WASTE MANAGEMENT
& RADIATION CONTROL

HAZARDOUS WASTE STORAGE and SUBPART X TREATMENT PERMIT

NORTHROP GRUMMAN INNOVATION SYSTEMS, INC.
ATK LAUNCH SYSTEMS, INC.
BACCHUS FACILITY - NIROP

and

UNITED STATES NAVY
Naval Industrial Reserve Ordnance Plant (NIROP)

EPA Identification Number UT3170027277

Issued by the Director of the
Utah Division of Waste Management and Radiation Control

September xx~~1~~, 2020

STATE OF UTAH
HAZARDOUS WASTE STORAGE and
SUBPART X THERMAL TREATMENT PERMIT

September xx~~1~~, 2020~~0~~~~19~~

PERMITTEES:

Northrop Grumman Innovation Systems, Inc.
ATK Launch Systems, Inc.
Bacchus Facility – NIROP
West Valley City, Utah

and

United States Navy
Naval Industrial Reserve Ordnance Plant (NIROP)
West Valley City, Utah

EPA Identification Number UT3170027277

Pursuant to the Utah Solid and Hazardous Waste Act, 19-6-101, et. seq., Utah Code Annotated 1953, as amended, and the regulations promulgated by the Utah Waste Management and Radiation~~Solid and Hazardous Waste~~ Control Board, codified in the Utah Administrative Code R315, and pursuant to the Solid Waste Disposal Act, 42 U.S.C. 3251 et. seq., as amended by the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et. seq., and the Hazardous and Solid Waste Amendments of 1984 (HSWA), this~~a~~ permit is issued to Northrop Grumman Innovation Systems~~Alliant Techsystems~~, Inc., ATK Launch Systems, Inc. and the United States Navy (the Permittees), for the hazardous waste operations on the Naval Industrial Reserve Ordnance Plant (NIROP). NIROP is owned by the US Navy and operated by ~~the~~ ATK Launch Systems, Inc. The NIROP facility has three~~two~~ hazardous waste storage units and a Subpart X thermal treatment unit. The NIROP property is located in West Valley City, Utah at 40 degrees 40.643 minutes North latitude and 112 degrees 5.133 minutes West longitude.

The Permittees shall comply with all the terms and conditions of this permit. The permit consists of Modules I through IV and Attachments 1 through 9~~8~~. The Permittees shall also comply with all applicable State rules, including R305-7, R315-101, R315-103, R315-124, R315-260~~1~~ through R315-266~~9~~, R315-268, R315-270~~R315-12 through R315-14~~, and R315-273~~16, R315-50, and R315-101~~ of the Utah Administrative Code.

Applicable rules are those that are in effect on the date of issuance of this permit and any self-implementing provisions and related rules that, according to the requirements of HSWA, are automatically applicable to the Permittees' hazardous waste management activities,

notwithstanding the conditions of this permit. ~~Applicable rules also include rules in effect that relate to portions of the permit that are modified on May 21, 2014.~~

This permit is based on the premise that the information submitted in the original permit application, as modified by subsequent amendments, permit modification requests received throughout the term of the original permit, and the permit renewal application, as modified by subsequent amendments, is accurate. The Permittees' failure in the application or during the permit issuance process to disclose fully all relevant facts, or the Permittees' misrepresentation of any relevant facts at any time, may be cause for the termination or modification of this permit, the initiation of enforcement action, including criminal proceedings, or any combination of these remedies. The Permittees shall inform the Director of the Division of Waste Management and Radiation Control~~Solid and Hazardous Waste~~ of any deviation from or changes to the information on which the application was based which would affect the Permittees' ability to comply with the terms and conditions of this permit. The Director will enforce all terms and conditions of this permit. Any challenges to any condition of this permit shall be appealed to the Division of Waste Management and Radiation Control~~Solid and Hazardous Waste~~ in accordance with the applicable provisions of the Utah Code Annotated.

This permit is effective as of September XX~~1~~, 20~~0~~2019~~9~~, and shall remain in effect until September xx~~1~~, 2030~~1~~2~~9~~, unless revoked and reissued pursuant to R315-270-413~~-4.2~~, terminated pursuant to R315-270-433~~-4.4~~, or continued in accordance with R315-270-513~~-5.2~~ and the conditions of this permit.

Signature: _____ Date: _____

Ty L Howard

Director, Division of Waste Management and Radiation Control~~Solid and Hazardous Waste~~

TABLE OF CONTENTS

MODULE I - STANDARD PERMIT CONDITIONS

I.A. EFFECT OF PERMIT

I.A.1. ATK Launch Systems, Inc. (ATK) is allowed to store hazardous waste in containers and treat hazardous waste by open burning at the Naval Industrial Reserve Ordnance Plant (NIROP) which is owned by the US Navy and operated by ATK ~~Launch Systems Inc~~. Northrop Grumman Corporation is the parent company of ATK ~~Launch Systems, Inc.~~ which operates Bacchus Facility that includes the Plant 1, Bacchus West and NIROP operations. The Permittees operate NIROP as a Government Owned Contractor Operated (GoCo) facility in accordance with the conditions of this Permit. Any storage, treatment or disposal of hazardous waste not authorized in this Permit, is prohibited.

I.A.2. Compliance with this Permit, during its term, constitutes compliance for purposes of enforcement with applicable sections of Utah Administrative Code (Utah Admin. Code) R315 only for those management practices specifically authorized by this Permit.

I.A.3. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of ~~State~~ state or local law or regulations.

I.A.4. This Permit has been developed in accordance with the applicable requirements of R315-101 through 273 of the Utah Admin. Code. All conditions in this Permit supersede conflicting statements, requirements, or procedures found in R315-101 through 273 of the Utah Admin. Code or Attachments to this Permit.

I.B. ENFORCEABILITY

I.B.1. Violation of this Permit may be considered a violation subject to Utah Code ~~Annotated~~ (UCA) §19-6-113.

I.C. OTHER AUTHORITY

I.C.1. The Director expressly reserves all rights of entry provided by law and the authority to order or perform emergency or other response activities as authorized by law.

I.D. PERMIT ACTIONS

I.D.1. This Permit may be modified, revoked and reissued, or terminated for cause, as specified in R315-124-5 and R315-270-41 through 43 of the Utah Admin. Code.

I.D.2. The filing of a request for a Permit modification, revocation and reissuance or termination, or the notification of planned changes, requiring prior approval, or anticipated noncompliance on the part of the Permittees does not stay the applicability or enforceability of any Permit condition.

I.D.3. All Permit conditions supersede conflicting statements, requirements or procedures found in the Attachments.

I.D.4. If a conflict exists between conditions in this Permit, the most stringent condition, as determined by the Director, shall be met.

I.D.5. The Director may modify this Permit in accordance with R315-270-41 of the Utah Admin. Code.

I.D.6. This Permit may be modified at the request of the Permittees in accordance with the procedures of R315-270-42 of the Utah Admin. Code.

I.D.7. In accordance with ~~the~~ Utah ~~Solid and Hazardous Waste Act,~~Code § 19-6-108(13), this Permit shall be reviewed no later than five years from the date of issuance or renewal and modified, if necessary.

I.E. SEVERABILITY

I.E.1. The provisions of this Permit are severable and if any provision, or the application of any provision to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby. Invalidation of any state or federal statutory or regulatory provision which forms the basis for any condition of this Permit does not affect the validity of any other State or federal statutory or regulatory basis for said condition.

