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APR 16 2012

Date:
Refer To: ENV-RCRA-12-0083
LAUR: 12-20363

Mr. John E. Kieling
Program Manager
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

SUBJECT: REQUEST TO SUPPLEMENT AND CORRECT THE LOS ALAMOS NATIONAL LABORATORY (LANL) PERMIT MODIFICATION REQUEST FOR OPEN DETONATION UNITS AT TECHNICAL AREAS 36 AND 39, LANL HAZARDOUS WASTE FACILITY PERMIT, EPA ID NO. NM0890010515

Dear Mr. Kieling:

The purpose of this letter is to apply a revision to the above referenced Class 3 permit modification request to the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (the Permit) originally submitted by the Department of Energy (DOE) and the Los Alamos National Security, LLC (LANS), to the New Mexico Environment Department Hazardous Waste Bureau (NMED-HWB) on July 19, 2011. The revision includes the addition of waste explosives that may be treated by open detonation to Table 2-8 within Section 2.0 of the permit modification request. The table was inadvertently left out of the original submittal. Table C-6 of the Waste Analysis Plan in Attachment L, *Redline/Strikeout of 2010 LANL Hazardous Waste Facility Permit,* also requires revision for consistency with Table 2-8.

Enclosures to this letter include a copy of the tables with editing marks that illustrate the additions to the tables and the revised tables in a format consistent with the original submittal. Along with the additional explosives information in Table 2-8, a number of revisions have been made to the table for clarity and update. Because of the frequent updates and maintenance to the list in Table 2-8, the Permittees have revised the suggested permit language in Table C-6 to include a generalized version of the list that encompasses all explosives that could be treated at the unit, without the specificity as included in Table 2-8. It is important to note that while the suggested language for the table of explosives (Table C-6) has been generalized, the suggested language for Table C-7, *Description of Explosives Waste Streams Treated at the Facility*, remains unchanged and continues to list specific explosives that are likely to be found in each waste stream. Therefore, the specificity required for waste characterization is preserved without reproducing an extensive list of all explosives at the Facility.

This correspondence will be posted to the LANL electronic public reading room and included within an electronic mail notice to keep the interested public aware of this change. Please contact Mark Haagenstad of the Water Quality and RCRA Group (ENV-RCRA) at (505) 665-2014 if you have questions.

Sincerely,

Anthony R. Grieggs
Group Leader
Water Quality & RCRA Group
Los Alamos National Laboratory

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
National Nuclear Security Administration

ARG:GET/lm

Enclosures: (1) Revised Table 2-8 and Table C-6 with Editing Marks Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39

(2) Revised Table 2-8 and Table C-6 without Editing Marks Los Alamos National Laboratory Permit Modification Request for Open Detonation Units at Technical Areas 36 and 39

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Tim Hall, NMED/HWB, Santa Fe, NM, w/enc., (E-File)
Gene Turner, LASO-EO, w/enc., A316, (E-File)
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Cy (continued):
Carl A. Beard, PADOPS, w/o enc., A102, (E-File)
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Enclosure 1

Revised Table 2-8 and Table C-6 with Editing Marks
Los Alamos National Laboratory Permit Modification Request for
Open Detonation Units at Technical Areas 36 and 39

ENV-RCRA-12-0083

LAUR-12-20363

APR 1 6 2012

Date

Table 2-8

Waste Explosives[a] Detonated Treated By Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
AN	Ammonium nitrate, 130N
CL20	Hexanitrohexaazaisowurtzitane
DAAzF	3,3'-diamino-4,4'-azofurazan
DAAF	Diamino-azoxyfurazan~~z~~
DAAT	3,3'-azobis (6-amino-1,2,4,5-tetrazine)
DAATOx	3,3'-azobis (6-amino-1,2,4,5-tetrazine) n-oxide
DATB	Diaminotrinitrobenzene, 1201
DHT	Dihydrazino-1,2,4,5-tetrazine
DiPEHN	Dipentaerythritol hexanitrate
DINGU	Dinitroglyco~~l~~uril
DINA	Di~~(~~nitroxydiethyl~~)~~ nitramine~~, Dioxyethyl dinitrate~~
EDNA	Ethylenedinitramine, Halite, 1101
FOX-7	1,1diamino-2,2dinitrethylene~~;~~, ~~AKA~~ 1,1-diamino-2,2dinitroethene
HMX	Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine; 03NN ~~Cyclotetramethylenetetranitramine~~
HNAB	Hexanitroazobenzene~~2,2,'4,'6,'6-hexanitrohexaazaisowurtzitane~~
Hydrogen Peroxide	Pure compound (above 80%)
~~LAX-112~~TZX	~~Bis-diaminotetrazine N-oxide~~Diaminotetrazine dioxide, LAX-112
NC~~Nitrocellulose~~	Single component Nitrocellulose
NQ	Nitroguanidine, Picrite, 07NN
NTO	3-nitro-1,2,4-Nitro-tiazole-5-one
PETN	Pentaerythritoltetranitrate, 06NN
Picric Acid	1,3,5-Trinitrophenol Note: Picric acid forms impact-sensitive compounds with metal ions.
PYX	2,6-Bis(picrylamino)-3,5-dinitropyridine
RDX	Cyclo-1,3,5-trimethylene-2,4,6-trinitramine, 02NN~~; Hexogen, Cyclonite~~
TAGDNAT	Bis-triaminoguanidinium 3,3'-Dinitroazotriazole
TAGN	Triaminoguanidine nitrate
TAGN4BIM	Triaminoguanidinium tetranitrobiimidizole
TAGzT	Triaminoguanidium azotetrazolate
TATB	1,3,5-Triamino-2,4,6-trinitrobenzene; 1701
TNAZ	1,3,3-Trinitroazetidine
Tetryl	2,4,6~~5~~-Trinitrophenylmethylnitramine
HNS	Hexanitrostilbene, 3001
TNT	2,4,6-Trinitrotoluene; Trotyl; 010N
TriPEON	Tripentaerythritol octanitrate

