2.5E-11	2.3E-11
W	7.4E-11	6.4E-11	2.3E-11	2.6E-11	3.1E-11	3.3E-11	3.0E-11
WSW	2.5E-10	2.2E-10	7.5E-11	8.7E-11	1.0E-10	1.1E-10	9.8E-11
SW	1.5E-10	1.3E-10	4.5E-11	5.2E-11	6.3E-11	6.6E-11	5.9E-11
SSW	2.4E-10	2.0E-10	6.9E-11	8.0E-11	9.6E-11	1.0E-10	9.1E-11
S	2.1E-10	1.8E-10	6.1E-11	7.0E-11	8.4E-11	8.9E-11	7.9E-11
SSE	2.2E-10	1.9E-10	6.0E-11	7.0E-11	8.4E-11	8.9E-11	7.9E-11
SE	1.5E-10	1.3E-10	4.5E-11	5.1E-11	6.1E-11	6.4E-11	5.8E-11
ESE	2.6E-10	2.2E-10	7.4E-11	8.5E-11	1.0E-10	1.1E-10	9.7E-11
E	1.9E-10	1.6E-10	5.1E-11	5.9E-11	7.1E-11	7.5E-11	6.7E-11
ENE	2.0E-10	1.7E-10	5.9E-11	6.9E-11	8.2E-11	8.7E-11	7.7E-11
NE	2.3E-10	1.9E-10	6.5E-11	7.6E-11	9.1E-11	9.6E-11	8.6E-11
NNE	3.8E-10	3.3E-10	1.1E-10	1.3E-10	1.6E-10	1.7E-10	1.5E-10

Direction	Distance (m)						
	1769	1572	1466	946	1511	1825	1163
N	7.3E-11	8.7E-11	9.6E-11	1.8E-10	9.2E-11	6.9E-11	1.4E-10
NNW	3.0E-11	3.5E-11	3.9E-11	6.8E-11	3.7E-11	2.8E-11	5.3E-11
NW	2.4E-11	2.8E-11	3.1E-11	5.8E-11	3.0E-11	2.3E-11	4.3E-11
WNW	2.0E-11	2.4E-11	2.6E-11	4.7E-11	2.5E-11	2.0E-11	3.6E-11
W	2.7E-11	3.1E-11	3.5E-11	6.3E-11	3.3E-11	2.5E-11	4.8E-11
WSW	8.7E-11	1.0E-10	1.2E-10	2.1E-10	1.1E-10	8.3E-11	1.6E-10
SW	5.3E-11	6.3E-11	6.9E-11	1.3E-10	6.6E-11	5.0E-11	9.7E-11
SSW	8.1E-11	9.6E-11	1.1E-10	2.0E-10	1.0E-10	7.7E-11	1.5E-10
S	7.0E-11	8.4E-11	9.3E-11	1.7E-10	8.9E-11	6.7E-11	1.3E-10
SSE	7.0E-11	8.4E-11	9.4E-11	1.8E-10	9.0E-11	6.7E-11	1.3E-10
SE	5.2E-11	6.1E-11	6.8E-11	1.2E-10	6.5E-11	4.9E-11	9.4E-11
ESE	8.6E-11	1.0E-10	1.1E-10	2.2E-10	1.1E-10	8.2E-11	1.6E-10
E	5.9E-11	7.1E-11	7.9E-11	1.5E-10	7.6E-11	5.7E-11	1.1E-10
ENE	6.9E-11	8.2E-11	9.1E-11	1.7E-10	8.7E-11	6.6E-11	1.3E-10
NE	7.6E-11	9.1E-11	1.0E-10	1.9E-10	9.7E-11	7.3E-11	1.4E-10
NNE	1.3E-10	1.6E-10	1.7E-10	3.2E-10	1.7E-10	1.3E-10	2.4E-10

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)	
Direction	197	1154
N	7.5E-05	1.7E-05
NNW	2.6E-05	6.6E-06
NW	1.8E-05	5.5E-06
WNW	1.9E-05	4.6E-06
W	4.2E-05	6.0E-06
WSW	9.4E-05	2.0E-05
SW	6.8E-05	1.2E-05
SSW	1.0E-04	1.9E-05
S	9.8E-05	1.6E-05
SSE	1.2E-04	1.7E-05
SE	6.4E-05	1.2E-05
ESE	1.3E-04	2.0E-05
E	9.0E-05	1.4E-05
ENE	9.1E-05	1.6E-05
NE	1.1E-04	1.8E-05
NNE	1.2E-04	3.0E-05