I.F. DUTIES TO COMPLY

I.F.1. The Permittees shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an Emergency Permit issued in accordance with R315-270-61 of the Utah Admin. Code. Any Permit noncompliance, other than noncompliance authorized by an Emergency Permit, constitutes a violation of the Utah Solid and Hazardous Waste Act, and is grounds for enforcement action, Permit modification, revocation and reissuance termination, or denial of a Permit renewal application, or a combination of an enforcement action and any of the other listed remedies.

I.F.2. Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under Sections 3007, 3008, 3013, or 7003 of RCRA (42 U.S.C. Sections 6927, 6928, 6934 and 6973), Sections 106(a), 104, or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9606(a), 9604, and 9607, commonly known as CERCLA) as amended by the Superfund Amendments and Re-authorization Act of 1986 (SARA), or any other state or federal law providing for protection of human health or the environment from any imminent and substantial endangerment to human health or the environment.

I.G. DUTY TO REAPPLY

I.G.1. If the Permittees wish to continue an activity allowed by this Permit after the expiration date of this Permit, the Permittees shall apply for a new Permit in accordance with R315-270-30(b) of the Utah Admin. Code a minimum of 180 calendar days prior to the expiration date.

I.H. PERMIT EXPIRATION

I.H.1. This Permit shall be effective for ten years from the date of issuance.

I.I. CONTINUATION OF EXPIRING PERMIT

I.I.1. This Permit, and all conditions herein, shall continue in force until the effective date of a new Permit, if the Permittees have submitted a timely and complete application under the applicable requirements of R315-270 and R315-124 of the Utah Admin. Code, and through no fault of the Permittees, the Director has neither issued nor denied a new Permit under R315-270-51 of the Utah Admin. Code on or before the expiration date.

I.J. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

I.J.1. It shall not be a defense for the Permittees in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

I.K. DUTY TO MITIGATE

I.K.1. The Permittees shall take all reasonable steps to minimize releases of solid and hazardous wastes, hazardous waste constituents, and perchlorate salts to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

I.L. PROPER OPERATION AND MAINTENANCE

I.L.1. The Permittees shall, at all times, properly operate and maintain all facilities, treatment systems and ancillary controls (and related appurtenances) which are installed or used by the Permittees to achieve compliance with the conditions of this Permit. This provision requires the operation of back-up or auxiliary equipment or similar systems when necessary to achieve compliance with this Permit.

I.M. DUTY TO PROVIDE INFORMATION

I.M.1. The Permittees shall furnish to the Director, within a reasonable time, any relevant information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittees shall also furnish to the Director upon request, copies of records required to be kept by this Permit.

I.N. INSPECTION AND ENTRY

I.N.1. Pursuant to ~~the~~ Utah Code §~~Solid and Hazardous Waste Act,~~ 19-6-109, the Permittees shall allow the Board, the Director, or its authorized officer, employee, or representative, upon the presentation of credentials and other documents, as may be required by law, to:

I.N.1.a. Enter, at any reasonable time, the Permittees' premises where a regulated facility or activity is located or conducted, or where records are kept as required by the conditions of this Permit;

I.N.1.b. Have access to and a copy of, at reasonable times, any records that are kept as required by the conditions of this Permit;

I.N.1.c. Inspect, at reasonable times, any portion of the facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit;

I.N.1.d. Sample or monitor, at reasonable times, for the purposes of assuring Permit compliance, or as otherwise authorized by the Utah Solid and Hazardous Waste Act, any substances or parameters at any location; and

I.N.1.e. Make a record of the inspection by photographic, electronic, video, or any other reasonable medium.

I.N.2. No audio recording devices shall be used without notice to all individuals in recording range prior to activation of the recording device. Photographic and video recording shall comply with the safety and security requirements of the Permittees to the extent those requirements are compatible with the Utah Solid and Hazardous Waste Act.

I.O. MONITORING AND RECORDS

I.O.1. The Permittees shall retain records of all sampling, monitoring and waste analysis information, including calibration and maintenance records and, where applicable, all original strip chart recordings (or equivalent recordings) for continuous monitoring instruments, copies of all reports and records required by this Permit, the waste minimization certification required by R315-264-73 of the Utah Admin. Code and records of all data used to comply with the conditions of this Permit, including any and all data to support the human health and ecological risk assessments for cleanup and closure activities. All of the above referenced material shall be retained for a period of at least three years from the date of the sample, measurement, report, certification, or recording unless a longer retention period for certain information is required by other conditions of this Permit. The three-year period may be extended by the Director at any time by written notification to the Permittees. The retention times are automatically extended during the course of any unresolved enforcement action regarding the facility to three years beyond the conclusion of the enforcement action. Recordkeeping may be accomplished using original documents, xerographic copies, document replicas, electronic facsimiles, electronic disk, CD-ROM computer drive files, microfilm, microfiche, photograph, magnetic tape or any other reasonable medium or similar recordkeeping technique. Any recordkeeping system shall be capable of reproducing complete, accurate and legible records.

I.O.2. Pursuant to R315-270-30(j)(3) of the Utah Admin. Code, records of monitoring information shall specify at a minimum:

I.O.2.a. The date(s), exact place, and times of sampling or measurements;

I.O.2.b. The name(s), title(s), and affiliation of individual(s) who performed the sampling or measurements;

I.O.2.c. The date(s) analyses were performed;

I.O.2.d. The individual(s) who performed the analyses;

I.O.2.e. The analytical techniques or methods used; and

I.O.2.f. The results of such analyses.

I.O.3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed shall be the appropriate method from R315-261-1090 of the Utah Admin. Code or prior to use, an equivalent method approved in writing by the Director~~. or designated representative.~~ Laboratory methods shall be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846 (prevailing edition, hereafter referred to as SW-846), or Standard Methods of Examination of Water and Wastewater (prevailing edition). Other alternate methods approved in this Permit, or an equivalent method, in accordance with Condition I.O.4. of this Permit will be allowed if approved by the Director and the Permit is modified in accordance with Condition I.D.

I.O.4. When requesting substitute or additional analytical methods, the Permittees shall submit to the Director a request for substitution of an analytical method(s) which is equivalent to the method(s) currently approved or listed in R315-260-21 of the Utah Admin. Code. The request shall provide information demonstrating that the proposed method(s) requested is equivalent or superior in terms of sensitivity, accuracy, and precision (e.g., reproducibility).

I.O.5. This P~~p~~ermit contains and refers to documents and forms on which information and data is recorded. The Permittees may request changes to the format of documents and forms as necessary to carry out administrative duties. Changes pertaining to a document or form shall only be changed in accordance with the provisions of Condition I.D.6.

I.P. REPORTING PLANNED CHANGES

I.P.1. The Permittees shall give written notice to the Director prior to any planned physical alterations or additions to any Hazardous Waste Management Unit (HWMU) or system being permitted or previously permitted in accordance with R315-270-30(f) and R315-270-30(l) of the Utah Admin. Code. Any changes or physical alterations or additions to any HWMU shall be in accordance with Condition I.D.6. Planned physical alterations or additions shall include all changes in any hazardous or solid waste activities, and to any non-waste underground storage tanks regulated under R311-202 of the Utah Admin. Code. Neither construction nor operation of a new or modified HWMU shall begin unless the provisions of R315-124-5 of the Utah Admin. Code are met.

I.Q. REPORTING ANTICIPATED NONCOMPLIANCE

I.Q.1. The Permittees shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with requirements of this Permit. Advance notice shall not constitute a defense for any noncompliance.