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
FEFO	Bis (2-fluoro-2,2-dinitroethyl) formal
Isopropylnitrate	Chemical Abstracts Service Registry Number (CAS Number) 1712-64-7
Methylnitrate	CAS Number 598-58-3
NM	Nitromethane
Tetranitromethane	CAS Number 509-14-8
AFX-757	Ammonium perchlorate (AP) 30% ~~,~~/ Aluminum (Al) 33% ~~,~~/ RDX 25% /~~,~~ Binders 12%
AFX-1209 Type II	Carnuba Wax 1.91% /~~,~~ Lecithin, 0.78% /~~,~~ Isodecyl pelargonate 0.81 % /~~,~~ Al 5% /~~,~~ HMX 12% /~~,~~ Tungsten, 79.5%~~, TMD 6.27%~~
AFX-1212	Carnuba Wax 3.82% /~~,~~ Lecithin 1.55% /~~,~~ Bis(2-ethylhexyl) adipate 1.63% /~~,~~ Al 10% /~~,~~ HMX 20% /~~,~~ Tungsten 63%
Al/Fomblin oil	~~65.7% Fomblin oil, 34.3% Al~~ Aluminum particles / Fomblin Oil
AP/Fuel mixture	Ammonium perchlorate in combination with sugar, metal powders, or dodecane~~AP, 23% sugar~~
AP/Fuel mixture	Ammonium perchlorate / Aluminum particles~~AP, 23% Al~~
~~AP/Fuel mixture~~	~~AP, 7.3% dodecane~~
ANFO	Ammonium nitrate / fuel oil
Boracitol	~~60 wt%~~ Ortho~~B~~-boric acid 60% / ~~40 wt%~~ TNT 40%
Baratol	~~76 wt%~~ Barium nitrate 76% / ~~24 wt%~~ TNT 24%, 76NN
Calcitol	~~40 wt%~~ TNT 40% /~~55-60 wt%~~ $CaCO_3$ 55-60% / ~~0-2 wt%~~ Talc 0-2% / ~~1-2 wt%~~ Microballoons 1-2%, X-0533
CH-6	~~97.5 wt%~~ RDX 97.5% / ~~1.5 wt%~~ Calcium stearate 1.5% / ~~0.5 wt%~~ Polyisobutylene 0.5% / ~~0.5 wt%~~ Graphite 0.5%
~~CL-20~~	~~2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hexaazaisowurtzitane, hexanitrohexaazaisowurtzitane~~
Comp. A	~~91 wt%~~ RDX 91% / ~~9 wt% Beeswa~~Wax 9%; Includes Comp. A-2, Comp. A-3, & 9085
~~Comp. A-2~~	~~91 wt% RDX/9 wt% Synthetic wax~~
~~Comp. A-3~~	~~9085, 91 wt% RDX/9 wt% Beeswax~~
Comp. A-4	~~97 wt%~~ RDX 97% / ~~3 wt%~~ Beeswax 3%
Comp. A-5	~~98.5 wt%~~ RDX 98.5-99% / ~~1.5 wt% Beeswax~~Stearic acid 1-1.5%
Comp. B	~~64 wt%~~ RDX 63% / ~~36 wt%~~ TNT 36% / Wax 1%, 60NN~~Comp B~~, Hexolite, Hexotol
Comp. B-3	~~60 wt%~~ RDX 60% / ~~40 wt%~~ TNT 40%, 60NN
Comp. C-3	~~9080, 88 wt%~~ RDX 78% / ~~12 wt% Wax~~Plasticizer or oil 22%, 9080
Comp. C-4	~~9081, 91 wt%~~ RDX 91% / ~~2.1 wt%~~ Polyisobutylene 2.1% / ~~1.6 wt%~~ Motor oil 1.6% / ~~5.3 wt%~~ Di(2-ethylhexyl) sebacate 5.3%, 9081

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
CR-1	~~94%~~ RDX 94% / ~~, 6%~~ Hydroxyl-terminated polybutadiene (HTPB), ~~/~~ Dioctyl Adipate (DOA), ~~/~~Isophorone diisocyanate (IPDI) gumstock 6%
CR-2	~~84%~~ RDX 84% / ~~, 10%~~ Al 10% / ~~, 6%~~ HTPB, ~~/~~DOA, ~~/~~IPDI gumstock 6%
CR-4	~~84%~~ RDX 84% / ~~, 10%~~ nm Al 10% / ~~, 6%~~ HTPB, ~~/~~DOA, ~~/~~IPDI gumstock 6%
CR-5	~~84%~~ RDX 84% / ~~, 10%~~ nm Al oxide 10% / ~~, 6%~~ HTPB, ~~/~~DOA, ~~/~~IPDI gumstock 6%
Cyclotol	RDX ~~75~~60-80% ~~/,~~ TNT ~~25~~20-40%
~~Cyclotol 75/25~~	~~75 wt% RDX/25 wt% TNT~~
~~Cyclotol 70/30~~	~~70 wt% RDX/30 wt% TNT~~
Detasheet	PETN / Plasticizer
Detasheet C	~~63 wt%~~ PETN 63% / ~~8 wt%~~ NC 8% / ~~29 wt%~~ Elastomeric binder 29%, 6300
Detasheet D	~~75 wt%~~ PETN 75% / ~~25 wt%~~ Elastomeric binder 25%, 6301 ~~Note: This material is usually red, but it is an explosive, not an inert material.~~
DNAT	Dinitroazotriazole 100%
EDC-8	~~76.0 wt%~~ PETN 76% / ~~24.0 wt% RTV Silicone~~Sylgard 24%
EDC-18	HNS 95% / ~~,~~Kel-F 5%
EDC-28	~~94 wt%~~ RDX 94% / ~~6 wt%~~ FPC 461 (polymer) 6%
EDC-29	HMX 95% / ~~,~~Polyurethane 5%
EDC-31	TATB 75% / ~~,~~ HMX 22.5% / ~~,~~HTPB-IDPI 2.5%
EDC-32	~~85 wt%~~ HMX 85% / ~~15 wt%~~ Viton A 15%, LX-04
EDC-35	TATB 95% / ~~,~~K~~EL~~el-F 5%
EDC-37	~~91 wt%~~ HMX 91% / ~~1 wt%~~ dinitroethylbenzene (DNEB) 5.2% / trinitroethylbenzene (TNEB) 2.8% / Nitrocellulose 1%~~/8 wt% K-10 Liquid~~
EDC-38	~~94.5 wt%~~ HMX 94.5% / ~~3.5 wt%~~ K-10 Liquid 3.5% / ~~2 wt%~~ Polyurethane 2%
EF-96	~~96%~~ HMX 96% / ~~4% i~~Inert binder 4%
Fixor	~~70/30 AN/NM~~Ammonium nitrate 70% / Nitromethane 30%
~~FOX-7~~	~~1,1 diamino02,2 dinitroethylene, AKA 1,1-diamino-2,2 dinitroethene~~
HBX-1	~~40 wt%~~ RDX 40% / ~~38 wt%~~ TNT 38.1% / ~~17 wt%~~ Al 17.1% / ~~4.5 wt%~~ Wax 4.8% / ~~0.5 wt%~~ $CaCl_2$ 0.5%
Helix-72	6~~:/~~1 NM / Al powder by weight
IMX-104	Dinitroanisole (DNAN) 31.7% / ~~,~~NTO 53% / ~~,~~RDX 15.3%
Kine-Pak/Kinestick	~~70/30 AN/NM~~ Ammonium nitrate 70% / Nitromethane 30%, Slurry
LAX-118	~~95%~~ FOX-7 95% / ~~,~~Kel-F 5%
LLM-105	ANPZO, ~~RX-55-AE-5~~ 2,6-Diamino-3,5-dinitropyrazine-1-Oxide
~~LX-04~~	~~85.5 wt% HMX/15.0 wt% Viton A~~
LX-07	~~90 wt%~~ HMX 90% / ~~10 wt%~~ Viton A 10%, PBX-9012, X-0211
~~LX-10~~	~~95.0 wt% HMX/5.0 wt% Viton A~~