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	836	934	1955	1775	1573	1517	1638
N	2.7E-05	2.3E-05	7.7E-06	9.0E-06	1.1E-05	1.1E-05	1.0E-05
NNW	9.9E-06	8.6E-06	3.2E-06	3.7E-06	4.4E-06	4.6E-06	4.1E-06
NW	8.5E-06	7.3E-06	2.6E-06	3.0E-06	3.5E-06	3.7E-06	3.3E-06
WNW	6.8E-06	6.0E-06	2.2E-06	2.6E-06	3.0E-06	3.2E-06	2.9E-06
W	9.2E-06	8.0E-06	2.9E-06	3.3E-06	3.9E-06	4.1E-06	3.7E-06
WSW	3.1E-05	2.7E-05	9.4E-06	1.1E-05	1.3E-05	1.4E-05	1.2E-05
SW	1.9E-05	1.6E-05	5.7E-06	6.5E-06	7.8E-06	8.2E-06	7.3E-06
SSW	2.9E-05	2.5E-05	8.6E-06	1.0E-05	1.2E-05	1.3E-05	1.1E-05
S	2.6E-05	2.2E-05	7.5E-06	8.7E-06	1.0E-05	1.1E-05	9.8E-06
SSE	2.7E-05	2.3E-05	7.5E-06	8.7E-06	1.0E-05	1.1E-05	9.8E-06
SE	1.8E-05	1.6E-05	5.6E-06	6.4E-06	7.6E-06	8.0E-06	7.2E-06
ESE	3.3E-05	2.8E-05	9.2E-06	1.1E-05	1.3E-05	1.3E-05	1.2E-05
E	2.3E-05	2.0E-05	6.3E-06	7.4E-06	8.9E-06	9.4E-06	8.3E-06
ENE	2.5E-05	2.2E-05	7.4E-06	8.5E-06	1.0E-05	1.1E-05	9.6E-06
NE	2.8E-05	2.4E-05	8.2E-06	9.4E-06	1.1E-05	1.2E-05	1.1E-05
NNE	4.7E-05	4.0E-05	1.4E-05	1.6E-05	2.0E-05	2.1E-05	1.8E-05

	Distance (m)						
Direction	1769	1572	1466	946	1511	1825	1163
N	9.0E-06	1.1E-05	1.2E-05	2.3E-05	1.1E-05	8.6E-06	1.7E-05
NNW	3.7E-06	4.4E-06	4.8E-06	8.5E-06	4.6E-06	3.6E-06	6.5E-06
NW	3.0E-06	3.5E-06	3.9E-06	7.2E-06	3.7E-06	2.9E-06	5.4E-06
WNW	2.6E-06	3.0E-06	3.3E-06	5.9E-06	3.2E-06	2.5E-06	4.5E-06
W	3.4E-06	3.9E-06	4.3E-06	7.8E-06	4.2E-06	3.2E-06	6.0E-06
WSW	1.1E-05	1.3E-05	1.4E-05	2.6E-05	1.4E-05	1.0E-05	2.0E-05
SW	6.6E-06	7.8E-06	8.6E-06	1.6E-05	8.3E-06	6.3E-06	1.2E-05
SSW	1.0E-05	1.2E-05	1.3E-05	2.5E-05	1.3E-05	9.6E-06	1.9E-05
S	8.8E-06	1.0E-05	1.2E-05	2.2E-05	1.1E-05	8.4E-06	1.6E-05
SSE	8.7E-06	1.0E-05	1.2E-05	2.3E-05	1.1E-05	8.3E-06	1.7E-05
SE	6.4E-06	7.6E-06	8.4E-06	1.5E-05	8.1E-06	6.1E-06	1.2E-05
ESE	1.1E-05	1.3E-05	1.4E-05	2.7E-05	1.4E-05	1.0E-05	2.0E-05
E	7.4E-06	8.9E-06	9.9E-06	1.9E-05	9.4E-06	7.0E-06	1.4E-05
ENE	8.6E-06	1.0E-05	1.1E-05	2.1E-05	1.1E-05	8.2E-06	1.6E-05
NE	9.5E-06	1.1E-05	1.3E-05	2.4E-05	1.2E-05	9.1E-06	1.8E-05
NNE	1.6E-05	2.0E-05	2.2E-05	4.0E-05	2.1E-05	1.6E-05	3.0E-05

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Jun 20, 1995 2:16 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45239-8704

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1995

Comments: FEMP TEMPLATE

Dataset Name: D&DNON
Dataset Date: Jun 20, 1995 1:47 pm
Wind File: WNDFILES\FEMPSTD.WND

RADIONUCLIDE EMISSIONS DURING THE YEAR 1995

Calculated based on no control equipment.

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
U-234	Y	0.30	5.2E-09	5.2E-09
U-235	Y	1.00	3.0E-10	3.0E-10
U-238	Y	0.30	6.1E-09	6.1E-09
TH-228	Y	1.00	6.2E-09	6.2E-09
TH-230	Y	1.00	8.2E-07	8.2E-07
TH-232	Y	1.00	5.7E-08	5.7E-08

SITE INFORMATION

Temperature:	13 degrees C
Precipitation:	97 cm/y
Mixing Height:	950 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	17.67
Diameter (m):	0.92
Plume Rise Momentum (m/s): (Exit Velocity)	1.35E+01

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

836	934	1955	1775	1573	1517	1638	1769	1572	1466
946	1511	1825	1163	197	1154				

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment

Jun 20, 1995 2:16 pm

Facility: FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
Address: P.O. BOX 398704
7400 WILLEY ROAD
City: CINCINNATI
State: OH Zip: 45239-8704

Effective Dose Equivalent
(mrem/year)

3.0E-05

At This Location: 1154 Meters North North-East

The effective dose equivalent to the maximally exposed individual in fifteen directions is highlighted in the "Dose and Risk Equivalent Summaries." There is no receptor in the northeast direction. A distance of 197 meters represents the distance in the northeast direction from the Bldg. 78 stack to the fence line.