I.R. CERTIFICATION OF CONSTRUCTION OR MODIFICATION

I.R.1. The Permittees shall not commence storage, treatment, or disposal of hazardous waste in a new HWMU or in a modified portion of an existing permitted HWMU (except as provided in R315-270-42 of the Utah Admin. Code), until:

I.R.1.a. The Permittees have submitted to the Director:

I.R.1.a.i. A letter signed by the Permittees, and an independent Utah registered professional engineer qualified by experience and education in the appropriate engineering field, certifying that the unit has been constructed or modified in compliance with this Permit; and

I.R.1.a.ii. As-built engineering drawings and specifications as appropriate.

I.R.1.b. The Director or designated representative has reviewed and inspected the modified or newly constructed unit(s) and has notified the Permittees in writing that the unit was found to be in compliance with the conditions of this Permit.

I.R.2. If the Permittees have not received notice from the Director of the intent to inspect within 15 calendar days of the date of receipt of the letter required by Condition I.R.1.a.i., then a prior inspection is waived and the Permittees may commence treatment, storage, or disposal of hazardous waste in the permitted unit certified in accordance with Condition I.R.1.

I.S. TRANSFER OF PERMIT

I.S.1. This Permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to R315-270-40 and R315-270-41(b)(2) of the Utah Admin. Code. Prior to transferring ownership or operation of the facility during its operating life, the Permittees shall notify the new owner or operator, in writing, of the requirements of R315-270 of the Utah Admin. Code, R315-264 of the Utah Admin. Code and this Permit. Failure by the Permittees to notify the new owner or operator of the requirements of R315-264 of the Utah Admin. Code and this Permit in no way relieves the new owner or operator of his obligation to comply with all applicable requirements of the Rules and this Permit.

I.T. TWENTY-FOUR HOUR REPORTING

I.T.1. In accordance with R315-270-30(d)(l)(6)(i) of the Utah Admin. Code, Permittees ~~ATK~~ shall orally report to the Director any noncompliance with this Permit which may endanger human health or the environment. Any such information shall be reported as soon as possible, but not later than 24 hours from the time Permitttees~~ATK~~ become~~s~~ aware of the noncompliance. Reporting shall not constitute a defense for any noncompliance.

I.T.2. In accordance with R315-263-30(b) of the Utah Admin. Code, Permittees~~ATK~~ shall orally report to the Director any spill of any hazardous waste or material which, when spilled becomes a hazardous waste if the spilled quantity exceeds 100 kilograms or a lesser amount if there is a potential for endangerment to human health or the environment, or exceeds 1 kilogram if the material and is an acute hazardous waste as

defined by R315-263-30(b)(2) of the Utah Admin. Code. Any such information shall be reported as soon as possible, but not later than 24 hours from the spill occurrence.

I.T.3. The Permittees[CN1] shall orally report to the Director any spill that contains perchlorate that exceeds 100 gallons. Any such information shall be reported as soon as possible, but not later than 24 hours from the spill occurrence. Spills of perchlorate less than 100 gallons and greater than 10 gallons shall be evaluated and the occurrence of the spill entered into the operating record. Any spill that cannot be cleaned up to meet the USEPA RSL standards shall be reported as a new solid waste management unit. ~~ATK shall orally report to the Director any spill that contains perchlorate if the perchlorate concentration is greater than 15 ug/l and the spilled quantity exceeds 100 kilograms. Any such information shall be reported as soon as possible, but not later than 24 hours from the spill occurrence.~~

I.T.4. The oral report shall include, but not be limited to, the following:

I.T.4.a. Information concerning the release of any hazardous waste or material which may endanger public drinking water supplies; and

I.T.4.b. All information on a release or discharge of hazardous waste or material or a fire, or explosion at the facility, that could threaten human health or the environment.

I.T.4.c. The description of the occurrence and its cause shall include:

I.T.4.c.i. Name, title, and telephone number of individual reporting;

I.T.4.c.ii. Name, address, and telephone number of the owner or operator;

I.T.4.c.iii. Name, address, and telephone number of the facility;

I.T.4.c.iv. Date, time, and type of incident;

I.T.4.c.v. Location and cause of incident;

I.T.4.c.vi. Name and quantity of materials involved;

I.T.4.c.vii. The extent of injuries, if any;

I.T.4.c.viii. An assessment of actual or potential hazard to the environment and human health, when this is applicable;

I.T.4.c.ix. Description of any emergency action taken to minimize a threat to human health and the environment;

I.T.4.c.x. Estimated quantity and disposition of recovered material that resulted from the incident, and;

I.T.4.c.xi. All information necessary to fully evaluate the release or discharge, and develop a response that is appropriate and applicable to the situation.

I.T.5. Within 15 days of the time ATK is required to provide the oral report, as specified in Conditions I.T.1. through I.T.4., ATK shall provide to the Director a written report.

I.T.6. The written report shall include, but not be limited to, the following:

I.T.6.a. The name, title, address, and telephone number of the individual reporting;

I.T.6.b. A description including the date, time, location and nature of the reported incident;

I.T.6.c. The extent of injuries, if any;

I.T.6.d. The name and quantity of material(s) involved in the spill;

I.T.6.e. An estimated quantity and disposition of recovered material;

I.T.6.f. Where applicable, an assessment of actual or potential hazards to human health and the environment will be completed. The report shall also include whether or not the results of the incident remain a threat to human health and the environment (whether the noncompliance has been corrected and the release has been adequately cleaned up); and

I.T.6.g. If the release or noncompliance has not been adequately corrected or cleaned, the anticipated time that the noncompliance or remediation is expected to continue; the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance; and/or the steps taken or planned to adequately remediate the release.

I.U. MONITORING RECORDS

I.U.1. The Permittees shall record and maintain m~~M~~onitoring information ~~shall be recorded and maintained~~ as specified in Condition I.O.

I.V. COMPLIANCE SCHEDULES

I.V.1. The Permittees shall submit ~~Reports~~ reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit ~~shall be submitted no later than 14 days~~ following each scheduled date[CN2].

I.W. MANIFEST DISCREPANCY REPORT

I.W.1. Manifest discrepancies shall be defined as differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste the permittees actually receive. Significant discrepancies in quantity are: (1) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload, and (2) for bulk waste, variations greater than 10 percent in weight. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper. If a significant discrepancy is discovered on a manifest, ATK shall attempt to reconcile the discrepancy. If not resolved within 15 days, ATK shall submit a written report, including a copy of the

manifest, and efforts to reconcile the discrepancy, to the Director in accordance with R315-264-72 of the Utah Admin. Code.

I.X. UNMANIFESTED WASTE REPORT

I.X.1 The Permittees shall submit ~~This~~ an unmanifested waste report ~~shall be submitted~~ to the Director within 15 days of receipt of unmanifested waste in accordance with R315-264-76 of the Utah Admin. Code.

I.Y. BIENNIAL REPORT

I.Y.1. The Permittees shall submit to the Director ~~A~~ a biennial report ~~shall be submitted~~ covering facility activities during odd numbered calendar years. This report shall be submitted by March 1 of the following even numbered year in accordance with R315-264-75 of the Utah Admin. Code.

I.Z. INSTANCE OF NONCOMPLIANCE

I.Z.1 ATK shall orally notify the Director of all other instances of noncompliance with this Permit not otherwise required to be reported in accordance with Condition I.T., within seven days of discovering the noncompliance. The notification shall contain the information listed in Condition I.T. of this Permit. ATK shall follow up all notifications under this Condition with a written report submitted to the Director within 15 days of the initial notification of noncompliance. Reporting shall not constitute a defense for any noncompliance.

I.AA. OTHER INFORMATION

I.AA.1. Whenever the Permittees become aware that they failed to submit all relevant facts in a permit modification, or submitted incorrect information in a permit modification, or in any report submitted to the Director, the Permittees shall submit such facts or corrected information within seven working days of discovering the omissions.