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
LX-14	~~95.5 wt%~~ HMX 95.5% / ~~4.5 wt%~~ Estane 4.5%, ~~5702-F1 (~~X-0282~~)~~
LX-15	HNS 95% / ~~,~~ Kel-F 5%
LX-16	PETN 96% / ~~,~~ FPC 461 4%
LX-17	TATB 92.5% / ~~,~~ Kel-F~~f~~ 7.5%
LX-18	HNS 99.5% / ~~,~~ e~~E~~poxy 0.5%
~~MDF~~	~~Mild Detonating Fuse~~
~~Nonel~~	~~RDX-Lined Metal Tubing~~
Octogen	~~94.5 wt%~~ HMX 94.5% / ~~4.5 wt%~~ Wax 4.5% / ~~1 wt%~~ Graphite 1%
Octol	~~75 wt%~~ HMX 75% / ~~25 wt%~~ TNT 25%, 740N
PAX	~~77%~~ HMX 77% / ~~, 15%~~ Al 15% / ~~, 4.8 %~~ BDNPA ~~/~~F(plasticizer) 4.8% / ~~, 3.2%~~ CAB 3.2%
PBX-7	TATB 60% / ~~,~~ RDX 35% / ~~,~~ Teflon 5%
PBX 9001	~~90 wt%~~ RDX 90% / ~~8.5 wt%~~ Polystyrene 8.5% / ~~1.5 wt%~~ Dioctyl phthalate 1.5%
PBX 9007	~~90 wt%~~ RDX 90% / ~~9.1 wt%~~ Polystyrene 9.1% / ~~0.5 wt%~~ Dioctyl phthalate 0.5% / ~~0.4 wt%~~ Resin 0.4%
PBX 9010	~~90 wt%~~ RDX 90% / ~~10 wt%~~ Kel-F ~~3700~~ Elastomer 10%
PBX 9011	~~90 wt%~~ HMX 90% / ~~10 wt%~~ Estane ~~5703-F-1~~ 10%
PBX 9205	~~92 wt%~~ RDX 92% / ~~6 wt%~~ Polystyrene 6% / ~~2 wt%~~ Dioctyl phthalate 2%
PBX 9206	~~92 wt%~~ HMX 92% / ~~8 wt%~~ Kel-F ~~3700~~ Elastomer 8%
BTF	Benzotrifuroxan
Hydrazinium Mononitrate	Hydrazine nitrate
ABX 116-2	TATB 95% / Silver 5%
ABX 120-1	TATB 60% / Silver 3% / Indium 19% / Bismuth 18%
DAAF/PIB	DAAF 50-100% / Polyisobutylene 0-50%
IMX-101	Dinitroansiole (DNAN) 43.5% / NQ 36.8% / NTO 19.7%
PBX 9401	RDX 94.2% / Polystyrene 3.6% / Trioctyl phosphate 2.2%
PBX 9404	HMX 94% / NC 3% / CEF (chloroethyl phosphate) 3%
PBX 9405	RDX 93.7% / NC 3.15% / CEF 3.15%
PBX 9407	RDX 94% / Exon-461 (polymer) 6%
PBX 9501	HMX 95% / Estane 2.5% / Nitroplasticizer (NP) 2.5%
PBX 9502	TATB 95% / Kel-F Elastomer 5%, X-0290
PBX 9503	TATB 80% / HMX 15% / Kel-F Elastomer 5%, X-0351
PBX 9504	TATB 69.8% / PETN 25% / Kel-F Elastomer 5% / Dye 0.2%, X-0407
PBXN-5	HMX 95% / Viton A 5%, LX-10
PBXN-7	TATB 60% / RDX 35% / Viton 5%
PBXN-7 Type 1	TATB 60% / RDX 35% / Teflon 5%

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
PBXN-7 Type 2	TATB 60% / RDX 35% / Viton-A 5%
PBXN-9	HMX 92% / Hytemp 6% / Dioctyl Adipate (DOA) 2%
PBXN-109	RDX 64% / Al 20% / binder 20%
PBXN-110	HMX 88% / HTPB (Hydroxy-terminated Polybutadiene) 12%, PBXW-113.
PBXN-111	AP 43% / Al 25% / RDX 20% / Binders 12%
PBXN-112	HMX 89% / Cobalt Acetoacetinate (polylaurylmethacrylate binder) 0.0025%, PBXC-129
PBXN-113	HMX 45% / Aluminum 35% / HTPB (Hydroxy-terminated Polybutadiene) 9.335% / Isodecyl Pelargonate 9.335% / Isophorone Diisocyanate 0.89% / Lecithin 0.36% / Triphenyl bismuth 0.03% / Ethanox-702 0.05%
Pentolite	TNT 50% / PETN 50%, 5001
PLG/UW-1	AP 44.73% / Al 37.52% / RDX 4% / TMETN 11.3% / PCP-0260 0.94% / PCP-030 0.24%
RSI-007	CL-20 97.75% / Zeon acrylic polymer 2% / PTFE (Teflon) 0.25%
RX-55	LLM-105 92.5-99% / Viton A 1-7.5%
Semtex 1A	PETN 83.5% / heavy oil 12.4% / rubber 4.1%, X-0564
Semtex 10	PETN 85% / 2bf 11.3% / acrylonitrile butadiene rubber 3.7%
Semtex 1H	RDX 60.5% / PETN 25% / heavy oil 11.6% / rubber (styrene/butadiene) 2.9%, X-0565
TAGzT Aluminum Formulation	TAGzT 80% / Al powder 15% / Viton A 5%
TBX01	TAGzT 50% / Al powder 30 % / GAP (glicidyl azide polymer) 20%
TBX02	TAGzT 65% / Al powder 30% / Viton A 5%
Tritonal	TNT 80% / Al powder 20%
Urea Nitrate	Urea nitrate 66% / Al flake 33% / Orthoboric acid 1%, RX-61-AH
VEX288-2B	Aluminum, titanium, bismuth trioxide 85% / perfluoropolyether diol binder 15%
X-0106	RDX 76.1% / EXON 461 23.9%
X-0208	RDX 80% / Sylgard 182 20% / XTX-8004
X-0219	TATB 90% / Kel-F 10%
X-0233	HMX 5-40% / Tungsten 40-95% / Polystyrene 0-10% / Plasticizer 0-5%
X-0242	HMX 90-95% / BDNPF-A 0-5% / Estane 0-5% / Calcium stearate 0-5%
X-0298	HMX 97.5% / Kraton 1.43% / Oil 1.17%
X-0309	TNT 74.6% / Al 18.7% / Wax 4.8% / Acetylene black (carbon) 1.9% (Destex)
X-0319	TATB 50% / HMX 45% / Kel-F Elastomer 5%
X-0321	TATB 75% / HMX 20% / Kel-F Elastomer 5%
X-0401	PETN 99.5% / Kel-F 800 0.5%
X-0450	70% TATB / 25% HMX / 5% Estane

