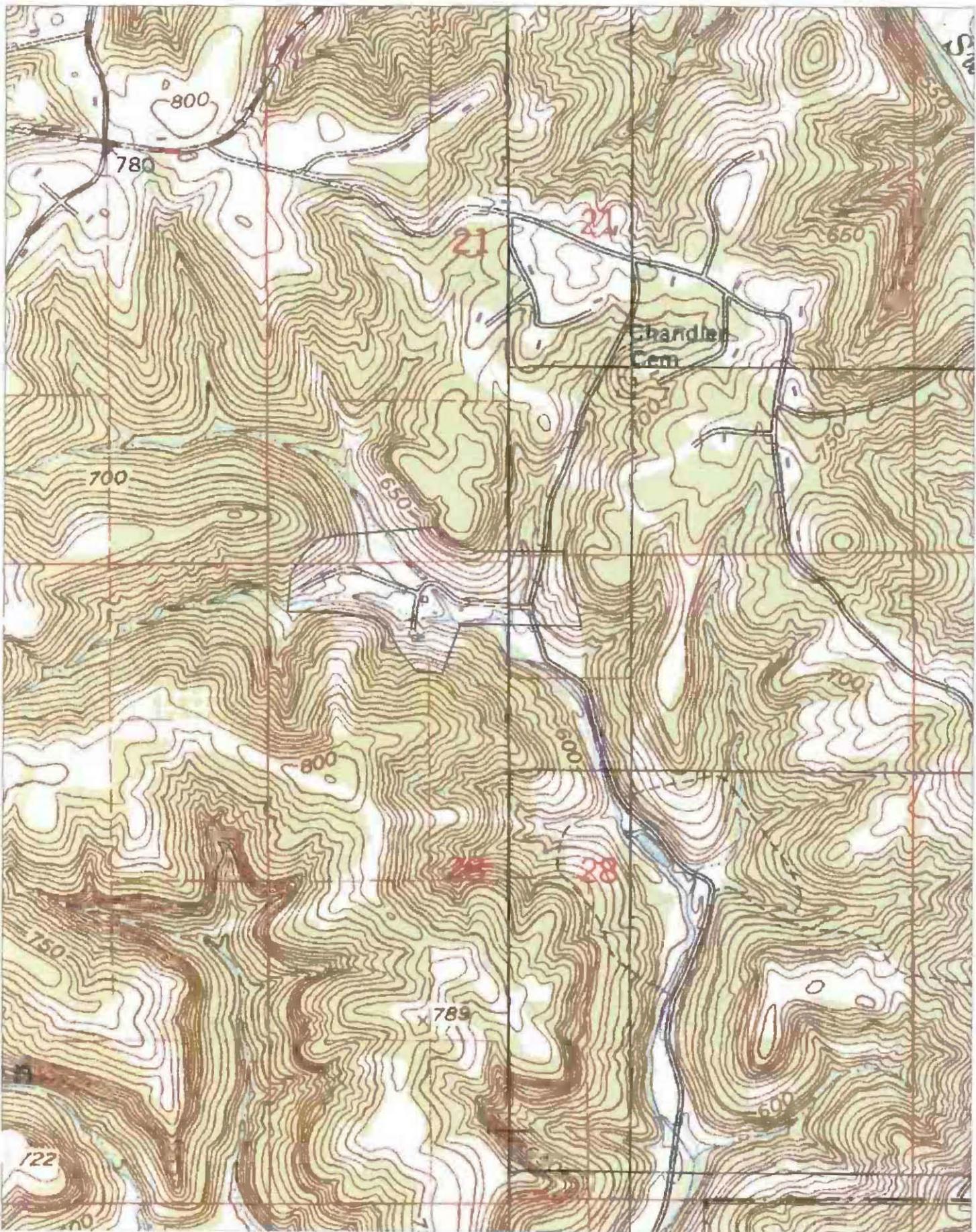


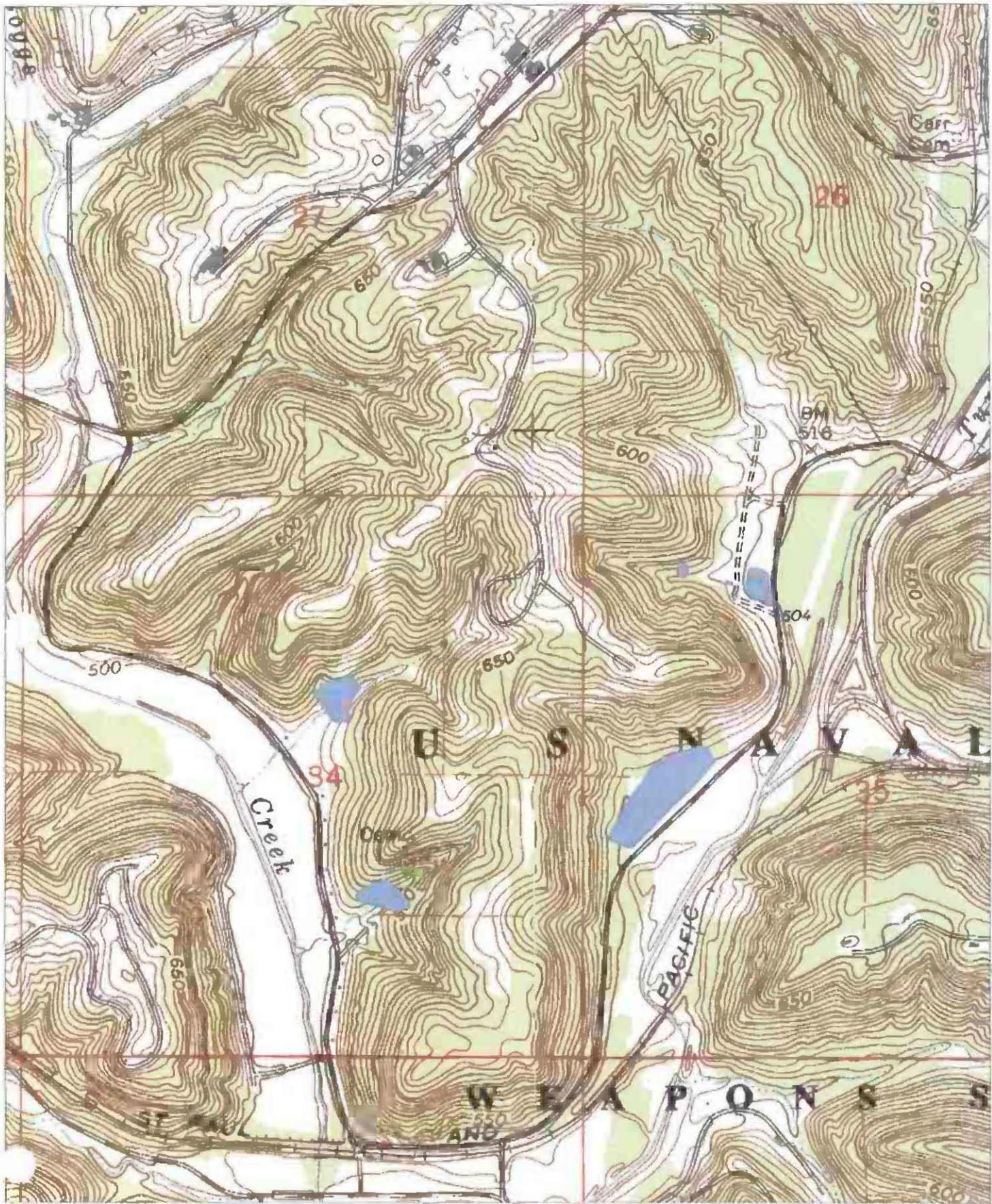
## **Exhibit V.A-1.2**

**ABG Topo; Surrounding Land Use Map**



**Exhibit V.A-1.3**

DR/ORR Topo; Surrounding Land Use Map



Coordinate System:  
Universal Transverse Mercator (UTM) Zone 10N  
NAD 83

- DEMOLITION Points
- Buildings
- DEMOLITION Range Boundary

DEMOLITION RANGE  
SITE TOPOGRAPHY AND SURROUNDING  
LANDUSE MAP

600 450 0 900  
Feet



**Exhibit V.A-1.4**

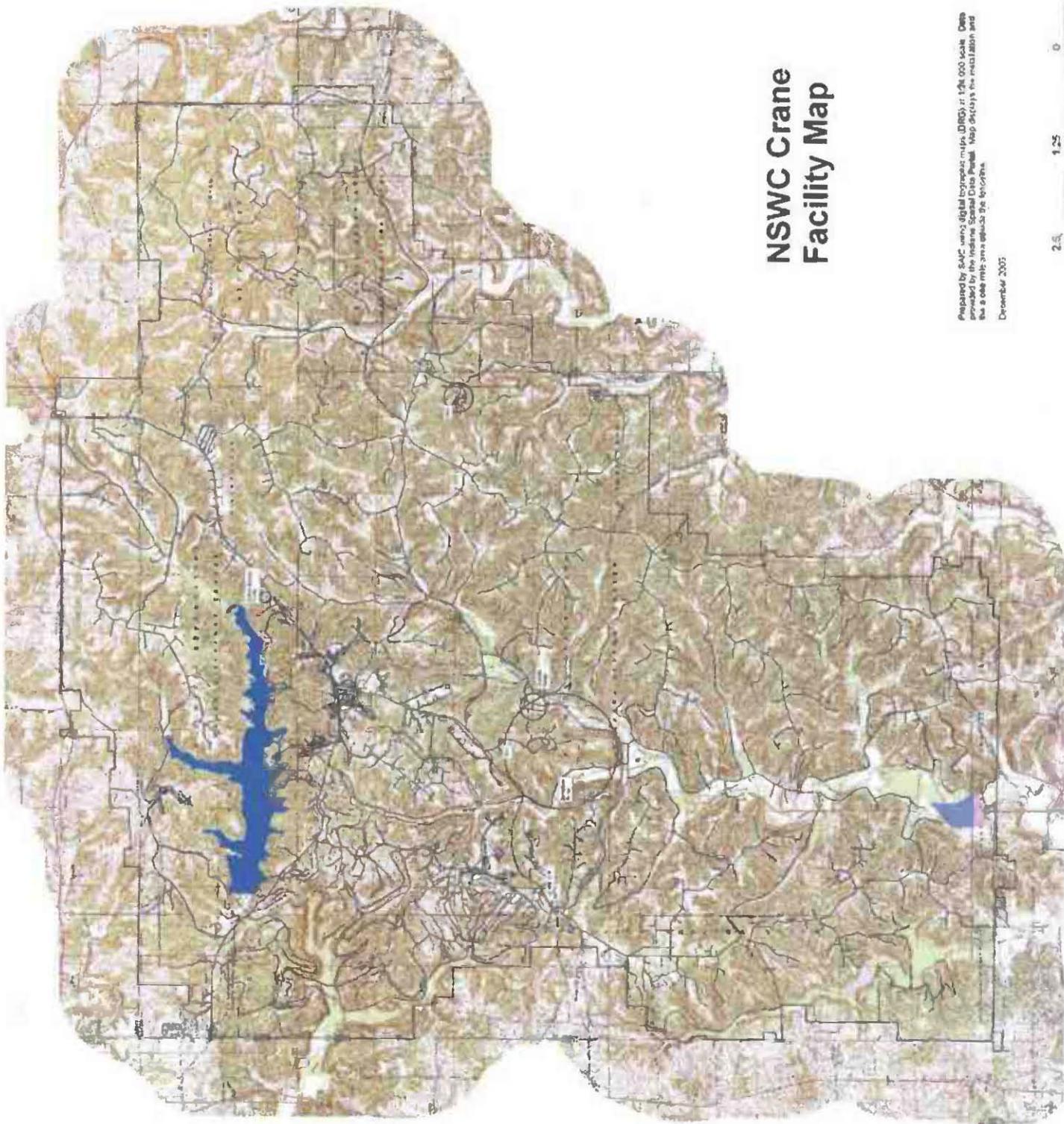
Crane Facility Topo; Legal Boundaries; Surface Waters  
Including Intermittent Streams; Surrounding Land Use;  
Access Control

# NSWC Crane Facility Map

Prepared by NSWC using digital topographic maps (DTMs) at 1:25,000 scale. Data provided by the Indiana Spatial Data Portal. Map displays the information and the date may not reflect the information.

December 2003

2.5 Miles  
0  
2.5  
1.25  
0



## **Exhibit V.A-2**

### **Ammunition Burning Grounds Leak Detection Equipment Information**

---

## INTRODUCTION

---

### SENSAPHONE MODEL 4100 CAPABILITIES

The Sensaphone model 4100 is an electronic watchman. It monitors specific environmental and operating conditions at your business facility or remote property. The model 4100 is equipped with sensors that automatically monitor the following conditions:

- ◆ AC electrical power--checks for power failure and records the total amount of time the power was off.
- ◆ Temperature--monitors temperature between -20° F and +150° F, checks to see if it exceeds or falls below user-programmed high and low limits, states actual temperature.
- ◆ High sound levels--such as smoke or burglar alarms.
- ◆ Battery--the condition of its battery back-up.

The Sensaphone model 4100 also has three digital alert inputs. Attachable dry contact sensors (see Appendix C) monitor conditions at the unit's location or other areas, such as:

- ◆ Intrusion into premises
- ◆ Water leaks or floods
- ◆ Temperature in remote areas

The use of each alert input can vary widely. One example is as follows:

- ◆ Input 1--Passive infrared sensor to detect intrusion
- ◆ Input 2--Humidistat to monitor relative humidity.
- ◆ Input 3--Magnetic reed switch for a door.

The Sensaphone also has an auxiliary temperature terminal. An auxiliary temperature probe can be attached to this terminal to monitor temperature in a second location. This second temperature will not

**THE MODEL 4100 SPECIFICATIONS AND STATISTICS****SIZE**

10 $\frac{1}{4}$  inches high, 10 $\frac{1}{4}$  inches wide, 4 inches deep.

**SHIPPING WEIGHT**

14 pounds

**BATTERY SYSTEM**

One 12 volt 1.9 Amp-hour sealed rechargeable battery with integral charger is included. The battery back-up time is approximately 8 - 10 hours with the AC power off. The battery will automatically be recharged when the AC power is restored, but it will take 48 hours for a full charge. Pressing OFF disconnects all functions, but the battery will still be drained if AC power is removed. Battery service should be performed by qualified personnel only.

**AC CONNECTION**

UL-listed Class 2 wall transformer with a six-foot cord. Converts 110 VAC, 60 Hz, 10 Watt input to 12 VAC, 60 Hz, 500 mA output.

**TELEPHONE CONNECTION**

Standard modular connector (RJ11C) with a six-foot cord. Works with standard systems that have pulse or tone dialing.

**OPERATING CONDITIONS**

The Sensaphone model 4100 should not be operated in temperatures less than +40° F nor more than +120° F.

Do not use the model 4100 in an environment where it is exposed to fumes or corrosive vapors. They might damage the unit, causing it to malfunction, and void the warranty.

**POWER SURGE PROTECTION**

Your Sensaphone Model 4100 may be affected by power surges through the telephone line or the 110 VAC power supply. Though the 4100 has built-in surge protection, we recommend that you obtain additional protection for the 4100, and for any electronic equipment which is attached to your power supply or telephone lines. This is especially important if you are in lighting prone

discontinued until the problem has been corrected. We suggest that you do the following:

- 1) Refer to Appendices F, MAINTENANCE, and G, TROUBLESHOOTING.
- 2) Carefully write down your observations of the model 4100's malfunctioning.
- 3) Call Phonetics' Technical Service at 1-215-558-2700 if any instructions are not clear or if you have any questions.

If your Sensaphone is programmed to dial to an emergency number (i.e. the police), you must do the following when testing:

- 1) Remain on the line and briefly explain to the dispatcher the reason for the call before hanging up.
- 2) Perform such activities in the off-peak hours, such as early morning or late evening.

**PART 15** - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# **POLLULERT® FLUID DETECTION SYSTEMS**

## **INSTALLATION AND OPERATION INSTRUCTIONS**

### **FOR POLLULERT CONTROL CENTER FD102N**

Document Number
961-40480-01
Revision Level
05

#### **READ BEFORE STARTING**

#### **SEQUENCE OF INSTALLATION**

- Step 1.** Read in its entirety Sections 1 and 2. Know and understand the operation of the unit.
- Step 2.** Select appropriate probe manual for operation and installation procedures of probes.
- Step 3.** Proceed to Section 3 for start-up & operation procedures.

**NOTE:** This Manual is to be retained with the control center. Additional copies may be obtained by calling Pollulert. See Appendix for phone numbers

The information contained herein is believed to be correct, but no guarantee or warranty with respect to accuracy, completeness or results is implied and no liability is assumed. Nothing herein is to be construed as advising or authorizing practice of any invention covered by existing patents owned by Emhart Industries, Inc. or others without license from the owners thereof. In the interest of improved design and performance, Emhart Industries, Inc. reserves the rights to make changes in any specification, data, or material contained herein.

Before starting installation, the following planning must be completed:

- Read and thoroughly understand this manual.
- Prepare all site layouts and wiring drawings.
- Obtain necessary building permits.
- Specify installation to conform to all local codes, ordinances and practices.

**NOTE: COMPLIANCE WITH NEC AND LOCAL CODES, ORDINANCES AND PRACTICES IS THE RESPONSIBILITY OF INSTALLERS AND USERS OF THE EQUIPMENT.**

**NOTE: IF CABLE OTHER THAN POLLULERT IS USED, THE PRODUCT WARRANTY IS NULL AND VOID.**

## SECTION 2

# Control Unit—FD102N

### 2.1 GENERAL DESCRIPTION

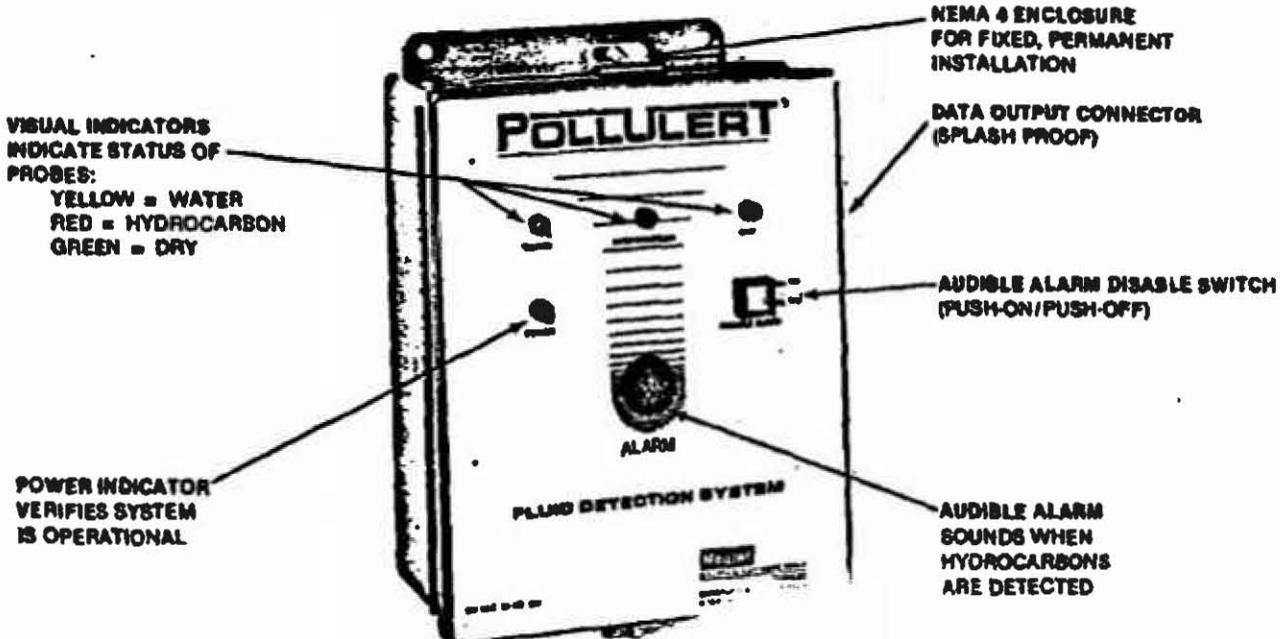
The Pollulert® fluid detection control center is an electronic monitoring system that works on the principle of conduction (liquids) and adsorption (vapors). Typical water (excluding de-ionized water) is a conductive, or polar, fluid. Hydrocarbons are non-conductive, or non-polar substances. The probe circuitry can differentiate between polar or non-polar fluids and provide the appropriate alarms and contact closures at the control center when a non-polar fluid is detected.

For vapor detection, an adsorption sensitive resistor with extremely low power requirements (cold sensor) is utilized. As with the liquid hydrocarbon detection probes, the vapor

probes can also differentiate between dry and water, and send the proper dry, water or hydrocarbon (vapor) signals back to the control center.

The probe system uses the fact that hydrocarbons float on water. The probe sensors monitor the fluid conductivity at the air-water interface for a specific probe location. Any hydrocarbon present will displace the water at the air-water interface, causing the probe sensors to be immersed in the hydrocarbon. The lack of conductivity in the non-polar hydrocarbon will cause the detector to alarm accordingly.

### 2.2 FEATURES





DEPARTMENT OF THE NAVY  
CRANE DIVISION  
NAVAL SURFACE WARFARE CENTER  
300 HIGHWAY 361  
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:

5090/H1.4.4  
Ser 0592/5353  
30 NOV 2005

MEMORANDUM

From: 0592  
To: 084

Subj: LEAK DETECTION SYSTEM ALARM RESPONSE

Ref: (a) 095 memorandum 5090/095 19 Nov 93

1. The calling procedure for the automated dialer installed at the Ammunition Burning Grounds (ABG) as part of the underground storage-tank leak detection system has recently been revised from that documented by reference.

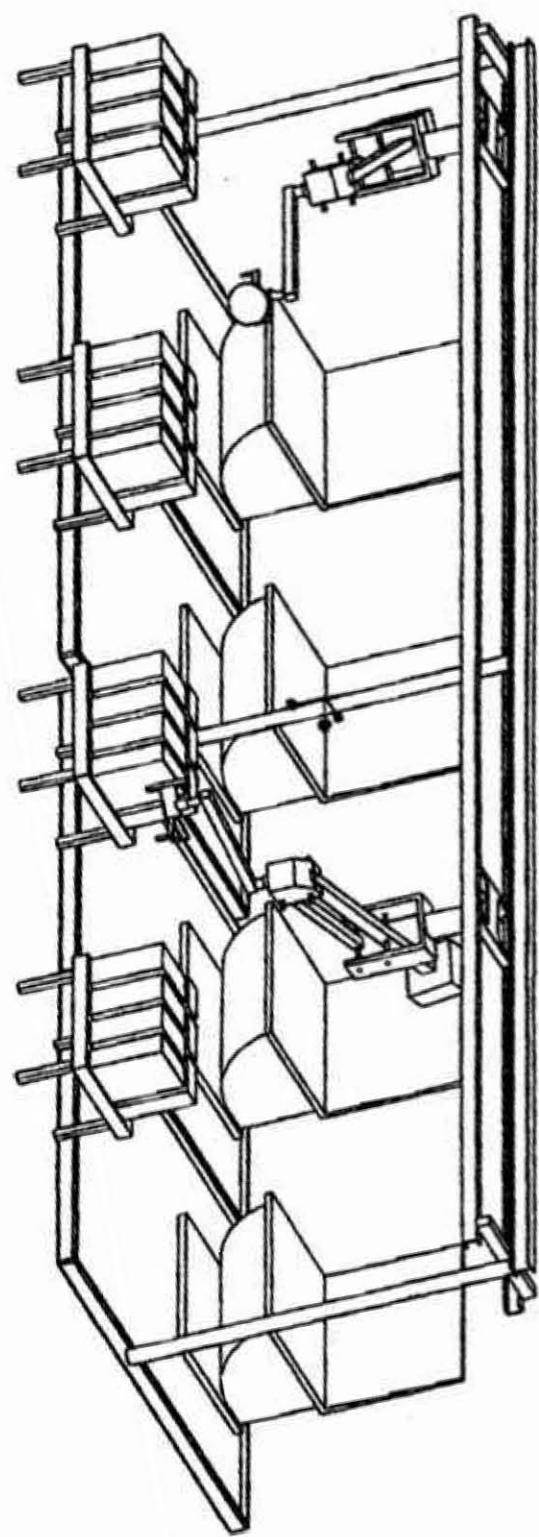
2. In the event of a leak from the tanks at the ABG (sludge dewatering units), the dialer is programmed to call extensions 1470 (ABG), 3114 (Environmental Protection Department), 3300 (Security Department), and 1132 (Environmental Protection Department). The dialer will identify itself with the following message: "Hello. This is telephone number 854-7341. Alert condition three exists." This message will be repeated three more times. Upon answering the phone, the dialer could be at any point in its four repetitions. After the fourth repetition, the dialer will say "Indicate you have received warning message" and then it will pause for five seconds.

a. During those five seconds of silence, you may acknowledge receipt of the alarm by pressing 5,5,5 on any touch-tone telephone. This will stop the dial-out procedure. When the dialer receives the touch-tone 5,5,5, it will respond by saying "Warning message received by telephone number 854-3300" and will disconnect from the phone line. If the unit does not receive these touch-tones, it will continue by stating "Dial telephone number 854-7341 within thirty seconds."

b. If you did not dial 5,5,5, then you must call the unit back to acknowledge an alarm and prevent the dialer from continuing to dial out. The first ring of your call-back must occur within 60 seconds after the dialer completes its alarm

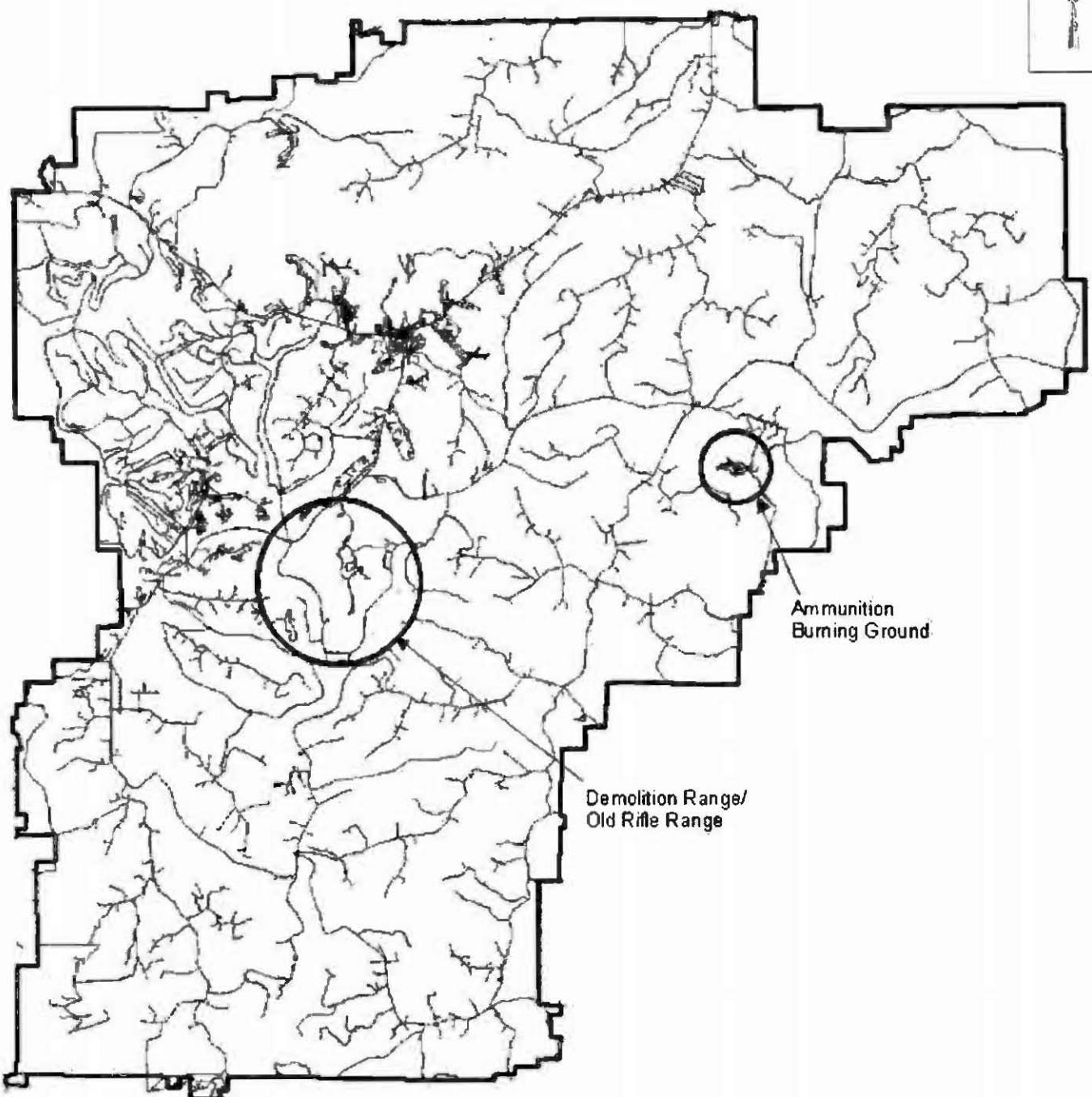
## **Exhibit V.A-3**

**ABG Propellant Loading Station**



**Exhibit V.B-1**

**Crane Facility Map Showing the Locations  
of ABG, DR/ORR**



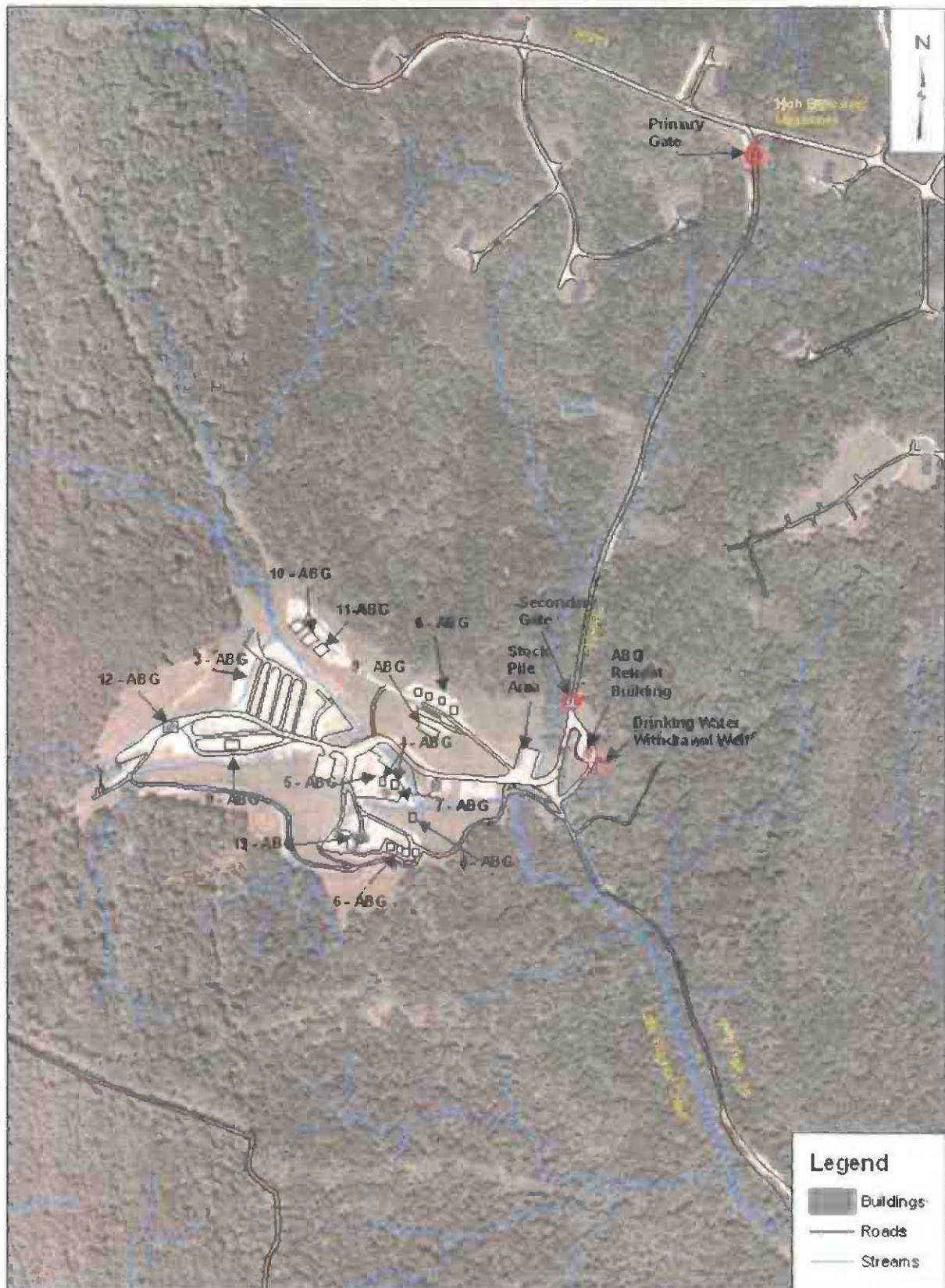
Coordinate System:  
Universal Transverse Mercator (UTM)  
Zone 16: NAD 83