I.BB. SIGNATORY REQUIREMENT

I.BB.1. All reports, notifications, submissions or other information required by this Permit, or requested by and submitted to the Director shall be signed and certified in accordance with R315-270-11 of the Utah Admin. Code.

I.CC. **CONFIDENTIAL INFORMATION**

I.CC.1. The Permittees may claim confidential any information required to be submitted by this Permit in accordance with Utah Code §§ 63-2, the Government Records Access and Management Act, ~~Section~~ 19-1-306 of the Utah Environmental Quality Code~~,~~ and implementing Rules.

I.DD. REPORTS, NOTIFICATIONS, AND SUBMISSIONS

I.DD.1. All reports, notifications, or other submissions which are required by this Permit to be transmitted to the Director should be sent by certified mail or other means of proof of delivery to:

Director
Division of Waste Management and Radiation Control
P.O. Box 144880
Salt Lake City, Utah 84114-4880
Phone: (801) 536-0200

Required oral notifications shall be given only to the Director or the Director's authorized representative during normal business hours. Notifications made at other times shall be made to the 24-hour answering service at 801-538-4123. Notifications made to the 24-hour answering service shall include all applicable information required by this Permit. The Permittees shall give oral notification to the Director or an authorized representative of the Director on the first business day following notification to the 24-hour answering service.

I.EE. DOCUMENTS TO BE MAINTAINED AT THE FACILITY SITE

I.EE.1. ATK shall maintain at the facility, for the periods specified, current copies of the following documents and amendments, revisions and modifications to these documents:

I.EE.1.a. A copy of the Permit until closure is certified in accordance with Condition II.O.7.

I.EE.1.b. All analytical data generated by the Waste Analysis Plans (Attachment 3), as required by R315-264-13 of the Utah Admin. Code and this Permit until closure is certified in accordance with Condition II.O.7.

I.EE.1.c. Inspection logs (Attachment 5), as required by R315-264-15 of the Utah Admin. Code and this Permit, for a period of three years in accordance with R315-264-15(d) of the Utah Admin. Code.

I.EE.1.d. Personnel training documents (Attachment 7), and records, as required by R315-264-16(d) of the Utah Admin. Code and this Permit until closure for current employees, or for a period of three years for former employees in accordance with R315-264-16(e) of the Utah Admin. Code.

I.EE.1.e. The Contingency Plan (Attachment 6), as required by R315-264-50 of the Utah Admin. Code and this Permit until closure is certified in accordance with Condition II.O.7.

I.EE.1.f. The operating record, as required by R315-264-73 of the Utah Admin. Code and this Permit until closure is certified in accordance with Condition II.O.7.

I.EE.1.g. The Closure Plan (Attachment 8), as required by R315-264-110 through 120 of the Utah Admin. Code and this Permit until closure is certified in accordance with Condition II.O.7.

I.EE.1.h. Cost estimates (Attachment 8) for the closure and post-closure of the HWMUs covered by this permit in accordance with Condition II.O.7.

I.EE.1.i. Manifest copies, as required by R315-264-71 of the Utah Admin. Code and this Permit for at least three years from the date the waste shipment was accepted at the facility or shipped off site to an approved TSDF.

I.EE.1.j. A copy of the Permittees' waste minimization statement until closure is certified in accordance with Condition II.O.7.

I.FF. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

I.FF.1. Pursuant to Section 3005(C)(3) of RCRA (Section 212 of HSWA) and R315-270-32(b)(2) of the Utah Admin. Code , this Permit contains those terms and conditions determined necessary to protect human health and the environment.

I.GG. REIMBRUSEMENT OF REVIEW AND OVERSIGHT COSTS

I.GG.1. ATK shall reimburse the Department of Environment Quality for costs incurred in conjunction with review and oversight of the Permit and all plans, reports, procedures and protocols identified in this Permit in accordance with ~~UCA~~ Utah Code § 19-1-201(6~~2~~)(i). These fees will be assessed for the activities including, but not limited to, the following: Sampling and Analysis Plans, Permit Modifications and Renewals; Closure activities; Review and Oversight of Administrative Consent Orders and Consent Agreements, Judicial Orders, and related compliance activities; Review and Oversight of Construction Activities; and Review and Oversight of Corrective Action Activities of the regulated units.

MODULE II - GENERAL FACILITY CONDITIONS

II.A. APPLICABILITY

II.A.1. The requirements of this Permit module apply to all Hazardous Waste Management Units (HWMUs) identified within Modules III and ~~-~~IV.

II.B. DESIGN AND OPERATION OF FACILITY

II.B.1. The Permittees shall design, construct, maintain, and operate all of its HWMUs and surrounding areas to minimize the possibility of fire, explosion, or any sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, groundwater, or surface water that could threaten human health or the environment.

II.B.2. Any request for changes to the existing HWMUs shall be in accordance with R315-270-42 of the Utah Admin. Code and Condition I.D.6. Any changes to a HWMU must be documented on as-built drawings and with a Utah certified professional engineering certification as required by R315-270-30(l)(2)(i) of the Utah Admin. Code.

II.B.3 After review of the as-built drawings and field verification of the facilities, the Director will notify the Permittees in writing of any change that does not satisfy the operating requirements specified in this permit. If it is established that such changes are permit violations, the Director may require the Permittees to remove, replace or modify any construction inconsistent with this permit.

II.C. REQUIRED NOTICE

II.C.1. As required by R315-264-12(a)(1) of the Utah Admin. Code, the Permittees shall notify the Director in writing at least four weeks in advance of the date the Permittees expects to receive waste from a foreign source. Notice of subsequent shipments of the same waste from the same foreign source in the same calendar year is not required.

II.C.2. When the Permittees arrange to receive waste from an off-site source, the Permittees must inform the generator in writing that they have the appropriate Permit for and will accept the waste the generator is shipping. As required by R315-264-12(b) of the Utah Admin. Code, the Permittees shall keep a copy of the written notice as part of the operating record.

II.D. WASTE ANALYSIS PLAN

II.D.1. The Permittees shall follow the procedures of the Waste Analysis Plan in Attachment 3 of this Permit. In addition, the Permittees shall comply with any other conditions involving waste analysis in ~~Modules I, II, III, and IV~~this Permit.

II.D.2. The Permittees shall use the test methods described in the Waste Analysis Plan in Attachment 3 or an equivalent procedure that satisfies Condition I.O.3. and 4. Changes to a test method described in the Waste Analysis Plan, as a result of an improvement or refinement of that method, may be adopted by the Permittees and incorporated into this Permit, in accordance with R315-124-5 of the Utah Admin. Code and Condition I.D.

II.D.3. The Permittees shall verify, using if necessary analytical techniques, the characteristics of each new or modified waste stream generated on or off-site in compliance with R315-264-13 of the Utah Admin. Code and Attachment 3. Analysis of all new, existing, or modified waste streams shall be kept in the operating record.

II.D.4. The Permittees shall ~~Sampling~~ sample~~of~~ wastes to be stored at NIROP ~~shall be performed~~ in accordance with~~-~~ R315-264-13 of the Utah Admin. Code and Attachment 3. Generator knowledge may suffice in characterizing waste streams. When the Permittees use generator knowledge to characterize chemical and reactive waste, they shall detail the physical and chemical characteristics of the waste. All waste characterization information shall be maintained in the operating record.

II.D.5. At a minimum, the Permittees shall:

II.D.5.a. Maintain properly functioning sampling and analytical equipment;

II.D.5.b. Use approved sampling and analytical methods; and

II.D.5.c. Submit an updated list of parameters, analytical methods, and sample preparation methods in Attachment 3 on an annual basis. The updated list shall be submitted to the Director on or before January 15th of each calendar year in accordance with Condition I.DD.