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
X-0457	PETN 78% / NuSil CF6-3500 22%
X-0526	TNT 70% / $CaCO_3$-Talc 30%
X-0534	TNT 50% / $CaCO_3$ 16-24% / Talc 25-33% / Microballoons 1-2%
X-0535	TZX 95% / OXY-461(polymer) 5%
X-0541	TATB 69.8% / PETN 25% / Kel-F Elastomer 5% / dye 2%
X-0557	HMX 96.4% / Estane 1.1-3.7% / BDNPA-F 0-2.5% / Irganox 1010 0.1%
X-0566	TATB 96.9% / Tungsten trioxide 3.1%
X-0567	DAAF 95% / Polystyrene 2.5% / DOP (di-2-ethylhexylphthalate) 2.5%
X-0569	HMX 85% / Nitroplasticizer 7.5% / Estane 7.5%
XTX-8003	PETN 80% / Sylgard 182 or silicone rubber 20%, LX-13
Benite	Mixture of black powder and NC
Black powder	Standard commercial and military grades only; Potassium nitrate 75%
Black powder substitute	Commercial synthetic black powder substitute, sodium or potassium nitrate based, Pyrodex or similar
HARP-1,-2	HARP propellants are Al/AP/HMX composites
HELP-1,-2	HELP propellants are NC/NG/HMX composites
HPP	Ammonium perchlorate and aluminum propellant
M-14	NC 90% / dinitrotoluene 8% / dibutylphthalate 1% / diphenylamine 1%
Smokeless Powder- Single, Double, or Triple Base	Propellants containing NC, Nitroglycerine (NG), and NQ in combination with stabilizers, plasticizers, inorganic nitrates, and other modifying agents 2,4-dinitrotoluene (2,4-DNT) may also be present
VTP 25540	HMX based High Energy Propellant
High power detonators	Articles such as EBWs and slappers
LEEEDs	Low Energy Electro-Explosive Devices- Articles that may contain lead azide and/or lead styphnate
Library and Analytical Standards	Small quantities (generally <1 kg) of energetic materials used as library and/or analytical standards
Un-fused or un-primed munitions	Generally includes metal-lined shaped charges and conventional bombs filled with explosives or propellants
Small-arms ammunition of caliber 20-mm or less	Generally complete commercial products

[a] Additional developmental or novel types/formulations of explosives may be treated at the OD Units in small quantities.

[b] Developmental or movel types/formulations of explosives may be added to the allowed energetic materials list at the discreation of the LANL Explosives Review Committee.

Table C-6

~~(This table is reserved)~~ Explosives* Found in Explosives Wastes and Explosives Contaminated Wastes

Explosive Categorys	~~Other Names, Compositions, or Reference~~Description
~~AN~~	~~Ammonium nitrate~~
~~CL20~~	~~Hexantrohexaazaisowurtzitane~~
~~DAAzF~~	~~3,3' diamino 4,4' azofurazan~~
~~DAAF~~	~~Diamino azoxyfurazaz~~
~~DAAT~~	~~3,3' azobis (6 amino 1,2,4,5 tetrazine)~~
~~DAATOx~~	~~3,3' azobis (6 amino 1,2,4,5 tetrazine)~~
~~DATB~~	~~Diaminotrinitrobenzene~~
~~DHT~~	~~Dihydrazino 1,2,4,5 tetrazine~~
~~DiPEHN~~	
~~DINGU~~	~~Dinitroglycoluril~~
~~DINA~~	~~Di(nitroethyl) nitramine, Dioxyethyl dinitrate~~
~~EDNA~~	~~Ethylenedinitramine, Halite~~
~~FOX 7~~	~~1,1diamino 2,2dinitrethylene,AKA 1,1 diamino 2,2dinitroethene~~
~~HMX~~	~~Cyclotetramethylenetetranitramine~~
~~HNAB~~	~~2,2,'4,'6,'6 hexanitrohexaazaisowurtzitane~~
~~Hydrogen Peroxide~~	~~Pure compound (above 80%)~~
~~LAX 112~~	~~Bis diaminotetrazine N oxide~~
~~Nitrocellulose~~	~~Single component~~
~~NQ~~	~~Nitroguanidine, Picrite~~
~~NTO~~	~~1,2,4 Nitro tiazole 5 one~~
~~PETN~~	~~Pentaerythritoltetranitrate~~
~~Picric Acid~~	~~1,3,5 TrinitrophenolNote: Picric acid forms impact sensitive compounds with metal ions.~~
~~PYX~~	~~2,6 Bis(picrylamino) 3,5 dinitropyridine~~
~~RDX~~	~~Cyclo 1,3,5 trimethylene 2,4,6 trinitramine; Hexogen, Cyclonite~~
~~TAGDNAT~~	~~Bis triaminoguanidinium 3,3' Dinitroazotriazole~~
~~TAGN~~	~~Triaminoguanidine nitrate~~
~~TAGN4BIM~~	
~~TAGzT~~	~~Triaminoguanidium azotetrazolate~~
~~TATB~~	~~1,3,5 Triamino 2,4,6 trinitrobenzene~~
~~TNAZ~~	~~1,3,3 Trinitroazetidine~~
~~Tetryl~~	~~2,4,5 Trinitrophenylmethylnitramine~~
~~HNS~~	~~Hexanitrostilbene~~
~~TNT~~	~~2,4,6 Trinitrotoluene; Trotyl~~