**NSA Crane Facility Map  
Naval Support Activity Crane  
Crane, Indiana**

0 1 2 4 Miles

## **Exhibit V.B-2**

**ABG Legal boundaries; access control;  
injection/withdrawal wells; building structures within  
1000 ft; operational units within facility locations**



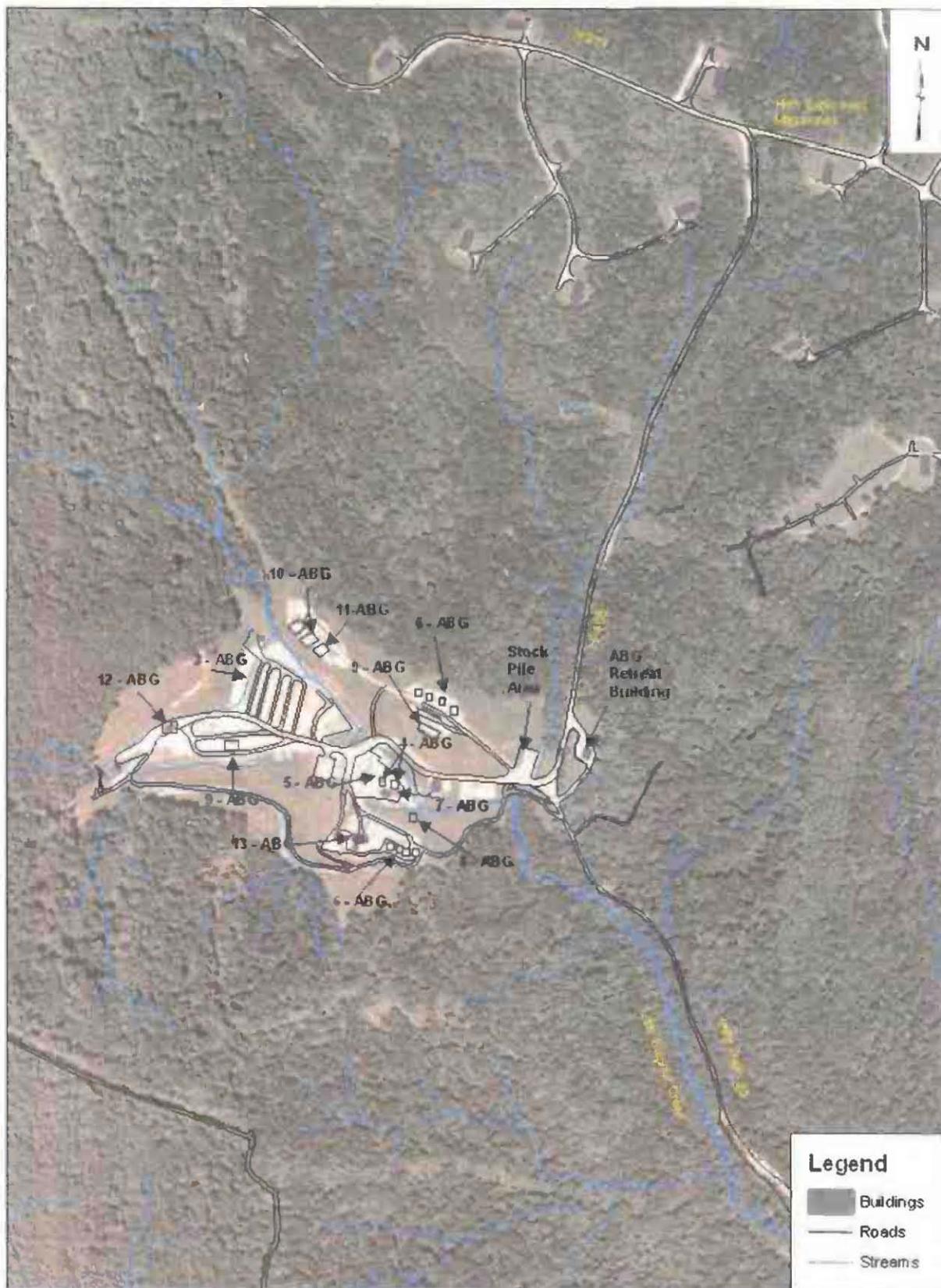
FACILITY LAYOUT  
AMMUNITION BURNING GROUND  
NAVAL SUPPORT ACTIVITY  
CRANE, INDIANA

Coordinate System:  
Universal Transverse Mercator Zone 16  
NAD 83

0 325 650 1,000  
Feet

**Exhibit V.B-2(a)**

ABG Surface waters including intermittent streams;  
operational units within facility locations



TREATMENT UNITS AND FACILITIES  
AMMUNITION BURNING GROUND  
NAVAL SUPPORT ACTIVITY  
CRANE, INDIANA

Coordinate System:  
Universal Transverse Mercator (UTM) Zone 16  
NAD 83

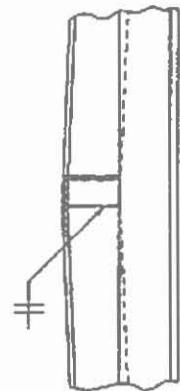
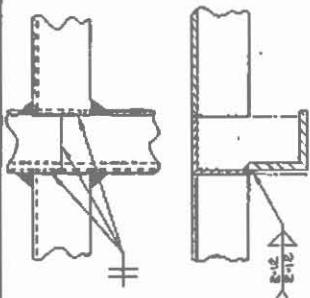
0 315 630 1,260  
Feet

### **Exhibit V.B-3**

**ABG/ORR Burn Pans, Units 3a, 3b, 3c, 4, 5, 6,  
7, 8-ABG and 3a-ORR**

REVISIONS		DATE	SCALE
1/1A	DESCRIPTION		
<p>Aluminum I-beam coil, 5000'-W. OD 10-1/2", ISGT - CUT TO FIT AT ASYM. TRIM TO LENGTH AND SHARP EDGES. SOURCE: 1 MAIN LINE TRANSMISSION SPURTS WEIGHT 95 LBS. EACH COILS 1000' LONG, 1000' DIA.</p> <p>(3) USE HALF-BEAMING POOR GRAVITY TO STRETCH ROD (P-1) OD 10-1/2", ISGT AT ASYM. SPACE AT NO O.C. OR AS REACTS, POOR SHEAR FIT.</p> <p>(4) WALL CIRCLE (BEAM COKE PULL) + 1/8" CLEARANCE 1/2 PROJECTION - PAINT NO. 12521 - OR BLACK - 4 ROUNDS SOURCE: 1 MANUFACTURER: CARE P.O. BOX 4988 CHICAGO, ILL. 60645</p> <p>NOTE: ACCESSIBLE AFTER ALUMINUM GROUP (P-2) IS PULLED TO PLATE (P-1). LOCATE VEHICLES APPROXIMATELY 10' FROM ROAD EDGE.</p>			
<input type="checkbox"/> DRAWINGS <input type="checkbox"/> SPECIFICATIONS <input type="checkbox"/> PARTS LIST <input type="checkbox"/> NARRATIVE <input type="checkbox"/> OTHER		1	2
EXPLOSIVE/PERCURIANT BURNING FLUIDS USED AT AMMUNITION SURVEYING, RESEARCH			
CRANE ARMY AMMUNITION ACTIVITY, CHAMPA, WIS. DRAWN BY: [Signature] DATE: [Signature]			
AS BUILT DRAWN BY: [Signature]		1	2
SCALE: 1/8" = 10' DRAWN BY: [Signature]			

REVISIONS \_\_\_\_\_ DATE \_\_\_\_\_



DETAIL 15'  
SCALE 1:16

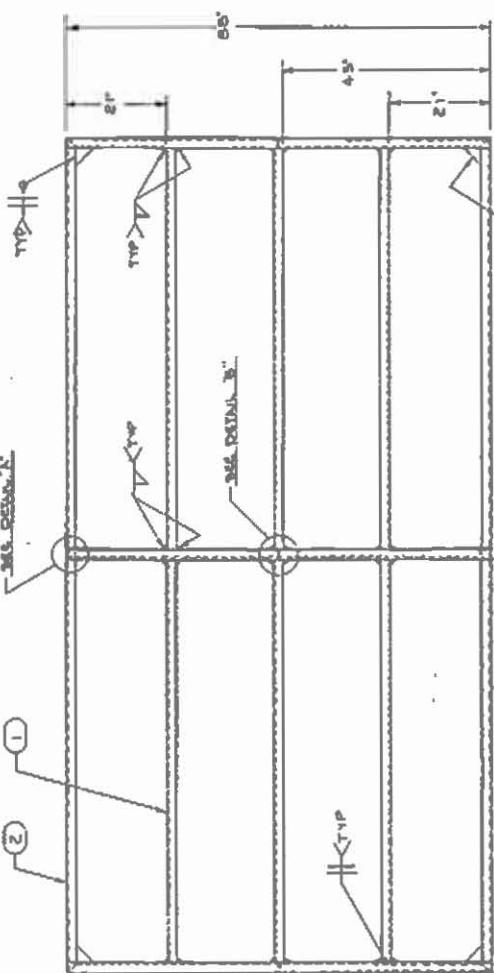
SEE DETAIL 1

SEE DETAIL 2

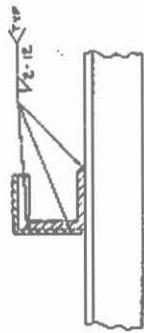
SEE DETAIL 3

SEE DETAIL 4

SEE DETAIL 5

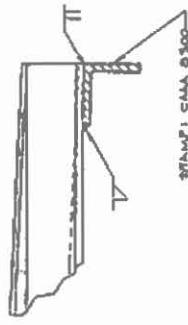


DETAIL 15'  
SCALE 1:16



DETAIL A  
SCALE 1:12

1 FRAME  
MATERIAL: ALUM.  
SCALE: 1-16'



DETAIL B  
SCALE 1:500

ELEVATION / PROJECTION DRAWINGS		SECTION DRAWINGS	
FRONT	TOP	FRONT	TOP
REAR	RIGHT	FRONT	TOP
LEFT	FRONT	FRONT	FRONT
FRONT	FRONT	FRONT	FRONT

1. Elevation Drawing  
2. Top Drawing  
3. Right Drawing  
4. Left Drawing  
5. Front Drawing

ELEVATION / PROJECTION DRAWINGS		SECTION DRAWINGS	
FRONT	TOP	FRONT	TOP
REAR	RIGHT	FRONT	TOP
LEFT	FRONT	FRONT	FRONT
FRONT	FRONT	FRONT	FRONT

1. Elevation Drawing  
2. Top Drawing  
3. Right Drawing  
4. Left Drawing  
5. Front Drawing

NO.	DESCRIPTION	QTY	MATERIAL
1	2" x 2" x 1/2" Lbs. 4	4	CORR. ST.
2	2" x 2" x 1/2" Lbs. 4	2	CORR. ST.
3	2" x 2" x 1/2" Lbs. 4	2	CORR. ST.
4	2" x 2" x 1/2" Lbs. 4	4	CORR. ST.
5	5" x 4" x 1/2" GASKET PLATE	4	
6	2" x 2" x 1/2" x 60" Lbs. 8	8	

REVISIONS		DATE
LN#	DESCRIPTION	

**NOTE:** BOTTOM OF BOX MAY BE MADE TOGETHER.  
ALL WELDS WILL BE CONTINUOUS, THIS WILL  
BE DONE TO PREVENT EXPLOSIVE FROM EXPLODING  
ITSELF IN THE JOINTS.

NO	DESCRIPTION	QTY	WATL
1	7' 0 1/2"	2	UAB@Bq
2	14 X 1 1/2"	2	STL
3	10 1/2 X 7 1/2"	1	
4	3 1/2 X 4 1/2"	4	
5	5" X 8" X 1/2"	4	

STAMP: CHAN 8500

SECTION NO.	SIZE	UNITS	SCALE
1	1/2 X 1/2"	INCHES	1" = 1'
2	1/2 X 1/2"	INCHES	1" = 1'
3	1/2 X 1/2"	INCHES	1" = 1'

STRONG / IMPORTANT BURNING PAN

CRANE ARMY AMMUNITION ACTIVITY, CLEVELAND, OHIO  
BUCC - EBPV  
DATE: 07/15/67  
DRAWN BY: J. S. STONE  
DESIGNED BY: J. S. STONE  
CHECKED BY: J. S. STONE  
APPROVED BY: J. S. STONE  
SHEET NO. 1 OF 1  
SCALE: 1" = 1'  
DATE: 07/15/67  
PAGE NO. 1 OF 1  
SCALE: 1" = 1'

DIB 8500  
1 PAN  
1 ART. NOTE  
1 SHEET  
1 SIGHT  
1 QTY  
1 DATE  
1 PAGE  
1 SCALE  
1 REV  
1 DIB 8500  
1 PAN  
1 ART. NOTE  
1 SHEET  
1 SIGHT  
1 QTY  
1 DATE  
1 PAGE  
1 SCALE  
1 REV

**Exhibit V.B-4**

**ABG Primer Pit, Unit 12-ABG**

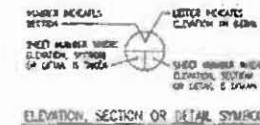
# DEMOLITION OF EXISTING PRIMER PITS AND CONSTRUCTION OF NEW PRIMER PITS AT BUILDING 2126 AT NAVAL SURFACE WARFARE CENTER CRANE DIVISION CRANE, INDIANA



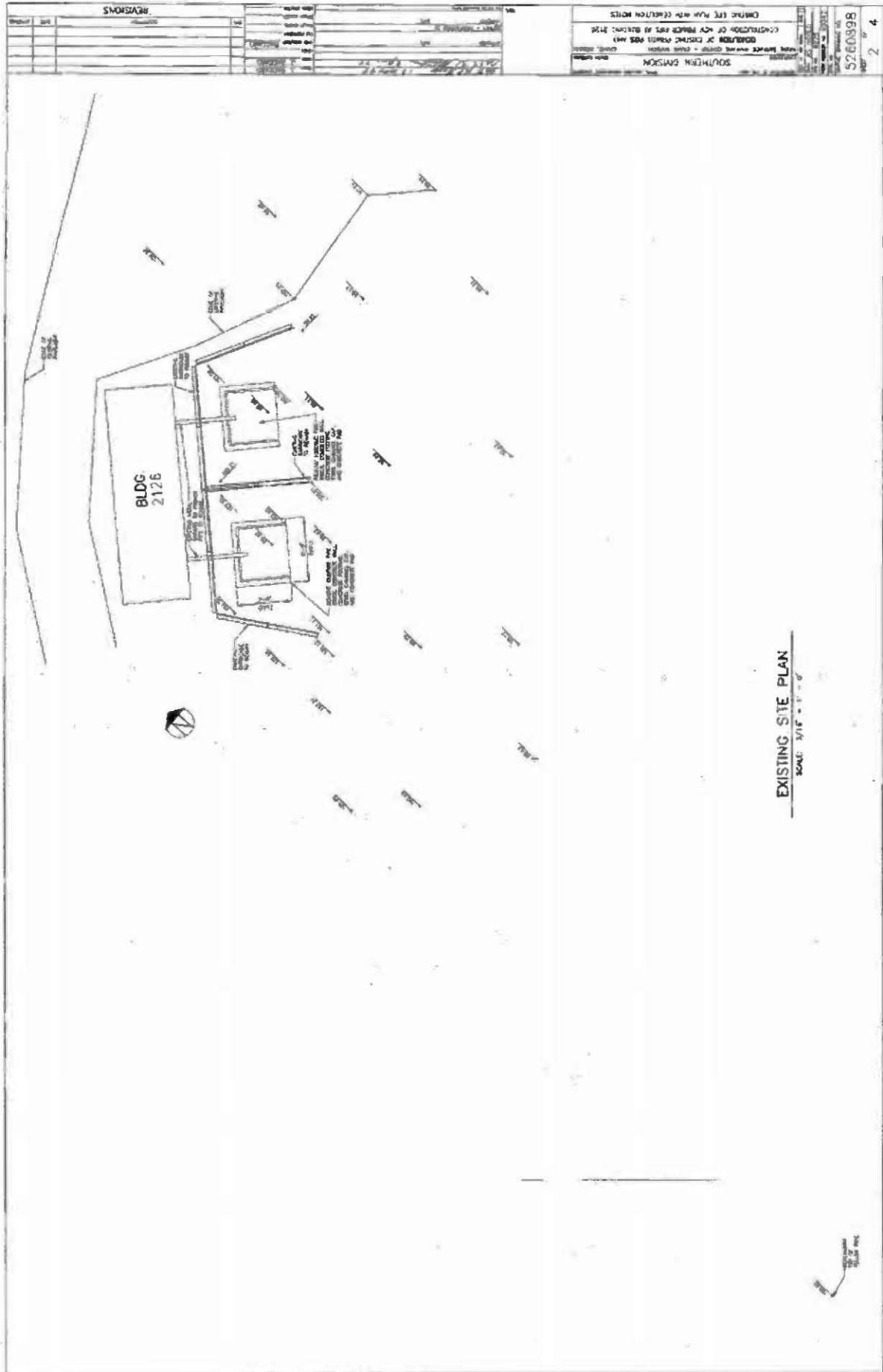
## ABBREVIATIONS

●	BT
●	TOP OF SUMP
●	BUCKET
●	ON GRADE
●	FLAT
●	WELL

INDEX	
SHEET	NAME
1	GENERAL
2	DEMOLITION PLAN WITH DEMOLITION NOTES
3	HIGH SITE PLAN
4	DETAIL AND SECTION



DEMOLITION OF EXISTING PRIMER PITS AND CONSTRUCTION OF NEW PRIMER PITS AT BUILDING 2126 AT NAVAL SURFACE WARFARE CENTER CRANE DIVISION CRANE, INDIANA
PERIOD OF WORK Date from 10/00 to 10/01
Date to 10/01
FOR CONSTRUCTION CONTRACT
FOR DEMOLITION CONTRACT
TO: 5260897
14



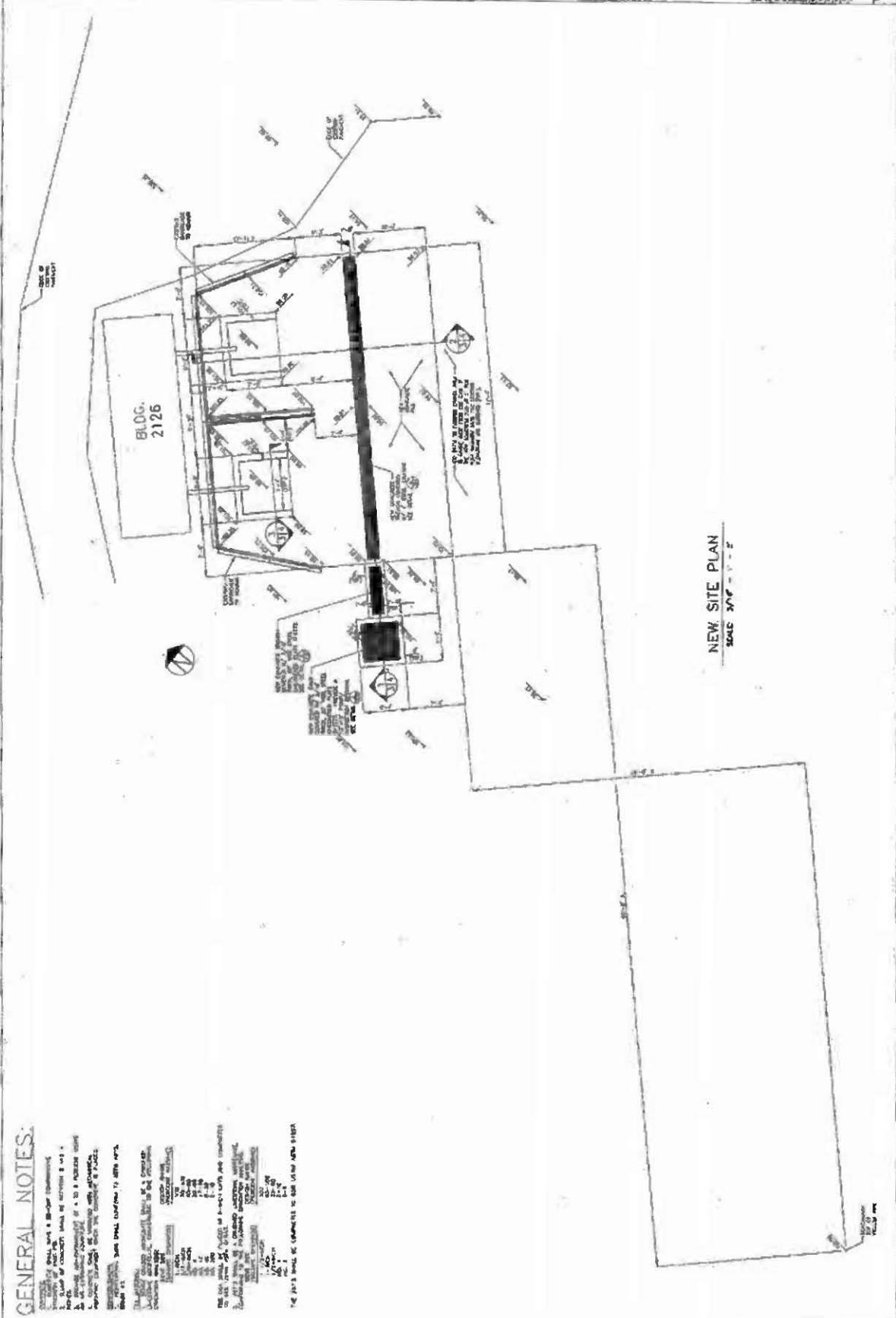
#### GENERAL NOTES.

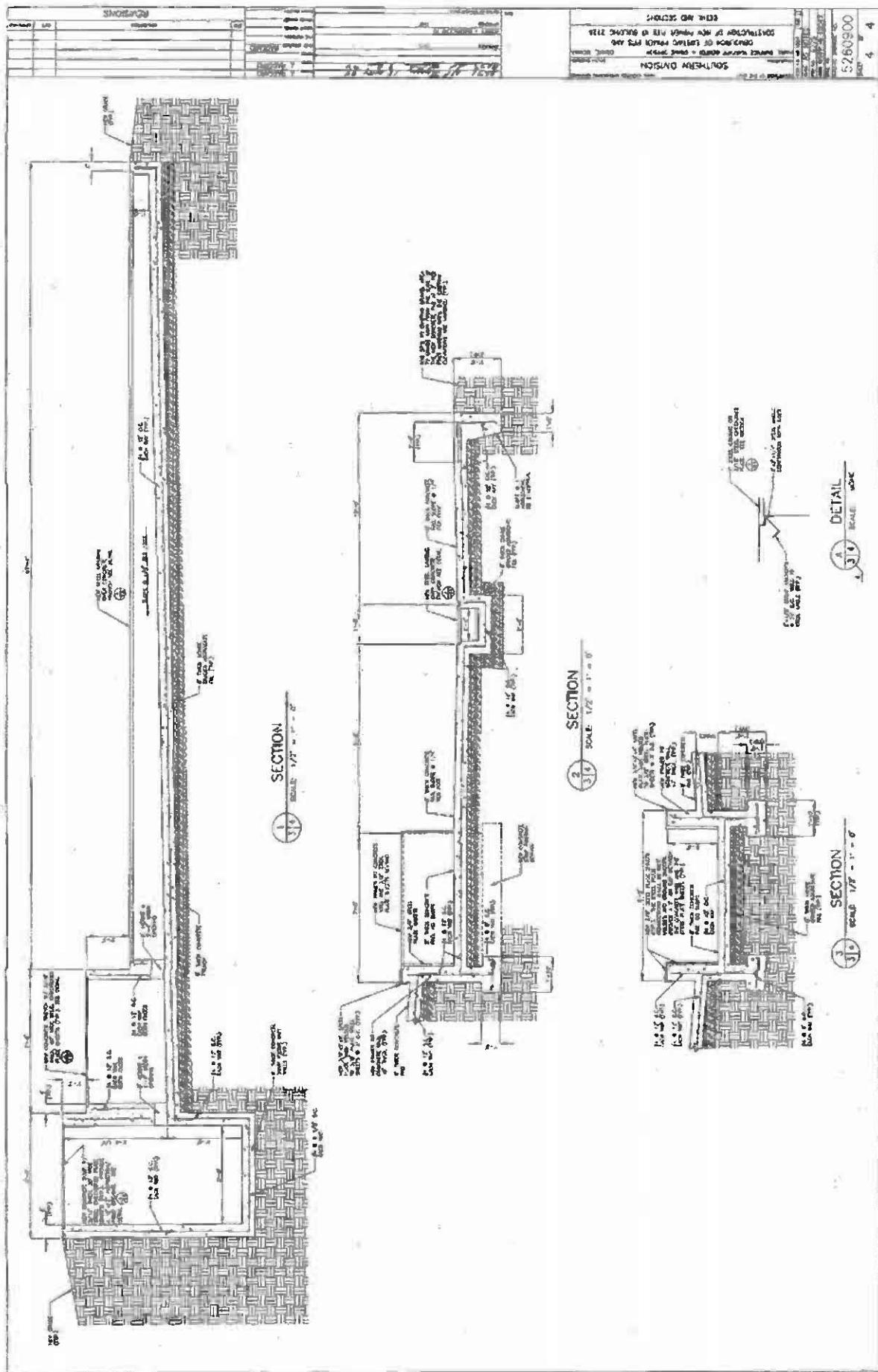
卷之三

卷之三

NEW SITE PLAN

SEARCHED		INDEXED		SERIALIZED		FILED	
<i>[Large redacted area]</i>							
SEARCHED INDEXED SERIALIZED FILED [Signature]							





**Exhibit V.B-5**

**ABG Incendiary Cage, Unit 13-ABG**

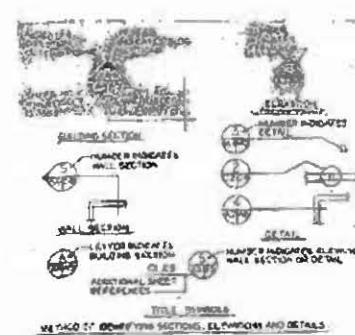
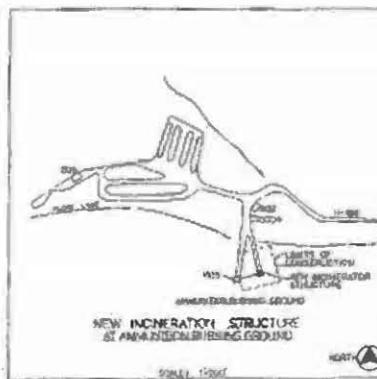
# NEW INCINERATION STRUCTURE AT AMMUNITION BURNING GROUND

## NAVAL WEAPONS SUPPORT CENTER

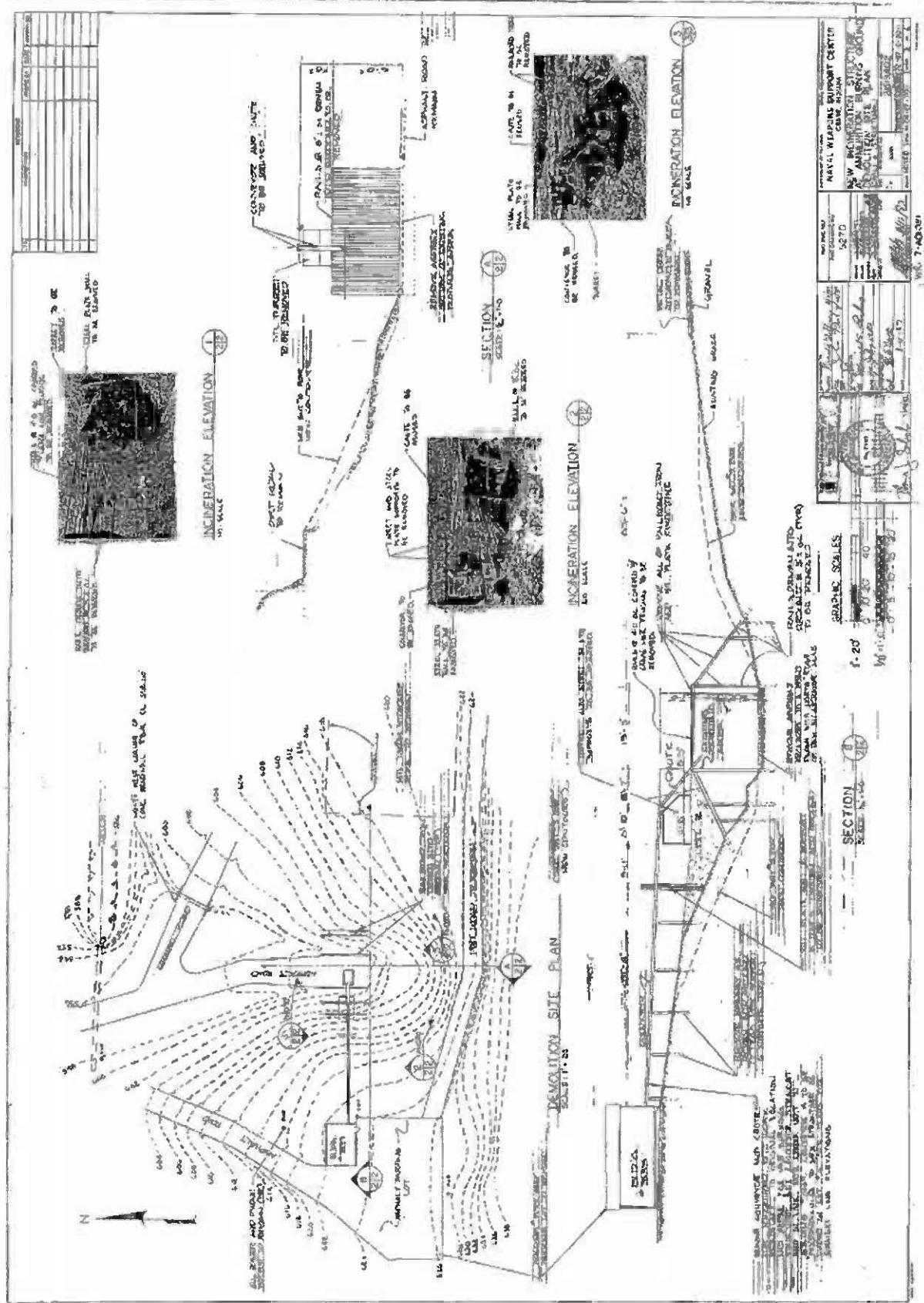
### CRANE, INDIANA

CONSTRUCTION CONTRACT NO. N62472-87-C-7011

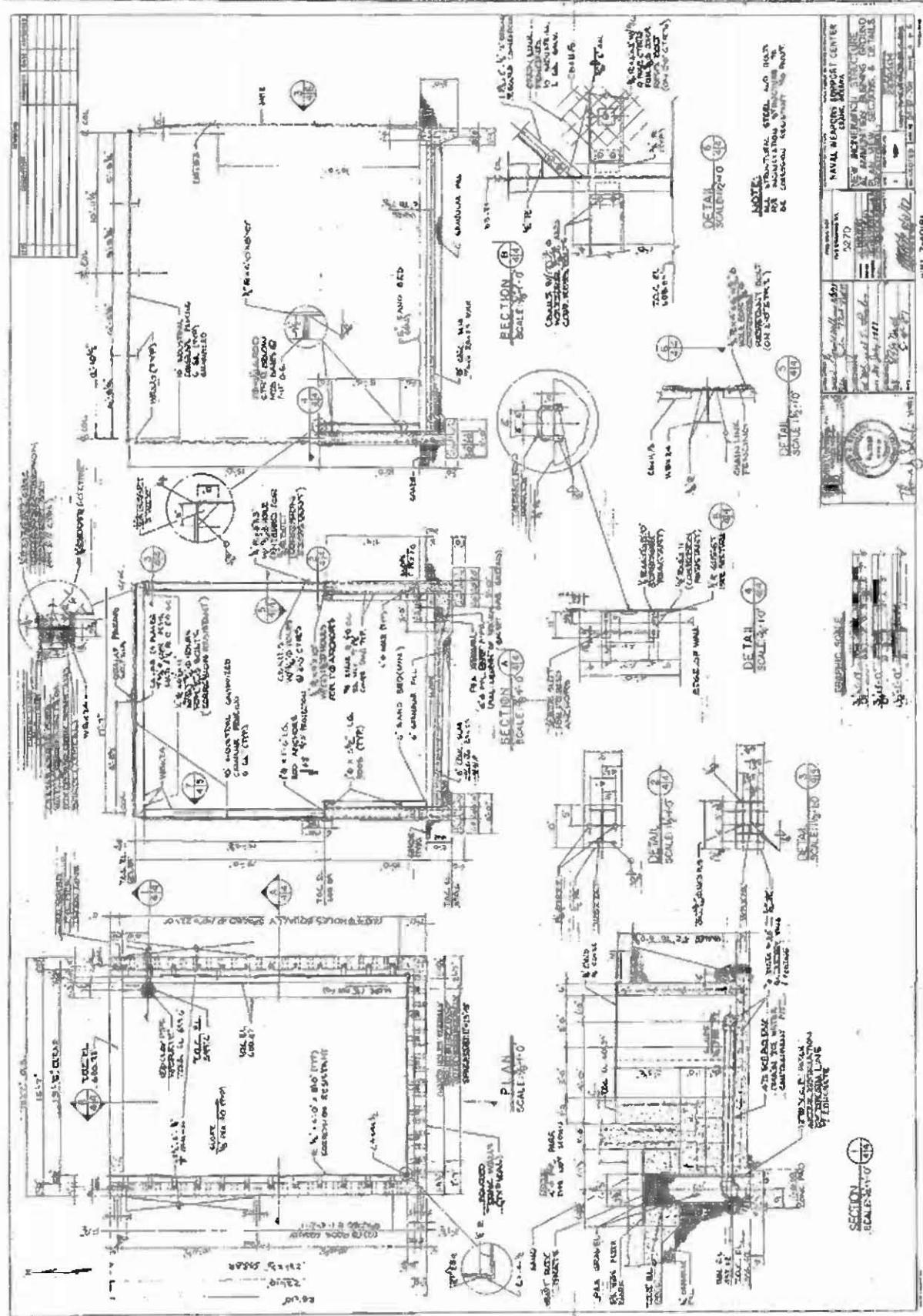
ITEM NUMBER	ITEM NAME	DESCRIPTION
100001	PLT. 1 AC 1	WATER SYSTEM
100002	PLT. 1 AC 2	CH22 - Incinerator 1000 cu. ft.
100003	PLT. 1 AC 3	CH22 - Incinerator 1000 cu. ft.
100004	PLT. 1 AC 4	PLATE - Top Arms, Reheated
100005	PLT. 2 AC 1	PLATE - Bottom Arms, Reheated
100006	PLT. 2 AC 2	PLATE - Bottom Arms, Reheated
100007	PLT. 2 AC 3	PLATE - Bottom Arms, Reheated
100008	PLT. 2 AC 4	PLATE - Bottom Arms, Reheated