Source Category: REMEDIATION SITE
Source Type: Stack
Emission Year: 1995

Comments: FEMP TEMPLATE

Dataset Name: D&DNON
Dataset Date: Jun 20, 1995 1:47 pm
Wind File: WNDFILES\FEMPSTD.WND

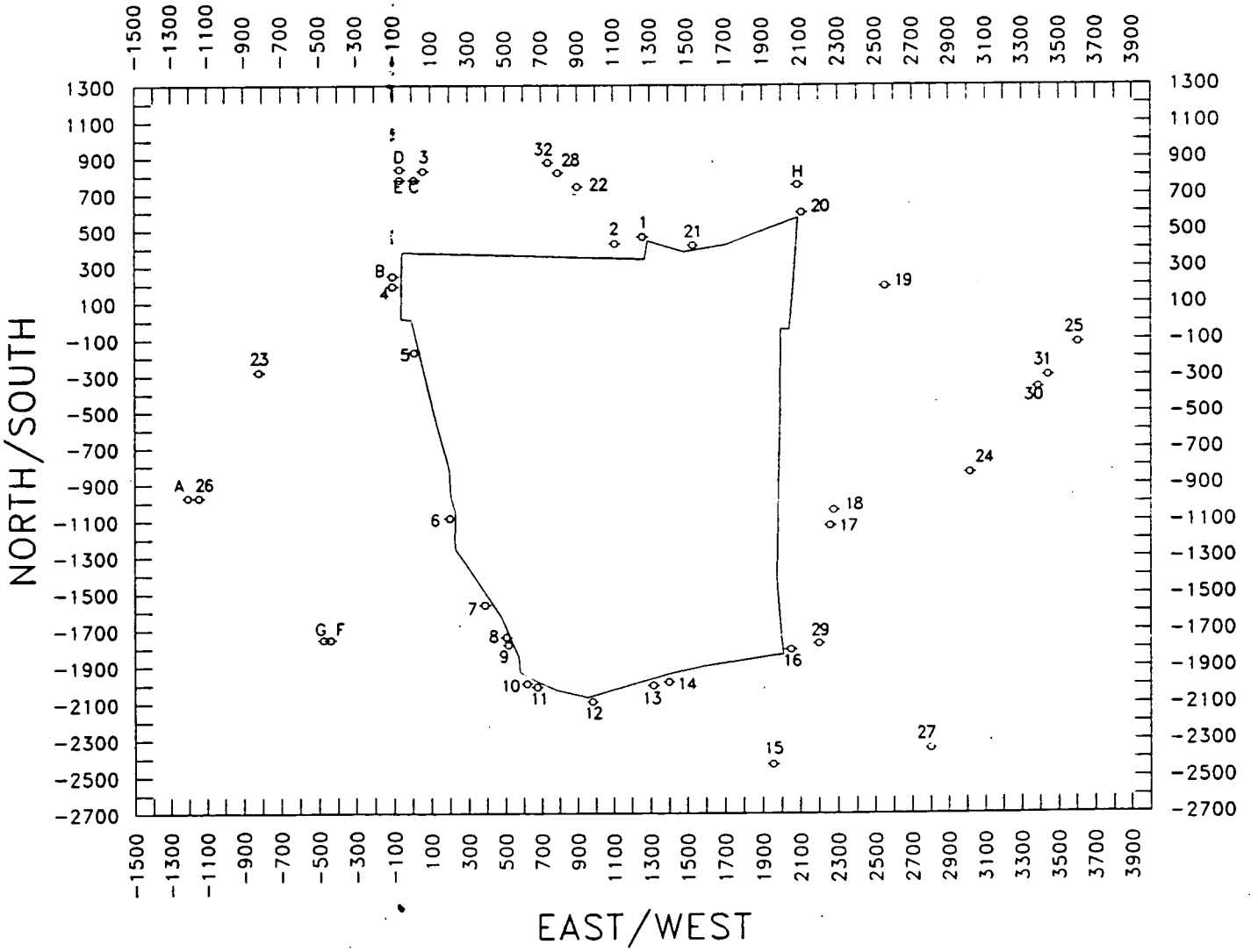
FEMP RECEPTOR LOCATOR PROGRAM
Closest Receptor in Sector

SOURCE NAME:BLDG.78 - VACUUM GRIT BLASTER
NORTH/SOUTH COORDINATES: 481380
EAST/WEST COORDINATES: 1381910
DATE: June 20
Program run b

RECEPTOR	SECTOR	DISTANCE(m)
21	N	836
1	NNW	934
3	NW	1955
4	WNW	1775
5	W	1573
6	WSW	1517
7	SW	1638
12	SSW	1769
14	S	1572
16	SSE	1466
18	SE	946
24	ESE	1511
30	E	1825
19	ENE	1163
20	NNE	1154

NE missing; use fence line in northeast direction. = 197 m

OFF-SITE RECEPTORS



PERMIT INFORMATION SUMMARY
DECONTAMINATION OF PLANT 1 ORE SILO STEEL
OPERABLE UNIT 3 - REMOVAL ACTION WORK PLAN 13
ATTACHMENT 4

In order to perform the CAP88-PC modeling run, release rates are required for the various radionuclides under consideration. These release rates were calculated based on data obtained from several surface smears of the steel awaiting decontamination. An activity/smear value was obtained. Knowing that a typical smear is 100 cm^2 and there is approximately 15,000 ft^2 of steel to be decontaminated a total activity was calculated based on the following calculation:

$$\frac{pCi}{smear} \left| \frac{1E\text{-}12\ Ci}{pCi} \right| \frac{smear}{100\ sq.cm.} \left| \frac{6.54\ sq.cm.}{sq.in.} \right| \frac{144\ sq.in.}{sq.ft.} \left| 15{,}000\ sq.ft.\ steel \right.$$

Total curies were determined and applied over a year. For determining whether continuous monitoring is required under 40 CFR Part 61, Section 61.93, the total curies were controlled to 99% to determine the release rate inputs. The control being applied in this instance is the vacuum nature of the blaster which is inherent to the operation of the machine. In determining application requirements under 40 CFR Part 61, Section 61.96, Part 61 Appendix D protocols were used to determine release rate inputs.