II.D.6. Whenever the Director determines that the Permittees need to update the analytical methodologies or the version(s) of SW-846 that are being used by the Permittees' analytical laboratory, the Director will ~~submit~~ send written notification to Permittees. Within 30 days of receipt of the Director's determination, the Permittees shall request the Utah Department of Health, Bureau of Laboratory Improvement to update their laboratory certification with the new analytical methodologies. If it is not possible to complete the update within 180 days, the Permittees shall submit a written request for extension to the Director for approval.

II.D.7. If the Permittees uses a contract laboratory to perform analyses, the laboratory shall be certified by the State of Utah to perform the contracted analyses. For parameters for which certification is unavailable, the laboratory shall provide quality control/quality assurance data sufficient to assess the validity of the data. The Permittees shall inform the laboratory in writing that it must operate under the Waste Analysis Plan conditions set forth in this Permit.

II.E. SECURITY

II.E.1. The Permittees shall comply with the security conditions and procedures contained in Attachments 2 and 5.

II.F. GENERAL INSPECTION REQUIREMENTS

II.F.1. The Permittees shall conduct inspections in accordance with R315-264-15 of the Utah Admin. Code, and the procedures and schedule in Attachments 4 and 5. In addition, the Permittees shall comply with the inspection conditions described in Modules III and IV.

II.F.2. The Permittees shall remedy any deterioration or malfunction as required by R315-264-15(c) of the Utah Admin. Code. If the remedy for any emergency item, as defined in Attachment 5, Section 5.2.1, requires more than 72 hours to implement, the Permittees shall submit to the Director, before the expiration of the 72-hour period, a proposed time schedule for correcting the problem.

II.F.3. Records of inspections shall be kept as required by R315-264-15(d) of the Utah Admin. Code.

II.G. RISK THRESHOLDS

II.G.1. The open burning operations at the NIROP Burning Grounds shall be conducted to minimize the risk to human health and the environment. The risk thresholds identified in Condition II.G. and the operating conditions in Module IV for the NIROP Burning Grounds are based on the information provided in Attachments to this Permit and the following site specific documents available for review in the Department of Environmental Quality, Division of Waste Management and Radiation Control~~Solid and Hazardous Waste~~ files:

II.G.1.a. The Risk Assessment Protocol to Support the Alliant Techsystems' Bacchus Works RCRA Subpart X Activities, December 1997;

II.G.1.b. The response to the Division of Waste Management and Radiation Control, formerly the Division of Solid and Hazardous Waste, ~~-~~comments on the Risk Assessment Protocol to Support the Alliant Techsystems' Bacchus Works RCRA Subpart X Activities, December 1997, titled Alliant Techsystems Inc. Addendum to Burning Ground Risk Assessment Protocol, April 1998;

II.G.1.c. The Sampling Results for "Slum" Emission Characterization, Volumes 1, 2 and 3, March 1998;

II.G.1.d. The Human Health Risk Assessment in support of the Alliant Techsystems' Bacchus Works RCRA Subpart X Activities, September 2005; and

II.G.1.e. The Acute Human Health Risk, March 2010, which evaluated the acute (one-hour exposure) inhalation noncancer health effects associated with inhalation of emission from the NIROP Burning Grounds.

II.G.2. The Permittees shall submit to the Director by March 1st of each calendar year, an annual report on the operation of the NIROP Burning Grounds. This report shall at a minimum include the following:

II.G.2.a. An accounting of the quantities and types of reactive hazardous waste treated at the NIROP Burning Grounds, including all donor material and ignition compounds;

II.G.2.b. The estimated quantity of tetrachlorodibenzo(p)dioxin toxic equivalents (TCDD TEQs) released annually. The quantity wasshall be calculated by assuming TCDD TEQ emission factors as follows:

2.89×10^{-11} lbs/lbs for 1.1 propellant and materials contaminated with 1.1 propellant

5.20×10^{-12} lbs/lbs for 1.3 propellant that does not contain any contaminated materials

1.28×10^{-10} lbs/lbs for materials contaminated with 1.3 propellant and all other waste streams with a higher chlorine content than 1.1 propellant. The emission factor of 1.28×10^{-10} lbs/lbs is based on the average of ODOBi test results for 1.3 propellants with contaminated materials representing conditions at both the ATK Bacchus NIROP and the ATK Promontory facilities.;

Based on the Human Health Risk Assessment identified in Condition II.G.1.d, the Permittees shall not emit more than 5.12×10^{-6} lbs (2.32 mg) of the TCDD TEQs in a calendar year;

II.G.2.c. An evaluation of the emission factors, identified in Condition II.G.1.c., used in the human health and acute human health risk assessments to determine whether these factors need to be updated;

II.G.2.d. A review of the of the human health risk assessment, identified in Condition II.G.1.d., to evaluate whether the slope factors and reference doses for carcinogenic and non-carcinogenic health effects related to the chlorinated dioxin, chlorinated furan and semi-volatile compounds have changed, and a review of the potential human health risk scenarios, identified in Condition II.G.1.a and b, used in the risk assessment to assure that these scenarios have not changed;

II.G.2.e. A review of the acute human health risk evaluation identified in Condition II.G.1.e., to determine whether any of the reference doses or one-hour exposure factors for non-carcinogenic health effects related to the chlorinated dioxin, chlorinated furan and semi-volatile compounds have changed, and a review of the applicability of the acute human health exposure model used in the initial assessment; and

II.G.2.f. A presentation of the sampling effort and a discussion of the results in accordance with Section 4 of the Soil Monitoring Plan.

~~II.G.3. Based on the Human Health Risk Assessment identified in Condition II.G.1.d, the Permittees shall keep a running total of TCDD TEQs emitted during the year and shall not emit more than a total of 5.12 x 10^{-6} lbs (2.32 mg) of the TCDD TEQs in a calendar year;~~

II.G.34. ~~If the Director determines a~~After reviewing this annual report required in II.G.2, the Director will inform the Permittees in writing which components of the risk assessments or Soil Monitoring Plan, if any, ~~that any component of the risk assessments or Soil Monitoring Plan~~ need to be updated~~, he will inform the Permittees in writing which components of the risk assessments or Soil Monitoring Plan to update~~.

II.G.44. If the Permittees are required to update the human health risk assessment for the NIROP Burning Grounds, the Permittees shall modify the Permit ~~shall be modified~~ in accordance with Condition I.D. of this Permit.

II.H. PERSONNEL TRAINING

II.H.1. The Permittees shall conduct personnel training as required by R315-264-16 of the Utah Admin. Code and the training program outline found in Attachment 7. New personnel assigned to hazardous waste management responsibilities shall complete the required personnel training within six months after their hire date, assignment to the facility, or assignment to a new position at the facility. In addition, the Permittees shall comply with the following conditions:

II.H.1.a. Facility personnel shall take part in an annual review of their initial training in both contingency procedures and the hazardous waste management procedures relevant to the positions, in which they are employed;

II.H.1.b. The Permittees shall maintain training documents and records as required by R315-264-16(d) and R315-264-16(e) of the Utah Admin. Code and in accordance with the Training Plan in Attachment 7. These records shall indicate the type and amount of training received; and

II.H.1.c. The Permittees shall maintain a copy of the Training Plan at the facility until the facility is fully closed and closure is certified.

II.I. GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

II.I.1. The Permittees shall comply with the requirements of R315-264-17 of the Utah Admin. Code.

II.I.2. In addition to the requirements of R315-264-17 of the Utah Admin. Code, the Permittees shall comply with the conditions of Modules III and IV applicable to ignitable, reactive, or incompatible waste.