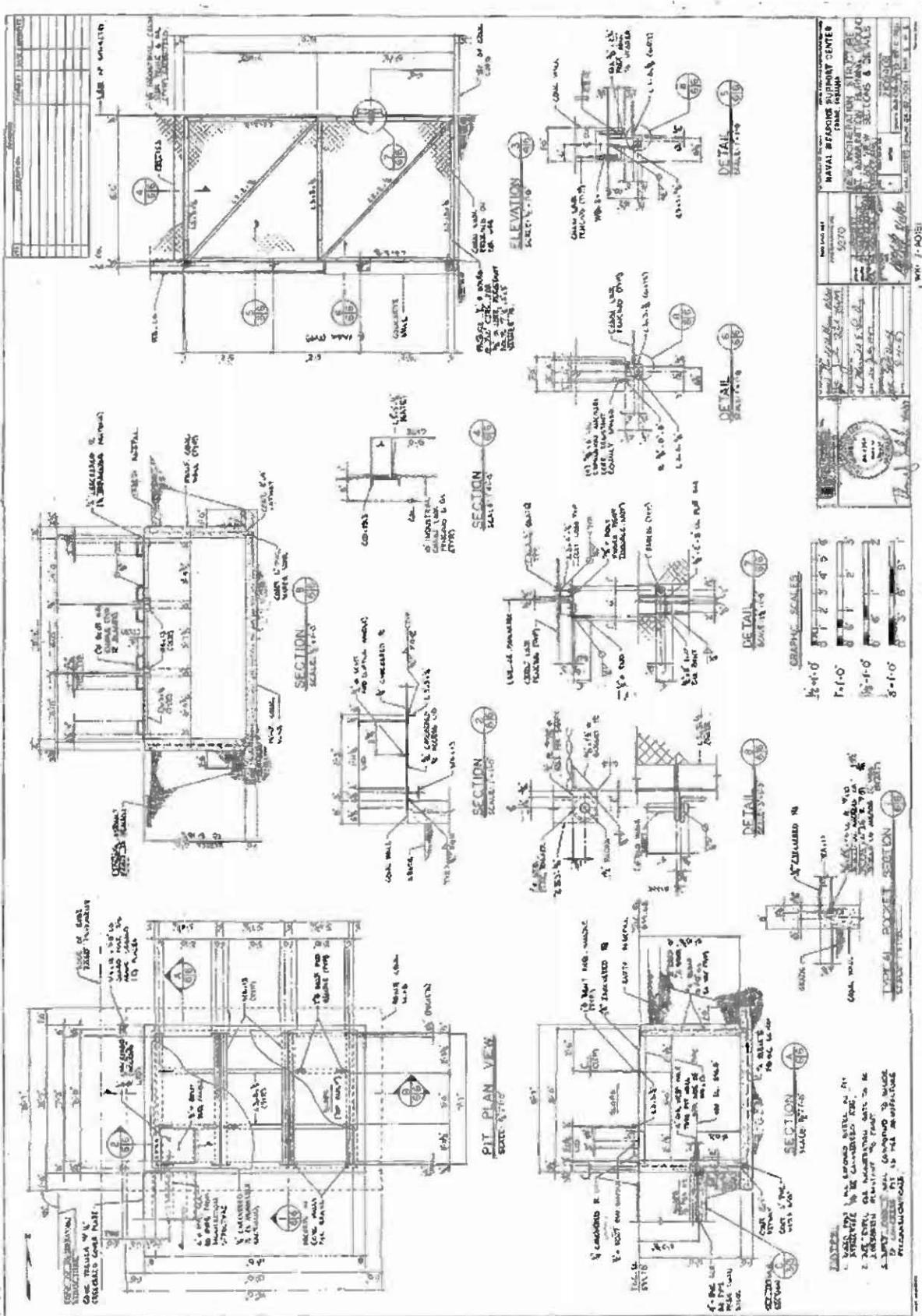
PROJ. DATE REC'D.	1988-04-01	PROJ. DATE ISSUED	1988-04-01
PROJ. NO.	S270	PROJ. NO. FOR THIS SHEET	S270
NAME OF CONTRACTOR	NAVAL WEAPONS SUPPORT CENTER	NAME OF CONTRACTOR	NAVAL WEAPONS SUPPORT CENTER
NAME OF CONTRACT	NEW INCINERATION STRUCTURE AT AMMUNITION BURNING GROUND	NAME OF CONTRACT	NEW INCINERATION STRUCTURE AT AMMUNITION BURNING GROUND
TYPE OF DRAWING	TITLE SHEET	TYPE OF DRAWING	TITLE SHEET
SCALE	1:200	SCALE	1:200
DATE DRAWN	1988-04-01	DATE DRAWN	1988-04-01
DRAWN BY	J. L. Ladd	DRAWN BY	J. L. Ladd
APPROVED BY	John S. Ladd	APPROVED BY	John S. Ladd
REVISIONS	0	REVISIONS	0
FILED	1	FILED	1
100-100000	100-100000	100-100000	100-100000









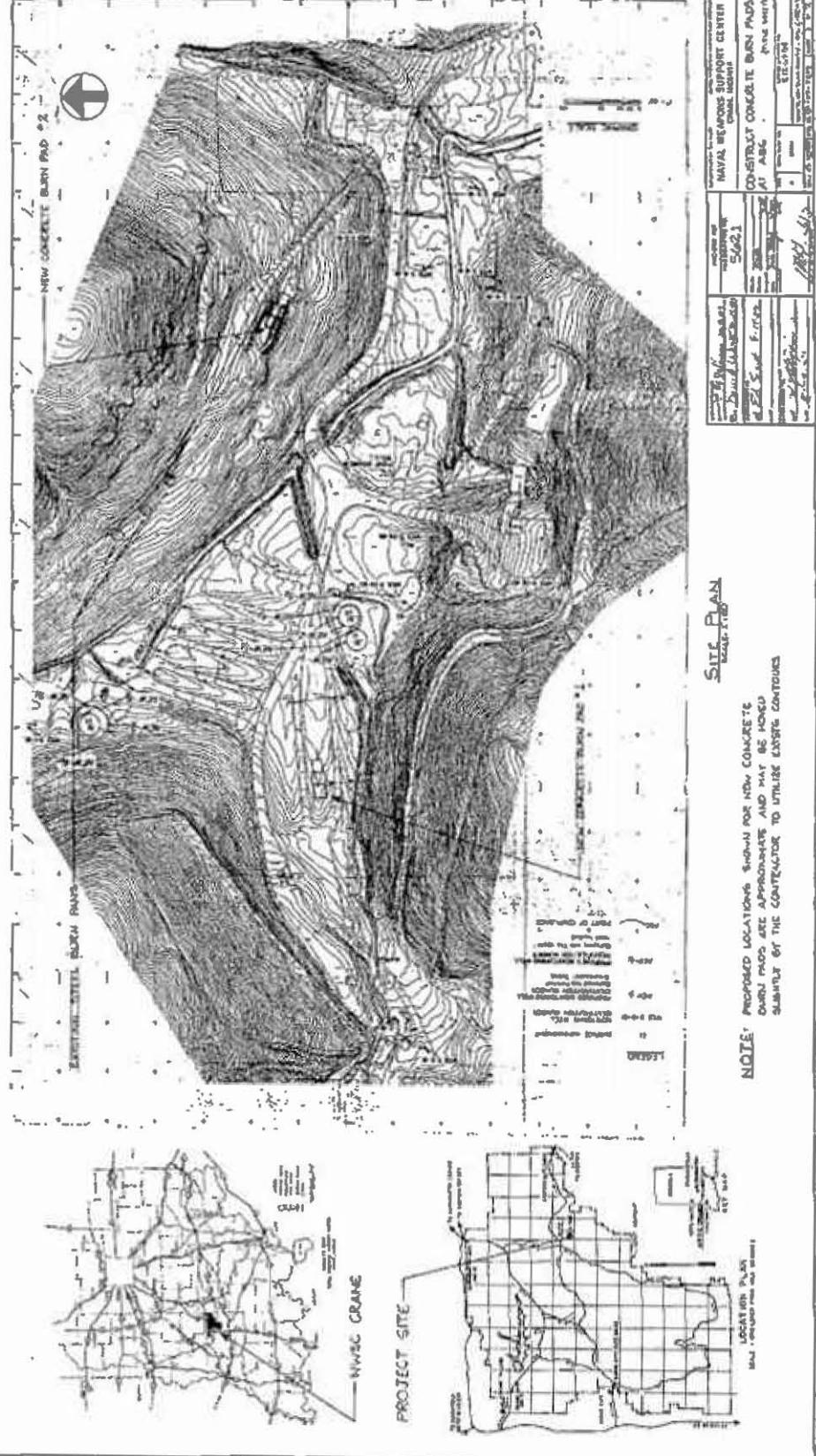


**Exhibit V.B-5(a)**

**ABG Concrete Burn Pads, Unit 9-ABG**

# CONSTRUCT CONCRETE BURN PADS

CONSTRUCTION CONTRACT NO. N62472-89-C-7249





## **Exhibit V.B-6**

**ABG Dewatering Units, Units 10, 11-ABG**

# CONSTRUCT SITE PLANS

## NAVAL WEAPONS SUPPORT CENTER CRANE, INDIANA

CONTRACT NO. N62472-87-C-7026

VICINITY MAP



LOCATION PLAN

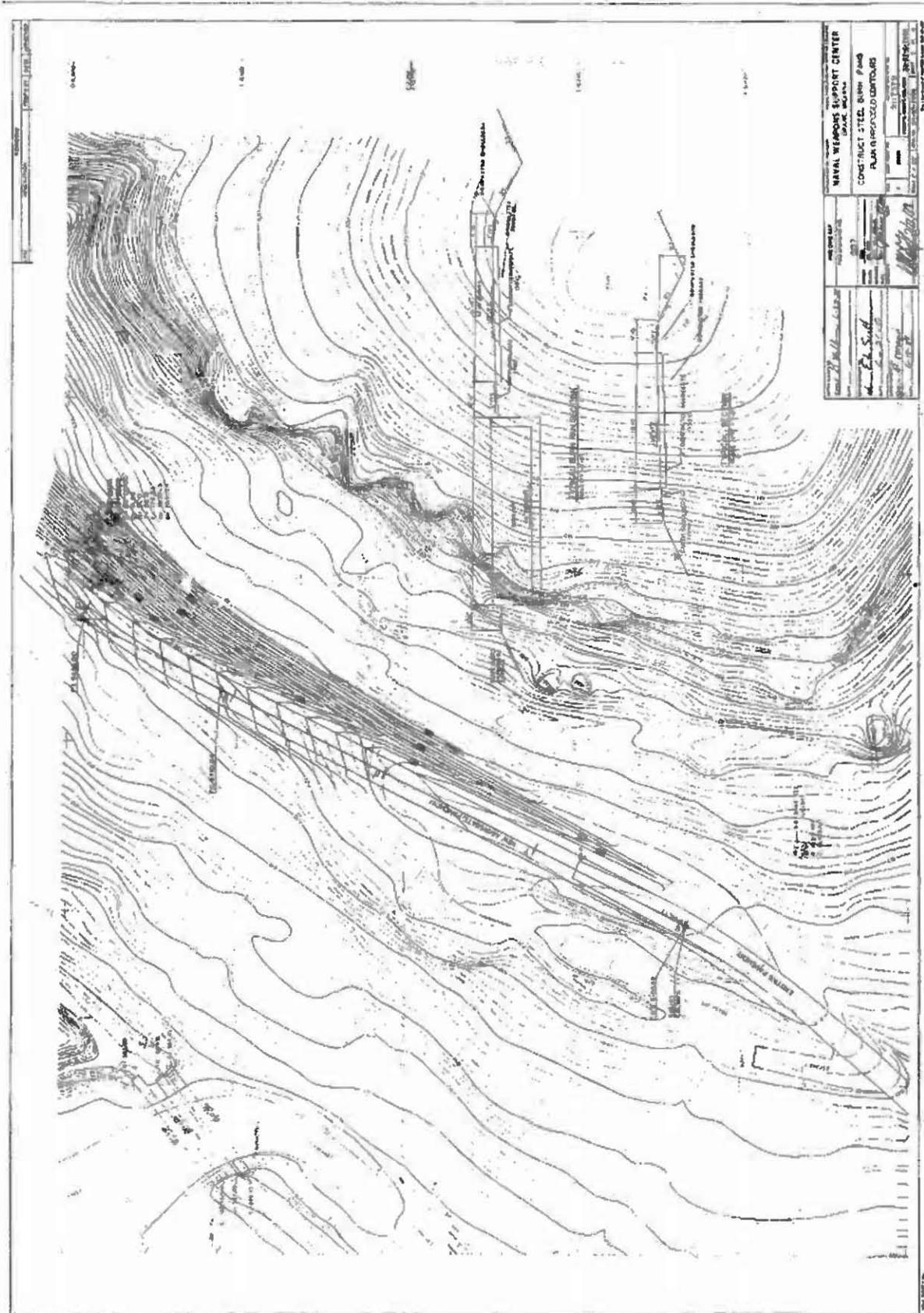


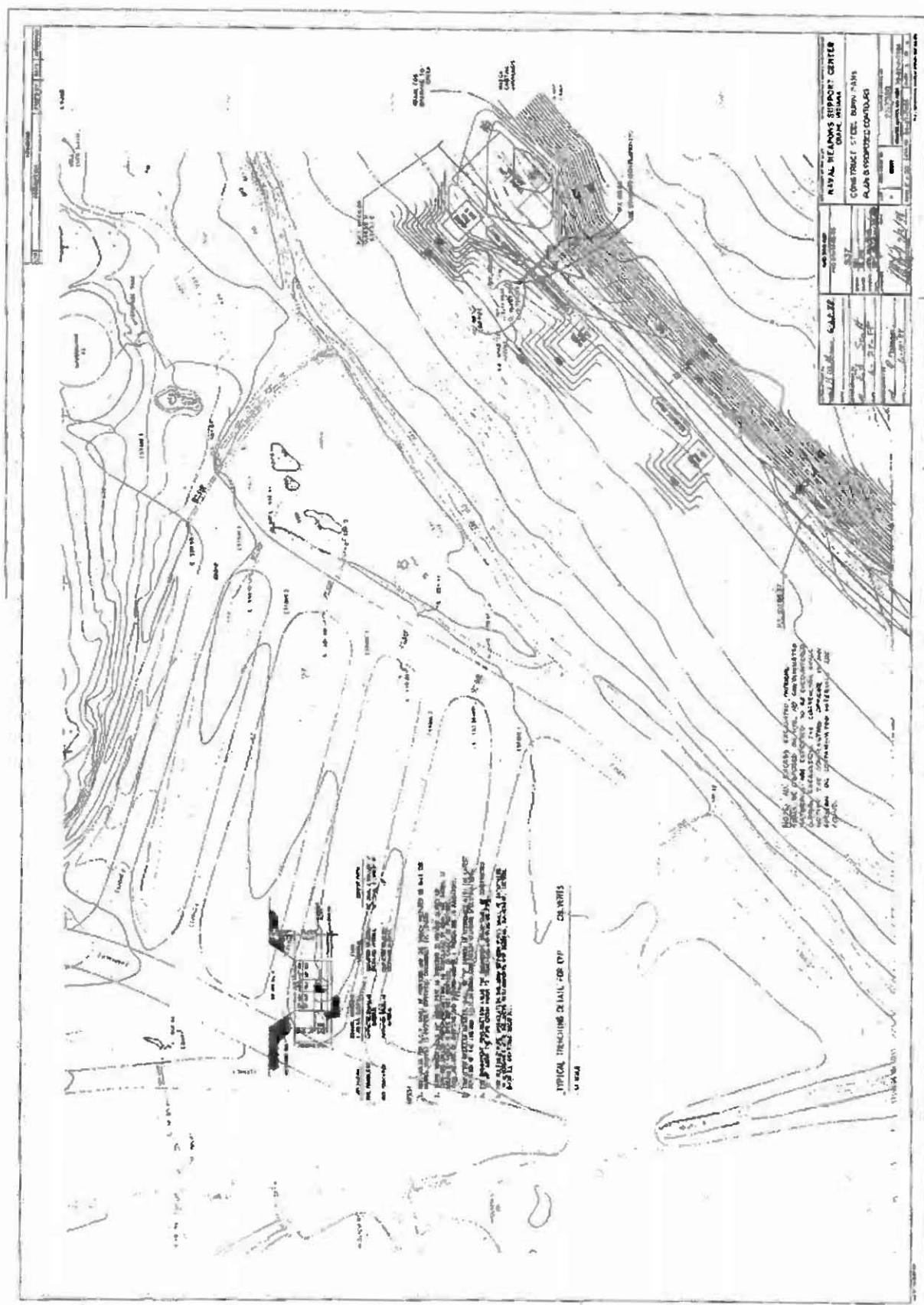
SITE PLAN

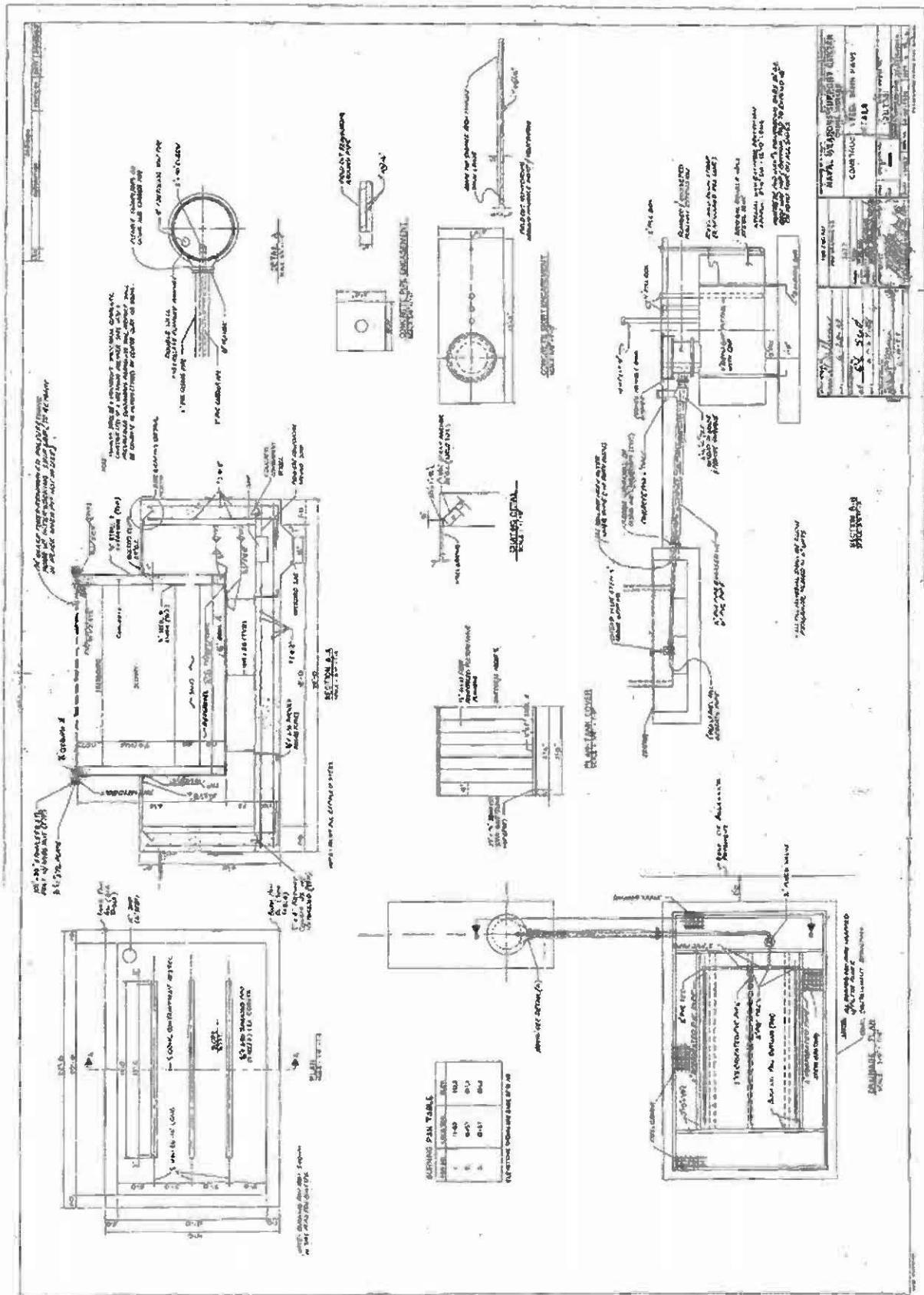


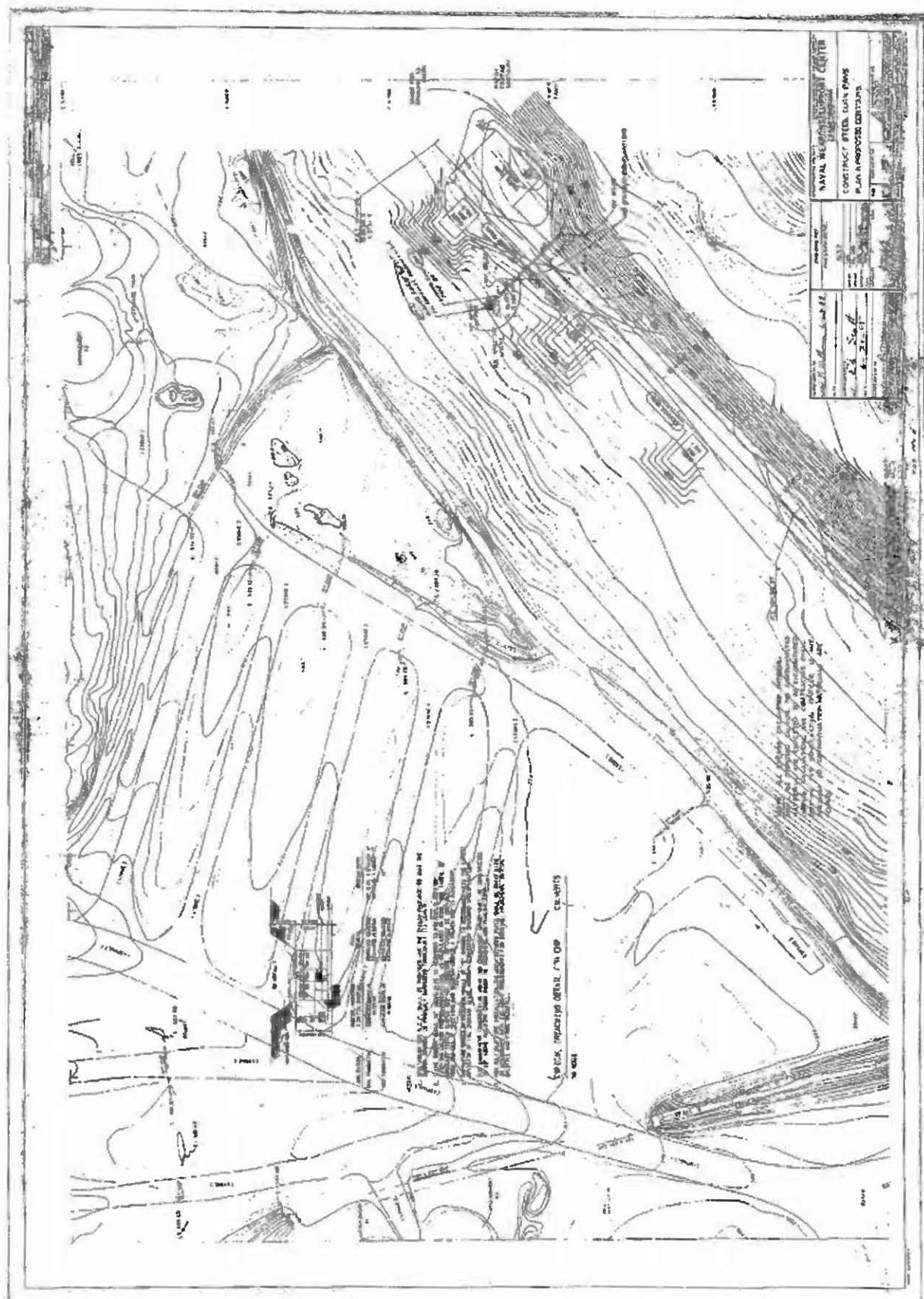
DRAWING INDEX

TITLE		REF. NO.	SCALE	DATE	DRAWN BY	APPROVED BY	REMARKS
Site Plan							
Location Plan							
Vicinity Map							
Contract Area Plan							
Naval Weapons Support Center Crane, Indiana							
Contract Area Drawn Plans							
Conver Sheet 1 of 100							









**Exhibit V.B-7**

DR/ORR Legal Boundaries; Access Control;  
Injection/Withdrawal Wells; Structures within 1000 ft.;  
Barriers for Drainage or Flood Control; Operational Units  
within Facility Locations



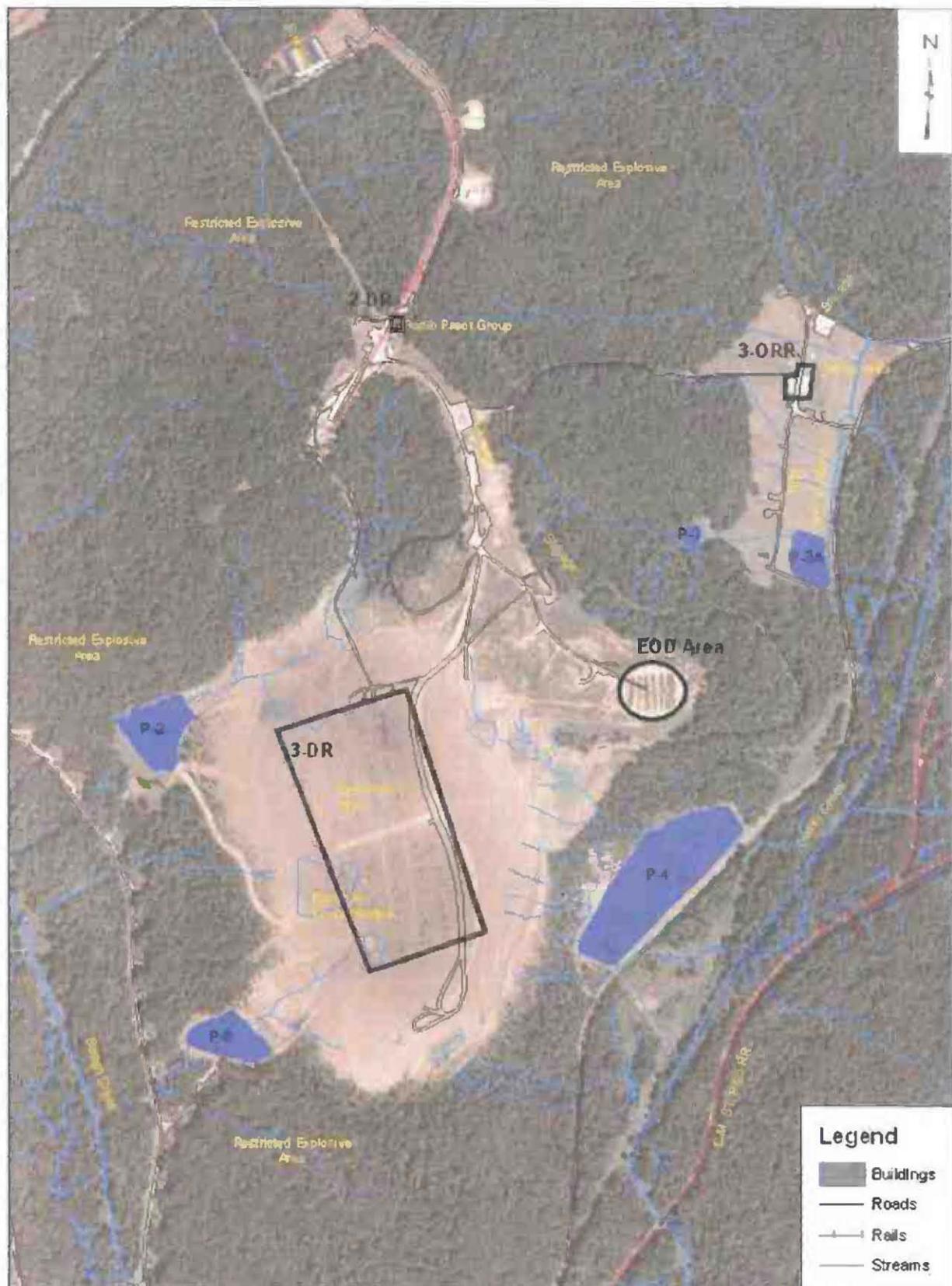
Coordinate System:  
Universal Transverse Mercator (UTM) Zone 16  
NAD 83

**FACILITY LAYOUT**  
**DEMOLITION RANGE - OLD RIFLE RANGE**  
**NAVAL SUPPORT ACTIVITY**  
**CRANE, INDIANA**

0 700 1,400 2,800  
Feet

**Exhibit V.B-7(a)**

**DR/ORR Treatment Unit Locations; Surface Water  
Including Intermittent Streams; Operation Units within  
Facility Locations**