Explosive Categorys	~~Other Names, Compositions, or Reference~~Description
~~TriPEON~~	~~Tripentaerythritol octanitrate~~
~~FEFO~~	~~Bis (2-fluoro-2,2-dinitroethyl) formal~~
~~Isopropylnitrate~~	
~~Methylnitrate~~	
~~NM~~	~~Nitromethane~~
~~Tetranitromethane~~	
~~AFX-757~~	~~AP 30%, Al 33%, RDX 25%, Binders 12%~~
~~AFX-1209 Type II~~	~~Carnuba Wax 1.91%, Lecithin, 0.78%, Isodecyl pelargonate 0.81 %, Al 5%, HMX 12%, Tungsten, 79.5%, TMD 6.27%~~
~~AFX-1212~~	~~Carnuba Wax 3.82%, Lecithin 1.55%, Bis(2-ethylhexyl) adipate 1.63%, Al 10%, HMX 20%, Tungsten 63%~~
~~Al/Fomblin oil~~	~~65.7% Fomblin oil, 34.3% Al~~
~~AP/Fuel mixture~~	~~AP, 23% sugar~~
~~AP/Fuel mixture~~	~~AP, 23% Al~~
~~AP/Fuel mixture~~	~~AP, 7.3% dodecane~~
~~ANFO~~	~~Ammonium nitrate/fuel oil~~
~~Boracitol~~	~~60 wt% Boric acid/40 wt% TNT~~
~~Baratol~~	~~76 wt% Barium nitrate/24 wt% TNT~~
~~Calcitol~~	~~40 wt% TNT/55-60 wt% $CaCO_3$/0-2 wt% Talc/1-2 wt% Microballoons, X-0533~~
~~CH-6~~	~~97.5 wt% RDX/1.5 wt% Calcium stearate/0.5 wt% Polyisobutylene/0.5 wt% Graphite~~
~~CL-20~~	~~2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hexaazaisowurtzitane, hexanitrohexaazaisowurtzitane~~
~~Comp. A~~	~~91 wt% RDX/9 wt% Beeswax~~
~~Comp. A-2~~	~~91 wt% RDX/9 wt% Synthetic wax~~
~~Comp. A-3~~	~~9085, 91 wt% RDX/9 wt% Beeswax~~
~~Comp. A-4~~	~~97 wt% RDX/3 wt% Beeswax~~
~~Comp. A-5~~	~~98.5 wt% RDX/1.5 wt% Beeswax~~
~~Comp. B~~	~~64 wt% RDX/36 wt% TNT, Comp B, Hexolite, Hexotol~~
~~Comp. B-3~~	~~60 wt% RDX/40 wt% TNT~~
~~Comp. C-3~~	~~9080, 88 wt% RDX/12 wt% Wax~~
~~Comp. C-4~~	~~9081, 91 wt% RDX/2.1 wt% Polyisobutylene/1.6 wt% Motor oil/5.3 wt% Di(2-ethylhexyl) sebacate~~
~~CR-1~~	~~94% RDX, 6% HTPB/DOA/IPDI gumstock~~
~~CR-2~~	~~84% RDX, 10% Al, 6% HTPB/DOA/IPDI gumstock~~
~~CR-4~~	~~84% RDX, 10% Al, 6% HTPB/DOA/IPDI gumstock~~
~~CR-5~~	~~84% RDX, 10% Al oxide, 6% HTPB/DOA/IPDI gumstock~~
~~Cyclotol~~	~~RDX 75%, TNT 25%~~
~~Cyclotol 75/25~~	~~75 wt% RDX/25 wt% TNT~~

Explosive Categorys	~~Other Names, Compositions, or Reference~~Description
~~Cyclotol 70/30~~	~~70 wt% RDX/30 wt% TNT~~
~~Detasheet~~	~~PETN/Plasticizer~~
~~Detasheet C~~	~~63 wt% PETN/8 wt% NC/29 wt% Elastomeric binder~~
~~Detasheet D~~	~~75 wt% PETN/25 wt% Elastomeric binderNote: This material is usually red, but it is an explosive, not an inert material.~~
~~DNAT~~	~~Dinitroazotriazole~~
~~EDC 8~~	~~76.0 wt% PETN/24.0 wt% RTV Silicone~~
~~EDC-18~~	~~HNS 95%, Kel-F 5%~~
~~EDC 28~~	~~94 wt% RDX/6 wt% FPC 461~~
~~EDC 29~~	~~HMX 95%, Polyurethane 5%~~
~~EDC-31~~	~~TATB 75%, HMX 22.5%, HTPB-IDPI 2.5%~~
~~EDC 32~~	~~85 wt% HMX/15 wt% Viton A~~
~~EDC 35~~	~~TATB 95%, KEL F 5%~~
~~EDC-37~~	~~91 wt% HMX/1 wt% Nitrocellulose/8 wt% K-10 Liquid~~
~~EDC 38~~	~~94.5 wt% HMX/3.5 wt% K-10 Liquid/2 wt% Polyurethane~~
~~EF 96~~	~~96% HMX 4% inert binder~~
~~Fixor~~	~~70/30 AN/NM~~
~~FOX 7~~	~~1,1 diamino02,2 dinitroethylene, AKA 1,1 diamino 2,2 dinitroethene~~
~~HBX 1~~	~~40 wt% RDX/38 wt% TNT/17 wt% Al/4.5 wt% Wax/0.5 wt% $CaCl_2$~~
~~Helix-72~~	~~6/1 NM/Al powder by weight~~
~~IMX 104~~	~~DNAN 31.7%, NTO 53%, RDX 15.3%~~
~~Kine Pak/Kinestick~~	~~70/30 AN/NM~~
~~LAX 118~~	~~95% FOX-7, Kel-F 5%~~
~~LLM 105~~	~~RX 55 AE 5 2,6 Diamino 3,5 dinitropyrazine 1 Oxide~~
~~LX 04~~	~~85.5 wt% HMX/15.0 wt% Viton A~~
~~LX 07~~	~~90 wt% HMX/10 wt% Viton A~~
~~LX 10~~	~~95.0 wt% HMX/5.0 wt% Viton A~~
~~LX 14~~	~~95.5 wt% HMX/4.5 wt% Estane 5702 F1 (X 0282)~~
~~LX 15~~	~~HNS 95%, Kel-F 5%~~
~~LX 16~~	~~PETN 96%, FPC 461 4%~~
~~LX 17~~	~~TATB 92.5%, Kel f 7.5%~~
~~LX 18~~	~~HNS 99.5%, epoxy 0.5%~~
~~MDF~~	~~Mild Detonating Fuse~~
~~Nonel~~	~~RDX Lined Metal Tubing~~
~~Octogen~~	~~94.5 wt% HMX/4.5 wt% Wax/1 wt% Graphite~~
~~Octol~~	~~75 wt% HMX/25 wt% TNT~~
~~PAX~~	~~77% HMX, 15% Al, 4.8 % BDNPA/F, 3.2% CAB~~
~~PBX 7~~	~~TATB 60%, RDX 35%, Teflon 5%~~
~~PBX 9001~~	~~90 wt% RDX/8.5 wt% Polystyrene/1.5 wt% Dioctyl phthalate~~