II.J. LOCATION STANDARDS

II.J.1. The Permittees shall comply with the location standards specified by R315-264-18 of the Utah Admin. Code.

II.K. PREPAREDNESS AND PREVENTION

II.K.1. The Permittees shall follow the Preparedness and Prevention Plan in Attachment 5.

II.K.2. At a minimum, the Permittees shall equip and maintain at the facility, and keep in good operating condition, the equipment set forth in Attachment 5, as required by R315-264-32 of the Utah Admin. Code.

II.K.3. The Permittees shall test and maintain the equipment specified in Condition II.K.2. as necessary to assure its proper operation in time of emergency.

II.K.4. The Permittees shall maintain records of the testing, maintenance, and repair activities specified in Condition II.K.3., and keep schedules that identify the minimum and planned frequency for the performance of preventative maintenance activities in the operating record at the facility in accordance with Condition I.O.

II.K.5. The Permittees shall maintain access to the communications or alarm system as required by R315-264-34 of the Utah Admin. Code.

II.K.6. At a minimum, the Permittees shall maintain aisle space that allows the unobstructed movement of personnel, fire protection equipment, discharge control equipment, and decontamination equipment to any area of the facility operations in an emergency in accordance with R315-264-35 of the Utah Admin. Code. For the permitted storage areas, the Permittees shall maintain the aisle spaces identified in Module III and Section 4.4 of Attachment 4.

II.K.7. At a minimum, the Permittees shall operate the NIROP Burning Grounds in accordance with Module IV and provide for unobstructed movement of personnel, fire protection

equipment, discharge control equipment, and decontamination equipment to any area of the facility operations in an emergency in accordance with R315-264-35 of the Utah Admin. Code. For the NIROP Burning Grounds, the Permittees shall operate this treatment unit in accordance with Module IV and Sections 4.3.1 and 4.6 of Attachment 4.

II.K.8. The Permittees shall attempt to make arrangements with state and local authorities as required by R315-264-37 of the Utah Admin. Code. Any refusals to enter into an agreement shall be documented in the operating record.

II.L. CONTINGENCY PLAN

II.L.1. The Permittees shall immediately carry out the provisions of Attachment 6, and follow the emergency procedures described by R315-264-56 of the Utah Admin. Code, whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment. The Permittees shall comply with Condition I.T. in reporting releases to the Director.

II.L.2. The Permittees shall comply with the requirements of R315-264-53 of the Utah Admin. Code ~~and Condition I.E~~ [HZ1].

II.L.3. The Permittees shall review the Contingency Plan in accordance with R315-264-54 of the Utah Admin. Code and shall modify in accordance with Condition I.D., if necessary.

II.L.4. A trained emergency coordinator shall be available at all times in case of an emergency, as identified in Attachment 6 and required by R315-264-55 of the Utah Admin. Code.

II.M. MANIFEST SYSTEM

II.M.1. The manifest tracking number shall be recorded in the operating record with each waste load that leaves the Permittees' facility. R315-262-217 and R315-264-74 of the Utah Admin. Code apply for all record keeping associated with the movement of these wastes.

II.M.2. The manifest tracking number shall be recorded in the operating record with each waste load that is received by the Permittees' facility. R315-262-217 and R315-264-74 of the Utah Admin. Code apply for all record keeping associated with the movement of these wastes.

II.N. RECORDKEEPING AND REPORTING

II.N.1. The Permittees shall maintain an accurate written operating record at the facility in accordance with R315-264-73 and R315-264-1103 of the Utah Admin. Code.

II.N.2. The Permittees shall, by March 31st of each year, submit to the Director a certification pursuant to R315-264-73 of the Utah Admin. Code, signed by the owner or operator of the facility, or an authorized representative, that the Permittees have a waste minimization program in place to reduce the volume and toxicity of hazardous waste that they generate to the degree determined by the Permittees to be economically practicable; and that the proposed method of treatment, storage, or disposal is the most practicable method currently available to the Permittees which minimizes the present and future threat to human health and the environment.

II.N.3. The Permittees shall comply with the biennial report requirements of R315-264-75 of the Utah Admin. Code, by March 1st of each even-numbered reporting year. The report shall,

at a minimum, include wastes generated, treated, and stored at the Permittees' facility during the previous odd-numbered year.

II.N.4. The Permittees shall submit additional reports to the Director in accordance with R315-264-77 of the Utah Admin. Code.

II.N.5. All reports, notifications, applications, or other materials required to be submitted to the Director shall be submitted at the address shown in Condition I.DD.

II.N.6. The Permittees shall maintain a copy of the certifications and reports required by Condition II.N.2. in the operating record and sign each certification in accordance with R315-262-41(a)~~(8)~~ and R315-270-11(d)(1) of the Utah Admin. Code.

II.O. CLOSURE

II.O.1. The Permittees shall close the facility in accordance with R315-264-110 through 120 of the Utah Admin. Code, R315-101 of the Utah Admin. Code and Attachment 8.

II.O.2. For all HWMUs, minor deviations from the approved Closure Plan procedures necessary to accommodate proper closure shall be described in narrative form with the closure certification statements. The Permittees shall describe the rationale for implementing minor changes as part of this narrative report. Within 60 days after completion of closure of each HWMU, the Permittees shall submit the certification statements and narrative report to the Director.

II.O.3. The Permittees shall amend the closure plan in accordance with R315-124-5 of the Utah Admin. Code and Condition I.D. whenever necessary, or when required to do so by the Director.

II.O.4. The Permittees shall notify the Director in writing of the partial closure of any portion of the facility in accordance with R315-264-110 through 120 of the Utah Admin. Code. The Permittees shall notify the Director at least 180 days prior to commencement of final facility closure. The closure plan contained in Attachment 8 shall be reviewed by the Permittees, and modified if necessary, before commencing partial or final facility closure. If the closure plan requires modification, the plan shall be modified and submitted to the Director for approval in accordance with Condition I.D.

II.O.5. After receiving the final volume of hazardous waste, the Permittees shall remove from the site all hazardous waste in accordance with the time frames specified in Attachment 8.

II.O.6. The Permittees shall decontaminate or dispose of all facility equipment, structures, soil and rinsate as required by R315-264-114 of the Utah Admin. Code and Attachment 8. Facility equipment, structures and soil that cannot be decontaminated will be disposed of

at a permitted TSDF.

II.O.7. The Permittees shall certify that the facility has been closed in accordance with the specifications in Attachment 8, as required by R315-264-110 through 120 of the Utah Admin. Code, and shall provide a certification by an independent, Utah registered professional engineer qualified by experience and education in the appropriate engineering field.

II.O.8. On the five-year anniversary date this Permit, the Permittees shall conduct a detailed evaluation of the closure cost estimates for the regulated units and determine whether the annual adjustments for inflation have been adequate to update the closure cost estimates.

II.O.9. The Permittees shall revise the closure cost estimate upon request by the Director.

II.O.10. The Permittees shall maintain the latest approved closure cost estimate in the operating record at the facility.

II.O.11. In the event that any of the HWMUs covered by this Permit cannot be clean closed by decontaminating or removing contaminated structures and soil, or releases have occurred that have impacted soil or groundwater, the Permittees shall modify the Closure Plan for that HWMU in accordance with R315-124-5 of the Utah Admin. Code and Condition I.D. Within 30 days of the date that the Director approves the modification, the Permittees shall close the unit in accordance with the applicable provision of R315-264-110 through 120 of the Utah Admin. Code, R315-101 of the Utah Admin. Code and the approved Closure Plan.