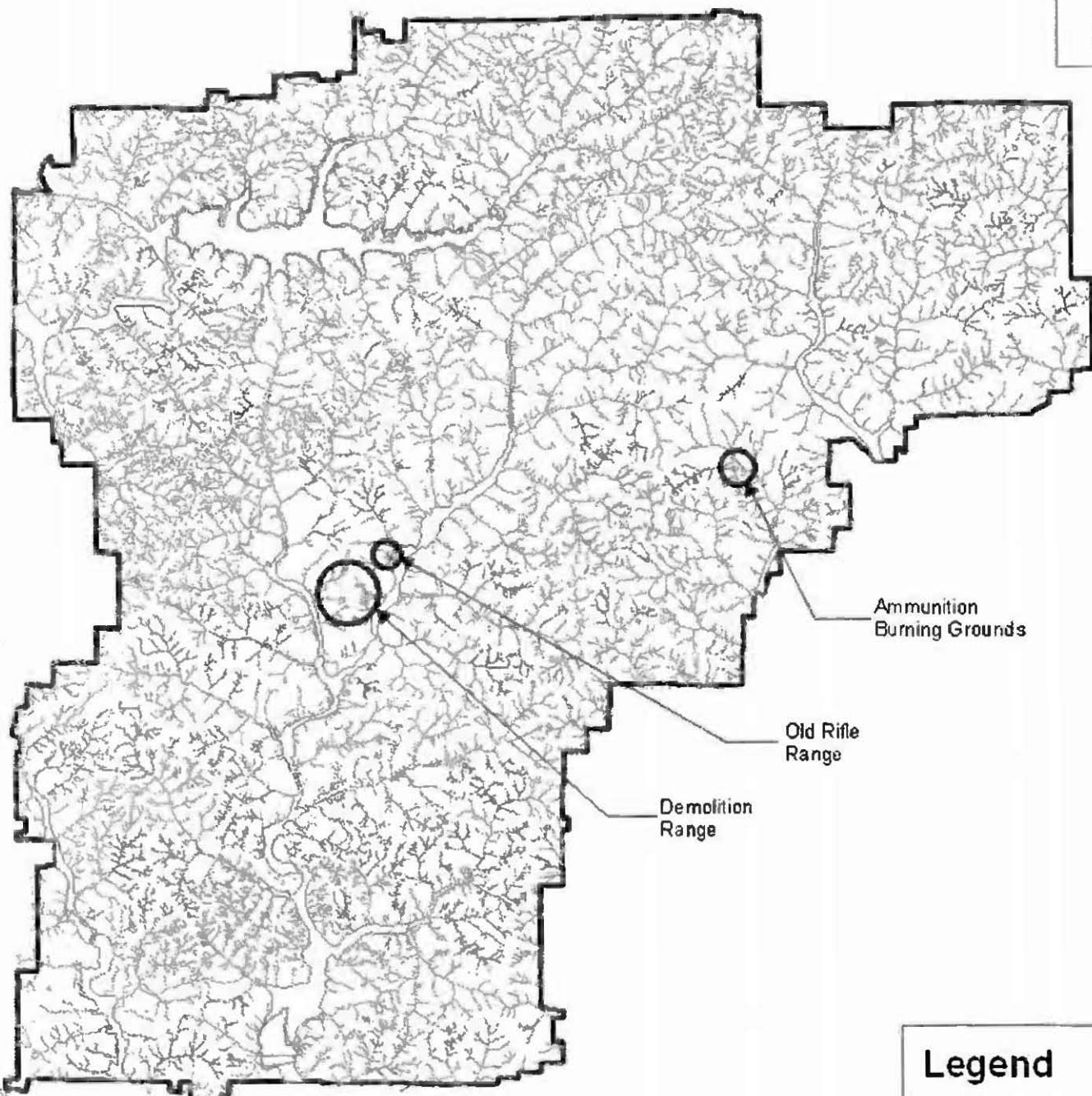
Coordinate System:  
Universal Transverse Mercator (UTM) Zone 16  
NAD 83

**TREATMENT UNITS AND FACILITIES**  
**DEMOLITION RANGE OLD RIFLE RANGE**  
**NAVAL SUPPORT ACTIVITY**  
**CRANE, INDIANA**

0 500 1,000 2,000  
Feet

## **Exhibit V.B-11**

**100-Year Floodplain for ABG, DR/ORR**



### Legend

- Streams
- Floodplain

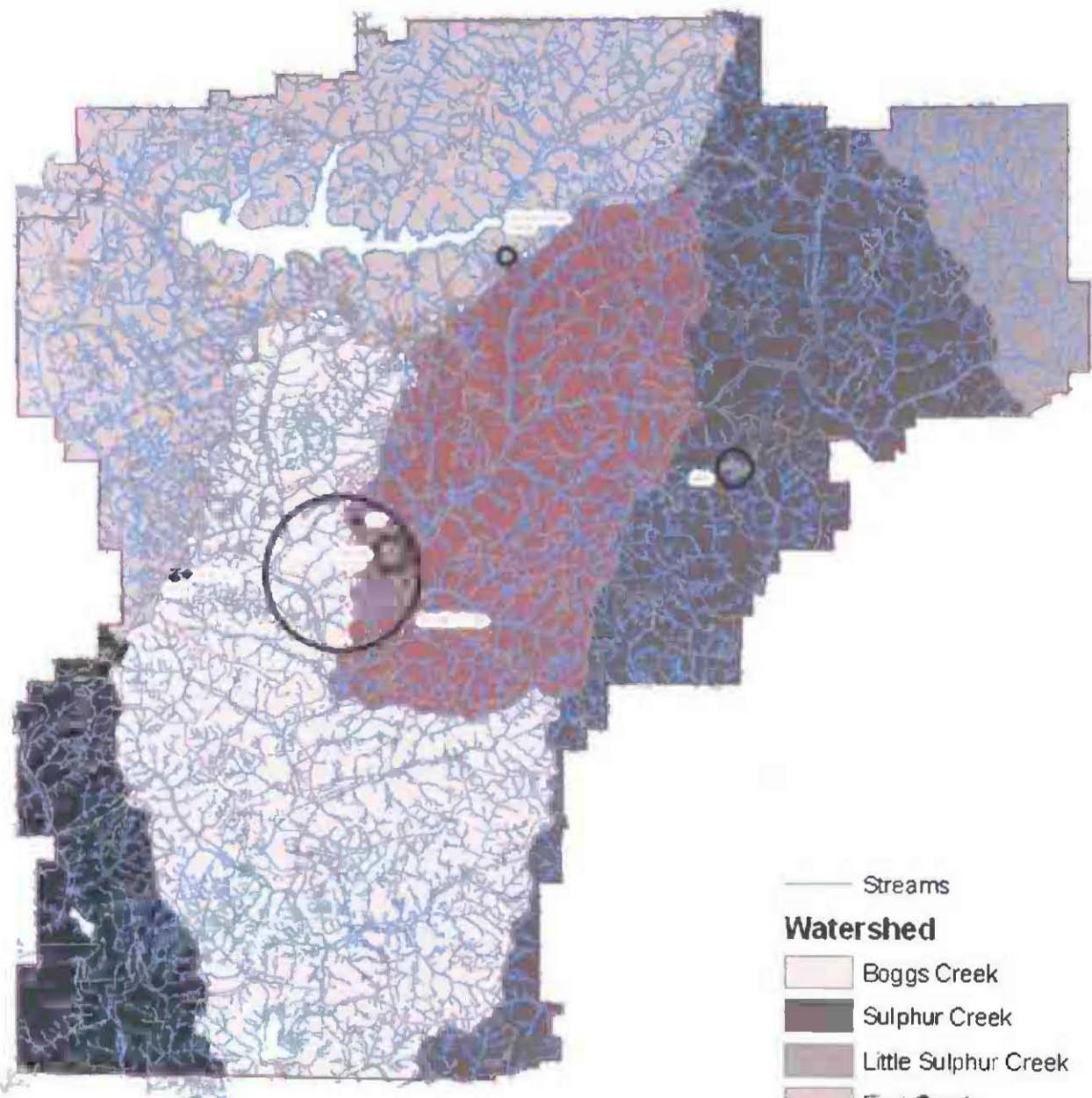
Coordinate System:  
Universal Transverse Mercator (UTM)  
Zone 16: NAD 83

### NSA Crane Floodplain Naval Support Activity Crane Crane, Indiana

0 1 2 4 Miles

## **Exhibit V.B-12**

**Watershed Maps for ABG, DR/ORR**



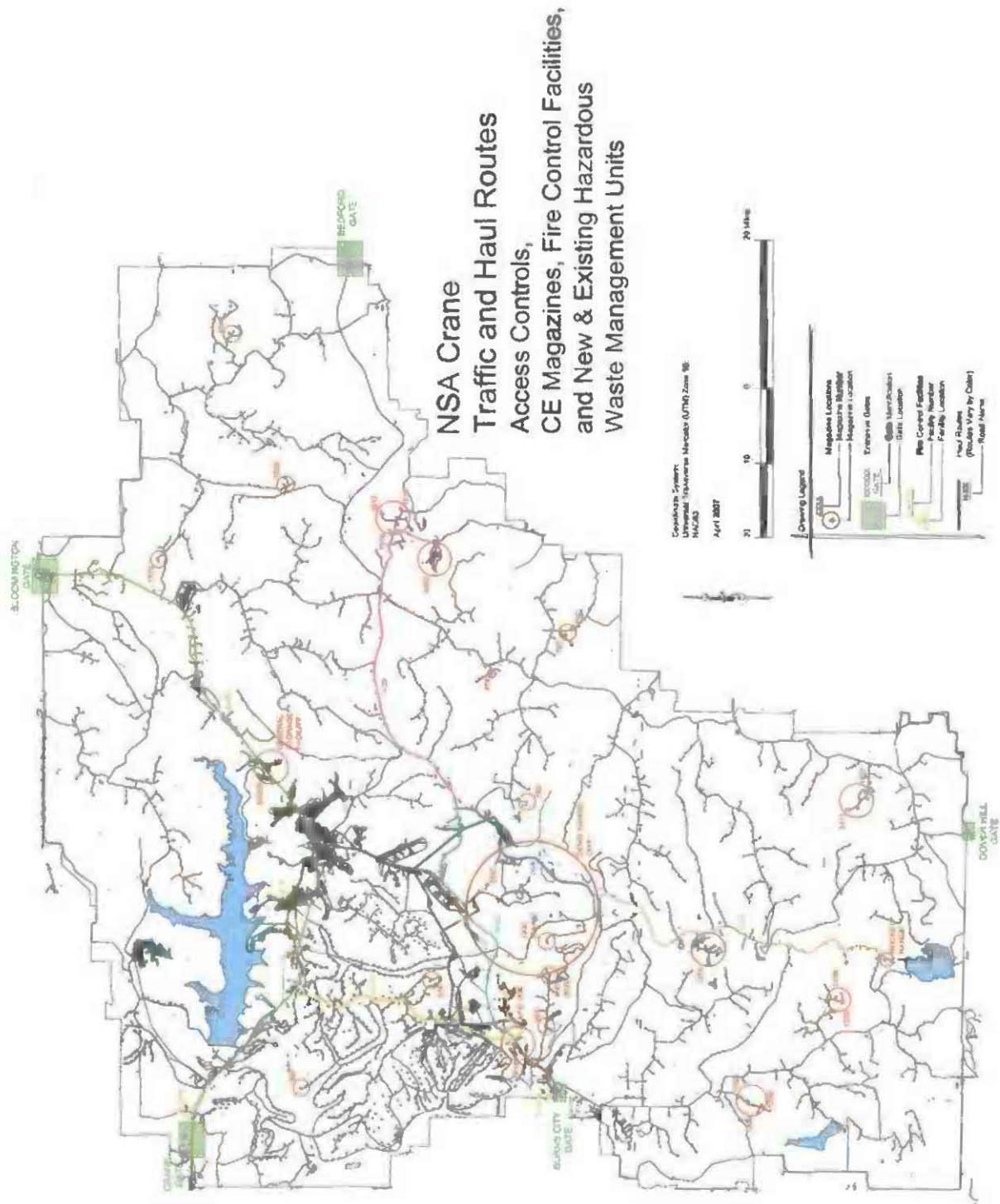
Coordinate System:  
Universal Transverse Mercator (UTM)  
Zone 16: NAD 83

**NSA Crane Watersheds**  
**Naval Support Activity Crane**  
**Crane, Indiana**

0 0.45 0.9 1.8 Miles

## **Exhibit V.B-13**

**Traffic and Haul Routes, Access Controls,  
CE Magazine Locations, Fire Control Facilities,  
Waste Management Units**



## **Exhibit V.B-14**

**ORR Burn Pads, Units 3a, 3b-ORR**

CONSTRUCT CONCRETE BURN PADS  
AT BUILDING 2167 AND RIFLE RANGE

AT  
NAVAL SURFACE WARFARE CENTER  
CRANE DIVISION  
CRANE, INDIANA



ABBREVIATIONS

BLDG.	#
B.D.	BOTTOM OF DUMP
COP.	CENTER OF PATH
DCA	DENSE CROWN AGGREGATE
DN.	DEGREE
EXP.	EXPANSION JOINT
E.P.	EARLY PLATE
F.E.	FEET
IN.	INCHES
M.F.	MILE
M.R.	MILE
M.	OF CENTER
N.C.	NON-CONTRACTING
S.C.J.	SEAL CONTRACTING JOINT
TYP.	TYPICAL
%	PERCENT
W.F.	WELDED FINE FILM

INDEX	
SHEET	TITLE
1	EXISTING AND NEW SITE PLANS AT BUILDING 2167
2	EXISTING AND NEW SITE PLANS AT RIFLE RANGE

**CENTER INDICATOR**  
SHEET NUMBER WHERE ELEMENT, SECTION OR DETAIL IS LOCATED  
**LETTER INDICATES ELEVATION OR COORD.**  
ELEVATION SECTION OR DETAIL SYMBOL  
**NOTE NUMBER WHICH ELEVATION SECTION OR DETAIL IS SHOWN**

SOUTHERN DIVISION	
CONTRACTOR	CHIEF ENGINEER
AT BIRMINGHAM, ALABAMA	460 N.W. 4TH AVENUE
5250894	TELE. SHEET
1	3

GENERAL NOTES:

STRUCTURE: Steel, light & deep columns.  
Size of columns: 8" x 10" to 10" x 12".  
Size of beams: 6" x 10" to 10" x 12".

Roofing: Sheet metal, 24 gauge.

Roof deck: 1" thick, 1/2" spaced joists.

Walls: Masonry, 8" thick, 1/2" spaced joists.

Floors: 1" thick, 1/2" spaced joists.

Doors: Standard, 3' x 7'.

Windows: Standard.

Lighting: Standard.

Plumbing: Standard.

Heating: Standard.

Ventilation: Standard.

Electrical: Standard.

Stairs: Standard.

Roof: 1" thick, 1/2" spaced joists.

Roof deck: 1" thick, 1/2" spaced joists.

Walls: Masonry, 8" thick, 1/2" spaced joists.

Floors: 1" thick, 1/2" spaced joists.

Doors: Standard, 3' x 7'.

Windows: Standard.

Lighting: Standard.

Plumbing: Standard.

Heating: Standard.

Ventilation: Standard.

Electrical: Standard.

Stairs: Standard.

Roof: 1" thick, 1/2" spaced joists.

Roof deck: 1" thick, 1/2" spaced joists.

Walls: Masonry, 8" thick, 1/2" spaced joists.

Floors: 1" thick, 1/2" spaced joists.

Doors: Standard, 3' x 7'.

Windows: Standard.

Lighting: Standard.

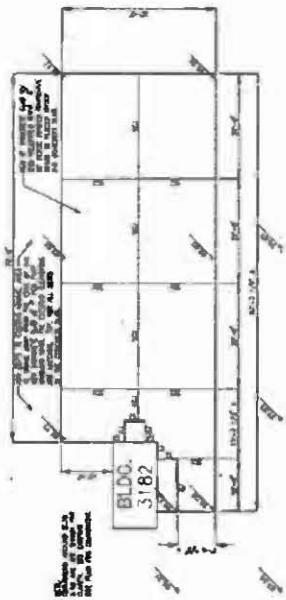
Plumbing: Standard.

Heating: Standard.

Ventilation: Standard.

Electrical: Standard.

Stairs: Standard.

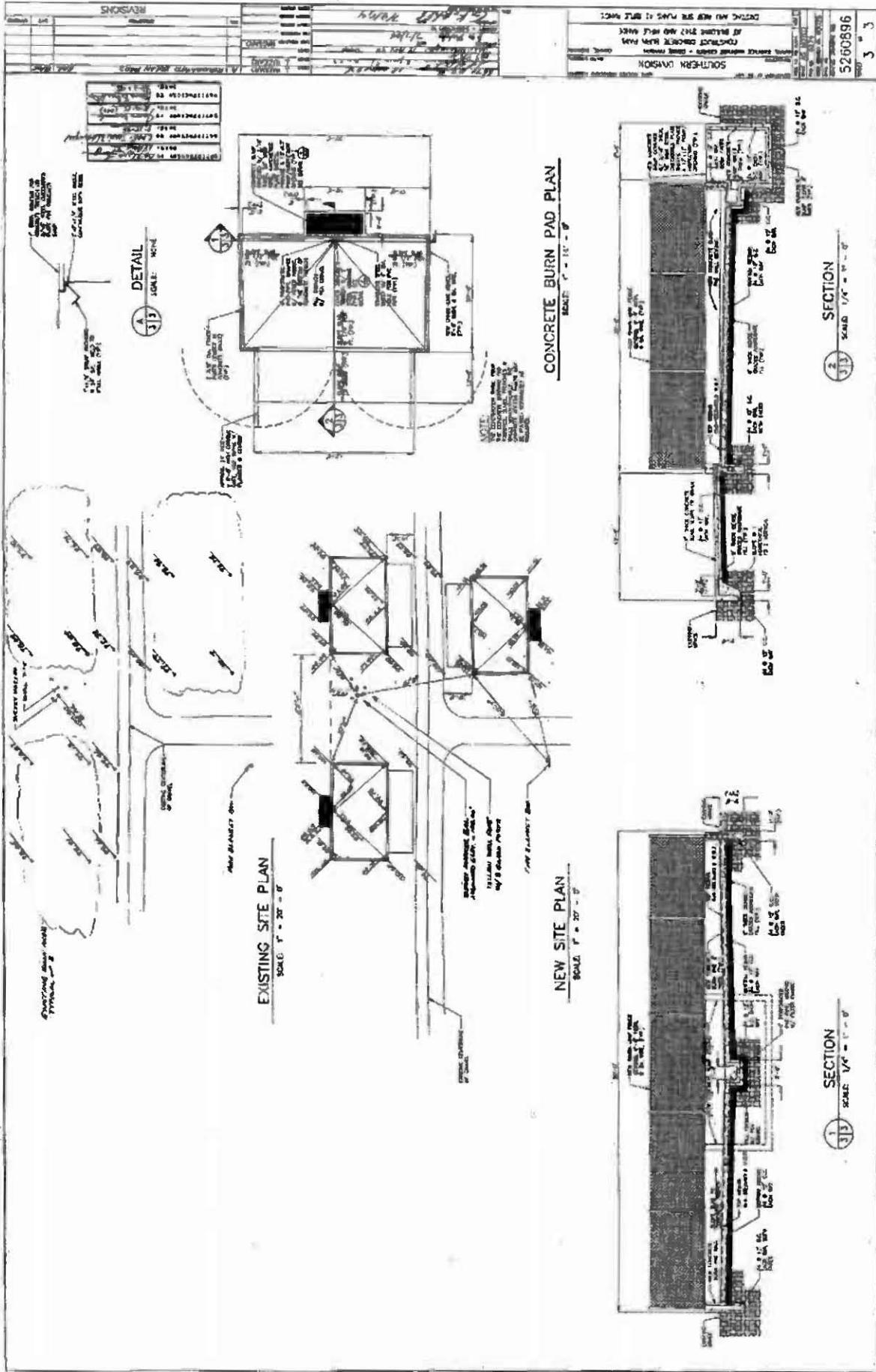


EXISTING SITE PLAN  
SCALE: 1" = 10' - 0"

NEW SITE PLAN  
SCALE: 1" = 10' - 0"

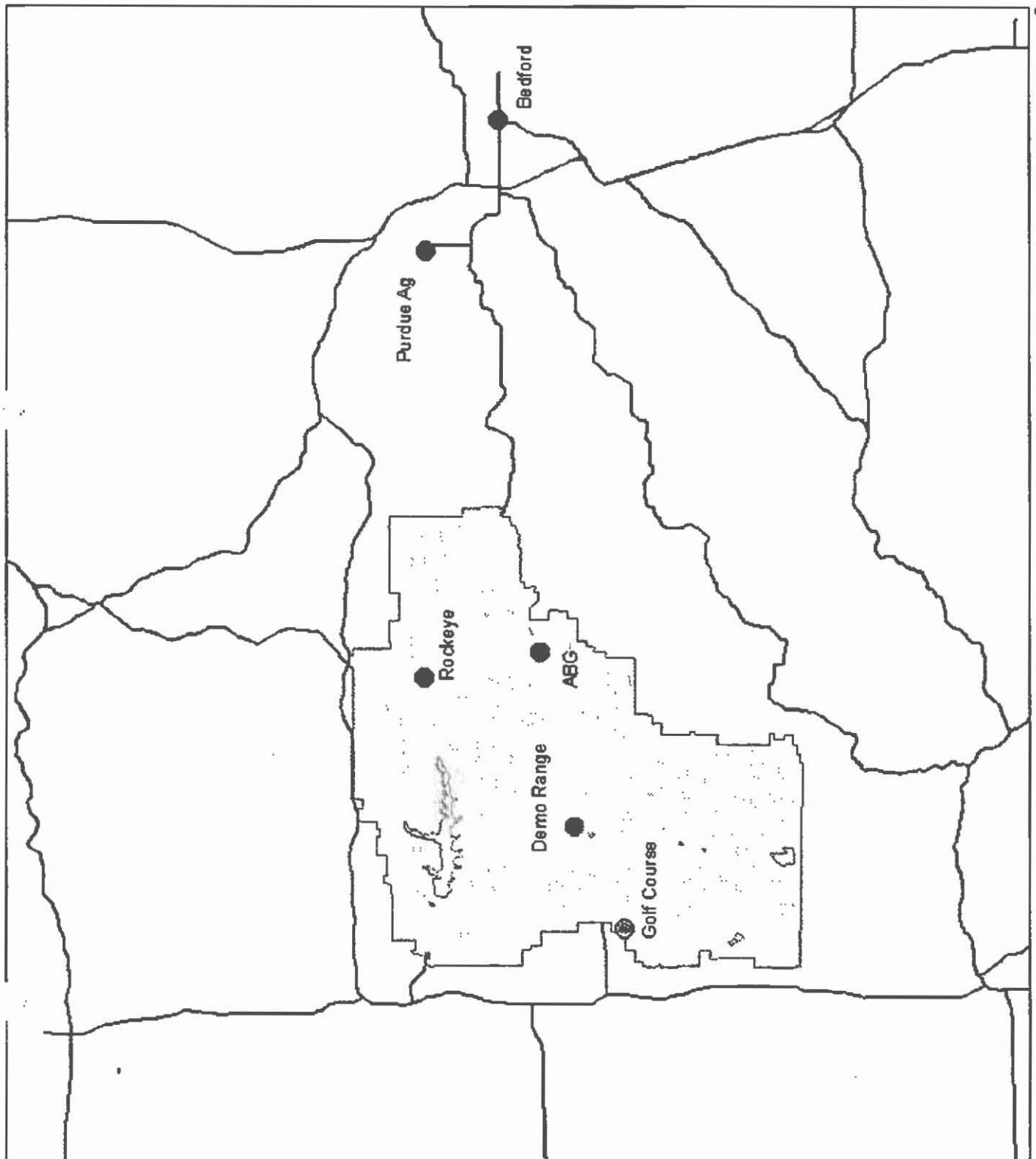
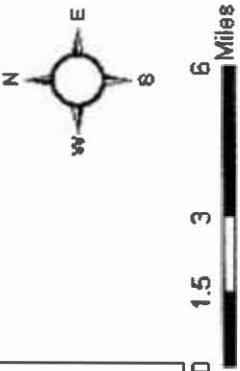
5260895  
2 - 3

5260895  
2 - 3



## **Exhibit V.B-15**

### **Lead Monitoring Map**



13 Jan 2005

## **Exhibit V.C-1**

### **Example of Military Specification for PEP**

\*This document is available for review within the facility's Permit Renewal Application (VFC# 66400964) in IDEM's Virtual File Cabinet at <http://vfc.idem.IN.gov/>.

## **Exhibit V.C-2**

**MOU with the Bureau of Alcohol, Tobacco, and Firearms**

**MEMORANDUM OF UNDERSTANDING BETWEEN  
THE DEPARTMENT OF DEFENSE AND THE  
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS  
DEPARTMENT OF THE TREASURY**

1. PURPOSE. The purpose of this Memorandum of Understanding is to establish an agreement pursuant to 10 U.S.C. section 2692 b(2) between the Department of Defense (DOD) and the Bureau of Alcohol, Tobacco and Firearms (ATF) for the temporary storage or disposal of explosives on DOD installations acquired as a result of ATF's Federal law enforcement responsibilities.
2. BACKGROUND. Section 2692, Title 10, U.S.C., prohibits the use of an installation of the DOD for the storage or disposal of any material that is toxic or a hazardous material, and that is not owned by the DOD. However, this prohibition does not apply to the temporary storage or disposal of explosives on DOD installations in order to protect the public, or to assist Federal law enforcement agencies in storing or disposing of explosives, when no alternate solution is available, and if such storage or disposal is made in accordance with an agreement between the DOD and the head of the Federal agency concerned.
3. ROLE AND RESPONSIBILITIES OF THE DEPARTMENT OF DEFENSE.
  - a. DOD Components are authorized to make available to ATF facilities which may be used by ATF for the temporary storage or disposal of explosives in order to protect the public.
  - b. DOD Components are authorized to provide secure temporary storage or disposal facilities for explosives acquired by ATF as a result of its law enforcement responsibilities where no alternate solution is available. DOD facilities will comply with the DOD Ammunition and Explosives Safety Standards (DOD 6055.9 STD).
  - c. DOD Components are authorized to advise ATF of DOD facilities authorized/permited by the Environmental Protection Agency for open burning, or open detonation of explosives with their capabilities and limitations.
  - d. DOD Components are authorized to provide technical advice and non-hazardous support activities.

4. ROLE AND RESPONSIBILITIES OF ATF

- a. ATF will comply with all DOD environmental, safety and security requirements regarding explosives transportation, storage and treatment.
- b. ATF will be responsible for obtaining all required Federal, state or local permits to conduct its activities.
- c. ATF will provide the DOD installation with a manifest of the explosives.
- d. ATF will comply with installation policy and procedures for conducting inventory and inspection of DOD facilities as outlined in DODI 4140.35, Physical Inventory Control for DOD Supply System Material.
- e. ATF will provide storage plans to installations to assure proper storage procedures are maintained as outlined in appropriate explosives safety publications. Facilities loaned to ATF for storage of ammunition and explosives, will not be used to store other commodities.
- f. ATF personnel will conduct all movement, storage, treatment or other handling of the explosives.
- g. ATF will reimburse DOD for all costs and expenses incurred by DOD in connection with support and services provided under this agreement.

5. PROCEDURES. Final arrangement for the use of a DOD facility made available for the temporary storage or disposal of ATF explosives should be made between appropriate personnel at the DOD installation and the

ATF district office. The actual use of a DOD installation under this agreement will be made pursuant to inter-agency reimbursable agreements under 31 U.S.C. 1535 and DOD 4000.19M, executed in accordance with applicable DOD and ATF delegations and procedures.

Oct 22, 1991

Date

October 18, 1991

Date

*Colin McMillan*  
Assistant Secretary of Defense  
(Production and Logistics)  
Department of Defense

*Stephen C. Higgins*  
Director, Bureau of Alcohol,  
Tobacco and Firearms  
Department of Treasury

## **Exhibit V.C-3**

**MOU between EODMU Two Detachment**

**Crane and Indiana**

**MEMORANDUM OF UNDERSTANDING  
BETWEEN  
EODMU TWO DETACHMENT CRANE  
AND THE  
STATE OF INDIANA  
REGARDING  
RESPONSES TO EXPLOSIVES OR MUNITIONS EMERGENCIES**

1. **Parties:** The parties to this Memorandum of Understanding (MOU) are the State of Indiana (Indiana), represented by the Indiana Department of Environmental Management (IDEM); and Officer in Charge, Explosive Ordnance Disposal Mobile Unit TWO Detachment Crane, who commands the following detachment: Explosive Ordnance Disposal Mobile Unit TWO Detachment Crane (Navy EOD).
2. **Purpose:** This MOU describes how the Navy Explosive Ordnance Disposal (EOD) unit will respond to explosives or munitions emergencies occurring within Indiana. The intent of the parties entering into this MOU is to:
  - a. Optimize the efficiency, safety, and speed of explosives or munitions emergency response actions through consultation, coordination, and mutual assistance; and
  - b. Promote compliance with Federal and State environmental laws and regulations.
3. **Definitions:**
  - a. **Explosives or Munitions Emergency.** A situation involving the suspected or detected presence of unexploded ordnance (UXO), damaged or deteriorated explosives or munitions, and improvised explosive device (IED), other potentially explosive material or devices, or other potentially harmful military chemical munitions or device, that creates an actual or potential imminent threat to human health, including safety, or the environment, to include property, as determined by an explosives or munitions emergency response specialist. Such situations may require immediate and expeditious action by an explosives or munitions emergency response specialist to control, mitigate or eliminate the threat.
  - b. **Explosives or Munitions Emergency Response.** All response activities by an explosives and munitions emergency response specialist to control, mitigate, or eliminate the actual or potential threat encountered during an explosive or munitions emergency. An explosives or munitions emergency response may include in-place render-safe procedures, treatment or destruction of the explosives or munitions, and/or transporting those items to another location to be rendered safe, treated, or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen or uncontrollable circumstance will not terminate the explosives or munitions emergency response. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at RCRA facilities.
  - c. **Explosives or Munitions Emergency Response Specialist:** An individual trained in chemical or conventional munitions or explosives handling, transportation, render-safe procedures and destruction techniques. Personnel assigned to the EOD Detachment shall be considered explosive or munitions emergency response specialists under this definition.

d. Improvised Explosive Devices: Devices that are placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals, designed to destroy, disfigure, distract, or harass.

e. Unexploded Ordnance (UXO): Military munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material and remain unexploded either by malfunction, design or any other cause.

#### 4. Background:

a. Explosives or munitions emergencies typically involve significant uncertainty regarding powerful and dangerous hazardous substances. The potential exists for substantial harm (including grievous injury and death) to emergency responders, the public, the environment, and property. Explosive or munitions emergency response specialists must have immediate, unencumbered access to the emergency, thereby allowing them to bring their unique training and expertise to bear in a timely and effective manner without undue risk.

b. DOD Directive 3025.15 and Chief of Naval Operations Instruction 8027.1G, authorize the Navy under certain circumstances when a determination has been made by the Navy that assistance is required or desirable in the interest of public safety.

c. Federal, State, and local law enforcement and emergency response authorities have historically requested assistance from Navy EOD units in Indiana, regardless of the location of the explosives or munitions emergency. Navy EOD units, in recognition of the Navy's concern for human health and safety, the environment, and property, have traditionally responded to such emergencies, at Navy expense, whenever and wherever requested. In responding to explosives and munitions emergencies, Navy EOD units and their Federal, Indiana, and local counterparts have worked extremely well together, in a spirit of mutual assistance, to preserve public safety.

d. The U.S. Environmental Protection Agency's Military Munitions Rule (MMR), 62 Federal Register 6621 (Feb. 12, 1997), states that EOD personnel engaged in explosives or munitions emergency response are exempt from generator, transporter, treatment, storage, and disposal unit requirements of the Solid Waste Disposal Act, 42 U.S. Code § 6901, *et seq.*

e. The Navy anticipates that it will enter into additional MOUs with other Federal, State and local agencies seeking Navy EOD assistance in explosives and munitions emergencies. These additional MOUs shall be based on the standards set forth herein. Notwithstanding any other MOUs, this MOU is intended to and shall be the sole and exclusive agreement as to Navy EOD response by and between the Navy and IDEM.

#### 5. Navy EOD Unit Emergency Response Procedures:

a. Consistent with the mission requirements of the Navy EOD Detachment, the Navy will provide an Explosives or Munitions Emergency Response to Federal, State or local law enforcement or the emergency response authorities. One of the two types of response will be provided:

(1) Level 1 Response. Immediate response to situations where explosives or munitions are not properly secured and thus threaten or potentially threaten human health and safety, the environment, or property. When extenuating circumstances exist, e.g., adverse weather, nightfall, or safety considerations, which delay actions necessary to complete an explosives or munitions emergency response, the response will be deemed to continue until the necessary action(s) can be accomplished.