Nuclide	pCi/smear	Ci/100 sq.cm.	Total Ci	**NESHAP Monitoring Requirement Demonstration 99% Controlled**	**NESHAP Application Requirement Demonstration Part 61 Appendix D**
U-234	3.67	3.67E-12	5.2E-7	5.2E-9	5.2E-12
U-235	0.213	2.13E-13	3.0E-8	3.0E-10	3.0E-13
U-238	4.33	4.33E-12	6.1E-7	6.1E-9	6.1E-12
Th-228	4.4	4.4E-12	6.2E-7	6.2E-9	6.2E-12
Th-230	580	5.8E-10	8.2E-5	8.2E-7	8.2E-10
Th-232	4.0	4.0E-12	5.7E-6	5.7E-8	5.7E-11

PERMIT INFORMATION SUMMARY
DECONTAMINATION OF PLANT 1 ORE SILO STEEL
OPERABLE UNIT 3 - REMOVAL ACTION WORK PLAN 13
ATTACHMENT 3

Emission estimates based upon "Air Quality Permits - A Handbook for Regulators and Industry, STAPPA/ALAPCO," Section 2.3.1.

For Steel Shot: 0.004 lb PM/lb abrasive
0.86 lb PM10/lb PM

Manufacturer estimates 448 lbs. abrasive/hr/nozzle will be applied to the surface. With two nozzles in use this equates to 896 lbs. abrasive/hr.

Uncontrolled Emissions:

$$\frac{896 \text{ lbs abrasive}}{\text{hr}} \left| \frac{0.004 \text{ lb PM}}{\text{lb abrasive}} \right| \frac{0.86 \text{ lb PM10}}{\text{lb PM}} = 3.1 \text{ lb PM10/hr}$$

Maximum Conditions:

$$\frac{3.1 \text{ lb PM10}}{\text{hr}} \left| \frac{8760 \text{ hr}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{ lb}} = 13.6 \text{ tons/year}$$

Average Conditions:

$$\frac{3.1 \text{ lb PM10}}{\text{hr}} \left| \frac{8 \text{ hr}}{\text{day}} \right| \frac{5 \text{ day}}{\text{week}} \left| \frac{52 \text{ week}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{ lb}} = 3.2 \text{ tons/year}$$

Controlled Emissions:

There are two emission points: 1) machine air exhaust and 2) at the blast head. The machine is designed to vacuum 99% of the emissions from the blast head back through the machines HEPA filter. In addition, the one percent fraction of the blast head emissions remaining is exhausted through a portable HEPA using a herculite tent enclosure. Therefore, assume that all the emissions are controlled by HEPA filtration (99.97% efficient).

3.1 lb PM10/hr X (1-.9997) = 0.0009 lb PM10/hr

Maximum Controlled Conditions:

$$\frac{0.0009 \text{ lb PM10}}{\text{hr}} \left| \frac{8760 \text{ hr}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{ lb}} = 0.004 \text{ tons PM10/year}$$

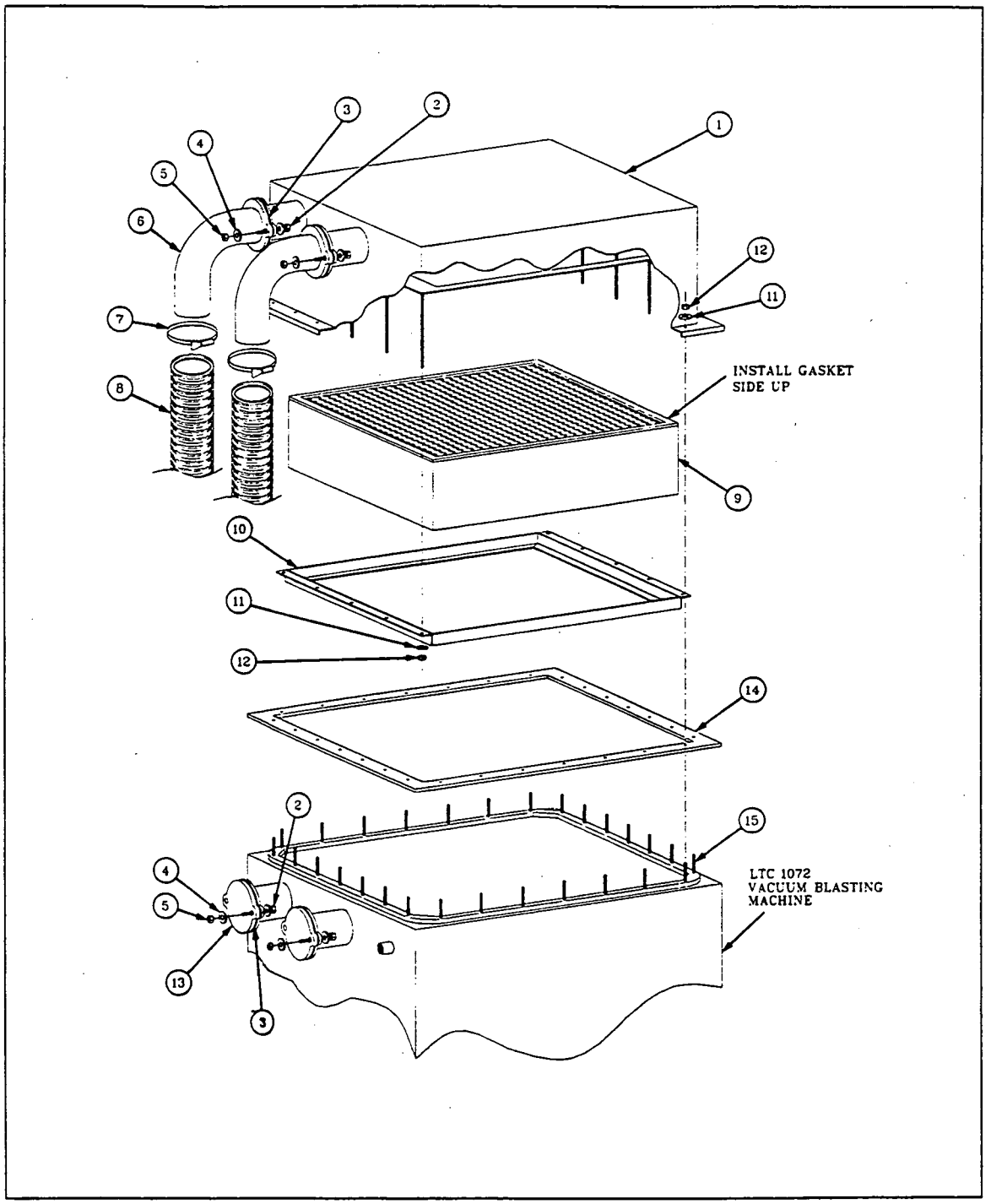
Average Controlled Conditions:

$$\frac{0.0009 \text{ lb PM10}}{\text{hr}} \left| \frac{8 \text{ hr}}{\text{day}} \right| \frac{5 \text{ day}}{\text{week}} \left| \frac{52 \text{ week}}{\text{yr}} \right| \frac{\text{ton}}{2000 \text{ lb}} = 0.0009 \text{ tons PM10/year}$$

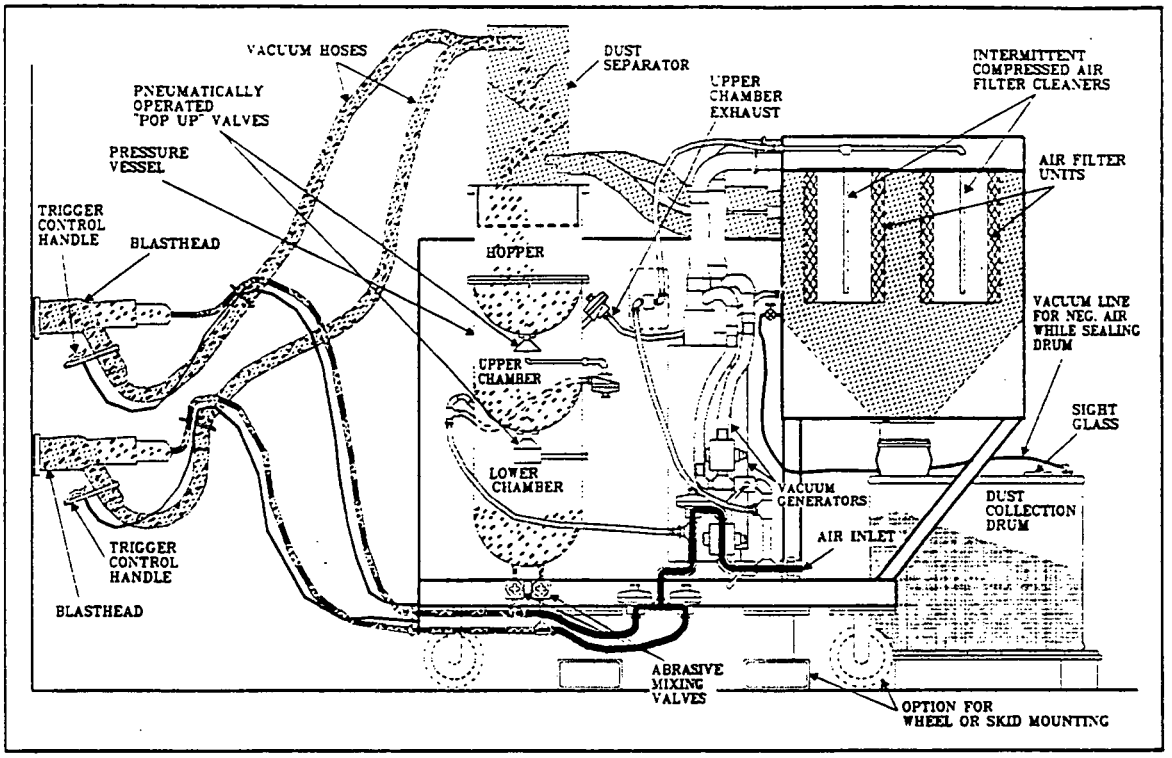
HEPA Kit

Position	Part #	Description	Quantity
1	56000100	HEPA Box with Bolt Lid	1
2	28020020	Hex Bolt 3/8" - 16 x 1 1/2"	8
3	33840050	Flanged Gasket Dust Box	4
4	28020060	Flat Washer 3/8"	16
5	28020040	Stainless Hex Nut 3/8" - 16	8
6	33210062	Sweep With Flange	2
7	32810112	Hose Clamp (4 1/4")	2
8	34010130	Vacuum Hose 3" (1060 PN)	5 ft.
9	10810093	HEPA Filter (1072)	1
10	10820063	Bolt Lid for 1072 Top Flange	1
11	28030050	Flat Washer 1/4"	38
12	28050070	Nylon Lock Nut 1/4" - 20	38
13	33210063	Dust Sox Outlet Cover	2
14	33840065	Dust Bunker Gasket (1072)	1
15	28030035	Coarse Thread Set Screw 1/4" x 20	28