II.O.12. If a HWMU cannot be clean closed, the Permittees shall submit a survey plat and property description for the HWMU with the submission of the certification of closure for the HWMU in accordance with R315-264-110 through 120 of the Utah Admin. Code and R315-101 of the Utah Admin. Code.

II.P. FINANCIAL ASSURANCE FOR FACILITY CLOSURE

II.P.1. The NIROP is a federal Government Owned/Contractor Operated (GOCO) facility; therefore, the Permittees are not required to demonstrate continuous financial assurance under R315-264-140 through 151 of the Utah Admin. Code.

II.P.2 By July 30 of each calendar year, the Permittees shall adjust the closure cost estimate for inflation and submit the latest adjusted closure cost estimate for review and approval by the Director. After approval, the Permittees shall maintain the latest adjusted closure cost estimate in the operating record. For any new HWMU being placed into operation, an updated facility closure cost estimate must be prepared for the new unit(s), 60 days prior to waste being placed on or into the new unit.

II.P.3. The Permittees shall revise the closure cost estimate whenever there is a change in the facility's closure plan that would change the cost estimate as required by R315-264-140 through 151 of the Utah Admin. Code.

II.Q. LIABILITY REQUIREMENTS

II.Q.1. The Permittees shall not be required to demonstrate continuous compliance with the liability requirements of R315-264-140 through 151 of the Utah Admin. Code because NIROP is a GOCO.

II.R. RECEIPT OF OFF-SITE WASTE PROHIBITED

II.R.1 The Permittees shall not receive hazardous wastes that are generated off site except for:

II.R.1.a. Wastes generated by the Permittees during sampling, investigation or remediation of sites contiguous or adjacent to the Permittees' facility;

II.R.1.b. Wastes generated at another ATK owned or operated facility, and;

II.R.1.c. Rocket motor segments from any source may be accepted for storage prior to treatment at an off-site TSDF.

MODULE III - STORAGE IN CONTAINERS

III.A. APPLICABILITY

III.A.1. The requirements of this permit module apply to the hazardous waste container storage operations at the Permittees' facility. The Permittees shall comply with R315-170 through 178 of the Utah Admin. Code and all requirements and conditions of this Permit. For the purposes of this permit, the hazardous waste container management areas are designated as: ES-2, ES-3 and the Ash Storage Pad.

III.B. WASTE IDENTIFICATION

III.B.1 The Permittees shall only store hazardous waste with the following waste codes in containers at the ES-2 explosive storage facility, subject to the terms of this permit:

F001, F002, F003, F004, F005, D001, D003, D005, D008, D038 and K044

III.B.2 The Permittees shall only store hazardous waste with the following waste codes in containers at the Ash Storage Pad, a chemical storage facility, subject to the terms of this permit:

F001, F002, F003, F004, F005, D005, D008 and D038

III.B.3 The Permittees shall only store hazardous waste with the following waste codes in containers at the ES-3 explosive storage facility, subject to the terms of this permit:

F001, F002, F003, F004, F005, D001, D003, D005, D008, D038 and K044

III.C. CONDITION OF CONTAINERS

III.C.1. If a container holding hazardous waste is not in good condition (e.g., severe rusting, bulging, apparent structural defects) or it has begun to leak, the Permittees shall transfer the contents from this container, or the container itself, to a container in good condition or manage the waste in some other way that complies with R315-264-171 of the Utah Admin. Code. This shall be completed as soon as possible, but no later than 24 hours from the time the problem was first discovered and noted in the inspection log.

III.D. COMPATIBILITY OF WASTE WITH CONTAINERS

III.D.1. The Permittees shall ensure that all wastes are compatible with the storage containers as required by R315-264-172 of the Utah Admin. Code.

III.E. MANAGEMENT OF CONTAINERS

III.E.1. The Permittees shall manage containers in accordance with R315-264-173 of the Utah Admin. Code. A container holding hazardous waste shall always be closed during storage except when the Permittees are adding or removing waste from the container. The Permittees shall not store containers in a manner which may cause the containers to leak. The Permittees shall manage containers in accordance with this module of the Permit and the procedures identified in Attachment 4.

III.E.2. The Permittees shall maintain aisle space in each container management area that complies with Condition II.K.6.

III.E.3. ES-2 is an explosive storage area where the Permittees may store, accumulate and consolidate the wastes identified in Condition III.B.1. The Permittees shall comply with the following conditions for wastes stored in ES-2:

III.E.3.a. ES-2 has a hazardous waste storage capacity of 4,000 gallons. The Permittees shall not exceed the storage capacity of ES-2.

III.E.3.b. The Permittees shall maintain an aisle space of at least 30 inches between rows of containers and no rows shall not be more than two containers wide.

III.E.3.c. The Permittees may store ~~the~~ waste in the types of containers identified and described in Section 4.2.1 of Attachment 2 at ES-2, including slum bags, SLIDs ("slum-in-a-drum"), slum pots, fiberboard drums, pizza boxes, "other containers," as described, and containers specified in Department of Defense (DOD) manual 4145.26-M.~~The Permittees may store all of the waste containers, except for the tanks[CN1], [HZ2] identified and described in Section 4.2.1 of Attachment 4, in 55 and 75 gallon containers and cardboard boxes at ES-2[CN3], including slum bags, SLIDs ("slum-in-a-drum), slum pots, fiberboard drums, pizza boxes, "other containers," as described, and containers specified in Department of Defense (DOD) manual 4145.26-M.~~ The Permittees shall not store waste in tanks at ES-2. [HZ4]

III.E.3.d. ~~Unless specified in this condition t~~The Permittees shall not stack waste containers at ES-2, except:

III.E.3.d.i. ~~.~~ The 30-gallon fiberboard drums shall not be stacked more than two high;

III.E.3.d.ii. ~~and s~~Slum bags, as defined in Section 4.2.1 of Attachment 4, may be accumulated and stacked inside empty SLIDs;~~.~~

III.E.3.d.iii. Pizza boxes may be stacked inside a large cardboard box with no more than 6 pizza boxes per large cardboard box;~~.~~

III.E.3.d.iv. The large cardboard boxes containing pizza boxes shall not be stacked more than two high; and.

III.E.3.d.v. Slum bags containing bleed tubes may be stacked inside 75-gallon fiberboard drums.

III.E.3.e. The Permittees shall label all containers stored in ES-2 in accordance with the waste tracking provisions identified in Section 4.3 of Attachment 4.

III.E.3.f. Wastes containing free liquids shall not be stored at ES-2.

III.E.3.g. Nitroglycerine (NG) remover shall not be stored at ES-2.

III.E.4. The Ash Storage Pad is a chemical storage unit where the Permittees may store and accumulate treatment residues and post burn clean-up wastes identified in Condition III.B.2. The Permittees shall comply with the following conditions for wastes stored on the Ash Storage Pad:

III.E.4.a. The Ash Storage Pad has a hazardous waste storage capacity of 50 cubic yards. The Permittees shall not exceed the hazardous waste storage capacity of the Ash Storage Pad.

III.E.4.b. The Permittees may store non-hazardous waste on the Ash Storage Pad. All non-hazardous waste stored on the Ash Storage Pad shall count towards the total storage capacity of the Ash Storage Pad.

III.E.4.c. All hazardous waste containers on the Ash Storage Pad shall remain closed except when waste ~~are~~ is being added or removed;

III.E.4.d. The Permittees shall maintain an aisle space of at least 30 inches between containers.

III.E.4.e. The Permittees shall not stack containers more than one high on the Ash Storage Pad.

III.E.4.f. The Permittees shall label all containers stored on the Ash Storage Pad in accordance with the waste tracking provisions identified in Section 4.3 of Attachment 4.