Explosive Categorys	~~Other Names, Compositions, or Reference~~Description
~~PBX 9007~~	~~90 wt% RDX/9.1 wt% Polystyrene/0.5 wt% Dioctyl phthalate/0.4 wt% Resin~~
~~PBX 9010~~	~~90 wt% RDX/10 wt% Kel-F 3700 Elastomer~~
~~PBX 9011~~	~~90 wt% HMX/10 wt% Estane 5703 F-1~~
~~PBX 9205~~	~~92 wt% RDX/6 wt% Polystyrene/2 wt% Dioctyl phthalate~~
~~PBX 9206~~	~~92 wt% HMX/8 wt% Kel-F 3700 Elastomer~~
Single component explosives	Explosives such as ammonium nitrate (AN); diamino-azoxyfurazan (DAAF); octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX); Pentaerythritoltetranitrate (PETN); and cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX) that have not been mixed or blended with other explosives components.
Liquid explosives	Explosives (e.g., pure compound hydrogen peroxide and nitromethane) that are in liquid form at standard temperatures and pressures.
Mixed Explosives	This category includes cast and pressed formations of single component explosives that have been mixed or blended with other explosives, binders, plasticizers, fuels, acids, polymers, or other chemical components.
Propellants	Components, mixtures, composites, and chemical compounds (e.g., black powder and benite) that propel or provide thrust.
Detonators	Devices that contain small amounts of explosives that are used to initiate a larger explosion.
Special explosives	Can include laboratory or analytical standards, developmental, or novel types/formulations of explosives.
Munitions	Can include small-arms ammunition and un-fused or un-primed munitions filled with other explosives or propellants.

~~[a] Additional developmental or novel types/formulations of explosives may be treated at the OD Units in small quantities~~.

Enclosure 2

Revised Table 2-8 and Table C-6 Without Editing Marks
Los Alamos National Laboratory Permit Modification Request for
Open Detonation Units at Technical Areas 36 and 39

ENV-RCRA-12-0083

LAUR-12-20363

APR 16 2012

Date

Table 2-8

Waste Explosives[a] Detonated Treated By Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
AN	Ammonium nitrate, 130N
CL20	Hexanitrohexaazaisowurtzitane
DAAzF	3,3'-diamino-4,4'-azofurazan
DAAF	Diamino-azoxyfurazan
DAAT	3,3'-azobis (6-amino-1,2,4,5-tetrazine)
DAATOx	3,3'-azobis (6-amino-1,2,4,5-tetrazine) n-oxide
DATB	Diaminotrinitrobenzene, 1201
DHT	Dihydrazino-1,2,4,5-tetrazine
DiPEHN	Dipentaerythritol hexanitrate
DINGU	Dinitroglycouril
DINA	Dinitroxydiethylnitramine
EDNA	Ethylenedinitramine, Halite, 1101
FOX-7	1,1diamino-2,2dinitrethylene; 1,1-diamino-2,2dinitroethene
HMX	Octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine; 03NN
HNAB	Hexanitroazobenzene
Hydrogen Peroxide	Pure compound (above 80%)
TZX	Diaminotetrazine dioxide, LAX-112
NC	Single component Nitrocellulose
NQ	Nitroguanidine, Picrite, 07NN
NTO	3-nitro-1,2,4-Nitro-tiazole-5-one
PETN	Pentaerythritoltetranitrate, 06NN
Picric Acid	1,3,5-Trinitrophenol Note: Picric acid forms impact-sensitive compounds with metal ions.
PYX	2,6-Bis(picrylamino)-3,5-dinitropyridine
RDX	Cyclo-1,3,5-trimethylene-2,4,6-trinitramine, 02NN
TAGDNAT	Bis-triaminoguanidinium 3,3'-Dinitroazotriazole
TAGN	Triaminoguanidine nitrate
TAGN4BIM	Triaminoguanidinium tetranitrobiimidizole
TAGzT	Triaminoguanidium azotetrazolate
TATB	1,3,5-Triamino-2,4,6-trinitrobenzene; 1701
TNAZ	1,3,3-Trinitroazetidine
Tetryl	2,4,6-Trinitrophenylmethylnitramine
HNS	Hexanitrostilbene, 3001
TNT	2,4,6-Trinitrotoluene; Trotyl; 010N
TriPEON	Tripentaerythritol octanitrate
FEFO	Bis (2-fluoro-2,2-dinitroethyl) formal

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
Isopropylnitrate	Chemical Abstracts Service Registry Number (CAS Number) 1712-64-7
Methylnitrate	CAS Number 598-58-3
NM	Nitromethane
Tetranitromethane	CAS Number 509-14-8
AFX-757	Ammonium perchlorate (AP) 30% / Aluminum (Al) 33% / RDX 25% / Binders 12%
AFX-1209 Type II	Carnuba Wax 1.91% / Lecithin, 0.78% /Isodecyl pelargonate 0.81 % / Al 5% / HMX 12% / Tungsten, 79.5%
AFX-1212	Carnuba Wax 3.82% / Lecithin 1.55% / Bis(2-ethylhexyl) adipate 1.63% / Al 10% / HMX 20% / Tungsten 63%
Al/Fomblin oil	Aluminum particles / Fomblin Oil
AP/Fuel mixture	Ammonium perchlorate in combination with sugar, metal powders, or dodecane
AP/Fuel mixture	Ammonium perchlorate / Aluminum particles
ANFO	Ammonium nitrate / fuel oil
Boracitol	Ortho-boric acid 60% / TNT 40%
Baratol	Barium nitrate 76% / TNT 24%, 76NN
Calcitol	TNT 40% / $CaCO_3$ 55-60% / Talc 0-2% / Microballoons 1-2%, X-0533
CH-6	RDX 97.5% / Calcium stearate 1.5% / Polyisobutylene 0.5% / Graphite 0.5%
Comp. A	RDX 91% / Wax 9%; Includes Comp. A-2, Comp. A-3, & 9085
Comp. A-4	RDX 97% / Beeswax 3%
Comp. A-5	RDX 98.5-99% / Stearic acid 1-1.5%
Comp. B	RDX 63% / TNT 36% / Wax 1%, 60NN, Hexolite, Hexotol
Comp. B-3	RDX 60% / TNT 40%, 60NN
Comp. C-3	RDX 78% / Plasticizer or oil 22%, 9080
Comp. C-4	RDX 91% / Polyisobutylene 2.1% / Motor oil 1.6% / Di(2-ethylhexyl) sebacate 5.3%, 9081
CR-1	RDX 94% / Hydroxyl-terminated polybutadiene (HTPB), Dioctyl Adipate (DOA), Isophorone diisocyanate (IPDI) gumstock 6%
CR-2	RDX 84% / Al 10% / HTPB, DOA, IPDI gumstock 6%
CR-4	RDX 84% / nm Al 10% / HTPB, DOA, IPDI gumstock 6%
CR-5	RDX 84% / nm Al oxide 10% / HTPB, DOA, IPDI gumstock 6%
Cyclotol	RDX 60-80% / TNT 20-40%
Detasheet	PETN / Plasticizer
Detasheet C	PETN 63% / NC 8% / Elastomeric binder 29%, 6300
Detasheet D	PETN 75% / Elastomeric binder 25%, 6301