B:2 HEPA Kit (Optional Accessory)



1.2c Description of Abrasive Flow



Abrasive Flow Schematic

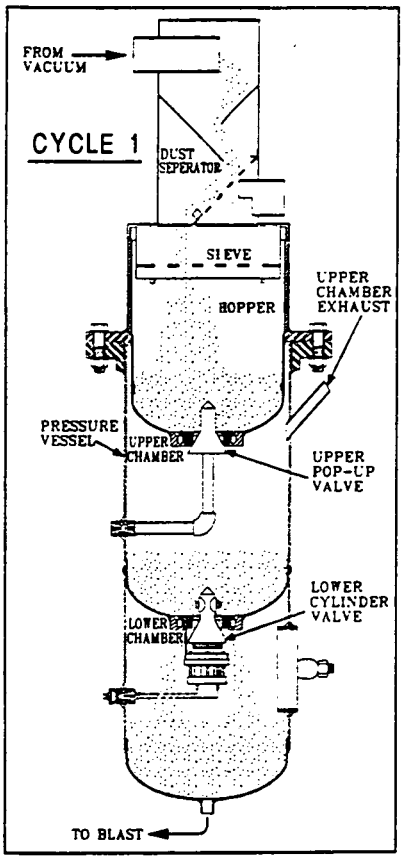
- When the trigger is activated the abrasive control valve is opened and the abrasive, under pressure is forced into the blast hose.
- This pressurized air, combined with air from the blast air assist line, then propels the abrasive through the blast hose to the blast nozzle.

1.2c Abrasive Flow

- Abrasive for blasting is cycled through a dual chamber pressure vessel. The upper pop-up and lower cylinder valves are controlled by a timer in the control box. They alternately close to pressurize or open to de-pressurize the upper chamber of the vessel. The sequence of the vessel is described as follows:

Cycle 1

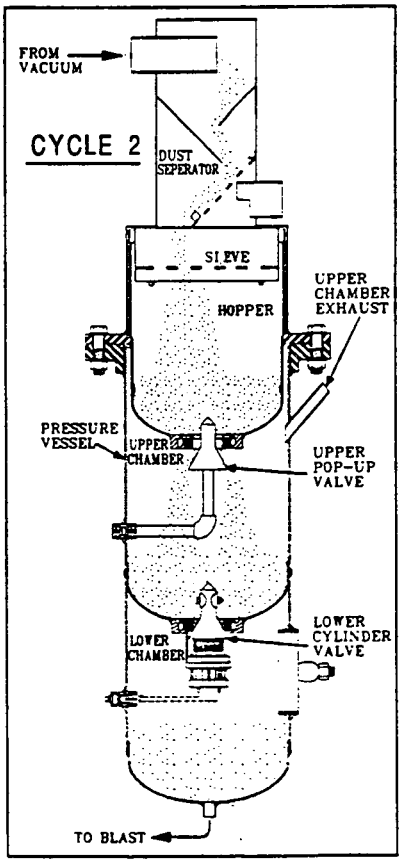
- When either trigger is activated, the pressure vessel will enter Cycle 1. In Cycle 1 the upper chamber pop-up valve is closed and the lower cylinder valve is open. At this time, abrasive will be draining from the top chamber into the bottom chamber. Abrasive blasted from the bottom of the vessel will be returned and stored in the hopper.



