

RAS 14533

ARMY EXH. #7



FINAL  
ENVIRONMENTAL IMPACT STATEMENT  
SEPTEMBER 1995

U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of U.S. ARMY (JEFFERSON PROVING GROUND)

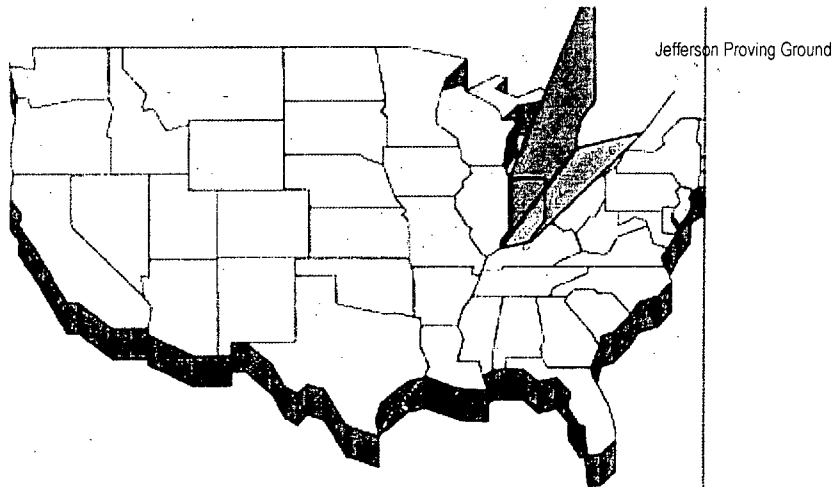
Docket No. 40-8838-ML Official Exhibit No. ARMY EXH. # 7

OFFERED by Applicant/Licensee Intervenor \_\_\_\_\_  
NRC Staff \_\_\_\_\_ Other \_\_\_\_\_

IDENTIFIED on \_\_\_\_\_ Witness/Panel \_\_\_\_\_

Action Taken: **ADMITTED** **REJECTED** **WITHDRAWN**

Reporter/Clerk \_\_\_\_\_



DISPOSAL AND REUSE OF THE  
JEFFERSON PROVING GROUND  
MADISON, INDIANA

DOCKETED  
USNRC

October 25, 2007 (2:00pm)

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Docket No. 40-8838-ML

SECY-02

TEMPLATE = SECY-028

Table 4-11. CERFA Acres Site Area.

2007A/L	10		o		
2107A			o		
2207A/L	9		o		
2407A/L	10		o		
2607A/L	10		o		
2707A/L	10		o		
4P	3078				o
9P	8				o
11p	10				o
25P	10				o
Areas north of the firing line					
20-X/PS/HR P/HS	130	o	o		
30-J/UHR P	50	o	o		
40-J/VHR P	40	o	o		
50-X/HR P	160	o	o		
60-X/HR P	40	o	o		
70-X/HR P	60	o	o		
80-X/HR P	60	o	o		
90-RD P R	1620	o	o		
100-X/HR P	210	o	o		
11 D-X/HR P	50	o	o		
12D-X/PR	20	o	o		
1Q-X	47696		o		
1 CERFA Disqualified Parcel (see text for definition)					
2 CERFA Parcel with Qualifier (see text for definition)					
3 CERFA Excluded Parcel (see text for definition)					
4 CERFA Parcel see text for definition					