(2) Level 2 Response. Response to situations involving explosives or munitions which pose an imminent and substantial danger to human health and safety, the environment, or property, but for which response actions may be temporarily delayed without compromising safety or increasing risk. In such case, time may allow for an emergency permit to be obtained. The parties acknowledge that explosives or munitions emergencies present unique facts and circumstances and must therefore be evaluated case-by-case. In the absence of full and complete information, which frequently occurs when notice of an explosives or munitions emergency is received and first responded to, emergency response specialists, based on their knowledge, training, and experience, must use their best judgment in assessing risk. It is therefore to be expected that as the response to an explosives or munitions emergency progresses, a Level 1 response may become a Level 2 response, and vice versa.

b. In the event an explosives or munitions emergency exists, that in the professional opinion of a Navy EOD specialist is time critical and requires immediate action, the Navy EOD specialist will perform a Level 1 response, taking immediate and appropriate action, including, but not limited to such steps as render-safe and blow-in-place.

c. In the event an explosives or munitions emergency poses a threat or potential threat to the safety of emergency responders, to public health and safety, to the environment, or to property, that in the professional opinion of the Navy EOD specialist is time critical and requires immediate action, but action that must take place at another location to which the explosives or munitions must be transported immediately, the Navy EOD specialist will perform a Level 1 response, taking immediate and appropriate action including, but not limited to render-safe procedures.

d. If in the professional opinion of a Navy EOD specialist explosives or munitions may be transported safely, with or without render-safe procedures, by a person who is not an explosives or munitions emergency response specialist, the Navy EOD specialist will perform a Level 2 response, and the Federal, State, or local law enforcement or emergency response authority seeking Navy EOD assistance will contact IDEM to determine if an emergency permit is necessary, and if so, obtain such.

e. Upon completion of an explosives or munitions emergency response (Level 1 or Level 2), the Navy EOD Detachment will maintain a record of the event including the time and date of the response, names and grades of individuals who responded, type and description of the item addressed, final disposition of the item, a copy of the emergency response permit, if issued, and all related documents. The Navy will provide this information, if requested, to the agency that sought Navy assistance.

f. To perform a Level 1 emergency response, regardless of where it occurs, the Navy is not required to apply for, obtain, or comply with any type of RCRA hazardous waste permit or

manifest. Further, the Navy does not have to include the response in generator or treatment, storage or disposal facility annual reports.

g. To perform a Level 2 emergency response, regardless of where it occurs, a RCRA hazardous waste emergency permit may be required, as provided in paragraph 5.d above; however, the Navy is not required to manifest the explosives or munitions as RCRA hazardous waste. Further, the Navy does not have to include the response in generator or treatment, storage or disposal facility annual reports.

h. All Navy EOD units, including those located within Indiana, have qualified explosives or munitions emergency response specialists. The training received by Navy EOD specialists is deemed to satisfy IDEM requirements for personnel who manage hazardous wastes, as per 40 C.F.R. §§ 264.16 and 265.16.

i. Navy EOD specialists who perform explosives or munitions emergency responses under this MOU are not considered generators of residuals resulting from Level 1 or Level 2 responses. Therefore, Navy EOD specialists are not responsible under these circumstances for contamination from residuals including residuals associated with donor explosives used to destroy other explosives or munitions. Additionally, Navy EOD Detachment personnel shall not perform and shall not under any circumstances be responsible for taking any remediation actions.

j. For explosive or munitions emergencies requiring Navy EOD response, contact Crane Division, Naval Surface Warfare Center Security Dispatch at 812-854-3300.

k. When an Explosives or Munitions Emergency Response involving non-military munitions or explosives requires an emergency permit, it shall be the obligation of the authority or entity requesting the response to request and obtain the permit. In order to ensure the prompt receipt of such a permit, IDEM shall endeavor to issue all needed emergency permits telephonically. To request an emergency permit call 888-233-7745.

l. The parties shall at all times comply with Section 2692 of Title 10 of the USC which, except for very limited circumstances, prohibits the bringing of non-DoD owned hazardous materials onto a DoD installation.

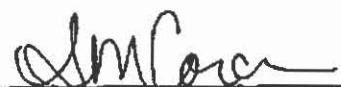
6. Duration/Amendment/Withdrawal: This MOU shall remain in full force and effect unless terminated by either party on 60 days prior written notice to the other. The MOU may be amended in a writing signed by all parties.

**STATE OF INDIANA**

Lori F. Kaplan  
LORI F. KAPLAN  
Commissioner  
Indiana Department of Environmental  
Management

5/30/01  
Date

**NAVY EXPLOSIVE ORDNANCE DISPOSAL**



LT S. M. CORCORAN

Lieutenant, U.S. Navy

Officer in Charge, Explosive Ordnance  
Disposal Mobile Unit TWO

19 Apr 01

Date

## **Exhibit V.C-4**

### **Burning Pan Certification**



CONSULTING ENGINEERS  
ARCHITECTS  
INDIANAPOLIS • SOUTH BEND  
ESTABLISHED 1964

REID, QUEBE, ALLISON, WILCOX & ASSOCIATES, INC.

JOHN B. ALLISON, JR., P.E., CHAIRMAN  
J. EDWARD DOYLE, P.E., PRESIDENT  
RAMAN D. PATEL, P.E., VICE PRESIDENT

JAMES F. SMITH, A.I.A.  
LOUIS KING, JR., IRVIA  
THOMAS J. HELBING, P.E.  
RICHARD T. O'CONNOR, P.E.  
STEVEN P. GRESS, P.E.  
BRUCE E. PROKOP, P.E.  
JERRY G. McDUGARAY, P.E.  
JEFFREY E. LAZZELL, P.E.

July 20, 1990

**Commanding Officer**  
**Naval Weapons Support Center, Crane**  
**Crane, IN 47522-5009**

**Attn:** Mr. James Hunsicker  
Code 0924

**Re:** Certification Per 329 IAC3-24-3  
Slurry Burning Pans  
Ammunition Burning Grounds

Gentlemen:

- The purpose of this letter is certification by an independent registered engineer regarding the adequacy of the burning pans constructed for the disposal of waste slurries associated with pyrotechnics and munitions manufacture.

Three burning pans are located in the ammunition burning grounds on the Crane Naval Weapons Support Center.

The burning pans consist of above ground reinforced concrete secondary containment vessels containing insulated covered steel burning vessels consisting of an inner steel liner and an exterior steel structural vessel. Concrete is located between the inner liner and the exterior structural vessel for insulation purposes. The slurry is deposited on a twenty-four inch layer of sand and pea gravel which insulates the bottom of the burning pan and allows drainage of liquid from the slurry. The burning pans are supported by I-beams which rest on the concrete secondary containment vessel.

Liquid drained from the slurry is transported to a double walled cathodically protected steel underground tank (sti-P3) through underground PVC pipe contained within a fiberglass casing pipe. The burning pans are equipped with removable fiberglass covers to prevent rainwater from entering the burning pans when not in use.

One burning pan is used to dispose of waste slurry from pyrotechnics manufacture. The hazardous nature of this activity is the classification of the pyrotechnic material as a DOT flammable solid. The liquid drained from the slurry does not exhibit hazardous characteristics as defined by 40 CFR Part 261. One burning pan is used to dispose of materials listed as K047 Pink/Red Water from TNT Operations and has a hazardous characteristic of reactivity. The remaining burning pan is not presently in use.

JUL 25

SAW INPLS.

P.3

---

REID, QUEBE, ALLISON, WILCOX & ASSOCIATES, INC.

Mr. James Hunsicker  
July 20, 1990  
Page -2-

The burning pans themselves are above ground structures equipped with secondary containment and as such are not subject to regulation under 329 IAC 3-24-3.

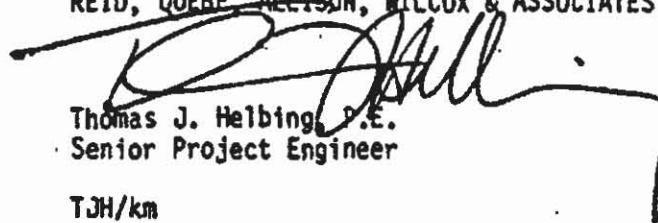
The underground piping and contaminated water storage tanks are subject to regulation under 329 IAC 3-24-3.

Having personally inspected the slurry burning pans and having personally reviewed the design of the burning pan systems, I make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true and accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very truly yours,

REID, QUEBE, ALLISON, WILCOX & ASSOCIATES, INC.

  
Thomas J. Helbing, P.E.  
Senior Project Engineer

TJH/km

cc: File 90027/3104

Enclosures

503[BURN.#]

## **Exhibit V.D-1**

**ABG Daily Inspection Log, Open Burn Areas,  
Sludge Burning Pans**

## DAILY INSPECTION LOG

SLUDGE BURNING PANS (SBP) AT AMMUNITION BURNING GROUNDS

NSWCC 5090/3 (REV. 05/06) [Formerly NSWCC 5090/3 (REV. 12/01)]

(To be inspected daily &amp; after storms)

INSPECTOR'S NAME/TITLE (Printed) (Signature)

DATE (Insp. - Mo./Day/Yr.)

TIME (Insp. - Mil.)

ITEM	REASON FOR INSPECTION	STATUS Acceptable (A) Unacceptable (U)	OBSERVATIONS/COMMENTS	DATE & NATURE OF REPAIRS AND/OR REMEDIAL ACTION
CONCRETE CONTAINMENT AREA AREA AROUND EACH SBP	CRACKS IN CONCRETE WALLS OR FLOOR			
	LEVEL OF RAIN WATER IN CONTAINMENT AREA			
	DRAINAGE OF SURFACE WATER AWAY FROM SBP			
COVERS FOR SBPs	IN PLACE, DAMAGED			
FREEBOARD IN SBPs	AT LEAST 2 FEET			
STEEL LINER	INSPECT FOR CRACKS AND WARPS. ASH REMOVED AFTER EACH BURN.			
SAND FILTER	ADEQUATE AMOUNT, NO PLUGGING			
PIPING	LEAKS PLUGGED CHECK FOR LEAKS BETWEEN SBP AND TANK			
TANK	CHECK FOR LIQUID IN LEAK DETECTION AREA			
SIGNS	MISSING, DAMAGED			
HOUSEKEEPING	TANK CAP IN PLACE AND LOCKED AREA FREE OF COMBUSTIBLE MATERIAL.			
FIRE EXTINGUISHERS	NEED RECHARGING			
PUMPER TRUCK	OPERATIONAL			
TANK FOR #1 SBP	VOLUME: WHEN PUMPED LAST: NEXT DAY NEEDS PUMPED (Less than 90 Days)			
TANK FOR #2 SBP	VOLUME: WHEN PUMPED LAST: NEXT DAY NEEDS PUMPED (Less than 90 Days)			
TANK FOR #3 SBP	VOLUME: WHEN PUMPED LAST: NEXT DAY NEEDS PUMPED (Less than 90 Days)			
TELEPHONE, RADIO, ALARM SYSTEM	OPERATIONAL			

This is an UNCONTROLLED DOCUMENT printed or photocopied for reference only.

The current copy is online on the NSWCC Intranet at:

<https://sharepoint1.cran.nmcil.navy.mil/function/environmental/FormServerTemplates/All%20Forms.aspx>

INAV/SEA

## DAILY INSPECTION LOG

OPEN BURNING AREAS AT AMMUNITION BURNING GROUNDS

NSWCC 5090/7 (REV. 05/08) [Formerly NSWCC 5090/7 (REV. 12/88)]

(To be inspected daily)

INSPECTOR'S NAME/TITLE (Printed) (Signature)		DATE (Insp. - Mo./Day/Yr.)	TIME (Insp. - Hr.)	
ITEM	REASON FOR INSPECTION	STATUS Acceptable (A) Unacceptable (U)	OBSERVATIONS/COMMENTS	DATE & NATURE OF REPAIRS AND/OR REMEDIAl ACTION
INCOMPLETE BURN	POSSIBLE CONTAMINATION OF SOIL/SURFACE WATER.			
SPILLAGE	POSSIBLE CONTAMINATION OF SOIL/SURFACE WATER BY MATERIAL PRIOR TO BURNING/DISPOSAL.			
ROLL-OFF CONTAINER	CONTAINER MUST BE LABELED, WITH ACCUMULATION DATE, AND COVERED WITH TARP.			
BURN AREAS	ASH MUST BE REMOVED, AND AREA MAINTAINED AFTER EACH BURN.			
STANDARD OPERATING PROCEDURE	MUST BE COMPLIED WITH FOR EACH BURN OPERATION.			
FUEL OIL TANK	AREA MUST BE BERMED AND TANK CHECKED FOR LEAKS.			
BURN PANS	ASH MUST BE REMOVED EACH BURN. PANS INSPECTED FOR CRACKS, WARPS, INADEQUATE LINER WHERE REQUIRED AND VISIBLE DETERIORATION OF PAN.			
SIGNS	MISSING, DAMAGED			
FIRE EXTINGUISHERS	NEED RECHARGING			
PUMPER TRUCK	OPERATIONAL			
TELEPHONE, RADIO	OPERATIONAL			
INCENDIARY CAGE	DRAINAGE OF SURFACE WATER AWAY FROM CAGE.			
	WATER LEVEL IN SUMP, CRACKS IN SUMP WALLS.			

This is an UNCONTROLLED DOCUMENT printed or photocopied for reference only.

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<https://sharepoint.cran.nmci.navy.mil/function/environmental/FormServerTemplates/All%20Forms.aspx>

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## **Exhibit V.D-2**

**Environmental Protection Daily Inspection Log – DR**

## ENVIRONMENTAL PROTECTION DAILY INSPECTION LOG

NSWCC 5090/1 (REV. 05/06) [Formerly NSWCC 5060/1 (12/88)]

5090-HWM-FM-015

AREA INSPECTED

## DEMOLITION RANGE AND OPEN BURNING AREAS

INSPECTOR'S NAME/TITLE (Printed) (Signature)			DATE (Insp. - Mo./Day/Yr.)	TIME (Insp. - Min.)
ITEM	REASON FOR INSPECTION	STATUS Acceptable (A) Unacceptable (U)	OBSERVATIONS/COMMENTS	DATE & NATURE OF REPAIRS AND/OR REMEDIATION ACTION
<input type="checkbox"/> INCOMPLETE <input type="checkbox"/> BURN <input type="checkbox"/> DETONATION	POSSIBLE CONTAMINATION OF SOIL/SURFACE WATER.			
SPILLAGE	POSSIBLE CONTAMINATION OF SOIL/SURFACE WATER BY MATERIAL PRIOR TO BURNING/DISPOSAL.			
ROLL-OFF CONTAINER	CONTAINER MUST BE LABELED, WITH ACCUMULATION DATE, AND COVERED WITH TARP.			
BURN AREAS	ASH MUST BE REMOVED, AND AREA MAINTAINED AFTER EACH BURN.			
STANDARD OPERATING PROCEDURE	MUST BE COMPLIED WITH FOR EACH BURN OPERATION.			
FUEL OIL TANK	AREA MUST BE BERMED AND TANK CHECKED FOR LEAKS.			
BURN PANS	ASH MUST BE REMOVED EACH BURN. PANS INSPECTED FOR CRACKS, WARPS, INADEQUATE LINER WHERE REQUIRED AND VISIBLE DETERIORATION OF PAN.			
FRAGMENTATION	MUST BE REMOVED FROM AREA WHEN LARGER THAN ONE SQUARE FOOT			
SIGNS	MISSING, DAMAGED			
FIRE EXTINGUISHERS	NEED RECHARGING			
PUMPER TRUCK	OPERATIONAL			
TELEPHONE, RADIO	OPERATIONAL			

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<https://sharepoint.cran.nmci.navy.mil/function/environmental/FormServerTemplates/All%20Forms.aspx>

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## **Exhibit V.D-3**

### **Motor Vehicle Inspection Log**

MOTOR VEHICLE INSPECTION  
TRANSPORTING HAZARDOUS MATERIAL  
MVBC 4730/22 (REV. 12-85)

(See Instructions On Reverse)

DATE

DRIVER (Name - Print)		VEHICLE NUMBER		
ITEM NO.	CHECK APPROPRIATE COLUMN (See Reverse for Explanatory Notes)	SAT.	UNSAT.	REMARKS
	<b>PRE OPERATIONAL CHECKS</b>			
1.	ENGINE, BODY, CAB AND CHASSIS CLEAN			
2.	STEERING MECHANISM			
3.	HORN OPERATIVE			
4.	WINDSHIELD AND WIPERS			
5.	SPARE ELECTRIC FUSES AVAILABLE			
6.	REAR VIEW MIRRORS INSTALLED			
7.	FULL FIRE EXTINGUISHER INSTALLED			
8.	LIGHTS AND REFLECTORS OPERATIVE			
9.	EXHAUST SYSTEM			
10.	FUEL TANK, LINE AND INLET			
11.	COUPLING DEVICES - KINGPIN LOCK			
12.	ALL BRAKES OPERATIVE			
13.	LANDING GEAR ASSEMBLY OPERATIVE			
14.	SPRINGS AND ASSOCIATED PARTS			
15.	TIRES			
16.	CARGO SPACE			
17.	ELECTRIC WIRING			
18.	TAIL GATE AND DOORS SECURED			
19.	FIRE AND WATER RESISTANT TARPAULIN			
20.	ANY OTHER DEFECTS (Specify)			
	<b>DURING OPERATIONAL CHECKS</b>			
1.	INSTRUMENTS			
2.	OIL PRESSURE			
3.	HEAT INDICATOR			
4.	ENGINE (HARD TO START, SKIPPING, IDLE, POWER, OVERHEATING)			
5.	CLUTCH			
6.	TRANSMISSION			
7.	DIFFERENTIAL			
<b>ITEMS TO BE CHECKED PRIOR TO MOVEMENT OF LOADED VEHICLE</b>				
1. MIXTURES OF MATERIALS PROHIBITED BY DOT REGULATIONS ARE NOT LOADED ONTO THIS VEHICLE.				
2. LOAD IS SECURED TO PREVENT MOVEMENT.				
3. WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERWEIGHT.				
4. SEAL(S)/LOCK(S) APPLIED TO CLOSED VEHICLE, FIRE AND WATER RESISTANT TARPAULIN APPLIED ON OPEN VEHICLE.				
5. PROPER PLACARDS APPLIED.				
REMARKS				

SIGNATURE (Operator)

## INSTRUCTIONS

The following explanatory notes are furnished as a guide to the driver/inspector in making a motor vehicle inspection for hauling hazardous materials on-station only. For off-station movement DD Form 626 is required.

### PRE-OPERATIONAL CHECKS

**ITEM 1. ENGINE, BODY, CAB, AND CHASSIS CLEAN** (e.g., no excessive oil or grease) - Inspect to see that engine and compartment are clean, check cab to see that no excessive grease is on cab and cab floor is free of debris; check under cab and chassis for excessive grease. (DOD Requirement)

**ITEM 2. STEERING MECHANISM** - Inspect to see that steering mechanism is in good condition, in proper adjustment, correctly and securely mounted, and whether the steering gear case is leaking lubricant. Pay particular attention to the pitman arm and tie rod assembly to see that they are securely mounted and not bent out of normal shape. (DOD Requirement)

**ITEM 3. HORN OPERATIVE** - Inspect to see that horn is securely mounted and of sufficient volume to serve its purpose. (M.C.S.R.)

**ITEM 4. WINDSHIELD AND WIPERS** - Inspect to see that the windshields of the tractors are free from breaks, cracks or defects which would make operation of the vehicle unsafe, that the view of the driver is not obscured by stickers, that wipers operate properly, and that wiper blades are of proper kind and in good condition. Defroster operative when conditions require it. (M.C.S.R.)

**ITEM 5. SPARE ELECTRIC FUSES AVAILABLE** - Check to see that at least one spare fuse for each kind and type of installed fuse is carried on vehicle as a spare, or it is equipped with an overload protective device (Circuit breaker) (M.C.S.R.)

**ITEM 6. REAR VIEW MIRRORS INSTALLED** - Every truck and truck tractor shall have installed two rear vision mirrors, one at each side, firmly attached and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors must not be cracked or dirty. (M.C.S.R.)

**ITEM 7. FULL FIRE EXTINGUISHER INSTALLED** - Inspect to see that one full fire extinguisher having an Underwriters' Laboratories rating of 10 B:C or more is securely mounted and readily accessible. (M.C.S.R.)

**ITEM 8. LIGHTS AND REFLECTORS OPERATIVE** - (Head-Stop-Trail-Front and Rear Clearance) - Inspect all lights and switches, including clearance lights and turn signals; make sure they are not obscured by dirt or grease or have broken lens; high and low beam switch must be operative. EMERGENCY flashers operating on front and rear of vehicle. (M.C.S.R.)

**ITEM 9. EXHAUST SYSTEM** - Inspect the exhaust system to see that no part is so located as would be likely to result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible parts of the vehicle. The exhaust system shall discharge to the atmosphere at a location to the rear of the cab or, if the exhaust projects above the cab, at a location near the rear of the cab. (M.C.S.R.)

**ITEM 10. FUEL TANK, LINE, AND INLET** - Inspect tanks and fuel lines to see that they are in completely serviceable condition, free from leaks or evidence of leakage and surely mounted. Examine caps for defective gaskets or plugged vents. Inspect the filler necks to see that they are in completely serviceable condition, securely supported and not leaking at joints. (M.C.S.R.)

**ITEM 11. COUPLING DEVICES - KINGPIN LOCK** - Inspect without uncoupling to see that the fifth wheel rocker plate and bed are in good condition, properly assembled and mounted, and adequately lubricated. Kingpin lock must operate freely and properly, lock securely, and not show excessive wear. (M.C.S.R.)

**ITEM 12. ALL BRAKES OPERATIVE** - (including hand brakes and air pressure warning devices) - Inspect for oil or grease leaks around drum flanges, pedal travel, air or vacuum line leaks, moisture in tanks, adequate brake application. Check alcohol reservoir. (M.C.S.R.)

### REMARKS

**ITEM 13. LANDING GEAR ASSEMBLY OPERATIVE** - Landing gear assembly must be in good condition, correctly assembled, adequately lubricated, and properly mounted.

**ITEM 14. SPRINGS AND ASSOCIATED PARTS** - Examine visually the springs, suspension hanger mechanisms, torsion bar assemblies, and auxiliary parts such as U-bolts, shackles, center bolts and hangers, for breakage, improper adjustment, and, as appropriate, lack of lubrication. Air suspensions should not be leaking. (DOD Requirement)

**ITEM 15. TIRES** - Examine all tires for cuts, bruises, breaks, and blisters. All tires with cuts or injuries extending into the cord body and those worn smooth in the center of the tread are not acceptable. Ensure that stones are removed from between duals. Tires must be properly matched on dual-equipped tractors and trailers. (M.C.S.R.)

**ITEM 16. CARGO SPACE** - Inspect to see that cargo space is clean and in good condition to prevent damage to loading from exposed bolts, nuts, screws, nails, or other inwardly projected parts. Check floor to make sure it is tight and free of holes. Floors shall not be permeated with oil or gasoline. (C.F.R.)

**ITEM 17. ELECTRIC WIRING** - Electric wiring must be clean and properly secured, insulation must not be frayed or otherwise in poor condition. There must be no uninsulated wires or improper splices or connections. Wires and electric fixtures inside the body must be protected from the loading. (M.C.S.R.)

**ITEM 18. TAILGATE AND DOORS ON CLOSED EQUIPMENT SECURED** - Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. (M.C.S.R.)

**ITEM 19. FIRE AND WATER RESISTANT TARPAULIN** - If shipment is made on open equipment, check to make sure the loading is properly covered with a fire and water resistant tarpaulin. Explosives, material packed in fire and water resistant containers and transported on flat-bed vehicles are not required to be covered with fire and water resistant tarpaulin. (C.F.R.)

**ITEM 20. ANY OTHER DEFECTS (Specify)** - Self Explanatory.

### DURING OPERATIONAL CHECKS

**ITEM 1-7. ANY DEFECTS (Specify)** - Self Explanatory.

### PRIOR TO MOVEMENT CHECKS

**ITEM 1. MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS VEHICLE** - Check carefully to prevent loading of incompatible explosives. (C.F.R.)

**ITEM 2. LOAD IS SECURED TO PREVENT MOVEMENT** - Self Explanatory.

**ITEM 3. WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED** - Loading shall be distributed in accordance with the approved load plan, when available, or when not available, a plan agreed upon by the shipper and the carrier. The weight of the load shall not exceed the capacity of the vehicle established by the carrier. The gross axle weights and the gross vehicle weight shall not exceed the limits imposed by the states through which the vehicle is routed. The carrier shall inform the shipper of the state(s) law requirements. (DOD Requirement)

**ITEM 4.** - Self Explanatory.

**ITEM 5. PROPER PLACARDS APPLIED** - Four standard placards applicable to the load will be furnished the carrier and insure they are conspicuously displayed, one in front, rear, and each side. (C.F.R.)

## **Exhibit V.D-4**

Typical Information Pertaining to Safety Precautions,  
Hazard Control Briefing, Special Instructions Excerpted  
from SOPs for ABG/DR/ORR

\*This document is available for review within the facility's Permit  
Renewal Application (VFC# 66400964) in IDEM's Virtual File Cabinet  
at <http://vfc.idem.IN.gov/>.

## **Exhibit V.D-5**

**Waste Labels - Reactive/Explosive Materials - EHW**

**Label**

**02079**

# **EXPLOSIVE**

**HAZARDOUS WASTE**

**CONTENTS:**

**CONTACT:**

**START DATE:**

## **Exhibit V.F-1**

### **Authorizing, Accomplishing, and Reporting Demilitarization of Class V Material**

\*This document is available for review within the facility's Permit Renewal Application (VFC# 66400964) in IDEM's Virtual File Cabinet at <http://vfc.idem.IN.gov/>.

## **Exhibit V.F-2**

### **Environmental Noise Consultation**

\*This document is available for review within the facility's Permit Renewal Application (VFC# 66400964) in IDEM's Virtual File Cabinet at <http://vfc.idem.IN.gov/>.

## **Exhibit V.F-3**

**Ground Motion and Air Overpressure Study at the Naval  
Surface Warfare Center, Crane, Indiana**

\*This document is available for review within the facility's Permit  
Renewal Application (VFC# 66400964) in IDEM's Virtual File Cabinet  
at <http://vfc.idem.IN.gov/>.

**Table V.B-1**

**Summary of Open Burning/Open Detonation Operations**

**TABLE V.B-I SUMMARY OF OPEN BURNING/OPEN DETONATION OPERATIONS**

OB Operation Number - Location	Description of OB Operation	Wastes Treated- Waste Codes	Net Explosive Weight (NEW) Limits	Auxiliary Fuels Used in The OB Operation	Treatment Schedule/ Estimated Open Burn Duration	Treatment Device Description/ Dimensions	Processes Generating Wastes Treated	Maximum Weekly Treatment Rate	Wastes Generated and Disposition of Waste
1-ABG	Transport of reactive wastes to ABG site	None	2,000 lbs via pickup truck; 50,000 lbs via tractor trailer	None	None	None	None	None	None
2-ABG	Receipt & stockpile of reactive wastes at the ABG	None	RangeLimit: 50,000lbs	None	None	None	None	None	None
3a-ABG	Main Burn Pan Grid - OB of propellants	Propellants D003	1,500 lbs/pan x 10 pans/event	No more than 5 gallons of fuel oil or 5 pounds of propellant used per event.	Maximum of 5 treatment events per day. Propellants: 5-30 seconds	20 pans; Dimensions: 14'x7"x12"	Demilitarization; Off-specification material; Imminently hazardous munitions; Off-site PEP	525,000 lbs	Ash Collected in rolloff at site and disposed of by contractor
3b-ABG	Main Burn Pan Grid - OB of explosives	Explosives D003	500 lbs/pan x 10 pans for items requiring greater than 100 ft. separation distance; 50 lbs or less/pan x 20 pans for items requiring a separation distance equal to or less than 50 ft.	No more than 5 gallons of fuel oil or 5 pounds of propellant used per event.	Maximum of 5 treatment events per day. Explosives: 5-30 seconds	20 pans; Dimensions: 14'x7"x12"	Demilitarization; Off-specification material; Off-site PEP	175,000 lbs	Ash Collected in rolloff at site and disposed of by contractor

**TABLE V.B-1 SUMMARY OF OPEN BURNING/OPEN DETONATION OPERATIONS**

3c-ABG	Main Burn Pan Grid - OB of production scrap	Production Scrap D003	1,500 lbs/pan x 10 pans/event	No more than 5 gallons of fuel oil or 5 pounds of propellant used per event.	Maximum of 5 treatment events per day; HE production scrap: 4-60 minutes	20 pans; Dimensions: 14'x7'x12"	Demilitarization; Manufacturing; Research & Development; Testing	525,000 lbs	Ash Collected in rolloff at site and disposed of by contractor
4-ABG	East End Burn Pan OB of explosive residue in flammable liquids	Flammable liquid is acetone; Explosive is tetryl. D003/F003	50 lbs of tetryl and 75 gallons of acetone per pan	5 lbs of propellant	Maximum of 3 events per day; 30-45 minutes	1 pan; Dimensions: 8'x4'x12"	Manufacturing; Research & Development	1,750 lbs	Ash Collected in drum at site and transferred to CSF when full
5-ABG	East End Burn Pan OB of contaminated flammable liquids	Flammable liquids contaminated with reactive materials. Liquids include acetone, hexane, toluene, cyclohexane, carbon disulfide, heptane, cycloheptane. F001-F005/D003	100 gallons of flammable liquid or 100 pounds explosive per pan.	5 lbs of propellant	Maximum of 3 treatment events per day; 30-45 minutes	1 pan; Dimensions: 8'x4'x12"	Manufacturing; Research & Development; Demilitarization	16,200 lbs	Ash Collected in drum at site and transferred to CSF when full
6-ABG	North Hill Burn Pan OB of pyrotechnics	Red phosphorus D003	100 lbs of red phosphorus per pan; 800 lbs total per event	5 gallons of fuel oil and 5 lbs of propellant per event.	Maximum of 2 events per day; 2 hours	8 pans; Dimensions: 4'x4'x12"	Manufacturing; Research & Development	11,200 lbs	Ash Collected in rolloff at site and disposed of by contractor

**TABLE V.B-1 SUMMARY OF OPEN BURNING/OPEN DETONATION OPERATIONS**

OB Operation Number - Location	Description of OB Operation	Wastes Treated- Waste Codes	Net Explosive Weight (NEW) Limits	Auxiliary Fuels Used in The OB Operation	Treatment Schedule/ Estimated Open Burn Duration	Treatment Device Description/ Dimensions	Processes Generating Wastes Treated	Maximum Weekly Treatment Rate	Wastes Generated and Disposition of Waste
7-ABG	East End Burn Pan OB of pyrotechnics	flare/smoke/ignition materials D003	100 lbs per pan	5 gallons of fuel oil and 5 lbs of propellant per event.	Maximum of 2 treatment events per day; 30-45 minutes	2 pans; Dimensions: 8'x4'x12"	Manufacturing; Research & Development	1,400 lbs	Ash Collected in rolloff at site and disposed of by contractor
8-ABG	East End Burn Pan OB of black powder slurry	Black powder D003	125 lbs. per pan	5 gallons of fuel oil and 5 lbs of propellant and wood.	Maximum of 2 treatment events per day; 60 minutes	1 pan; Dimensions: 8'x4'x12"	Manufacturing; Demilitarization	1,750 lbs	Ash Collected in rolloff at site and disposed of by contractor
9-ABG	North Hill and West End Concrete Pads Safety flashing of contaminated items	Tags, floor sweepings, paper, and boxes contaminated with explosive and propellants	100 lbs per pad	Wood, 5 gallons of fuel oil and 5 lbs of propellant per event.	Maximum of 2 treatment events per day; 2 hours	2 concrete pads; Dimensions: 30'x50'	Demilitarization; Manufacturing; Research & Development; Testing	1,400 lbs	Ash Collected in rolloff at site and disposed of by contractor
10-ABG	Dewatering Units #1 & #2 OB of contaminated sludges	Composition B, HBX, 1,2,3-HMX, Octol, pentolite10/90 & 50/50, PETN, RDX, tetryl, TNT, and Tritonal D003	1,000 lbs per pan	5 gallons of fuel oil and 5 lbs of propellant per event.	Maximum of 1 event per day; 2 hours	2 pans; Dimensions: 8'x14'x6'	Manufacturing; Demilitarization	14,000 lbs	Ash Collected in rolloff at site and disposed of by contractor. Water treated at pinkwater treatment plant.