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
DNAT	Dinitroazotriazole 100%
EDC-8	PETN 76% / Sylgard 24%
EDC-18	HNS 95% / Kel-F 5%
EDC-28	RDX 94% / FPC 461 (polymer) 6%
EDC-29	HMX 95% / Polyurethane 5%
EDC-31	TATB 75% / HMX 22.5% / HTPB-IDPI 2.5%
EDC-32	HMX 85% / Viton A 15%, LX-04
EDC-35	TATB 95% / Kel-F 5%
EDC-37	HMX 91% / dinitroethylbenzene (DNEB) 5.2% / trinitroethylbenzene (TNEB) 2.8% / Nitrocellulose 1%
EDC-38	HMX 94.5% / K-10 Liquid 3.5% / Polyurethane 2%
EF-96	HMX 96% / Inert binder 4%
Fixor	Ammonium nitrate 70% / Nitromethane 30%
HBX-1	RDX 40% / TNT 38.1% / Al 17.1% / Wax 4.8% / $CaCl_2$ 0.5%
Helix-72	6:1 NM / Al powder by weight
IMX-104	Dinitroanisole (DNAN) 31.7% / NTO 53% / RDX 15.3%
Kine-Pak/Kinestick	Ammonium nitrate 70% / Nitromethane 30%, Slurry
LAX-118	FOX-7 95% / Kel-F 5%
LLM-105	ANPZO, 2,6-Diamino-3,5-dinitropyrazine-1-Oxide
LX-07	HMX 90% / Viton A 10%, PBX-9012, X-0211
LX-14	HMX 95.5% / Estane 4.5%, X-0282
LX-15	HNS 95% / Kel-F 5%
LX-16	PETN 96% / FPC 461 4%
LX-17	TATB 92.5% / Kel-F 7.5%
LX-18	HNS 99.5% / Epoxy 0.5%
Octogen	HMX 94.5% / Wax 4.5% / Graphite 1%
Octol	HMX 75% / TNT 25%, 740N
PAX	HMX 77% / Al 15% / BDNPA-F(plasticizer) 4.8% / CAB 3.2%
PBX-7	TATB 60% / RDX 35% / Teflon 5%
PBX 9001	RDX 90% / Polystyrene 8.5% / Dioctyl phthalate 1.5%
PBX 9007	RDX 90% / Polystyrene 9.1% / Dioctyl phthalate 0.5% / Resin 0.4%
PBX 9010	RDX 90% / Kel-F Elastomer 10%
PBX 9011	HMX 90% / Estane 10%
PBX 9205	RDX 92% / Polystyrene 6% / Dioctyl phthalate 2%
PBX 9206	HMX 92% / Kel-F Elastomer 8%
BTF	Benzotrifuroxan

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
Hydrazinium Mononitrate	Hydrazine nitrate
ABX 116-2	TATB 95% / Silver 5%
ABX 120-1	TATB 60% / Silver 3% / Indium 19% / Bismuth 18%
DAAF/PIB	DAAF 50-100% / Polyisobutylene 0-50%
IMX-101	Dinitroansiole (DNAN) 43.5% / NQ 36.8% / NTO 19.7%
PBX 9401	RDX 94.2% / Polystyrene 3.6% / Trioctyl phosphate 2.2%
PBX 9404	HMX 94% / NC 3% / CEF (chloroethyl phosphate) 3%
PBX 9405	RDX 93.7% / NC 3.15% / CEF 3.15%
PBX 9407	RDX 94% / Exon-461 (polymer) 6%
PBX 9501	HMX 95% / Estane 2.5% / Nitroplasticizer (NP) 2.5%
PBX 9502	TATB 95% / Kel-F Elastomer 5%, X-0290
PBX 9503	TATB 80% / HMX 15% / Kel-F Elastomer 5%, X-0351
PBX 9504	TATB 69.8% / PETN 25% / Kel-F Elastomer 5% / Dye 0.2%, X-0407
PBXN-5	HMX 95% / Viton A 5%, LX-10
PBXN-7	TATB 60% / RDX 35% / Viton 5%
PBXN-7 Type 1	TATB 60% / RDX 35% / Teflon 5%
PBXN-7 Type 2	TATB 60% / RDX 35% / Viton-A 5%
PBXN-9	HMX 92% / Hytemp 6% / Dioctyl Adipate (DOA) 2%
PBXN-109	RDX 64% / Al 20% / binder 20%
PBXN-110	HMX 88% / HTPB (Hydroxy-terminated Polybutadiene) 12%, PBXW-113.
PBXN-111	AP 43% / Al 25% / RDX 20% / Binders 12%
PBXN-112	HMX 89% / Cobalt Acetoacetinate (polylaurylmethacrylate binder) 0.0025%, PBXC-129
PBXN-113	HMX 45% / Aluminum 35% / HTPB (Hydroxy-terminated Polybutadiene) 9.335% / Isodecyl Pelargonate 9.335% / Isophorone Diisocyanate 0.89% / Lecithin 0.36% / Triphenyl bismuth 0.03% / Ethanox-702 0.05%
Pentolite	TNT 50% / PETN 50%, 5001
PLG/UW-1	AP 44.73% / Al 37.52% / RDX 4% / TMETN 11.3% / PCP-0260 0.94% / PCP-030 0.24%
RSI-007	CL-20 97.75% / Zeon acrylic polymer 2% / PTFE (Teflon) 0.25%
RX-55	LLM-105 92.5-99% / Viton A 1-7.5%
Semtex 1A	PETN 83.5% / heavy oil 12.4% / rubber 4.1%, X-0564
Semtex 10	PETN 85% / 2bf 11.3% / acrylonitrile butadiene rubber 3.7%
Semtex 1H	RDX 60.5% / PETN 25% / heavy oil 11.6% / rubber (styrene/butadiene) 2.9%, X-0565
TAGzT Aluminum Formulation	TAGzT 80% / Al powder 15% / Viton A 5%