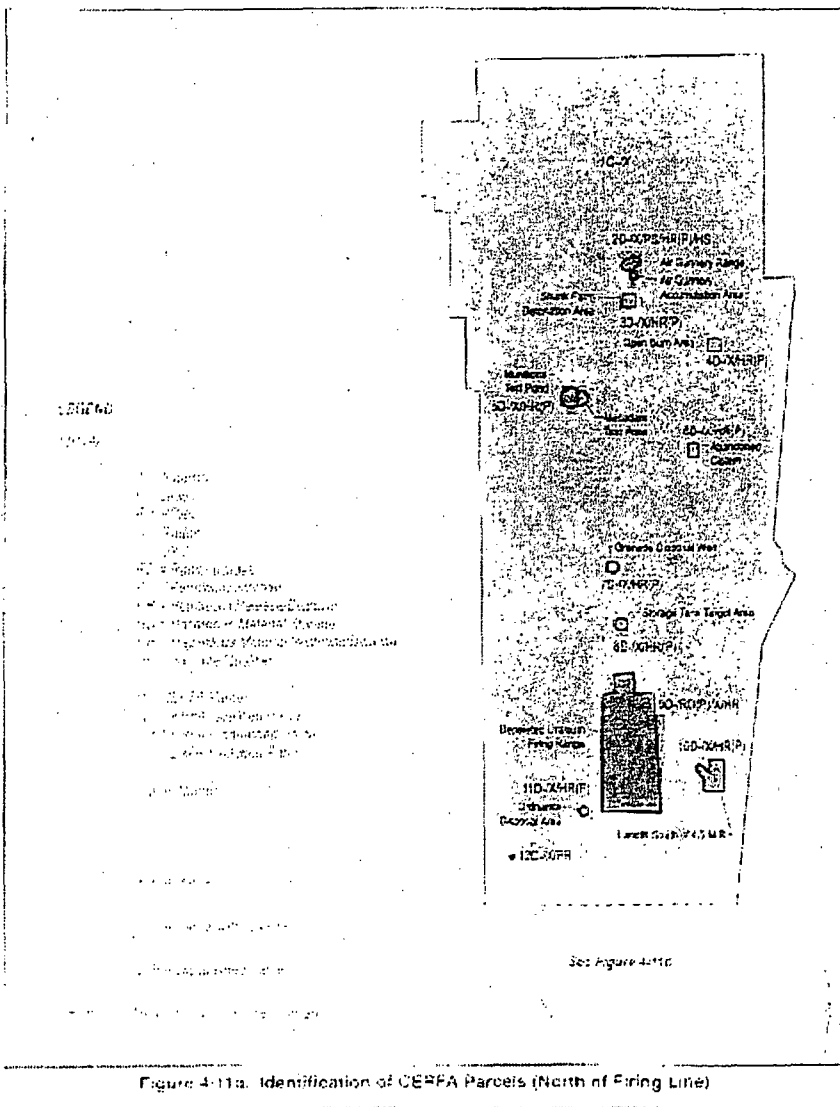
South Earth Technology Corporation, 1993

The CERFA process addresses potentially contaminated areas in terms of acres. Specific remedial actions are accomplished at smaller, more precisely defined project sites. Corrective actions are, or will be, occurring at numerous sites throughout the installation as part of the Installation Restoration Program. Individual projects are developed and funded according to various regulatory requirements and funding accounts.

In September 1992, a Draft Technical Plan was prepared to perform an RI/FS for 22 solid waste management units and three additional sites south of the firing line at the JPG. The Army conducted field work in two phases in order to maximize placement of monitoring wells. Field work was conducted in 1992 and 1993. The Final Draft RI Report was provided for review in July 1994. The Army plans to perform cleanup activities as required; however, the schedule for cleanup activities is not known. The overall objective of the Army is to provide, wherever possible, parcels that are environmentally suitable for disposal and that can be readily disposed and made available for reuse.

#### 4.14.3 Unexploded Ordnance

Due to historical practices at the JPG, unexploded ordnance (UXO) may be found anywhere north of the firing line. South of the firing line, UXO may be found in specific places; these are being investigated either because of known ordnance activities at a site or because there is some evidence of possible ordnance activities at a site. JPG officials estimate that approximately 23 million rounds have been fired into impacts areas north of the firing line since 1941. The types of munitions tested vary from 20 millimeter small caliber cannon to 2,000 pound bombs. It is estimated that as many as 1.5 million UXO items may exist within



The boundaries of the installation, in addition, another 70 miles, had proved to having the tracks of spotting airplanes may be present. Figure 4-12 provides information on the probable locations of UXO. The majority of these UXO items have not been recovered and remain a safety hazard in circumstances of unrefined areas (USACOM 1997).