**TABLE V.B-1 SUMMARY OF OPEN BURNING/OPEN DETONATION OPERATIONS**

OB Operation Number - Location	Description of OB Operation	Wastes Treated- Waste Codes	Net Explosive Weight (NEW) Limits	Auxiliary Fuels Used In The OB Operation	Treatment Schedule/ Estimated Open Burn Duration	Treatment Device Description/ Dimensions	Processes Generating Wastes Treated	Maximum Weekly Treatment Rate	Wastes Generated and Disposition of Waste
11-ABG	Dewatering Unit #3 OB of red phosphorus sludges	Red phosphorus D003	200 lbs of red phosphorus	5 gallons of fuel oil and 5 lbs of propellant per event; and wood.	Maximum of 1 treatment event per day; 4 hours	1 pan; Dimensions: 8'x4'x6'	Manufacturing	1,400 lbs	Ash Collected in rolloff at site and disposed of by contractor. Water analyzed - placed in drum if contaminated, discharged if clean.
12-ABG	Primer Pits OB of pyrotechnics, fuses, and small items	Explosives, propellants & pyrotechnics D003	SOP NEW limit varies by item; NEW limit ranges from 20 to 300 lbs.	5 gallons of fuel oil and 5 lbs of propellant per event; and wood.	Maximum of 1 treatment event per day; pits may be burnt in succession with each pit burning 4 hours.	2 open pits; Dimensions: 7'x5.5'x3'	Manufacturing; Demilitarization	2,100 lbs	Ash Collected in rolloff at site and disposed of by contractor
13-ABG	Incendiary Cage OB of explosives and pyrotechnics	Explosives & pyrotechnics D003	SOP NEW limit varies by item; NEW limit ranges from 50 to 50,000 lbs.	5 gallons of fuel oil and 5 lbs of propellant per event; and wood.	Maximum of 1 treatment event per day;/10 hours.	1 incendiary cage enclosure	Manufacturing; Demilitarization	350,000 lbs	Ash Collected in rolloff at site and disposed of by contractor

TABLE V.B-1 SUMMARY OF OPEN BURNING/OPEN DETONATION OPERATIONS

OB Operation Number - Location	Description of OB Operation	Wastes Treated- Waste Codes	SOP Net Explosive Weight (NEW) Limits	Auxiliary Fuels Used in the OB Operation	Treatment Schedule/Estimated Open Burn Duration	Treatment Device Description	Processes Generating Wastes Treated	Maximum Weekly Treatment Rate	Wastes Generated and Disposition of Waste
1-ORR	Transport of reactive wastes to ORR site	None	2,000 lbs via pickup truck; 5,000 lbs via tractor trailer	None	None	None	None	None	None
2-ORR	Receipt & stockpile of reactive wastes at the ORR	None	Range Limit: 50,000 lbs	None	None	None	None	None	None
3a-ORR	OB of bulk yellow D; Alternate to 3-ABG	Explosives D003	500 lbs of yellow D per pan	10 gallons of fuel oil and 110 lbs of propellant	Maximum of 4 treatment events per day; 2 hours per event	3 pans; Dimensions: 14'x7'x12"	Demilitarization	42,000 lbs	Ash collected in rolloff and disposed of by contractor
3b-ORR	OB of projectile bodies & Yellow-D Contaminated Materials	Explosives, propellants, and pyrotechnics D003	5,000 lbs total NEW per event	10 gallons of fuel oil and 110 lbs of propellant	Maximum of 1 treatment event per day; 4 hours per event	3 pits; Dimensions: 30'x50'	Demilitarization	56,000 lbs	Ash collected in rolloff and disposed of by contractor

**TABLE V.B-1 SUMMARY OF OPEN BURNING/OPEN DETONATION OPERATIONS**

OD Operation Number - Location	Description of OB Operation	Wastes Treated-Waste Codes	SOP Net Explosive Weight (NEW) Limits	Donor Charge Used in the OD Operations	Treatment Schedule/Estimated Open Detonation Duration	Processes Generating Wastes Treated	Maximum Weekly Treatment Rate	Wastes Generated and Disposition of Waste
1-DR	Transport of reactive wastes to DR site	None	2,000 lbs via pickup truck; 25,000 lbs via tractor trailer; 50,000 lbs via rail	None	None	None	None	None
2-DR	Receipt & stockpile of reactive wastes at the DR	None	Total NEW allowed on the range is 106,400 lbs contained in 5 separate storage locations.	None	None	None	None	None
3-DR	OD of waste explosive materials	Explosives D003	500 lbs NEW per pit; 28,000 lbs per day in winter and 55,000 lbs per day in the summer.	Combined NEW of donor charge and the waste explosive is not to exceed 500 lbs per pit.	Maximum SOP treatment limit is 110 pits per day spread over 2 treatment events.* Neither event can contain more than 70 pits.*	Manufacturing; Demilitarization; Imminently Hazardous Materials; Research & Development	385,000 lbs	Scrap from range operations collected and safety flashed at ORR before recycling as scrap metal.

**Table V.B-2**

Traffic Patterns/Haul Routes

**TABLE V.B-2**  
**TRAFFIC PATTERNS/HAUL ROUTES**

<u>Origin of Waste</u>	<u>Destination of Waste</u>	<u>Routes (Highways)</u>
Production Areas (PEP Scrap) Minefill A, Rockeye, B-126, B-200 (Various production buildings)	Ammunition Burning Grounds/Demolition Range	H-331 to H-5 to H-45; H-105 & II-10 to H-101 to H-45 H-322 to H-101 to H-45
Production Areas: Minefill A, Rockeye, B-146	10-ABG	H-45 to H-99 to H-58 to H-274 to H-463
Pyro Production B-133	11-ABG	H-12 to II-99 to H-58 to H-274 to H-463
11-ABG at ABG (ash)	Off-site management by Private Contractor	H-463 to H-274 to H-58 to H-99 to H-45 to H-5 to U.S. 231
11-ABG at ABG (filtrate)	Central Storage Facility if sampled and found to be hazardous; to sanitary sewer if non-hazardous	H-463 to H-274 to H-58 to H-99 to H-45
10-ABG (ash)	Off-site management by Private Contractor	H-463 to H-274 to H-58 to H-99 to H-45 to H-5 to U.S. 231
10-ABG (filtrate)	Minefill A, Rockeye treated/discharged (covered by NPDES)	H-3044 to H-463 to H-274 to H-58 to H-99 to II-45
OTA/SFTR (expended hardware)	ABG	H-30 to H-24 to H-493 to H-8 to H-58 to H-274 to H-463
Rocket Range (expended hardware)	ABG	H-465 to H-161 to H-30 to H-24 to H-493 to H-8 to H-58 to H-274 to II-463
B-198/2504 (expl. Contaminated solvent)	ABG	H-101 to H-45 to H-58 to H-274 to H-463
B-2707 (explosive contaminated lab waste)	ABG/DR	H-11 to H-10 to H-101 to H-45 to H-58 to H-274 to H-463 / H-11 to H-10 to H-101 to H-45 to H-314
B-126	ABG	H-5 to H-45 to H-99 to H-58 to H-274 to H-463

### **Table V.B-3**

Traffic Volumes/Waste Flow

**TABLE V.B-3**  
**TRAFFIC VOLUMES/WASTE FLOW**

<u>Origin of Waste</u>	<u>Destination of Waste</u>	<u>Estimated Trip Rate</u>
Production Area (PEP Scrap)	ABG/DR	10 trips per day
Production Area; B-160, Rockeye,	10-ABG	4 trips per month
Pyro Production B-133	11-ABG	4 trips per month
11-ABG (Filtrate)	Central Storage Facility if sampled and found to be hazardous; to sanitary sewer if non-hazardous	1 trip per month
10-ABG (Filtrate)	B-160; Rockeye B-3044 treated and discharged (covered by NPDES)	2 trips per month
Ash from Thermal Treatment includes DU's and all ash from pans and other operations	Off-site Management by Private Contractor	8 trips per month

## **Table V.B-4**

**Number of Vehicles and Types**

**TABLE V.B-4**  
**NUMBER OF VEHICLES AND TYPES**

FACILITY	3/4- & 1-TON PICKUP	2-TON STAKE TRUCK	SEMI FOR ROLLOFFS (CONTRACTOR)	FORKLIFTS	BULLDOZERS D8	5-TON SEMI-TRACTOR TRAILER	1-TON FIRE TRUCK PUMPER	GRADER
ABG	5	4*	1	5**	0	1	1	0
DR/ORR	5	4*	1	4**	6	1	1	1

\*NOTE: STAKE TRUCKS CAN SERVE EITHER LOCATION

\*\*NOTE: ABG HAS 5 @ 6,000# CAP.; DR/ORR HAS 4 @ 6,000# CAP.

**Table V.B-5**

Roster of CE Magazines at NSWC Crane

## Roster of CE Magazines at NSWC Crane

Magazine Number	Operated by
276	CAAA
527	CAAA
624	EOD
760	CAAA
787	CAAA
789	CAAA
814	CAAA
1161	EOD
1200	CAAA
1205	CAAA
1206	CAAA
1209	CAAA
1298	CAAA
1299	CAAA
1407	CAAA
1411	CAAA
1509	CAAA
1512	CAAA
1516	CAAA
1556	CAAA
1578	CAAA
1646	CAAA

## **Table V.C-1**

Typical Items Proposed for Thermal Treatment

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
PAGE 1

Crane No.	Description	Unit	Component	Wt. %
1	10 GAUGE BLANKS (D003)	CRANE/DE/PP	BLACK POWDER	100.0000
2	105-MM TP-T CARTRIDGE, M939A1 (D003)	CRANE/DE	RDX	47.3000
			NITROCELLULOSE	40.1800
			DINITROTOLUENE	4.7300
			WAX	4.6200
			DIBUTYLPHthalate	1.8900
			DIPHENYLAMINE	0.4700
			POTASSIUM NITRATE	0.3800
			MAGNESIUM POWDER	0.1200
			STRONTIUM NITRATE	0.1200
			BARIUM COMPOUNDS	0.0300
3	105-MM APDS-T CARTRIDGE, M392A2 (D003)	CRANE/DE	NITROGUANIDINE	47.3900
			NITROCELLULOSE	28.1200
			NITROGLYCERIN	22.2800
			ETHYL CENTRALITE	1.4900
			POTASSIUM NITRATE	0.4600
			CHARCOAL	0.1000
			GRAPHITE	0.1000
			MAGNESIUM POWDER	0.0500
			STRONTIUM NITRATE	0.0400
			BARIUM PEROXIDE	0.0200
4	105-MM APFSDS-T CARTRIDGE, M735 (D003)	CRANE/DE	NITROGUANIDINE	47.4900
			NITROCELLULOSE	28.0700
			NITROGLYCERIN	22.5300
			ETHYL CENTRALITE	1.5200
			GRAPHITE	0.0800
5	105-MM BLANK CARTRIDGE, M395 (D003)	CRANE/DE	POTASSIUM NITRATE	75.1000
			CHARCOAL	15.0000
			SULFUR	9.9000
6	105-MM HEP-T CARTRIDGE, M393A2 (D003, D030)	CRANE/DE	RDX	47.6600
			NITROCELLULOSE	39.8000
			DINITROTOLUENE	4.6900
			WAX	4.6900
			DIBUTYLPHthalate	1.9100
			DIPHENYLAMINE	0.4800
			POTASSIUM NITRATE	0.4000
			CHARCOAL	0.0800
			MAGNESIUM POWDER	0.0800
			STRONTIUM NITRATE	0.0800
7	105-MM HIGH EXPLOSIVE CARTRIDGE WITH PD FUZE (M1) (D003, D008, D030)	CRANE/DE	TRINITROTOLUENE	48.1200
			RDX	21.9300
			NITROCELLULOSE	17.0300
			DIBUTYLPHthalate	10.0000
			DINITROTOLUENE	2.3600
			POTASSIUM NITRATE	0.2300
			DIPHENYLAMINE	0.2000
			TETRYL	0.0300
			LEAD COMPOUNDS	0.0100

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
8	105-MM HIGH EXPLOSIVE CARTRIDGE WITHOUT FUZE, M1 (D003, D030)	CRANE/DE	TRINITROTOLUENE	53.0700
			RDX	23.8700
			NITROCELLULOSE	18.7900
			DINITROTOLUENE	2.6100
			POTASSIUM NITRATE	0.2500
			DIPHENYLAMINE	0.2290
9	1305-A659 CTG 20 MM HEI-T M242A1 SINGL RD (D003, D008)	CRANE/DE/PP	NITROCELLULOSE	58.0300
			RDX	10.6300
			NITROGLYCERIN	7.4300
			DIBUTYLPHTHALATE	5.7400
			ALUMINUM POWDER	5.7400
			POTASSIUM COMPOUNDS	2.6100
			STRONTIUM NITRATE	1.3900
			MAGNESIUM/ALUMINUM ALLOY	1.0600
			DIPHENYLAMINE	1.0200
			TIN DIOXIDE	1.0200
			LEAD COMPOUNDS	0.3050
			ANTIMONY SULFIDE	0.0202
10	1305-A662 CTG 20 MM HEI M56 SERIES LNKD (D003, D005, D008)	CRANE/DE/PP	NITROCELLULOSE	58.9600
			RDX	11.3600
			NITROGLYCERIN	7.5400
			ATOMIZED ALUMINUM	6.0000
			DIBUTYLPHTHALATE	5.8300
			POTASSIUM COMPOUNDS	2.7800
			MAGNESIUM/ALUMINUM ALLOY	1.6100
			DIPHENYLAMINE	1.0300
			TIN DIOXIDE	1.0300
			LEAD COMPOUNDS	0.3100
			BARIUM NITRATE	0.1470
			ANTIMONY SULFIDE	0.1470
11	1305-A701 CTG 20-MM HEI M56A3 SERIES LNKD (D003, D005, D008)	CRANE/DE/PP	NITROCELLULOSE	77.7000
			NITROGLYCERIN	9.2300
			DIPHENYLAMINE	1.1200
			TIN DIOXIDE	1.0700
			RDX	1.0200
			HMX	0.9500
			POTASSIUM NITRATE	0.7800
			CALCIUM COMPOUNDS	0.5800
			LEAD COMPOUNDS	0.4400
			SODIUM SULFATE	0.2400
			BARIUM NITRATE	0.2100
			GRAPHITE	0.2000
			ANTIMONY SULFIDE	0.2910

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TYPICAL ENERGETIC ITEMS  
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Crane No.	Description	Unit	Component	Wt. %
			ZINC STEARATE	0.0048
12	1305-A775 CTG 20-MM HEI M97 SINGLE RD (D003, D005, D008, D030)	CRANE/DE/PP	NITROCELLULOSE	59.1200
			RDX	10.1800
			NITROGLYCERIN	6.6900
			DIBUTYLPHthalate	6.0100
			DINITROTOLUENE	6.0100
			ALUMINUM POWDER	5.3100
			POTASSIUM COMPOUNDS	1.5800
			TIN	0.6320
			LEAD COMPOUNDS	0.3430
			BARIUM NITRATE	0.1630
			ANTIMONY SULFIDE	0.2270
13	1305-A776 CTG 20-MM INC M96 SNGL RD (D003, D008, D030)	CRANE/DE/PP	NITROCELLULOSE	67.0700
			POTASSIUM COMPOUNDS	14.1800
			MAGNESIUM/ALUMINUM ALLOY	12.0400
			DINITROTOLUENE	5.4900
			DIPHENYLAMINE	0.5190
			TIN	0.5190
			LEAD THIOCYANATE	0.0836
			ANTIMONY SULFIDE	0.0395
			PETN	0.0331
			CALCIUM RESINATE	0.0253
14	1305-A785 CTG 20 MM HEI MZ10 SNGL RD (D003, D008)	CRANE/DE/PP	NITROCELLULOSE	57.2900
			RDX	9.1200
			NITROGLYCERIN	7.4200
			DIBUTYLPHthalate	6.4100
			ALUMINUM POWDER	4.6900
			GRAPHITE	4.1400
			POTASSIUM COMPOUNDS	3.2800
			MAGNESIUM/ALUMINUM ALLOY	2.0700
			DIPHENYLAMINE	1.0200
			TIN DIOXIDE	1.0200
			LEAD COMPOUNDS	0.3080
			ANTIMONY SULFIDE	0.0667
15	1305-A806 CTG-20 MM API MK107 MOD 5 SINGLE ROUND (D003, D030)	CRANE/DE	NITROCELLULOSE	91.4000
			DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
16	1305-A809 CTG-20 MM HPT T131 SINGLE ROUND (D003, D030)	CRANE/DE	NITROCELLULOSE	91.4000
			DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt %
			GRAPHITE	0.2000
17	1305-A811 CTG-20 MM TP MK105	CRANE/DE	NITROCELLULOSE	91.4000
	SNGL RD		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
18	1305 A812 CTG-20 MM AP-T MK 108	CRANE/DE	NITROCELLULOSE	91.4000
	SNGL RD		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
19	1305-A872 CTG-20MM API MK107	CRANE/DE	NITROCELLULOSE	91.4000
	MOD 1 SINGLE ROUND		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
20	1305-A873 CTG-20 MM AP-T MK 108	CRANE/DE	NITROCELLULOSE	91.4000
	MOD 1 SINGLE ROUND		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
21	1305-A874 CTG-20 MM TP MK105	CRANE/DE	NITROCELLULOSE	91.4000
	MOD 1 SINGLE ROUND		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
22	1305-A876 CTG-20 MM TP MK105	CRANE/DE	NITROCELLULOSE	91.4000
	MOD 0 SNGL RD		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
23	1305-A884 20 MM API M53 LNKD	CRANE/DE/PP	NITROCELLULOSE	67.6000
	(D003, D005, D008, D030)		NITROGLYCERIN	8.7500
			DIBUTYLPHthalate	7.5600
			MAGNESIUM/ALUMINUM ALLOY	5.3100
			POTASSIUM PERCHLORATE	2.1500
			BARIUM NITRATE	1.7700
			AMMONIUM NITRATE	1.6700
			DIPHENYLAMINE	1.1900
			TIN DIOXIDE	1.1900
			DINITROTOLUENE	0.8000
			SODIUM SULFATE	0.3900
			LEAD STYPHNATE	0.1600
24	1305-A892 CTG-20 MM HPT 54A1	CRANE/DE	NITROCELLULOSE	91.4000
	SNGL RD		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
25	1305-A974 CTG 25-MM ADP-T M791	CRANE/DE	NITROCELLULOSE	91.4000
	LNUKD		DINITROTOLUENE	7.0000
	(D003, D030)		DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
26	1305-B112 CTG 30-MM HEI MK3Z	CRANE/DE	PETN	50.0000
	LNUKD LHF (D003)		TNT	50.0000
27	1305-B113 CTG 30-MM TP MK4Z	CRANE/DE	NITROCELLULOSE	91.4000
	LNUKD LHF (D003, D030)		DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
28	1305-B114 CTG 30-MM HEI M3Z-1	CRANE/DE	PETN	50.0000
	LNUKD RHF (D003)		TNT	50.0000
29	1305-B115 CTG 30-MM HEI M799	CRANE/DE	PETN	50.0000
	LNUKD LHF(D003)		TNT	50.0000
30	1305-B115 CTG 30-MM TP MK4Z	CRANE/DE	NITROCELLULOSE	91.4000
	LNUKD RHF(D003, D030)		DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
31	1305-B120 CTG 30-MM TP M788	CRANE/DE/PP	NITROCELLULOSE	77.1100
	LNUKD RHF		NITROGLYCERIN	9.9500
	(D003, D005, D008)		DIBUTYLPHTHALATE	9.0500
			DIPHENYLAMINE	1.3600
			CALCIUM CARBONATE	0.9000
			POTASSIUM NITRATE	0.4500
			SODIUM SULFATE	0.4500
			GRAPHITE	0.3600
			BARIUM NITRATE	0.1500
			LEAD STYPHNATE	0.1400
			CALCIUM SILICIDE	0.0600
32	1305-B125 CTG 30-MM HEI M799	CRANE/DE	PETN	50.0000
	LNUKD RHF (D003)		TNT	50.0000
33	1310-B551 CTG 40-MM AP M81A1	CRANE/DE	NITROCELLULOSE	80.0000
	CLIPPED		DINITROTOLUENE	9.4400
	(D003, D005, D008, D030)		DIBUTYLPHTHALATE	4.7200
			STRONTIUM NITRATE	1.6200
			MAGNESIUM	1.0900
			POTASSIUM COMPOUNDS	0.9900
			DIPHENYLAMINE	0.9400
			BARIUM PEROXIDE	0.3300
			POLYVINYL CHLORIDE	0.2000
			ALUMINUM	0.5000
			ANTIMONY SULFIDE	

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			LEAD THIOCYANATE	
34	1310-B559 40-MM EI-T-SD 4/CLIP (D003, D008, D030)	CRANE/DE	NITROCELLULOSE	70.3800
			TNT	16.1000
			DINITROTOLUENE	8.2800
			DIBUTYLPHthalate	3.3100
			DIPHENYLAMINE	0.8280
			POTASSIUM NITRATE	0.7880
			CHARCOAL	0.1560
			SULFUR	0.1050
			LEAD AZIDE	0.1050
			POTASSIUM CHLORATE	0.0055
			ANTIMONY SULFIDE	0.0055
			CARBORUNDUM	0.0004
35	1310-B569 CTG 40-MM HE M406 (D003, D005, D008)	CRANE/DE	RDX	59.3200
			TNT	38.5200
			WAX	0.9900
			NITROCELLULOSE	0.5900
			NITROGLYCERIN	0.4100
			LEAD COMPOUNDS	0.2100
			POTASSIUM COMPOUNDS	0.0600
			ANTIMONY SULFIDE	0.0200
			BARIUM NITRATE	0.0100
			ETHYL CENTRALITE	
			TETRACENE	
36	1310-B586 CTG-57 MM HE M306 A1 (D003, D005, D008)	CRANE/DE	NITROCELLULOSE	60.5500
			RDX	20.3700
			TRINITROTOLUENE	13.2500
			POTASSIUM COMPOUNDS	2.5200
			TETRYL	1.5700
			DIPHENYLAMINE	0.6170
			CHARCOAL	0.3920
			LEAD AZIDE	0.0528
			BARIUM NITRATE	0.0135
			ANTIMONY SULFIDE	0.0035
			ALUMINUM POWDER	0.0014
37	1310-B587 CTG 57-MM HEAT M307 SERIES (D003, D005, D008)	CRANE/DE	NITOC	57.2500
			RDX	14.3300
			PETN	11.7000
			TRINITROTOLUENE	11.7000
			POTASSIUM COMPOUNDS	2.3700
			TETRYL	0.8770
			DIPHENYLAMINE	0.5840
			GRAPHITE	0.5840
			LEAD COMPOUNDS	0.0374
			ANTIMONY SULFIDE	0.0099

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			BARIUM NITRATE	0.0098
38	1310-B588 CTG-57 MM TP M306 A1 (D003, D005, D008)	CRANE/DE	NITROCELLULOSE	86.1700
			POTASSIUM COMPOUNDS	8.0100
			TETRYL	2.2400
			CHARCOAL	1.5000
			SULFUR	1.0000
			DIPHENYLAMINE	0.8800
			GRAPHITE	0.0900
			LEAD COMPOUNDS	0.0700
			BARIUM NITRATE	0.0200
			ALUMINUM POWDER	0.0100
			ANTIMONY SULFIDE	0.0100
39	1310-B632 CTG, 60 MM M49 SERIES (D003,D008)	CRANE/DE/PP	TRINITROTOLUENE	51.3600
			RDX	43.6600
			NITROCELLULOSE	2.5300
			NITROGLYCERIN	2.0200
			DENSENSITIZER	0.6330
			DIETHYLPHthalate	0.1770
			TETRYL	0.1270
			POTASSIUM COMPOUNDS	0.1020
			LEAD COMPOUNDS	0.0693
			ETHYL CENTRALITE	0.0302
			ANTIMONY SULFIDE	0.0080
40	1310-B643 CTG 60-MM HE M888 (D003)	CRANE/DE	RDX	60.0000
			TNT	39.0000
			WAX	1.0000
41	1314-C306 CTG-3 IN 50 CAL HE-IR MK33 (D003, D030)	CRANE/DE	NITROCELLULOSE	75.5600
			RDX	15.7700
			DINITROTOLUENE	5.7900
			WAX	1.5600
			DIPHENYLAMINE	0.7440
			POTASSIUM SULFATE	0.4960
			GRAPHITE	0.1650
42	1315-C027 CTG-75 MM HE M48 (D003, D005, D008, D030)	CRANE/DE	TRINITROTOLUENE	62.0800
			NITROCELLULOSE	30.2000
			DINITROTOLUENE	3.5600
			DIBUTYLPHthalate	1.7800
			TETRYL	1.6600
			DIPHENYLAMINE	0.3560
			POTASSIUM COMPOUNDS	0.2880
			CHARCOAL	0.0597
			LEAD THIOCYANATE	
			AZIDE STYPHNATE	0.0413
			ANTIMONY SULFIDE	0.0027
			BARIUM CHROMATE	0.0020

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			BARIUM NITRATE	0.0020
43	1315-C302 CTG 3 IN 50 CAL AA MK 27	CRANE/DE	NITROCELLULOSE	76.9700
	FLASHLESS		HE	15.7900
	(D003, D030)		DINITROTOLUENE	5.8800
			DIPHENYLAMINE	0.7560
			POTASSIUM SULFATE	0.5040
			GRAPHITE	0.1680
44	1315-C052 CTG-76 MM HEAT M310	CRANE/DE	NITROCELLULOSE	74.6400
	(D003, D008)		PETN	10.6500
			TRINITROTOLUENE	10.6500
			POTASSIUM COMPOUNDS	1.5200
			TETRYL	1.0800
			DIPHENYLAMINE	0.7630
			STRONTIUM NITRATE	0.1340
			MAGNESIUM	0.8400
			LEAD COMPOUNDS	0.0095
			ALUMINUM POWDER	0.0041
			ANTIMONY SULFIDE	0.0015
45	1315-C053 CTG 75 MM HEP-T M349	CRANE/DE	NITROCELLULOSE	54.7400
	(D003, D008)		RDX	38.6000
			DENSENSITIZER	3.8100
			POTASSIUM COMPOUNDS	1.0900
			TETRYL	0.7540
			DIPHENYLAMINE	0.5590
			STRONTIUM NITRATE	0.0932
			MAGNESIUM	0.0584
			LEAD COMPOUNDS	0.0066
			ALUMINUM POWDER	0.0029
			ANTIMONY SULFIDE	0.0010
46	1315-C113 76-MM HE PD MX166	CRANE/DE	NITROCELLULOSE	73.1500
	(D003)		RDX	18.2500
			DINITROCELLULOSE	5.5900
			WAX	1.8100
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
47	1315-C122 76-MM HE M352	CRANE/DE	NITROCELLULOSE	60.9500
	(D003, D005, D008, D030)		RDX	16.9200
			TNT	10.9600
			DINITROTOLUENE	6.9200
			DIBUTYLPHthalate	1.3500
			TETRYL	0.9500
			POTASSIUM COMPOUNDS	0.8200
			DIPHENYLAMINE	0.7000
			LEAD COMPOUNDS	0.0200

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			ANTIMONY SULFIDE	
			BARIUM CHROMATE	
			BARIUM NITRATE	
48	1315-C136 CTG-3 IN 50 CAL VT MK33 (D003, D030)	CRANE/DE	NITROCELLULOSE	73.2000
			HE	19.8000
			DINITROTOLUENE	5.6000
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
49	1315-C150 CTG-3 IN 50 CAL VT NSD MK33 (D003, D030)	CRANE/DE	NITROCELLULOSE	73.2000
			HE	19.8000
			DINITROTOLUENE	5.6000
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
50	1315-C152 CTG-3 IN 50 CAL VT SD MK 33 (D003, D030)	CRANE/DE	NITROCELLULOSE	73.2000
			HE	19.8000
			DINITROTOLUENE	5.6000
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
51	1315-C162 CTG-3 IN 50 CAL VT NON-FRAG MK33 (D003, D030)	CRANE/DE	NITROCELLULOSE	72.6600
			POTASSIUM NITRATE	15.3500
			DINITROTOLUENE	5.5600
			CHARCOAL	3.0700
			SULFUR	2.0500
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
52	1315-C164 CTG-3 IN 50 CAL VT NON-FRAG MK 33 (D003, D030)	CRANE/DE	NITROCELLULOSE	72.5300
			POTASSIUM NITRATE	15.3500
			DINITROTOLUENE	5.5700
			CHARCOAL	3.0700
			SULFUR	2.0500
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
53	1315-C172 CTG-3 IN 50 CAL ILLUM MK 26 MODS (D003, D030)	CRANE/DE	NITROCELLULOSE	79.0000
			POTASSIUM NITRATE	10.0000
			DINITROTOLUENE	6.0700
			CHARCOAL	2.0200
			SULFUR	1.3400
			DIPHENYLAMINE	0.7800
			POTASSIUM SULFATE	0.5200
			GRAPHITE	0.1700
54	1315-C178 CTG-3 IN 50 CAL BL-T MK27 (D003, D030)	CRANE/DE	NITROCELLULOSE	91.4000
			DINITROTOLUENE	7.0000
			POTASSIUM SULFATE	0.9000

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt %
			DIPHENYLAMINE	0.6000
			GRAPHITE	0.2000
55	1315-C179 CTG-3 IN 50 CAL BL-P MK27 (D003, D030)	CRANE/DE	NITROCELLULOSE	91.4000
			DINITROTOLUENE	7.0000
			POTASSIUM SULFATE	0.9000
			DIPHENYLAMINE	0.6000
			GRAPHITE	0.2000
56	1315-C218 CTG-3 IN 50 CAL HC MK27 (D003, D030)	CRANE/DE	NITROCELLULOSE	68.8000
			RDX	22.3700
			DINITROTOLUENE	5.2600
			WAX	2.2400
			DIPHENYLAMINE	0.6800
			POTASSIUM SULFATE	0.4500
			GRAPHITE	0.1500
57	1315-C222 CTG 81 MM HE M362 SERIES W/PD FUZE (D003, D005, D008)	CRANE/DE	RDX	56.1900
			TNT	34.3500
			NITROCELLULOSE	6.8000
			NITROGLYCERIN	1.4500
			DENSENSITIZER	0.8800
			BARIUM NITRATE	0.1100
			POTASSIUM COMPOUNDS	0.0900
			ETHYL CENTRALITE	0.0500
			LEAD COMPOUNDS	0.0400
			GRAPHITE	0.0200
			BARIUM CHROMATE	0.0020
			ANTIMONY SULFIDE	0.0010
58	1315-C223 CTG 81 MM HE M362 W/O FUZE (D003, D005, D008)	CRANE/DE	RDX	57.4000
			TNT	35.6000
			NITROCELLULOSE	7.0400
			NITROGLYCERIN	1.5000
			DENSENSITIZER	0.9100
			BARIUM NITRATE	0.1100
			POTASSIUM COMPOUNDS	0.0900
			ETHYL CENTRALITE	0.0500
			GRAPHITE	0.0200
			LEAD THIOCYANATE	0.0005
			ANTIMONY SULFIDE	0.0004
59	1315-C299 CTG 3 IN 50 CAL HC MK27 (D003, D030)	CRANE/DE	NITROCELLULOSE	76.9700
			TNT	15.7900
			DINITROTOLUENE	5.8800
			DIPHENYLAMINE	0.7560
			POTASSIUM SULFATE	0.5040
			GRAPHITE	0.1680
60	1315-C299 CTG 3 IN 50 CAL AA MK27 NON-FL	CRANE/DE	NITROCELLULOSE	76.9700
			TNT	15.7900

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
	(D003, D030)		DINITROTOLUENE	5.8800
			DIPHENYLAMINE	0.7560
			POTASSIUM SULFATE	0.5040
			GRAPHITE	0.1680
61	1315-C305 CTG 3 IN 50 CAL ILLUM	CRANE/DE	NITROCELLULOSE	79.0500
	MK25 MODS		POTASSIUM NITRATE	10.0700
	(D003, D030)		DINITROTOLUENE	6.0000
			CHARCOAL	2.0200
			SULFUR	1.3400
			DIPHENYLAMINE	0.7800
			POTASSIUM SULFATE	0.5200
			GRAPHITE	0.1700
62	1315-C307 CTG 3 IN 50 CAL HE-IR	CRANE/DE	NITROCELLULOSE	73.2700
	MK33		TNT	19.8400
	(D003, D030)		DINITROTOLUENE	5.6100
			DIPHENYLAMINE	0.7210
			POTASSIUM SULFATE	0.4810
			GRAPHITE	0.1600
63	1315-C319 CTG 50 CAL VT NON-FRAG	CRANE/DE	NITROCELLULOSE	72.5300
	MK31		POTASSIUM NITRATE	15.3500
	(D003, D030)		DINITROTOLUENE	5.5700
			CHARCOAL	3.0700
			SULFUR	2.0500
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1700
64	1315-C320 CTG-3 IN 50 CAL VT	CRANE/DE	NITROCELLULOSE	72.5300
	NON-FRAG MK31		POTASSIUM NITRATE	15.3500
	(D003, D030)		DINITROTOLUENE	5.5700
			CHARCOAL	3.0700
			SULFUR	2.0500
			DIPHENYLAMINE	0.7200
			POTASSIUM SULFATE	0.4800
			GRAPHITE	0.1600
65	1315-C321 CTG 3 IN 50 CAL HE-IR	CRANE/DE	NITROCELLULOSE	75.5600
	MK31 NON-FL		RDX	15.7700
	(D003, D030)		DINITROTOLUENE	5.7900
			WAX	1.5600
			DIPHENYLAMINE	0.7440
			POTASSIUM SULFATE	0.4960
			GRAPHITE	0.1650
66	1315-C322 CTG-3 IN 50 CAL HE-IR	CRANE/DE	NITROCELLULOSE	73.2700
	MK31 FLASHLESS		TNT	19.8400
	(D003, D030)		DINITROTOLUENE	5.6100
			DIPHENYLAMINE	0.7210
			POTASSIUM SULFATE	0.4810
			GRAPHITE	0.1600
67	1315-C338 CTG-3 IN 50 CAL BL-P	CRANE/DE	NITROCELLULOSE	91.4000