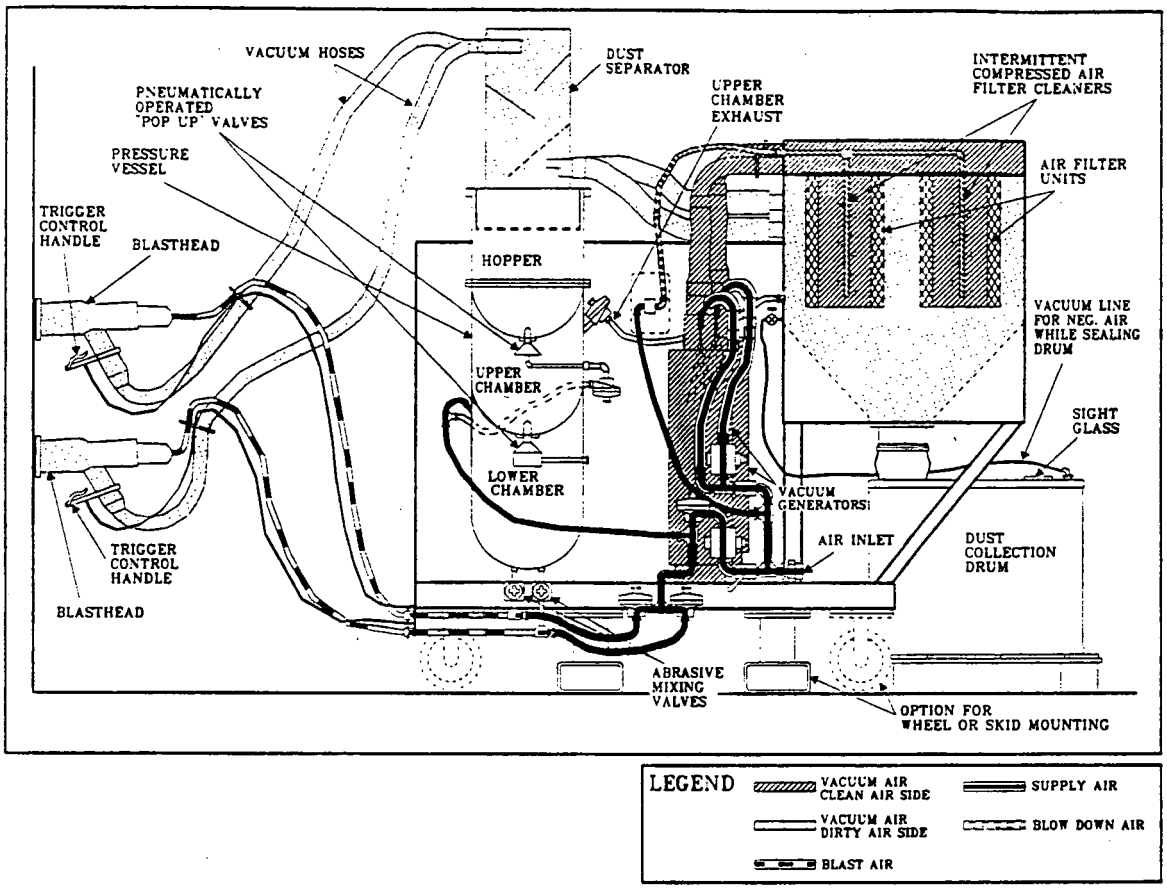
Cycle 2

- After one timing cycle, the pressure vessel will enter Cycle 2. In Cycle 2, the lower cylinder valve will close to its seat. This allows the bottom chamber to remain charged with air. The top chamber of the pressure vessel will depressurize through an exhaust relief valve. Once the top chamber is depressurized, the top pop-up valve will drop. At this time, the abrasive which was being stored in the hopper will begin draining into the top chamber of the vessel.

- When using two blastheads both triggers must be deactivated for the pressure vessel to reset to Cycle 1. As long as at least one trigger is activated the pressure vessel will continue to cycle.



000025



Air Flow Schematic

- After back-flushing, dust is dumped from the dust chamber into the dust collection bag or drum by operation of the bellows valve. The dust collected in the dust collection bag must be disposed of in a code approved manner.

- **Be sure to wear a respirator when disposing of dust.**

- To prevent emissions, cover blasthead, dust separator outlet, vacuum hose ends and outlet from dust dump housing with plastic bag when not in use.

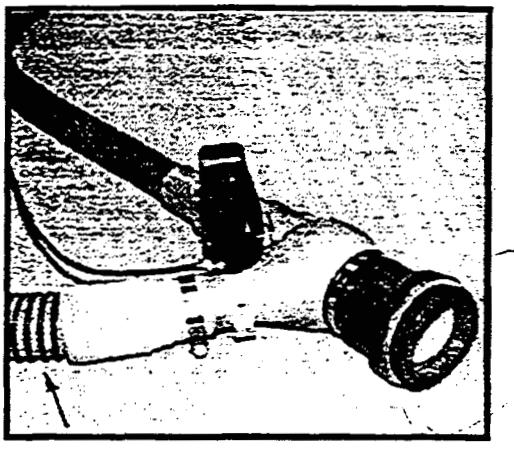
1.2b Description of Air Flow

- During the blasting operation, the blast nozzle propels the abrasive at a high speed against the surface to be cleaned. After cleaning the surface, the abrasive, together with the rust or coating that was removed from the surface, is vacuumed back into the machine through the suction hose. (See photograph 1 of the blasthead.)

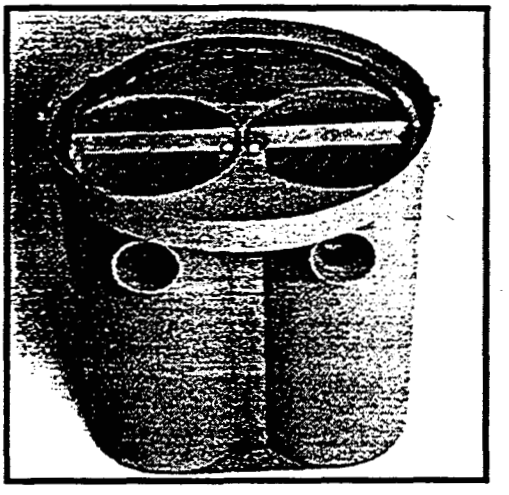
- The dust separator contains angled steel collision pads that reduce the exhaust speed of the abrasive and dust. The angle of the pads, working with the force of gravity, allows any reusable abrasive to fall back into the pressure vessel. The abrasive and dust pass through a fine wire mesh screen that is under the last collision pad. Particles too large to pass through the screen are caught by a sieve. (See photographs 2 and 3.)

- Dust is drawn from the dust separator into the filter chamber through the exhaust opening located below the last angled steel collision pad and wire mesh screen. (See photograph 2.) In the filter chamber, heavier dust falls directly into the chamber; the remainder is drawn into the filter.