A 1995 study analyzed methods and levels of UXO identification to provide cost for recovery and worst case estimates. Cost per acre to clear UXO was calculated using parameters of low, medium, and high UXO density, assuming clear, grassy, and tree covered lands. Additional adjustment factors took into account soil density of UXO, and vegetation differences. Cleanup costs of UXO to soil depths of 10 feet and 10 feet were calculated. At the end of both ground terms, the estimate ranged from \$100,000 (best case) to \$120,000 (worst case). Under the same

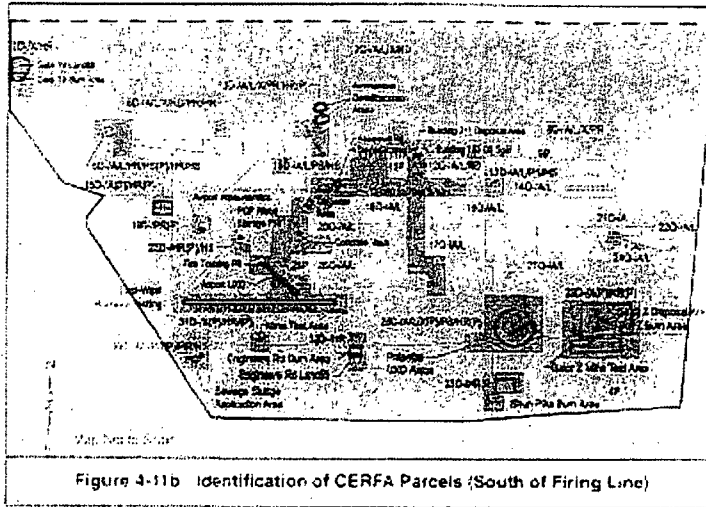


Figure 4-11b Identification of CERFA Parcels (South of Firing Line)

map, cleanup costs per acre, costs range from \$25,000 to \$25,000. The cleanup cost per acre for a 10-foot depth of UXO cleanup was estimated from \$11,000 (best case) to \$21,000 (worst case) per acre. The cleanup cost for a 10-foot depth of UXO cleanup was estimated at \$44,145 (best case) to \$81,145 (worst case) per acre. Cleanup cost ranges from \$100,000 (best case) to \$120,000 (worst case) per acre.

Table 4-12. UXO Cleanup Cost Estimates

Clearance Depth	Scenario	Bare Land Cost per Acre	Forested Land Cost per Acre
10 feet	Best Case	\$25,000	\$11,000
	Worst Case	\$25,000	\$21,000
	Average	\$29,762	\$44,145

Clearance Depth	Scenario	Bare Land Cost per Acre	Forested Land Cost per Acre
10'	Worst Case	\$58,977	\$87,624

**4.14.4 Depleted Uranium**

Since March 1984, more than 100,000 kilograms of depleted uranium (DU) projectiles have been fired into a three square mile DU impact area. Figure 4-13 identifies the location of the DU impact area. The presence of the DU gives rise to an encumbrance on disposal or transfer of the DU impact area portion of the JPG. Depleted uranium testing was conducted in accordance with Nuclear Regulatory Commission license number SUB 1435, approved in December 1983. This license permits testing of up to 250,000 kilograms in the DU testing area (105 millimeter and 120 millimeter tank ammunition), storage of DU in Buildings 610, 611, and M1, and storage of up to, 50 kilograms of DU for use as a collimator for a photographic x-ray machine. Semiannual cleanup activities have resulted in recovery of about 25 percent of the DU in the impact area. Although not required by license number SUB 1435, the JPG has taken actions to recover and dispose of spent DU rounds in order to extend the useful life of the impact area. A decommissioning plan is required to be submitted to the Nuclear Regulatory Commission to identify methodology for cleanup of DU contamination and closing out of the license.