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
	MK29/27/185 FLASHLESS (D003, D030)		DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
68	1315-C341 CTG-3 IN 50 CAL BL-P MK29/27/185 FLASHLESS (D003, D030)	CRANE/DE	NITROCELLULOSE	91.4000
			DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
69	1315-C347 CTG-3 IN 50 CAL HC MK33 FLASHLESS (D003, D030)	CRANE/DE	NITROCELLULOSE	76.9700
			TNT	15.7900
			DINITROTOLUENE	5.8800
			DIPHENYLAMINE	0.7560
			POTASSIUM SULFATE	0.5040
			GRAPHITE	0.1680
70	1315-C348 CTG-3 IN 50 CAL HC MK33 NON-FL (D003, D030)	CRANE/DE	NITROCELLULOSE	68.8000
			RDX	22.3700
			DINITROTOLUENE	5.2600
			WAX	2.2400
			DIPHENYLAMINE	0.6800
			POTASSIUM SULFATE	0.4500
			GRAPHITE	0.1500
71	1315-C373 CTG 3 IN 50 CAL VT NON-FRAG MK36 NFL (D003, D030)	CRANE/DE	NITROCELLULOSE	77.8500
			SODIUM NITRATE	11.1200
			DINITROTOLUENE	5.9600
			CHARCOAL	2.2200
			SULFUR	1.4800
			DIPHENYLAMINE	0.7660
			POTASSIUM SULFATE	0.5110
			GRAPHITE	0.1700
72	1315-C375 CTG 3 IN 50 CAL VT NON-FRAG MK36 NFL (D003, D030)	CRANE/DE	NITROCELLULOSE	77.8500
			SODIUM NITRATE	11.1200
			DINITROTOLUENE	5.9600
			CHARCOAL	2.2200
			SULFUR	1.4800
			DIPHENYLAMINE	0.7660
			POTASSIUM SULFATE	0.5110
			GRAPHITE	0.1700
73	1315-C429 CTG 105-MM HEP-1 M393 SERIES (D003, D030)	CRANE/DE	RDX	49.9600
			NITROCELLULOSE	40.4400
			DINITROTOLUENE	4.7600
			WAX	4.6400
			DIBUTYLPHthalate	2.3800
			DIPHENYLAMINE	0.4800
			POTASSIUM NITRATE	0.3900
			MAGNESIUM	0.1200
			STRONTIUM NITRATE	0.1200
			CHARCOAL	0.0800

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			SULFUR	0.0500
74	1315-C430 105 MM HE M1 W/O FUZE (D003, D008, D030)	CRANE/DE	TNT	52.6800
			RDX	22.9300
			NITROCELLULOSE	19.9300
			DINITROTOLUENE	2.3400
			DIBUTYLPHthalATE	1.1600
			POTASSIUM NITRATE	0.2600
			DIPHENYLAMINE	0.2300
			ANTIMONY SULFIDE	
			LEAD THIOCYANATE	
			POTASSIUM CHLORATE	
75	1315-C510 CTG 105-MM TP-T M467 (D003, D005, D030)	CRANE/DE	NITROCELLULOSE	83.5500
			DINITROTOLUENE	9.8200
			DIBUTYLPHthalATE	4.9100
			DIPHENYLAMINE	0.9800
			POTASSIUM NITRATE	0.8000
			MAGNESIUM	0.2400
			STRONTIUM NITRATE	0.2400
			CHARCOAL	0.1700
			SULFUR	0.1100
			BARIUM PEROXIDE	0.0600
			PERCHLOROPENTACYCLO	
			DECANE	0.0400
			VINYL ALCOHOL ACETATE	
			RESIN	0.0400
76	1315-C699 CTG 4.2 IN HE M329A2 W/O FUZE (D003)	CRANE/DE	RDX	51.1900
			TNT	38.6900
			NITROCELLULOSE	4.6500
			NITROGLYCERIN	3.8300
			WAX	0.8530
			POTASSIUM NITRATE	0.3950
			METHYLPHthalATE	0.2670
			CHARCOAL	0.0556
			ETHYL CENTRALITE	0.0534
			SULFUR	0.0371
77	1315-C800 PJ & PJCHG - 120MM HE T15E3 (D003, D005, D008)	CRANE/DE	NITROGUANADINE	33.1900
			RDX	22.9900
			TNT	14.9700
			NITROCELLULOSE	12.1300
			NITROGLYCERIN	11.5300
			DIBUTYLPHthalATE	2.7300
			STRONTIUM NITRATE	0.0137
			LEAD COMPOUNDS	0.0059
			ALUMINUM POWDER	0.0004
			BARIUM CHROMATE	0.0003
			ANTIMONY SULFIDE	0.0003
			BARIUM NITRATE	0.0000
78	1315-C801 PJ & PRCHG 120 MM	CRANE/DE	NITROGUANADINE	33.1900

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
	HE M356 (D003, D005, D008)		RDX	22.9900
			TNT	14.9700
			NITROCELLULOSE	12.1300
			NITROGLYCERIN	11.5300
			DIBUTYLPHthalATE	2.7300
			STRONTIUM NITRATE	0.0137
			LEAD COMPOUNDS	0.0059
			ALUMINUM POWDER	0.0004
			BARIUM CHROMATE	0.0003
			ANTIMONY SULFIDE	0.0003
			BARIUM NITRATE	0.0000
79	1315-C807 PJ & PPCHG 120 MM HEAT-TM 469 (D003, D005, D008, D030)	CRANE/DE	NITROCELLULOSE	71.7200
			RDX	10.1400
			DINITROTOLUENE	8.2400
			TNT	6.5900
			DIBUTYLPHthalATE	2.4700
			DIPHENYLAMINE	0.8240
			MAGNESIUM	0.0212
			STRONTIUM NITRATE	0.0198
			BARIUM PEROXIDE	0.0112
			LEAD COMPOUNDS	0.0011
			ANTIMONY SULFIDE	0.0004
80	1320-D151 BURSTER PROJ M71 F/GAS PROJ 155 MM (D003)	CRANE/DE	RDX	60.0000
			TNT	39.0000
			WAX	1.0000
81	1320-D153 BURSTER PROJ M83 (D003)	CRANE/DE	RDX	60.0000
			TNT	39.0000
			WAX	1.0000
82	1320-D485 PROJ 155-MM HE 101 (D003, D008)	CRANE/DE	TNT	99.6700
			TETRYL	0.3300
			LEAD COMPOUNDS	0.0100
			ANTIMONY SULFIDE	
			BARIUM CHROMATE	
			BORON POWDER	
			CARBORUNDUM	
			POTASSIUM CHLORATE	
			TETRACENE	
83	1320-D569 PROJ 155-MM HE 101 (D003, D008)	CRANE/DE	TNT	99.6800
			TETRYL	0.3200
			LEAD COMPOUNDS	0.0100
			ANTIMONY SULFIDE	
			BARIUM CHROMATE	
			BORON POWDER	
			CARBORUNDUM	
			POTASSIUM CHLORATE	
			TETRACENE	
84	1375-M757 CHG ASSY DEMO 183 COMP C-4 8x2.5 LBS.	CRANE/DE	RDX	91.0000
			SEBACATE	5.3000

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
	(D003)		POLYISOBUTYLENE	2.1000
			MOTOR OIL	1.6000
85	1390-N519 PRIMER PERC M57	CRANE/PP	POTASSIUM NITRATE	72.8500
	(D003, D008)		CHARCOAL	15.3800
			SULFUR	10.2400
			POTASSIUM CHLORATE	0.8000
			LEAD THIOCYANATE	0.3800
			ANTIMONY SULFIDE	0.2600
			TRINITROTOLUENE	0.0800
86	152-MM PROJECTILES (D003)	CRANE/DE	COMPOSITION B	100.0000
87	155-MM HIGH EXPLOSIVE PROJECTILE	CRANE/DE	NITROCELLULOSE	50.5600
	M107		TRINITROTOLUENE	42.3000
	(D003, D030)		DINITROTOLUENE	5.8200
			DIBUTYLPHthalate	1.1600
			RDX	0.1300
			POTASSIUM NITRATE	0.0100
			TETRYL	0.0100
88	155-MM HIGH EXPLOSIVE PROJECTILE	CRANE/DE	RDX	58.4700
	RAP M549 SERIES		TRINITROTOLUENE	40.2400
	(D003, D008)		WAX	0.9800
			TETRYL	0.0300
			LEAD AZIDE / STYPHNATE	0.0100
89	155-MM PROPELLANT CHARGE	CRANE/PA	NITROCELLULOSE	87.0000
	CARTRIDGE W/OUT PRIMER		DINITROTOLUENE	10.0000
	RB M119 SERIES		DIBUTYLPHthalate	2.0000
	(D003, D030)		DIPHENYLAMINE	1.0000
90	155-MM PROPELLANT CHARGE	CRANE/PA	NITROCELLULOSE	85.0000
	CARTRIDGE GB M3 SERIES		DINITROTOLUENE	10.0000
	(D003, D030)		DIBUTYLPHthalate	4.0000
			DIPHENYLAMINE	1.0000
91	155-MM PROPELLANT CHARGE	CRANE/PA	NITROCELLULOSE	85.0000
	CARTRIDGE WB M4 SERIES		DINITROTOLUENE	10.0000
	(D003, D030)		DIBUTYLPHthalate	4.0000
			DIPHENYLAMINE	1.0000
92	165-MM HEP CARTRIDGE M123A1	CRANE/DE	RDX	79.9800
	(D003)		NITROCELLULOSE	9.0300
			WAX	7.9100
			NITROGLYCERIN	2.2700
			POTASSIUM CHLORATE	0.4500
			BARIUM NITRATE	0.1600
			POTASSIUM NITRATE	0.0900
			ETHYL CENTRALITE	0.0700
			GRAPHITE	0.0300
93	175-MM HIGH EXPLOSIVE PROJ	CRANE/DE	NITROCELLULOSE	56.7600
	M437A1/M437A2		TRINITROTOLUENE	34.7500

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
	(D003, D030)		DINITROTOLUENE	6.5200
			DIBUTYLPHthalate	1.3100
94	175-MM HIGH EXPLOSIVE PROJ	CRANE/DE	NITROCELLULOSE	56.3100
	M437A2		RDX	21.1200
	(D003, D030)		TNT	14.1400
			DINITROTOLUENE	6.4700
			DIBUTYLPHthalate	1.3000
			DIPHENYLAMINE	0.6500
95	22 CALIBER	CRANE/DE/PP	POTASSIUM NITRATE	91.4000
	(D003, D030)		NITROCELLULOSE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
96	22 MM SUBCALIBER DEVICE	CRANE/DE/PP	POTASSIUM NITRATE	74.0000
	(D003)		CHARCOAL	16.0000
			SULFUR	10.0000
97	3"/50 FUZES (D003)	CRANE/DE	BLACK POWDER	100.0000
98	3"/50 PROJECTILES (D003)	CRANE/DE	TNT	100.0000
99	30 CALIBER BLANK	CRANE/DE/PP	DINITROTOLUENE	91.4000
	(D003, D030)		NITROCELLULOSE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
100	30 CALIBER CARBINE	CRANE/DE/PP	DINITROTOLUENE	91.4000
	(D003, D030)		NITROCELLULOSE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
101	38 SPECIAL	CRANE/DE/PP	DINITROTOLUENE	91.4000
	(D003, D030)		NITROCELLULOSE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
102	40-MM HEDP CARTRIDGE M433	CRANE/DE	RDX	97.5800
	(D003, D005, D008)		DESENSITIZER	1.4900
			NITROCELLULOSE	0.4200
			NITROGLYCERIN	0.2900
			LEAD COMPOUNDS	0.1400
			POTASSIUM CHLORIDE	0.0300
			ANTIMONY SULFIDE	0.0100
			BARIUM NITRATE	0.0100
			ETHYL CENTRALITE	0.0100
			POTASSIUM NITRATE	0.0100
103	40-MM HIGH EXPLOSIVE CARTRIDGE	CRANE/DE	RDX	90.6100
	LND M383E1		NITROCELLULOSE	6.0800
	(D003, D005, D008)		NITROGLYCERIN	1.5300
			DESENSITIZER	1.3800
			BARIUM NITRATE	0.1200

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			LEAD COMPOUNDS	0.1200
			POTASSIUM NITRATE	0.0700
			ETHYL CENTRALITE	0.0500
			GRAPHITE	0.0200
			POTASSIUM CHLORATE	0.0200
			ANTIMONY SULFIDE	0.0100
104	40-MM HIGH EXPLOSIVE CARTRIDGE M406 (D003, D005, D008)	CRANE/DE	RDX	59.2200
			TRINITROTOLUENE	38.5000
			WAX	0.9900
			NITROCELLULOSE	0.5900
			NITROGLYCERIN	0.4100
			LEAD COMPOUNDS	0.2000
			POTASSIUM CHLORATE	0.0400
			ANTIMONY SULFIDE	0.0200
			POTASSIUM NITRATE	0.0200
			BARIUM NITRATE	0.0100
			ETHYL CENTRALITE	0.0100
105	40-MM PAP CARTRIDGE M576 (D003, D005, D008)	CRANE/DE	METAL PELLETS	99.1200
			NITROCELLULOSE	0.6000
			NITROGLYCERIN	0.1500
			POTASSIUM CHLORATE	0.0500
			ANTIMONY SULFIDE	0.0200
			LEAD THIOCYANATE	0.0200
			BARIUM NITRATE	0.0100
			ETHYL CENTRALITE	0.0100
			LEAD AZIDE	0.0100
			POTASSIUM NITRATE	0.0100
106	40-MM TP CARTRIDGE M781 (D003)	CRANE/PA	NITROCELLULOSE	57.7700
			NITROGLYCERIN	39.9300
			POTASSIUM NITRATE	1.5000
			ETHYL CENTRALITE	0.8000
107	40-MM TP LNKD CARTRIDGE M385 (D003, D005, D008)	CRANE/DE	NITROCELLULOSE	77.0700
			NITROGLYCERIN	19.3700
			BARIUM NITRATE	1.3900
			POTASSIUM NITRATE	0.7500
			ETHYL CENTRALITE	0.5900
			GRAPHITE	0.3000
			POTASSIUM CHLORATE	0.2800
			ANTIMONY SULFIDE	0.0900
			LEAD AZIDE	0.0300
108	45 CALIBER BLANKS (D003)	CRANE/DE/PP	BLACK POWDER	100.0000
109	60 MM MORTAR TRAINING M69 (D003, D008)	CRANE/DE	NITROCELLULOSE	55.0000
			NITROGLYCERIN	38.0000
			POTASSIUM NITRATE	4.0000
			CHARCOAL	1.0000
			ETHYL CENTRALITE	0.7000
			POTASSIUM CHLORATE	0.5000
			SULFUR	0.4000

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			ANTIMONY SULFIDE	0.2000
			LEAD SULFOCYANATE	0.2000
			TNT	
110	7.62 BLANK (D003, D005, D008, D030)	CRANE/DE/PP	NITROCELLULOSE	84.0000
			NITROGLYCERIN	12.5000
			DINITROTOLUENE	2.4000
			ETHYL CENTRALITE	2.4000
			LEAD STYPHNATE	1.5000
			BARIUM NITRATE	1.4000
			DIPHENYLAMINE	1.0000
			DIBUTYLPHthalate	0.7000
			ALUMINUM POWDER	0.6000
			ANTIMONY SULFIDE	0.5000
			CALCIUM CARBONATE	0.5000
			POTASSIUM SULFATE	0.5000
			SODIUM SULFATE	0.3000
			GRAPHITE	0.2000
			POTASSIUM NITRATE	0.1000
			TIN DIOXIDE	0.1000
111	7.62-MM GRENADE RIFLE CARTRIDGE M64 (D003)	CRANE/PP	POTASSIUM NITRATE	75.0000
			CHARCOAL	15.0000
			SULFUR	10.0000
112	76-MM TPT CARTRIDGE (M340A1) (D003, D005)	CRANE/DE	NITROGUANADINE	47.1700
			NITROCELLULOSE	27.7000
			NITROGLYCERIN	22.2600
			ETHYL CENTRALITE	1.4800
			POTASSIUM NITRATE	0.7500
			CHARCOAL	0.1600
			MAGNESIUM	0.1000
			STRONTIUM NITRATE	0.0900
			BARIUM PEROXIDE	0.0500
113	8-INCH PROPELLING CHARGE GBM1 (D003, D030)	CRANE/PA	NITROCELLULOSE	85.0000
			DINITROTOLUENE	10.0000
			DIBUTYLPHthalate	4.0000
			DIPHENYLAMINE	1.0000
114	8-INCH PROPELLING CHARGE WBM2 (D003, D030)	CRANE/PA	NITROCELLULOSE	85.0000
			DINITROTOLUENE	10.0000
			DIBUTYLPHthalate	4.0000
			DIPHENYLAMINE	1.0000
115	81-MM CARTRIDGE W/PD FUZE TPM43A1 (D003)	CRANE/DE	NITROCELLULOSE	35.3200
			NITROGLYCERIN	28.2600
			POTASSIUM NITRATE	25.6300
			CHARCOAL	5.2100
			SULFUR	3.4900
			DIETHYLPHthalate	1.6600
			ETHYL CENTRALITE	0.4300
116	81-MM HIGH EXPLOSIVE CARTRIDGE	CRANE/DE	RDX	55.4000

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Crane No.	Description	Unit	Component	Wt. %
	WITH PD FUZE M374 SERIES		TRINITROTOLUENE	33.9000
	(D003, D008)		NITROCELLULOSE	5.7900
			NITROGLYCERIN	3.7200
			DESENSITIZER	0.8200
			POTASSIUM NITRATE	0.2000
			ETHYL CENTRALITE	0.0800
			LEAD COMPOUNDS	0.0400
117	81-MM HIGH EXPLOSIVE CARTRIDGE	CRANE/DE	RDX	59.9600
	WITH PD FUZE M374 SERIES		TNT	36.4400
	(D003)		NITROCELLULOSE	1.7000
			NITROGLYCERIN	1.3000
			WAX	0.8900
118	81-MM HIGH EXPLOSIVE CARTRIDGE	CRANE/DE	RDX	56.5000
	M43A1 WITH PD FUZE M525		TRINITROTOLUENE	34.9000
	(D003, D008)		NITROCELLULOSE	4.0000
			NITROGLYCERIN	3.2000
			WAX	0.9000
			DIETHYLPHTHALATE	0.2000
			DINITROTOLUENE	0.1000
			POTASSIUM NITRATE	0.1000
			TETRYL	0.0600
			ETHYL CENTRALITE	0.0500
			LEAD AZIDE	0.0300
119	81-MM MORTAR IGNITION CARTRIDGE	CRANE/C/PP	NITROCELLULOSE	57.7500
	M6		NITROGLYCERIN	40.0000
	(D003)		POTASSIUM NITRATE	1.5000
			ETHYL CENTRALITE	0.7500
120	90-MM CARTRIDGE AP-T M318	CRANE/C/PP	NITROCELLULOSE	85.4200
	SERIES		DINITROTOLUENE	9.8200
	(D003, D030)		DIBUTYLPHTHALATE	1.9400
			DIPHENYLAMINE	1.0300
			STRONTIUM NITRATE	0.6400
			POTASSIUM NITRATE	0.4800
			MAGNESIUM	0.4000
			CHARCOAL	0.1000
			ALUMINUM POWDER	0.0200
121	90-MM HEAT CARTRIDGE M371A1	CRANE/DE	NITROCELLULOSE	36.2300
	(D003, D005)		RDX	32.2800
			TNT	22.9300
			NITROGLYCERIN	3.9700
			BARIUM NITRATE	0.6000
			WAX	0.5700
			POTASSIUM NITRATE	0.3500
			ETHYL CENTRALITE	0.2700
			GRAPHITE	0.1300
122	90-MM HEAT PROJECTILE (D003)	CRANE/DE	TNT	100.0000
123	90-MM HIGH EXPLOSIVE CARTRIDGE	CRANE/DE	NITROGUANADINE	42.1500
	WITH PD FUZE M71		NITROCELLULOSE	15.3800

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
	(D003)		NITROGLYCERIN	14.6500
			RDX	14.1200
			TNT	8.8500
			ETHYL CENTRALITE	4.6400
			CRYOLITE	0.2100
124	90-MM HIGH EXPLOSIVE CARTRIDGE WITHOUT FUZE M71	CRANE/DE	NITROGUANADINE	42.3700
	(D003)		NITROCELLULOSE	15.4700
			NITROGLYCERIN	14.7200
			RDX	13.6700
			TNT	8.9000
			ETHYL CENTRALITE	4.6600
125	BLACK POWDER	CRANE/PA	POTASSIUM NITRATE	74.0000
	(D003)		CHARCOAL	15.6000
			SULFUR	10.4000
126	BLASTING CAPS (D003, D008)	CRANE/DE/PP	LEAD AZIDE	100.0000
127	BOMB NOSE FUZE M904 E2/E3 (D003, D005, D008)	CRANE/DE	RDX	99.4500
			TETRYL	0.2700
			BARIUM CHROMATE	0.0900
			LEAD COMPOUNDS	0.0900
			ZIRCONIUM NICKEL ALLOY	0.0500
			POTASSIUM PERCHLORATE	0.0200
			RAREOX	0.0200
128	BOMB TAIL FUZE M905 (D003, D005, D008)	CRANE/DE	TETRYL	99.8500
			BARIUM CHROMATE	0.0200
			LEAD AZIDE	0.0100
			ZIRCONIUM NICKEL ALLOY	0.0100
129	BOMBLET FRAGMENTATION (D003)	CRANE/DE	TNT	100.0000
130	BOOSTER ADAPTER T45E7 (D003)	CRANE/DE	TETRYL	100.0000
131	BOOSTER BOMB ADAPTER T46E3 (D003)	CRANE/DE	TETRYL	100.0000
132	BOUNDING ANTIPERSONNEL MINE M16 SERIES (D003, D005)	CRANE/DE	TRINITROTOLUENE	99.8000
			ZIRCONIUM	0.0900
			POTASSIUM NITRATE	0.0800
			BARIUM CHROMATE	0.0500
			CHARCOAL	0.0200
			NICKEL ALLOY	0.0100
			POTASSIUM PERCHLORATE	0.0100
			SULFUR	0.0100
133	C-58 BLASTING CAPS (D003, D008)	CRANE/DE/PP	LEAD AZIDE	100.0000
134	COMPOSITION A3 (D003)	CRANE/DE/PA	RDX	91.0000
			WAX	9.0000
135	COMPOSITION A5 (D003)	CRANE/PA	RDX	98.5000
			STEARIC ACID	1.5000
136	COMPOSITION B (60/40 CYCLOTOL)	CRANE/PA/DU	RDX	60.0000

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TYPICAL ENERGETIC ITEMS  
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Crane No.	Description	Unit	Component	Wt. %
	(D003)		TNT	39.0000
			WAX	1.0000
137	COMPOSITION C4	CRANE/DE	RDX	91.0000
	(D003)		DI(2-ETHYLHEXYL) SEBACATE	5.3000
			POLYISOBUTYLENE	2.1000
			MOTOR OIL	1.6000
138	CYCLOTOL	CRANE/PA	RDX	75.0000
	(D003)		TNT	25.0000
139	DEMO CHARGE M186 FLEX (D003)	CRANE/DE	PETN OR RDX	100.0000
140	DETONATOR CORD (D003)	CRANE/DE	PETN	100.0000
141	ELECTRIC BLASTING CAP	CRANE/C/PP	RDX	90.0000
	(D003, D008)		LEAD AZIDE	5.0000
			LEAD STYPHNATE	5.0000
142	ELECTRICAL SQUIBS (D003)	CRANE/PP	BLACK POWDER	100.0000
143	ELECTRICAL SQUIB M1	CRANE/PP	POTASSIUM CHLORATE	60.0000
	(D003)		DIAZONDINITROPHENOL	20.0000
			CHARCOAL	15.0000
			NITROSTARCH	5.0000
144	ELECTRICAL SQUIB M1A1	CRANE/PP	POTASSIUM CHLORATE	60.0000
	(D003)		DIAZONDINITROPHENOL	20.0000
			CHARCOAL	15.0000
			NITROSTARCH	5.0000
145	EXPLOSIVE A4	CRANE/PA	RDX	97.0000
	(D003)		WAX	3.0000
146	FRAGMENTATION HAND GRENADE	CRANE/DE	RDX	39.1000
	M61		TETRYL	35.1500
	(D003)		TNT	25.1900
			WAX	0.0100
147	FRAGMENTATION HAND GRENADE	CRANE/DE	RDX	60.3900
	M67		TNT	38.6300
	(D003)		WAX	0.0100
148	FRAGMENTATION HAND GRENADE	CRANE/DE	TNT	54.0400
	MK2/M26 SERIES		RDX	42.0400
	(D003)		TETRYL	3.8800
			WAX	0.0100
149	GRENADE TRAINING M21	CRANE/DE	POTASSIUM NITRATE	45.6000
	(D003, D005, D008)		BARIUM CHROMATE	22.5000
			CHARCOAL	9.5000
			SULFUR	6.3000
			NICKEL POWDER	5.5000
			POTASSIUM PERCHLORATE	5.2000
			ZIRCONIUM POWDER	4.3000
			LEAD STYPHNATE	0.0400
			BARIUM NITRATE	0.0200
			ANTIMONY SULFIDE	0.0010
			TETRACENE	0.0010

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
150	HAND GRENADE FUZE M201A1 (D003, D005, D008)	CRANE/PP	LEAD COMPOUNDS	59.1000
			SILICONE	13.6400
			MAGNESIUM	13.6300
			TITANIUM	5.2300
			IRON OXIDE	4.5400
			ZIRCONIUM POWDER	1.6600
			BARIUM NITRATE	1.2900
			POTASSIUM CHLORATE	0.4500
			FERRIC OXIDE	0.3900
			POTASSIUM PERCHLORATE	0.2200
			TNT	0.0600
151	HAND GRENADE FUZE M204 SERIES (D003)	CRANE/PP	RDX	100.0000
152	HAND GRENADE FUZE M213 (D003, D005, D008)	CRANE/PP	RDX	61.9000
			LEAD COMPOUNDS	34.1500
			BARIUM CHROMATE	1.9200
			NICKEL POWDER	0.4900
			POTASSIUM PERCHLORIDE	0.4500
			ZIRCONIUM POWDER	0.3800
			BARIUM NITRATE	0.2700
			ALUMINUM POWDER	0.1200
			ANTIMONY SULFIDE	0.1200
			CALCIUM STEARATE	0.1200
			TETRACENE	0.0600
153	HAND GRENADE PRACTICE FUZE M205 (D003)	CRANE/PP	POTASSIUM NITRATE	75.0000
			CHARCOAL	15.0000
			SULFUR	10.0000
154	HAND GRENADE PRACTICE FUZE M228 (D003)	CRANE/PP	POTASSIUM NITRATE	75.0000
			CHARCOAL	15.0000
			SULFUR	10.0000
155	HBX-1, -3, AND -6 (D003)	CRANE/DE/PA/D U	RDX	39.6000
			TNT	37.8000
			ALUMINUM POWDER	17.1000
			DESENSITIZER	5.0000
			CALCIUM CHLORIDE	0.5000
156	HEAVY HIGH EXPLOSIVE ANITITANK MINE M15 (D003)	CRANE/DE	RDX	60.0000
			TNT	39.0000
			WAX	0.9900
			TETRYL	0.0200
157	HMX (HOMOCYCLONITE) (D003)	CRANE/PA/DU	HMX	100.0000
158	INCREMENT A PROPELLING CHARGE M90A1 FOR AN 81-MM MORTAR (D003)	CRANE/PA	NITROCELLULOSE	57.7500
			NITROGLYCERIN	40.0000
			POTASSIUM NITRATE	1.5000
			ETHYL CENTRALITE	0.7500
159	INCREMENT B PROPELLING CHARGE	CRANE/PA	NITROCELLULOSE	91.4000

TABLE V.C-1  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt %
	M90A1 FOR AN 81-MM MORTAR (D003)		DINITROTOLUENE DIPHENYLAMINE POTASSIUM SULFATE GRAPHITE	7.0000 0.9000 0.6000 0.0200
160	LEAD AZIDE (D003, D008)	CRANE/DE	LEAD AZIDE	100.0000
161	LEAD STYPHNATE (D003, D008)	CRANE/DE	LEAD STYPHNATE	100.0000
162	M-6 BLASTING CAPS (D003, D008)	CRANE/DE/PP	LEAD AZIDE	100.0000
163	M1 PROPELLANT (D003, D008, D030)	CRANE/PA	NITROCELLULOSE DINITROTOLUENE DIBUTYLPHthalate DIPHENYLAMINE LEAD CARBONATE POTASSIUM SULFATE	85.0000 10.0000 5.0000 5.0000 1.0000 1.0000
164	M18A1 ANTIPERSONNEL MINE WITH M57 FIRING DEVICE (D003, D005, D008)	CRANE/DE	RDX LEAD COMPOUNDS PETN BARIUM CHROMATE	99.7900 0.1500 0.0500 0.0100
165	M18A1 ANTIPERSONNEL MINE WITHOUT FIRING DEVICE (D003)	CRANE/DE	RDX	100.0000
166	M26 PROPELLANT (D003, D005)	CRANE/PA	NITROCELLULOSE NITROGLYCERIN ETHYL CENTRALITE BARIUM NITRATE POTASSIUM NITRATE GRAPHITE	67.2500 25.0000 6.0000 0.7500 0.7000 0.3000
167	M3 FLASH REDUCER FOR 8-IN PROPELLING CHARGE (D003)	CRANE/C	POTASSIUM NITRATE CHARCOAL SULFUR	75.0000 15.0000 10.0000
168	M30 PROPELLANT (D003)	CRANE/PA	NITROGUANADINE NITROCELLULOSE NITROGLYCERIN ETHYL CENTRALITE CRYOLITE GRAPHITE	47.7000 28.0000 22.5000 1.5000 0.3000 0.1000
169	TRACERS (D003)	CRANE/C	STRONTIUM NITRATE MAGNESIUM PERCHLOROPENTACYCLO DECANE	44.0000 42.0000 7.0000
170	M6 PROPELLANT	CRANE/PA	NITROCELLULOSE DINITROTOLUENE DIBUTYLPHthalate DIPHENYLAMINE	87.0000 10.0000 3.0000 1.0000
171	M60 IGNITER TIME BLASTING FUZE (D003, D005, D008)	CRANE/DE	LEAD THIOCYANATE POTASSIUM CHLORATE BARIUM NITRATE GLASS TNT	37.5000 37.5000 10.0000 10.0000 5.0000

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
172	M605 FUZE COMBINATION FOR M16 SERIES MINE (D003, D005, D008)	CRANE/PP	POTASSIUM NITRATE BARIUM CHROMATE CHARCOAL NICKEL ALLOY SULFUR POTASSIUM PERCHLORATE ZIRCONIUM POTASSIUM CHLORATE LEAD COMPOUNDS ANTIMONY SULFIDE	42.0000 25.0000 8.8800 6.0800 5.9200 5.8000 4.7200 1.0800 0.6200 0.3400
173	M7 PROPELLANT (D003)	CRANE/PA	NITROCELLULOSE NITROGLYCERIN POTASSIUM PERCHLORATE CARBON BLACK DIPHENYLAMINE ETHYL CENTRALITE	54.6000 35.5000 7.8000 1.2000 1.0000 0.9000
174	M7 PROPELLANT FOR A 105-MM CARTRIDGE (D003)	CRANE/PA	NITROCELLULOSE NITROGLYCERIN POTASSIUM PERCHLORATE CARBON BLACK ETHYL CENTRALITE	54.6000 35.5000 7.8000 1.2000 0.9000
175	M702 SERIES IGNITION CARTRIDGE FOR 60-MM MORTAR (D003)	CRANE/C	NITROCELLULOSE DINITROCELLULOSE DIPHENYLAMINE POTASSIUM SULFATE GRAPHITE	91.4000 7.0000 0.9000 0.6000 0.2000
176	MILITARY DYNAMITE LOW VELOCITY (D003)	CRANE/DE	TNT RDX TRIPENTAERYTHRITOL BINDER CELLULOSE ACETATE	67.8000 17.5000 8.6000 4.1000 2.0000
177	MILITARY DYNAMITE MEDIUM VELOCITY (D003)	CRANE/DE	RDX TNT STARCH SAE NO. 10 OIL POLYISOBUTYLENE	75.0000 15.0000 5.0000 4.0000 1.0000
178	ND1211 DETONATORS (D003, D008)	CRANE/PP	LEAD AZIDE PETN	90.0000 10.0000
179	NITROGUANADINE (D003)	CRANE/PA	NITROGUANADINE	100.0000
180	NON-ELECTRIC BLASTING CAP (D003, D008)	CRANE/PP/C	RDX LEAD AZIDE LEAD STYPHNATE	90.0000 5.0000 5.0000
181	OCTOL (D003)	CRANE/DE/PA/D U	HMX TNT	75.0000 25.0000