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
TBX01	TAGzT 50% / Al powder 30 % / GAP (glicidyl azide polymer) 20%
TBX02	TAGzT 65% / Al powder 30% / Viton A 5%
Tritonal	TNT 80% / Al powder 20%
Urea Nitrate	Urea nitrate 66% / Al flake 33% / Orthoboric acid 1%, RX-61-AH
VEX288-2B	Aluminum, titanium, bismuth trioxide 85% / perfluoropolyether diol binder 15%
X-0106	RDX 76.1% / EXON 461 23.9%
X-0208	RDX 80% / Sylgard 182 20% / XTX-8004
X-0219	TATB 90% / Kel-F 10%
X-0233	HMX 5-40% / Tungsten 40-95% / Polystyrene 0-10% / Plasticizer 0-5%
X-0242	HMX 90-95% / BDNPF-A 0-5% / Estane 0-5% / Calcium stearate 0-5%
X-0298	HMX 97.5% / Kraton 1.43% / Oil 1.17%
X-0309	TNT 74.6% / Al 18.7% / Wax 4.8% / Acetylene black (carbon) 1.9% (Destex)
X-0319	TATB 50% / HMX 45% / Kel-F Elastomer 5%
X-0321	TATB 75% / HMX 20% / Kel-F Elastomer 5%
X-0401	PETN 99.5% / Kel-F 800 0.5%
X-0450	70% TATB / 25% HMX / 5% Estane
X-0457	PETN 78% / NuSil CF6-3500 22%
X-0526	TNT 70% / $CaCO_3$-Talc 30%
X-0534	TNT 50% / $CaCO_3$ 16-24% / Talc 25-33% / Microballoons 1-2%
X-0535	TZX 95% / OXY-461(polymer) 5%
X-0541	TATB 69.8% / PETN 25% / Kel-F Elastomer 5% / dye 2%
X-0557	HMX 96.4% / Estane 1.1-3.7% / BDNPA-F 0-2.5% / Irganox 1010 0.1%
X-0566	TATB 96.9% / Tungsten trioxide 3.1%
X-0567	DAAF 95% / Polystyrene 2.5% / DOP (di-2-ethylhexylphthalate) 2.5%
X-0569	HMX 85% / Nitroplasticizer 7.5% / Estane 7.5%
XTX-8003	PETN 80% / Sylgard 182 or silicone rubber 20%, LX-13
Benite	Mixture of black powder and NC
Black powder	Standard commercial and military grades only; Potassium nitrate 75%
Black powder substitute	Commercial synthetic black powder substitute, sodium or potassium nitrate based, Pyrodex or similar
HARP-1,-2	HARP propellants are Al/AP/HMX composites
HELP-1,-2	HELP propellants are NC/NG/HMX composites
HPP	Ammonium perchlorate and aluminum propellant
M-14	NC 90% / dinitrotoluene 8% / dibutylphthalate 1% / diphenylamine 1%
Smokeless Powder- Single, Double, or Triple Base	Propellants containing NC, Nitroglycerine (NG), and NQ in combination with stabilizers, plasticizers, inorganic nitrates, and other modifying agents

Table 2-8 (continued)

Waste Explosives[a] Treated by Open Detonation at Los Alamos National Laboratory

Explosives	Other Names, Compositions, or Reference
	2,4-dinitrotoluene (2,4-DNT) may also be present
VTP 25540	HMX based High Energy Propellant
High power detonators	Articles such as EBWs and slappers
LEEEDs	Low Energy Electro-Explosive Devices- Articles that may contain lead azide and/or lead styphnate
Library and Analytical Standards	Small quantities (generally <1 kg) of energetic materials used as library and/or analytical standards
Un-fused or un-primed munitions	Generally includes metal-lined shaped charges and conventional bombs filled with explosives or propellants
Small-arms ammunition of caliber 20-mm or less	Generally complete commercial products

[a] Additional developmental or novel types/formulations of explosives may be treated at the OD Units in small quantities.

[b] Developmental or movel types/formulations of explosives may be added to the allowed energetic materials list at the discreation of the LANL Explosives Review Committee.

Table C-6

~~(This table is reserved)~~ Explosives* Found in Explosives Wastes and Explosives Contaminated Wastes

Explosive Category	Description
Single component explosives	Explosives such as ammonium nitrate (AN); diamino-azoxyfurazan (DAAF); octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine (HMX); Pentaerythritoltetranitrate (PETN); and cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX) that have not been mixed or blended with other explosives components.
Liquid explosives	Explosives (e.g., pure compound hydrogen peroxide and nitromethane) that are in liquid form at standard temperatures and pressures.
Mixed Explosives	This category includes cast and pressed formations of single component explosives that have been mixed or blended with other explosives, binders, plasticizers, fuels, acids, polymers, or other chemical components.
Propellants	Components, mixtures, composites, and chemical compounds (e.g., black powder and benite) that propel or provide thrust.
Detonators	Devices that contain small amounts of explosives that are used to initiate a larger explosion.
Special explosives	Can include laboratory or analytical standards, developmental, or novel types/formulations of explosives.
Munitions	Can include small-arms ammunition and un-fused or un-primed munitions filled with other explosives or propellants.

~~[a] Additional developmental or novel types/formulations of explosives may be treated at the OD Units in small quantities.~~

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, 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.

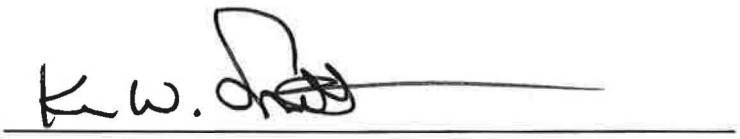
4/4/12

Alison M. Dorries

Date Signed

Division Director
Environment Protection Division
Los Alamos National Laboratory

Operator



4/16/12

Kevin W. Smith

Date Signed

Manager, Los Alamos Site Office
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Refer To: ENV-RCRA-12-0083
LAUR: 12-20363

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APR 2012
Hazardous Waste Bureau

SUBJECT: **REQUEST TO SUPPLEMENT AND CORRECT THE LOS ALAMOS NATIONAL LABORATORY (LANL) PERMIT MODIFICATION REQUEST FOR OPEN DETONATION UNITS AT TECHNICAL AREAS 36 AND 39, LANL HAZARDOUS WASTE FACILITY PERMIT, EPA ID NO. NM0890010515**

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. John E. Kieling
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

COMPLETE THIS SECTION ON DELIVERY

A. Signature — ☐ Agent ☐ Addressee

B. Received by (Printed Name) U. Ramos — C. Date of Delivery 4.16.12

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type HAND DELIVERED
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* ENVRCRA 12-0083 CD Correction

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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