In 1994, the Army's Test and Evaluation Command commissioned Los Alamos National Laboratory to study human health risks posed by DU at the JPG. The Laboratory's report, *Depleted Uranium Human Health Risk Assessment, Jefferson Proving Ground*, addresses risks associated with three scenarios: hunting or occasional use, resident farming (drinking water from uncontaminated off-site sources), and resident farming (use of on-site, presumed contaminated water). Both a steady-state model and the Department of Energy's Residual Radioactive Material Guidelines model were used to develop the risk assessment. In the hunting scenario, total dose to humans was modeled to be about 0.15 millirems per year. In the first farming scenario, total dose to human was modeled to be about 1.3 millirems per year. The final scenario, which assumed ingestion of food grown on the impact area and intake of water from a presumably contaminated aquifer, resulted in a modeled dose in years 10 through 100 of about 110 millirems per year, an amount that exceeds the exposure limit of 100 millirems per year (Los Alamos National Laboratory, 1994). To put these doses in context, it is noted that an average American's annual radiation exposure from all natural and man-made sources is 360 millirems; two packs of cigarettes daily results in exposure of about 8,000 millirems per year (polonium-210), porcelain dentures about 1,500 millirems per year (uranium), and each dental x-ray about 100 millirems (Department of Energy, 1994).

~~4.14.5~~

~~**Asbestos, Radon, Lead-based Paint, PCBs**~~

~~The JPG management of hazardous materials and waste extends not only to materials as they are used and subsequent remedial actions as required, but also asbestos, radon, leadbased paint, PCBs, and underground storage tanks (USTs). Information on these is presented below.~~

~~Asbestos. Management and disposal of asbestos at the JPG is performed in accordance with Occupational Safety and Health Administration regulations (29 CFR 1926.1101) and National Emission Standards for Hazardous Air Pollutants (40 CFR 61, Subpart M). Asbestos containing materials are present in several~~