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TYPICAL ENERGETIC ITEMS  
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Crane No.	Description	Unit	Component	Wt. %
182	OFFENSIVE HAND GRENADE FUZE M206/M6 (D003)	CRANE/PP	PETN OR RDX	100.0000
183	OFFENSIVE HAND GRENADE MK3A2 (D003, D005, D008)	CRANE/DE	TNT	99.0000
			RDX	0.3800
			BARIUM COMPOUNDS	0.3400
			LEAD COMPOUNDS	0.1400
			NICKEL POWDER	0.0800
			POTASSIUM PERCHLORATE	0.0800
			ZIRCONIUM POWDER	0.0600
184	PBX (D003)	CRANE/DE/PA/C	RDX	95.0000
			FLUOROELASTOMERS	5.0000
185	PENTOLITE 10/90 (D003)	CRANE/PA/DU	TNT	90.0000
			PETN	10.0000
186	PENTOLITE 50/50 (D003)	CRANE/PA/DU	PETN	50.0000
			TNT	50.0000
187	PETN (PENTAERYTHRITE TETRANITRATE) (D003)	CRANE/PA/DU	PETN	100.0000
188	PHOTOFINISH (D003)	CRANE/DE/C	LAMINAC	96.8000
			LUPERSOL	3.0000
			IRON OXIDE	0.2000
189	PIBD FUZES (D003)	CRANE/DE	Tetryl	100.0000
190	PRACTICE ANTITANK MINE ACTIVATOR M1 (D003)	CRANE/C	POTASSIUM NITRATE	75.0000
			CHARCOAL	15.0000
			SULFUR	10.0000
191	PRACTICE MINE SPOTTING CHARGE F/APERS M8 (D003)	CRANE/C	POTASSIUM NITRATE	75.0000
			CHARCOAL	15.0000
			SULFUR	10.0000
192	PROJECTILE BURSTER FOR A 105-MM CARTRIDGE M53/M53-A1 (D003)	CRANE/DE	Tetryl	75.0000
			TRINITROTOLUENE	25.0000
193	PROJECTILE 57 MM HE M48 (D003)	CRANE/DE	TNT	100.0000
194	PROJECTILE 57MM RECOILLESS HE M306 (D003)	CRANE/DE	TNT	100.0000
195	PROJECTILE 57MM RECOILLESS HE 307 (D003)	CRANE/DE	PETN	50.0000
			TNT	50.0000
196	PROJECTILE 57MM RECOILLESS HE 307A1 (D003)	CRANE/DE	RDX	60.0000
			TNT	39.0000
			WAX	1.0000
197	PROJECTILE 57MM RECOILLESS HE M306A1 (D003)	CRANE/DE	RDX	60.0000
			TNT	39.0000
			WAX	1.0000
198	PROPELLING CHARGE FOR A 81-MM CHARGE (D003)	CRANE/PA	DINITROCELLULOSE	81.1400
			NITROCELLULOSE	9.2200
			NITROGLYCERIN	7.6900
			DIPHENYLAMINE	0.8000
			POTASSIUM SULFATE	0.5300

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TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT CRANE  
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Crane No.	Description	Unit	Component	Wt. %
			POTASSIUM NITRATE	0.2900
			GRAPHITE	0.1800
			ETHYL CENTRALITE	0.1400
199	RDX (CYCLONITE) (D003)	CRANE/PA/DU	RDX	100.0000
200	ROCKET MORTAR IGNITER M20A1 (D003)	CRANE/C	POTASSIUM NITRATE	75.0000
			CHARCOAL	15.0000
			SULFUR	10.0000
201	SAFETY FUZE (D003)	CRANE/DE	BLACK POWDER	100.0000
202	SMOKE POT FUZE M207A1 (D003, D005, D008)	CRANE/PP	RED LEAD	61.6200
			SILICON	20.1500
			IRON OXIDE	7.0100
			TITANIUM	6.9400
			ZIRCONIUM POWDER	2.3800
			LEAD THIOCYANATE	0.7100
			POTASSIUM CHLORATE	0.7000
			GLASS	0.1900
			BARIUM NITRATE	0.1800
			TNT	0.0900
203	SMOKELESS BLACK POWDER (D003, D030)	CRANE/PA	NITROCELLULOSE	91.4000
			DINITROTOLUENE	7.0000
			DIPHENYLAMINE	0.9000
			POTASSIUM SULFATE	0.6000
			GRAPHITE	0.2000
204	TETRYL (TRINITROPHENYL-METHYLNITRAMINE) (D003)	CRANE/PA/DU	TETRYL	100.0000
205	TETRYTOL (D003)	CRANE/PA/DU	TETRYL	75.0000
			TNT	25.0000
206	TIME BLASTING SAFETY FUZE M700 (D003)	CRANE/DE	SODIUM NITRATE	74.0000
			OR POTASSIUM NITRATE	
			CHARCOAL	16.0000
			SULFUR	10.0000
207	TIME FUZE (D003)	CRANE/DE	SODIUM NITRATE	74.0000
			OR POTASSIUM NITRATE	
			CHARCOAL	16.0000
			SULFUR	10.0000
208	TNT (D003)	CRANE/PA/DU	TRINITROTOLUENE	100.0000
209	TRITONAL (D003)	CRANE/DE/PA/DU	TNT	80.0000
			ALUMINUM POWDER	20.0000
210	U.S PROJECTILE 105 MM ILLUMINATING (D003, D030)	CRANE/DE	NITROCELLULOSE	40.0000
			MAGNESIUM	19.0000
			SODIUM NITRATE	18.6000
			DINITROTOLUENE	5.9000
			LAMINAC	3.6000
			DIBUTYLPHthalate	2.9000
			DIPHENYLAMINE	0.6000
			COBALT NAPHTHANATE	0.0400
			LUPERSOL	0.0400

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TYPICAL ENERGETIC ITEMS  
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Crane No.	Description	Unit	Component	Wt. %
211	WC846 PROPELLANT (D003)	CRANE/PA	NITROCELLULOSE NITROGLYCERIN DIBUTYLPHthalate POTASSIUM SULFATE	83.0000 10.0000 6.0000 1.0000
212	WC872 PROPELLANT (D003)	CRANE/PA	NITROCELLULOSE NITROGLYCERIN DIBUTYLPHthalate POTASSIUM SULFATE TIN DIOXIDE	82.5000 10.0000 6.0000 1.0000 0.5000
213	XM54 PROJECTILE BURSTER (D003)	CRANE/DE	TETRYL TRINITROTOLUENE	75.0000 25.0000
214	106-MM HEP-T M346A1 PROJECTILE ONLY (D003, D008)	CRANE/DE	RDX WAX TETRYL STRONTIUM NITRATE MAGNESIUM / ALUMINUM ALLOY BARIUM PEROXIDE POLYVINYL CHLORIDE LEAD AZIDE MAGNESIUM ANTIMONY SULFIDE CALCIUM RESINATE POTASSIUM CHLORATE GRAPHITE CARBORUNDUM	90.3700 8.9400 0.5700 0.0510 0.0340 0.0170 0.0060 0.0060 0.0033 0.0009 0.0009 0.0009 0.0002 0.0001
215	106-MM HEAT M344A1 PROJECTILE ONLY (D003, D008)	CRANE/DE	RDX TNT WAX STEARIC ACID LEAD AZIDE PETN	60.2400 38.7400 0.9900 0.0096 0.0080 0.0066
216	EXPLOSIVE D (D003)	CRANE/ORR	AMMONIUM PICRATE	100.0000
217	ABL-705 (AHH) DOUBLE BASE CASTING POWDER (D003, D008)	CRANE/PA	NITROCELLULOSE NITROGLYCERIN LEAD SALICYLATE LEAD ETHYLHEXOATE 2-NITRODIPHENYLAMINE	82.4000 12.0000 2.3000 2.3000 1.0000
218	CHARGE PROPELLING 155-MM M119A2 (D003, D008, D030)	CRANE/C	NITROCELLULOSE DINITROTOLUENE DIBUTYLPHthalate DIPHENYLAMINE LEAD POTASSIUM NITRATE SULFUR CHARCOAL	81.3700 9.3600 2.8000 0.9500 0.8600 0.1100 0.0030 0.0030
219	CHARGE PROPELLING 8-INCH M188 (D003, D008)	CRANE/C	NITROGUANADINE NITROCELLULOSE	44.8200 26.6900

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TYPICAL ENERGETIC ITEMS  
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Crane No.	Description	Unit	Component	Wt. %
			NITROGLYCERIN	21.4500
			TITANIUM DIOXIDE WAX	3.0800
			ETHYL CENTRALITE	1.4300
			POTASSIUM SULFATE	0.9500
			BLACK POWDER	0.8500
			LEAD	0.7300
220	GRENADE FUZE (M204A2) (D003, D005, D008)	CRANE/C/PP	LEAD STYPHNATE	51.3600
			BARIUM NITRATE	21.6200
			ALUMINUM POWDER	10.8100
			ANTIMONY SULFIDE	10.8100
			TETRACENE	5.4000
221	3.5-INCH ROCKET MOTOR (D003)	CRANE/C	NITROCELLULOSE	54.6000
			NITROGLYCERIN	35.5000
			POTASSIUM PERCHLORATE	7.8000
			CARBON BLACK	1.2000
			ETHYL CENTRALITE	0.9000
222	ELECTRIC IGNITION ELEMENT M91 (D003, D008)	CRANE/C	POTASSIUM CHLORATE	39.4400
			LEAD THIOCYANATE	31.9300
			CHARCOAL	18.3200
			LACQUER	10.3100
223	PROJECTILE SIMULATOR M74 (D003)	CRANE/C	POTASSIUM NITRATE	67.5000
			CHARCOAL	13.5000
			ALUMINUM POWDER	10.0000
			SULFUR	9.0000
224	30-CAL-M1 TRACER WITH I280 (D003, D005, D008, D030)	CRANE/C/PP	NITROCELLULOSE	71.2700
			DINITROTOLUENE	6.7900
			STRONTIUM NITRATE	6.5400
			MAGNESIUM	5.9200
			STRONTIUM PEROXIDE	3.4700
			CALCIUM RESINATE	2.0200
			DIPHENYLAMINE	1.0600
			STRONTIUM OXALATE	0.9800
			POTASSIUM SULFATE	0.7500
			LEAD STYPHNATE	0.3300
			GRAPHITE	0.3000
			BARIUM NITRATE	0.2900
			ANTIMONY SULFIDE	0.1300
			ALUMINUM POWDER	0.0600
			PETN	0.0500
			TETRACENE	0.0300

Units: C = Incendiary Cage  
DE = Demo  
DU = Dewatering Unit  
ORR = Old Rifle Range  
PA = Burn Pans  
PP = Primer Pit

## **Table V.C-2**

Typical Items Proposed for Detonation - DR

**TABLE V.C-2**  
**TYPICAL ENERGETIC ITEMS**  
**THERMALLY TREATED AT THE DEMO UNIT**  
**PAGE 1**

Crane No.	Description
1	10 GAUGE BLANKS
2	105-MM TP-T CARTRIDGE, M939A1
3	105-MM APDS-T CARTRIDGE, M392A2
4	105-MM APFSDS-T CARTRIDGE, M735
5	105-MM BLANK CARTRIDGE, M395
6	105-MM HEP-T CARTRIDGE, M393A2
7	105-MM HIGH EXPLOSIVE CARTRIDGE WITH PD FUZE M1
8	105-MM HIGH EXPLOSIVE CARTRIDGE WITHOUT FUZE M1
9	1305-A659 CTG 20 MM HEI-T M242A1 SNGL RD
10	1305-A662 CTG 20 MM HEI M56 SERIES LNKD
11	1305-A701 CTG 20-MM HEI M56A3 SERIES LNKD
12	1305-A775 CTG 20-MM HEI M97 SINGLE RD
13	1305-A776 CTG 20-MM INC M96 SNGL RD
14	1305-A785 CTG 20-MM HEI MZ10 SNGL RD
15	1305-A806 CTG-20 MM API MK107 MOD 5 SINGLE ROUND
16	1305-A809 CTG-20 MM HPT T131 SINGLE ROUND
17	1305-A811 CTG-20 MM TP MK105 SNGL RD
18	1305 A812 CTG-20 MM AP-T MK 108 SNGL RD
19	1305-A872 CTG-20MM API MK107 MOD1 SNGL RD
20	1305-A873 CTG-20 MM AP-T MK 108 MOD1 SNGL RD
21	1305-A874 CTG-20 MM TP MK105 MOD1 SNGL RD
22	1305-A876 CTG-20 MM TP MK105 MOD 0 SNGL RD
23	1305-A884 20 MM API M53 LNKD
24	1305-A892 CTG-20 MM HPT 54A1 SNGL RD
25	1305-A974 CTG 25-MM ADP-T M791 LNKD
26	1305-B112 CTG 30-MM HEI MK3Z LNKD LHF
27	1305-B113 CTG 30-MM TP MK4Z LNKD LHF
28	1305-B114 CTG 30-MM HEI M3Z-1 LNKD RHF
29	1305-B114 CTG 30-MM HEI HEI M799 LNKD LHF
30	1305-B115 CTG 30-MM TP MK4Z LNKD RHF
31	1305-B120 CTG 30-MM TP M788 LNKD RHF
32	1305-B125 CTG 30-MM HEI M799 LNKD RHF
33	1310-B551 CTG 40-MM AP M81A1 CLIPPED
34	1310-B559 40-MM EI-T-SD 4/CLIP

TABLE V.C-2  
 TYPICAL ENERGETIC ITEMS  
 THERMALLY TREATED AT THE DEMO UNIT  
 PAGE 2

Crane No.	Description
35	1310-B569 CTG 40-MM HE M406
36	1310-B586 CTG-57 MM HE M306 A1
37	1310-B587 CTG 57-MM HEAT M307 SERIES
38	1310-B588 CTG-57 MM TP M306 A1
39	1310-B632 CTG, 60 MM M49 SERIES
40	1310-B643 CTG 60-MM HE M888
41	1314-C306 CTG-3 IN 50 CAL HE-IR MK33
42	1315-C027 CTG-75 MM HE M48
43	1315-C302 CTG 3 IN 50 CAL AA MK 27 FLASHLESS
44	1315-C052 CTG-76 MM HEAT M310
45	1315-C053 CTG 75 MM HEP-T M349
46	1315-C113 76-MM HE PD MX166
47	1315-C122 76-MM HE M352
48	1315-C136 CTG-3 IN 50 CAL VT MK33
49	1315-C150 CTG-3 IN 50 CAL VT NSD MK 33
50	1315-C152 CTG-3 IN 50 CAL VT SD MK 33
51	1315-C162 CTG-3 IN 50 CAL VT NON-FRAG MK33
52	1315-C164 CTG-3 IN 50 CAL VT NON-FRAG MK33
53	1315-C172 CTG-3 IN 50 CAL ILLUM MK26 MODS
54	1315-C178 CTG-3 IN 50 CAL BL-T MK27
55	1315-C179 CTG-3 IN 50 CAL BL-P MK27
56	1315-C218 CTG-3 IN 50 CAL HC MK27
57	1315-C222 CTG 81 MM HE M362 SERIES W/PD FUZE
58	1315-C223 CTG 81 MM HE M362 W/O FUZE
59	1315-C299 CTG 3 IN 50 CAL HC MK27
60	1315-C299 CTG 3 IN 50 CAL AA MK27 NON-FL
61	1315-C305 CTG 3 IN 50 CAL ILLUM MK25 MODS
62	1315-C307 CTG 3 IN 50 CAL HE-IR MK31 FLASHLESS
63	1315-C319 CTG 50 CAL VT NON-FRAG MK31
64	1315-C320 CTG-3 IN 50 CAL VT NON-FRAG MK31
65	1315-C321 CTG 3 IN 50 CAL HE-IR MK31 NON-FL
66	1315-C322 CTG-3 IN 50 CAL HE-IR MK31 FLASHLESS
67	1315-C338 CTG-3 IN 50 CAL BL-P MK29/27/185 FLASHLESS

TABLE V.C-2  
 TYPICAL ENERGETIC ITEMS  
 THERMALLY TREATED AT THE DEMO UNIT  
 PAGE 3

Crane No.	Description
68	1315-C341 CTG-3 IN 50 CAL BL-P MK29/27/185 FLASHLESS
69	1315-C347 CTG-3 IN 50 CAL HC MK33 FLASHLESS
70	1315-C348 CTG-3 IN 50 CAL HC MK33 NON-FL
71	1315-C373 CTG 3 IN 50 CAL VT NON-FRAG MK36 NFL
72	1315-C375 CTG 3 IN 50 CAL VT NON-FRAG MK36 NFL
73	1315-C429 CTG 105-MM HEP-1 M393 SERIES
74	1315-C430 105 MM HE M1 W/O FUZE
75	1315-C510 CTG 105-MM TP-T M467
76	1315-C699 CTG 4.2 IN HE M329A2 WO FUZE
77	1315-C800 PJ & PJCHG - 120MM HE T15E3
78	1315-C801 PJ & PRCHG 120 MM HE M356
79	1315-C807 PJ & PPCHG 120 MM HEAT-TM 469
80	1320-D151 BURSTER PROJ M71 F/GAS PROJ 155MM
81	1320-D153 BURSTER PROJ M83
82	1320-D485 PROJ 155-MM HE 101
83	1320-D569 PROJ 155-MM HE 101
84	1375-M757 CHG ASSY DEMO 183
86	152-MM PROJECTILES
87	155-MM HIGH EXPLOSIVE PROJECTILE M107
88	155-MM HIGH EXPLOSIVE PROJECTILE RAP M549 SERIES
92	165-MM HEP CARTRIDGE M123A1
93	175-MM HIGH EXPLOSIVE PROJ M123A1
94	175-MM HIGH EXPLOSIVE PROJ M473A1/M437A2
95	22 CALIBER
96	22 MM SUBCALIBER DEVICE
97	3"/50 FUZES
98	3"/50 PROJECTILES
99	30 CALIBER BLANK
100	30 CALIBER CARBINE
101	38 SPECIAL
102	40-MM HEDP CARTRIDGE M433 40-MM HIGH EXPLOSIVE CARTRIDGE LNKD
103	M383E1
104	40-MM HIGH EXPLOSIVE CARTRIDGE M406
105	40-MM PAP CARTRIDGE M576

TABLE V.C-2  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT THE DEMO UNIT  
PAGE 4

Crane No.	Description
107	40-MM TP LNKD CARTRIDGE M385
108	45 CALIBER BLANKS
109	60 MM MORTAR TRAINING M69
110	7.62 BLANK
112	76-MM TPT CARTRIDGE (M340A1)
115	81-MM CARTRIDGE W/PD FUZE TPM43A1
116	81-MM HIGH EXPLOSIVE CARTRIDGE WITH PD FUZE M374 SERIES
117	81-MM HIGH EXPLOSIVE CARTRIDGE WITH PD FUZE M374 SERIES
118	81-MM HIGH EXPLOSIVE CARTRIDGE M43A1 WITH PD FUZE M525
121	90-MM HEAT CARTRIDGE M371A1
122	90-MM HEAT PROJECTILE
123	90-MM HIGH EXPLOSIVE CARTRIDGE WITH PD FUZE M71
124	90-MM HIGH EXPLOSIVE CARTRIDGE WITHOUT FUZE M71
126	BLASTING CAPS
127	BOMB NOSE FUZE M904 E2/E3
128	BOMB TAIL FUZE M905
129	BOMBLET FRAGMENTATION
130	BOOSTER ADAPTER T45E7
131	BOOSTER BOMB ADAPTER T46E3
132	BOUNDING ANTIPERSONNEL MINE M16 SERIES
133	C-58 BLASTING CAPS
134	COMPOSITION A3
137	COMPOSITION C4
139	DEMO CHARGE M186 FLEX
140	DETONATOR CORD
146	FRAGMENTATION HAND GRENADE M61
147	FRAGMENTATION HAND GRENADE M67
148	FRAGMENTATION HAND GRENADE MK2/M26 SERIES
149	GRENADE TRAINING M21
155	HBX-1, -3, AND -6
156	HEAVY HIGH EXPLOSIVE ANITITANK MINE M15
160	LEAD AZIDE
161	LEAD STYPHNATE
162	M-6 BLASTING CAPS
164	M18A1 ANTIPERSONNEL MINE WITH M57 FIRING DEVICE

TABLE V.C-2  
 TYPICAL ENERGETIC ITEMS  
 THERMALLY TREATED AT THE DEMO UNIT  
 PAGE 5

Crane No.	Description
165	M18A1 ANTI PERSONNEL MINE WITHOUT FIRING DEVICE
171	M60 IGNITER TIME BLASTING FUZE
176	MILITARY DYNAMITE LOW VELOCITY
177	MILITARY DYNAMITE MEDIUM VELOCITY
181	OCTOL
183	OFFENSIVE HAND GRENADE MK3A2
184	PBX
188	PHOTOFLASH
189	PIBD FUZES
192	PROJECTILE BURSTER FOR A 105-MM CARTRIDGE M53/M53A1
193	PROJECTILE 57 MM HE M48
194	PROJECTILE 57MM RECOILLESS HE M306
195	PROJECTILE 57MM RECOILLESS HE M307
196	PROJECTILE 57MM RECOILLESS HE M307A1
197	PROJECTILE 57MM RECOILLESS HE M306A1
201	SAFETY FUZE
206	TIME BLASTING SAFETY FUZE M700
207	TIME FUZE
209	TRITONAL
210	U.S PROJECTILE 105 MM ILLUMINATING
213	XM54 PROJECTILE BURSTER
214	106-MM HEP-T M346A1 PROJECTILE ONLY
215	106-MM HEAT M344A1 PROJECTILE ONLY

**Table V.C-3**

**Typical Items Proposed for Open Burning - ABG  
Incendiary Cage**

**TABLE V.C-3**  
**TYPICAL ENERGETIC ITEMS**  
**THERMALLY TREATED AT ABG INCENDIARY CAGE**  
**PAGE 1**

Crane No.	Description
119	81-MM MORTAR IGNITION CARTRIDGE
120	90-MM CARTRIDGE AP-T M318 SERIES
141	ELECTRIC BLASTING CAP
167	M3 FLASH REDUCER FOR 8-IN PROPELLING CHARGE
169	TRACERS
175	M702 SERIES IGNITION CARTRIDGE FOR 60-MM MORTAR
180	NON-ELECTRIC BLASTING CAP
184	PBX
188	PHOTOFLASH
190	PRACTICE ANTITANK MINE ACTIVATOR, M1 PRACTICE MINE SPOTTING CHARGE F/APERS
191	M8
200	ROCKET MORTAR IGNITER M20A1
218	CHARGE PROPELLING 155-MM M119A2
219	CHARGE PROPELLING 8-INCH M188
220	GRENADE FUZE (M204A2)
221	3.5-INCH ROCKET MOTOR
222	ELECTRIC IGNITION ELEMENT M91
223	PROJECTILE SIMULATOR M74
224	30-CAL-M1 TRACER WITH I280

**Table V.C-3DU**

Typical Items Proposed for Treatment - ABG  
Dewatering Units

TABLE V.C-3  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT ABG DEWATERING UNITS  
PAGE 1

Crane No.	Description
136	COMPOSITION B (60/40 CYCLOTOL)
155	HBX-1, -3, AND -6
157	HMX (HOMOCYCLONITE)
181	OCTOL
185	PENTOLITE 10/90
186	PENTOLITE 50/50
	PETN (PENTAERYTHRITE
187	TETRANITRATE
199	RDX (CYCLONITE)
	Tetryl (Trinitrophenyl-
204	Methylnitramine
205	TETRYTOL
208	TNT
209	TRITONAL

**Table V.C-3PA**

Typical Items Proposed for Treatment -  
ABG/ORR Burn Pans

TABLE V.C-3  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT ABG/ORR BURN PANS  
PAGE 1

Crane No.	Description
89	155-MM PROPELLANT CHARGE WITHOUT PRIMER RB M119 SERIES
90	155-MM PROPELLANT CHARGE CARTRIDGE GB M3 SERIES
91	155-MM PROPELLANT CHARGE WB M4 SERIES
106	40-MM TP CARTRIDGE M781
113	8-INCH PROPELLED CHARGE GBM1
114	8-INCH PROPELLED CHARGE WBM2
125	BLACK POWDER
134	COMPOSITION A3
135	COMPOSITION A5
136	COMPOSITION B (60/40 CYCLOTOL)
138	CYCLOTOL
145	EXPLOSIVE A4
155	HBX-1, -3, AND -6
157	HMX (HOMOCYCLONITE)
158	INCREMENT A PROPELLING CHARGE M90A1 FOR 81-MM MORTAR
159	INCREMENT B PROPELLING CHARGE M90A1 FOR 81-MM MORTAR
163	M1 PROPELLANT
166	M26 PROPELLANT
168	M30 PROPELLANT
170	M6 PROPELLANT
173	M7 PROPELLANT
174	M7 PROPELLANT FOR A 105-MM CARTRIDGE
179	NITROGUANADINE
181	OCTOL
184	PBX
185	PENTOLITE 10/90
186	PENTOLITE 50/50
187	PETN (PENTAERYTHRONE TETRANITRATE)
198	PROPELLING CHARGE FOR A 81-MM CHARGE
199	RDX (CYCLONITE)
203	SMOKELESS BLACK POWDER
204	TETRYL (TRINITROPHENYL METHYL NITRAMINE)
205	TETRYTOL
208	TNT
209	TRITONAL
211	WC846 PROPELLANT
212	WC872 PROPELLANT
216	EXPLOSIVE D

TABLE V.C-3  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT ABG/ORR BURN PANS  
PAGE 2

Crane No.	Description
217	ABL-705 (AHH) DOUBLE BASE CASTING POWDER

**Table V.C-3PP**

Typical Items Proposed for Treatment - ABG Primer Pit

TABLE V.C-3  
TYPICAL ENERGETIC ITEMS  
THERMALLY TREATED AT ABG PRIMER PIT  
PAGE 1

Crane No.	Description
1	10 GAUGE BLANKS
9	1305-A659 CTG 20 MM HEI-T M242A1 SNGL RD
10	1305-A662 CTG 20 MM HEI M56 SERIES LNKD
11	1305-A701 CTG 20-MM HEI M56A3 SERIES LNKD
12	1305-A775 CTG 20-MM HEI M97 SINGLE RD
13	1305-A776 CTG 20-MM INC M96 SINGLE RD
14	1305-A785 CTG 20-MM HEI MZ10 SNGL RD
23	1305-A884 20 MM API M53 LNKD
31	1305-B120 CTG 30-MM TP M788 LNKD RHF
39	1310-B632 CTG, 60 MM M49 SERIES
85	1390-N519 PRIMER PERC M57
95	22 CALIBER
96	22 MM SUBCALIBER DEVICE
99	30 CALIBER BLANK
100	30 CALIBER CARBINE
101	38 SPECIAL
108	45 CALIBER BLANKS
110	7.62 BLANK
111	7.62-MM GRENADE RIFLE CARTRIDGE M64
119	81-MM MORTAR IGNITION CARTRIDGE M6
126	BLASTING CAPS
133	C-58 BLASTING CAPS
141	ELECTRIC BLASTING CAP
142	ELECTRICAL SQUIBS (D003)
143	ELECTRICAL SQUIB M1
144	ELECTRICAL SQUIB M1A1
150	HAND GRENADE FUZE M201A1
151	HAND GRENADE FUZE M204 SERIES
152	HAND GRENADE FUZE M213
153	HAND GRENADE PRACTICE FUZE M205
154	HAND GRENADE PRACTICE FUZE M228
162	M-6 BLASTING CAPS
172	M605 FUZE COMBINATION FOR M16 SERIES MINE
178	ND1211 DETONATORS
180	NON-ELECTRIC BLASTING CAP
182	OFFENSIVE HAND GRENADE FUZE M206 M6
202	SMOKE POT FUZE M207A1
220	GRENADE FUZE (M204A2)
224	30-CAL-M1 TRACER WITH I280

**Table V.C-4**

**Compositions of Contaminants in Sludge**

**TABLE V.C-4**  
**COMPOSITIONS OF CONTAMINANTS IN**  
**DEWATERING UNIT SLUDGE**

SLUDGE CONTAMINANTS	CONTAMINANT CONSTITUENTS	HAZARDOUS WASTE NO.	SOURCE	DU
Composition A	RDX Beeswax	D003	Bldg. 146	10-ABG
Composition B	RD TNT Wax	D003 D003	Minefill A Rockeye loading area	10-ABG
HBX	RDX TNT Aluminum D-2 Wax Calcium Chloride	D003 D003	Minefill A	10-ABG
H-6	RDX TNT Aluminum D-2 Wax Calcium Chloride	D003 D003	Minefill A	10-ABG
TNT	TNT	D003	Minefill A	10-ABG
Red Phosphorus composition	Butyl Rubber Linseed Oil Magnesium Manganese Red Phosphorus Zinc Oxide	D003	Bldg. 133	11-ABG
Pentolite	PETN TNT	D003 D003	Minefill A	10-ABG
Tritonal	TNT Aluminum	D003	Minefill A	10-ABG
Tetryl	Tetryl	D003	Minefill A	10-ABG

**Table V.C-5**

Testing Methods

**METHODS FOR TESTING REPRESENTATIVE WASTE SAMPLES**  
**NSWC CRANE**

	PARAMETER	ANALYSIS	TEST METHOD	WASTE
TCLP Metals	TCLP Metals	Toxicity Characteristic Leaching Procedure	SW 846 1311/6010B/6020	Ash/Residue/Filtrate
	Corrosivity	pH Electronic Measurement	SW 846 9040C	Ash/Residue/Filtrate
	Ignitability	Pensky-Martens Closed-Cup	SW 846 1010A	Ash/Residue/Filtrate
	Reactive Cyanides		SW 846 7.3.3.2(2)	Ash/Residue/Filtrate
	Total Sulfide	Acid-Soluble and Acid-Insoluble Sulfides	SW 846 9030B	Ash/Residue/Filtrate
	Ash (percent)	Comp. Anal. By Thermal Gravimetry	ASTM E1131-86 ASTM D482-03	Ash/Residue/Filtrate
	Solids (percent)	Standard Methods Total Solids Dried	2540B	Ash/Residue/Filtrate
	Chlorine	Std. Methods Ampimetric Titration	4500-CL-D	Ash/Residue/Filtrate
	Water (percent)	Water (moisture) Content in soils	ASTM D2216-05	Ash/Residue/Filtrate
	2,4,-Dinitrotoluene	HPLC	SW 846 8330	Ash/Residue/Filtrate
Solvents	Acetone	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
	Carbon Disulfide	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
	Cyclohexanone	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
	Hexachlorobenzene	SVOC GC/MS	SW 846 8270C	PEP-contaminated Solvents
	Hexane	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
	Methyl Ethyl Ketone	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
	Toluene	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
	Trichloroethane	VOCs GC/MS	SW 846 8260B	PEP-contaminated Solvents
Total Metals	Arsenic	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Barium	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Cadmium	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Chromium	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Lead	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Mercury	Cold Vapor	SW 846 7470A	Ash/Residue/Filtrate
	Nickel	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Selenium	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Silver	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Zinc	ICP-OES / ICP-MS	SW 846 6010B, 6020	Ash/Residue/Filtrate
	Explosive Reactivity		U.S. B.O.M. Protocol	Ash/Residue/Filtrate
	Residual Ordnance	HPLC	SW 846 8330	Ash/Residue/Filtrate

**Table V.C-6A and Table V.C-6B**

Sample Containers and Preservatives

Sample Holding Time

**TABLE V.C-6A**  
**SAMPLE CONTAINERS AND PRESERVATIVES FOR**  
**COMPLIANCE MONITORING**

Parameter	AQUEOUS SAMPLE			SOIL SAMPLE		
	Container	Volume	Preservative	Container	Volume	Preservative
Total Recoverable Metals	Polyethylene	250 ml	Acidify to pH<2 w/HNO <sub>3</sub>	Glass	4 oz.	None
Dissolved Metals	Polyethylene	250 ml ≤ 6°C	Acidify to pH<2 w/HNO <sub>3</sub>	Glass	4 oz.	None
Volatiles	Glass, Teflon-Lined septum	(3) 40 ml. vials	Cool to ≤ 6°C HCL	Glass	4 oz.	Zero headspace ≤ 6°C
Explosives	Glass	(3) 1 Liter	Cool to ≤ 6°C	Glass	4 oz.	None
Semi-volatiles	Amber Glass, Teflon lined cap	(2) 1 Liter	Cool to ≤ 6°C	Glass	4 oz.	None
Dioxins, Furans <sup>1</sup>	Amber Glass, Teflon-lined cap	(2) 1 Liter	Cool to ≤ 6°C	Glass	4 oz.	None
Sulfide	Polyethylene	500 ml	4 drops 2N zinc acetate + NaOH to pH > 9.0 per 100 ml.	Glass	4 oz.	None

<sup>1</sup> - Polychlorinated dibenzo-p-dioxins and dibenzofurans

<sup>2</sup> - One Liter for each: 1 - Liter Unfiltered for total metals, 1 - Liter Filtered for dissolved metals

All samples will be preserved on ice and kept under Chain of Custody protocol

**TABLE V.C-6B**  
**MAXIMUM HOLDING TIMES FOR SAMPLES BEFORE**  
**EXTRACTION AND ANALYSIS**

CONSTITUENT(S)	HOLDING TIME(S)
Metals	6 Months (Mercury 28 Days)
Volatile Organics	14 Days
Semi-Volatile Organics	Extract within 7 days and analyze within 40 days of extraction
Dioxins and Furans	Extract within 30 days and analyze within 45 days of extraction

Sulfide

| 7 Days