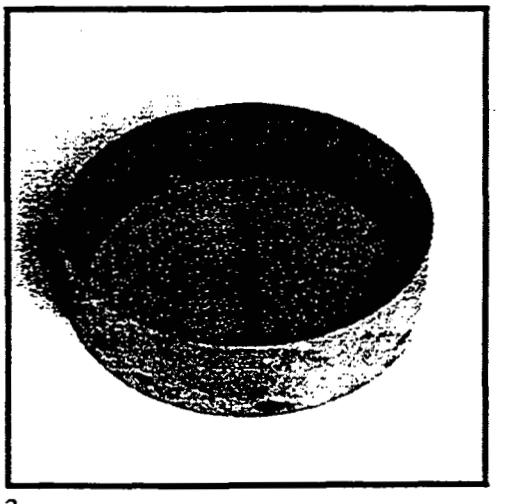
- Back-flushing is necessary to prevent the filter from becoming clogged. The general rule is that the filter should be back-flushed every one-to-two hours during LTC 1072 operation. In actuality, the frequency with which you should back-flush the filter will be determined by the abrasives being used and the surface being blasted. The procedure for back-blushing the filter is described in Section 2.3b.



1.



2.



3.

PERMIT INFORMATION SUMMARY
DECONTAMINATION OF PLANT 1 ORE SILO STEEL
OPERABLE UNIT 3 - REMOVAL ACTION WORK PLAN 13
ATTACHMENT 2

The following pages are taken directly from the operators manual for the LTC Americas Vacuum Blaster. Descriptions and diagrams are provided for the air flow and abrasive flow through the blaster. These diagrams do not show the HEPA filtration unit. A schematic of the HEPA kit is provided to show connection to the machine.

PERMIT INFORMATION SUMMARY
DECONTAMINATION OF PLANT 1 ORE SILO STEEL
OPERABLE UNIT 3 - REMOVAL ACTION WORK PLAN 13
ATTACHMENT 1

PROCESS DATA

1. Name of process Decontamination of Plant 1 Ore Silo Steel
2. End product Approximately 75 tons of steel (15,000 ft^2) for free release
3. Primary process equipment Portable vacuum grit blaster
4. Manufacturer LTC Americas Make or Model LTC 1072
5. Capacity of equipment (lbs./hr): Rated 100 ft^2/hr Max. Variable

OPERATING DATA

6. Normal operating schedule: 8 hrs./day, 5 days/wk., 3 wks./year.
7. Hourly production rates Average 100 ft^2/hr Maximum Variable
8. Type of operation: [ ] Continuous [X] Batch
9. Materials used in process:

Raw Materials	Principal Use	Amount (lbs./hr.)
Steel Grit	Abrasive for blasting	896 lbs/hr
Contaminated Steel	Free Release	1000 lbs/hr

STACK DATA

10. FEMP Stack Identification Building 78; EP78-1
11. Are other sources vented to this stack? [X] Yes [ ] No
    If yes, identify sources General Building Exhaust
12. Type: Round; top inside diameter dimension 36-inch
13. Height: Above roof 25 ft., above ground 58 ft.
14. Exit gas: Temp. 82 °F, Volume 18,800 ACFM, Velocity 2,660 ft./min.

3. **Explanation of how the response action will meet the standard, requirements, criteria, or limitations identified in Item 2 above.**

Satisfaction of State Requirements Relative to Air Permit's (APTI & APTO)

The vacuum grit blaster has two emission points. Emissions at the blast head are 99 % controlled by the vacuum nature of the blaster. Blast material and surface debris are vacuumed back into a dust separator, integral to the machine, containing angled steel emission pads that reduce the speed of the exhaust allowing heavy matter to drop out for recycle while the dust is exhausted through a HEPA device (also integral to the machine). The blast head area will be enclosed with a herculite tent and the tent contents exhausted through a portable HEPA unit. This mode of operation ensures all emissions are HEPA controlled satisfying OEPA BAT requirements.

Attachment 1 contains basic information concerning the vacuum blaster. Attachment 2 contains an airflow diagram, abrasive flow diagram, and HEPA kit schematic (from the equipment supplier). Attachment 3 contains emission estimates based on the type and amount of blast media.

Satisfaction of Federal Requirements Relative to NESHAP Subpart H.

The source terms derived under Appendix D of 40 CFR Part 61, as required by 40 CFR Part 61.96(b) were modeled using the CAP88PC computer model. The modeling yields an EDE of 3.0E-8 mrem/yr to the maximally exposed individual. New or modified sources of radionuclides whose EDEs are determined to be less than 0.1 mrem/yr are not required to submit applications for approval to the USEPA.

Modeling of the source terms developed under 40 CFR Part 61.93(b)(4)(ii) yields an EDE of 3.0E-5 mrem/yr to the maximally exposed individual. Since the EDE is lower than the 0.1 mrem/yr criteria a continuous sampler is not required.

Attachment 4 contains the basis for the release rate inputs used in the modeling as well as excerpts from the actual modeling runs.

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m)	
	197	1154
N	6.1E-13	1.4E-13
NNW	2.1E-13	5.3E-14
NW	1.5E-13	4.4E-14
WNW	1.5E-13	3.6E-14
W	3.4E-13	4.8E-14
WSW	7.6E-13	1.6E-13
SW	5.5E-13	9.8E-14
SSW	8.2E-13	1.5E-13
S	7.9E-13	1.3E-13
SSE	1.0E-12	1.4E-13
SE	5.1E-13	9.5E-14
ESE	1.1E-12	1.6E-13
E	7.3E-13	1.1E-13
ENE	7.3E-13	1.3E-13
NE	8.9E-13	1.4E-13
NNE	9.5E-13	2.4E-13