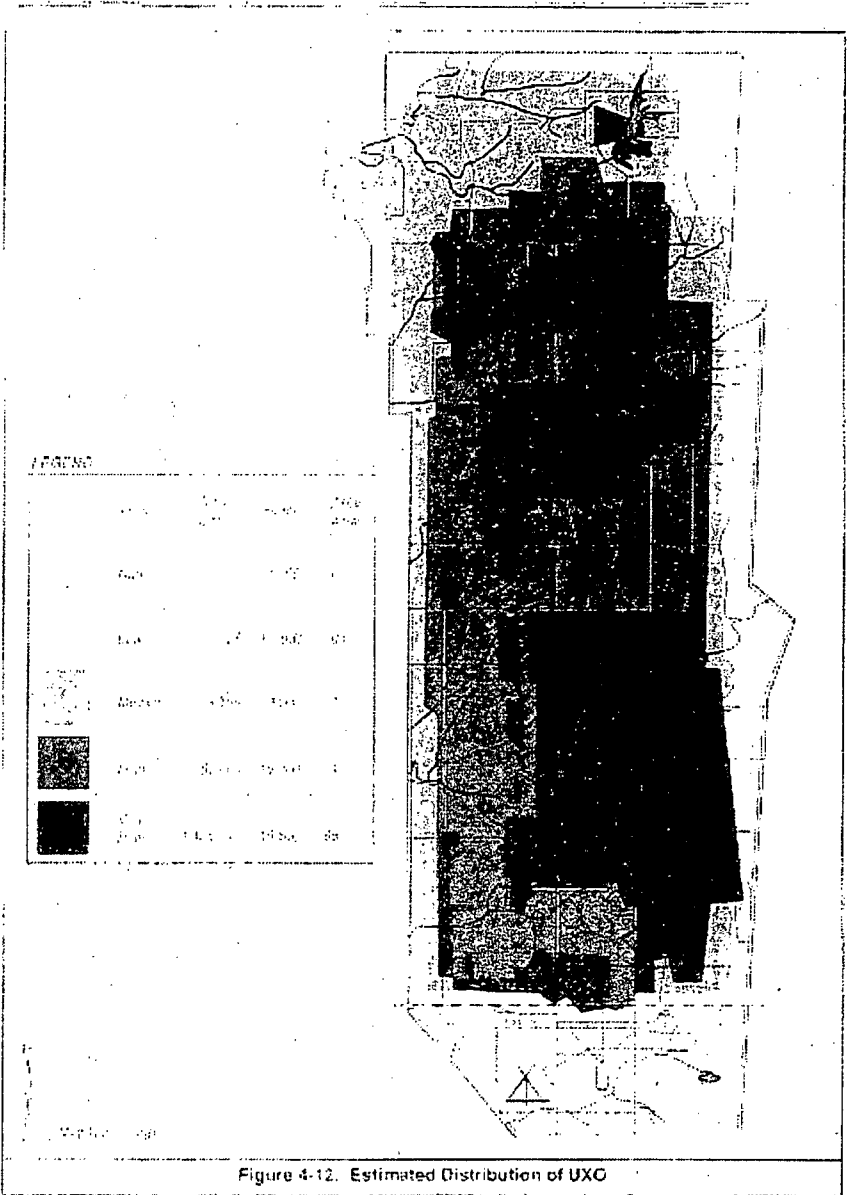


Figure 4-12. Estimated Distribution of UXO

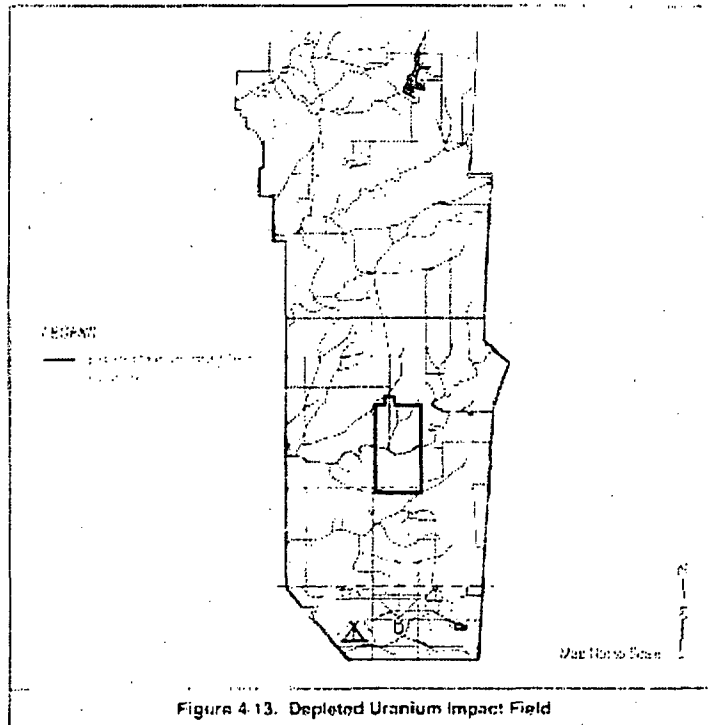


Figure 4-13. Depleted Uranium Impact Field

of the buildings at the JFCG facility. Construction materials include pipe insulation, roof shingles, and siding. A preliminary survey at the JFCG indicated that the total length of asbestos-insulated pipe was approximately 127,000 linear feet. There is also an estimated 25,500 square feet of asbestos shingles and siding. The piping, insulation, and shingles are generally in good, sound, and maintainable condition. However, many piping joints, joints, sleeves, etc. on many of the buildings have potential to become brittle (USAFHAMA 1992).

In March 1999, a comprehensive asbestos survey was completed which located, identified, and recommended appropriate abatement action for asbestos-containing materials. A total of 346 buildings were inspected. No buildings were found to require immediate abatement action. Minor asbestos-containing material abatement actions have occurred during operation and maintenance activities. Waste materials containing asbestos resulting from these actions were double-bagged and stored in Building 305 prior to disposal at the Gule 19 landfill.

Radon: Radon testing at the JFCG has been performed in family quarters, building basements, and shelter tunnels throughout the facility. Testing for radon was done by 7 day, 90 day, and 12 month tests. Test results indicate radon concentrations in