III.E.4.g. The Permittees shall not store incompatible waste on the Ash Storage Pad.

III.E.4.h. The Permittees shall immediately clean up all waste spilled during transfer operations to mitigate releases to the environment.

III.E.4.i. Wastes containing free liquids shall not be stored on the Ash Storage Pad.

III.E.5. ES-3 is an explosive storage area where the Permittees may store, accumulate and consolidate the wastes identified in Condition III.B.3. The Permittees shall comply with the following conditions for wastes stored in ES-3:

III.E.5.a. ES-3 has a hazardous waste storage capacity of 2,500 gallons. The Permittees shall not exceed the storage capacity of ES-3.

III.E.5.b. The Permittees shall maintain an aisle space of at least 30 inches between rows of containers and no rows shall not be more than two containers wide.

III.E.5.c. The Permittees may store ~~the~~ waste in the types of containers identified and described in Section 4.2.1 of Attachment 2 at ES-3, including slum bags, SLIDs ("slum-in-a-drum"), slum pots, fiberboard drums, pizza boxes, "other containers," as described, and containers specified in Department of Defense (DOD) manual 4145.26-M~~The Permittees may store all of the waste containers, except for the tanks, identified in Section 4.2.1 of Attachment 4, in 55 and 75-gallon containers and cardboard boxes at ES-3, including slum bags, SLIDs ("slum-in-a-drum), slum pots, fiberboard drums, pizza boxes, "other containers," as described, and containers specified in DOD 4145.26-M. [HZ5].~~ The Permittees shall not store waste in tanks at ES-3.

III.E.5.d. Unless specified in this condition the Permittees shall not stack waste containers at ES-3, except:

III.E.5.d.i. ~~.~~ The 30-gallon fiberboard drums shall not be stacked more than two high;

III.E.5.d.ii. ~~and s~~Slum bags, as defined in Section 4.2.1 of Attachment 4, may be accumulated and stacked inside empty SLIDs;

III.E.5.d.iii. ~~–~~Pizza boxes may be stacked inside a large cardboard box with no more than 6 pizza boxes per large cardboard box;

III.E.5.d.iv. ~~.~~ The large cardboard boxes containing pizza boxes shall not be stacked more than two high; and~~.~~

III.E.5.d.v. Slum bags containing bleed tubes may be stacked inside 75-gallon fiberboard drums.

III.E.5.e. The Permittees shall label all containers stored in ES-3 in accordance with the waste tracking provisions identified in Section 4.3 of Attachment 4.

III.E.5.f. Wastes containing free liquids shall not be stored at ES-3.

III.E.5.g. Nitroglycerine (NG) remover shall not be stored at ES-3.

III.F. CONTAINMENT UNITS

III.F.1. The Permittees shall not store liquid waste at ES-2, ES-3 or the Ash Storage Pad.

III.G. SPECIAL REQUIREMENTS FOR IGNITABLE AND REACTIVE WASTE

III.G.1. The Permittees shall not locate containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility's property line.

III.G.2. For ignitable and reactive wastes stored at ES-2, ES-3 and the Ash Storage Pad, the Permittees shall comply with R315-264-17 of the Utah Admin. Code and the requirements specified in Section 4.4.1 of Attachment 4.

III.G.3. For explosive waste stored at ES-2 and ES-3, the Permittees shall comply with R315-264-17 of the Utah Admin. Code and the quantity distance requirement specified in Section 2.3 of Attachment 2.

III.H. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

III.H.1. The Permittees shall not place incompatible hazardous waste or materials in the same container and shall comply with R315-264-17 of the Utah Admin. Code.

III.H.2. The Permittees shall not place hazardous waste in an unwashed container that previously held an incompatible waste or material.

III.H.3. Whenever Class 1.1 and 1.3 waste explosives are stored together at ES-2 or ES-3, the Permittees shall maintain at least a 30-inch aisle space so that there is no interaction between the wastes.

III.H.4. The Permittees shall document compliance with Conditions III.H.1, 2 and 3 as required by R315-264-17(c) of the Utah Admin. Code and place the documentation in the operating record.

III.I. IDENTIFICATION AND LOCATION OF CONTAINERS IN THE OPERATING RECORD

III.I.1. The Permittees shall record in the operating record the location of each container of hazardous waste stored at any hazardous waste container storage area identified in Condition III.A. until the container is manifested off site~~,~~ or treated at the NIROP Burning Grounds. The Permittees shall track hazardous waste storage, treatment and off-site management of wastes using the waste tracking systems described in Sections 4.3 of Attachment 4.

III.J. INSPECTIONS

III.J.1. The Permittees shall conduct inspections of the storage areas identified in Condition III.A. of this Permit in accordance with the schedule outlined in Section 5.2, Attachment 5 of this Permit.

III.K. STORAGE OF WASTES FOR LONGER THAN ONE YEAR

III.K.1. The Permittees may store hazardous waste for more than a year provided that the Permittees submit~~s~~ written notification to the Director prior to exceeding the one year time limit and provide~~s~~ an estimate of the additional storage time needed. This provision applies only to the following hazardous waste~~s~~:

III.K.1.a. Waste explosives that are permitted for storage at the NIROP facility and designated for disposal at Utah Test and Training Range (UTTR) where disposal arrangements and/or approvals cannot be completed within one year.

III.K.1.b. Waste explosives ~~rocket motors or motor sections~~ that are permitted for storage at the NIROP facility and lack adequate approvals to ship off-site and/or lack sensitivity data to develop an appropriate disposal plan.

III.K.2. Whenever the Permittees are storing any of the waste streams identified in Condition III.K.1.a. and III.K.1.b., the Permittees shall submit a written report to the Director on or before January 31st of each calendar year. This report shall provide a detailed description of the waste, where it is stored and the Permittees' efforts to arrange treatment and/or disposal.

III.L. STORAGE OF WASTE ROCKET MOTORS OR MORTOR SECTIONS

III.L.1. The Permittees may request ~~for~~ emergency storage of waste rocket motors or motor sections in accordance with R315-270-61 of Utah Admin. Code.

III.ML. CLOSURE/POST CLOSURE

III.L.1. The Permittees shall close the storage areas in accordance with R315-264-110 through 120 of the Utah Admin. Code, UAC R315-264-178 of the Utah Admin. Code, Condition II.O, and Attachment 8 of this Permit.

MODULE IV – THERMAL TREATMENT OF ENERGETIC WASTES

IV.A. APPLICABILITY

IV.A.1. The requirements of this permit module apply to the thermal treatment of energetic or reactive hazardous waste at the NIROP facility in West Valley City, Utah. The Permittees shall comply with R315-264 of the Utah Admin. Code and all conditions of this module and Permit.

IV.A.2. The permit conditions of this module allow thermal treatment at the HWMU designated as the NIROP Burning Grounds, as designed and described in the drawings and specifications in Attachments 2 and 4. The NIROP Burning Grounds consist of 17 burn pans and two burn cages where the Permittees may thermally treat energetic or reactive hazardous wastes by open burning.

IV.A.3. Open burning at the NIROP Burning Grounds shall only be accomplished by properly trained ATK personnel in accordance with the conditions of this Permit and its attachments.

IV.A.4. This Permit has been developed in accordance with the applicable requirements of R315-101 through 273 of the Utah Admin. Code. All conditions in this Permit shall supersede conflicting statements, requirements, or procedures found in R315-101 through 273 of the Utah Admin. Code or attachments to this Permit.

IV.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

IV.B.1. The Permittees may thermally treat energetic or reactive hazardous waste at the NIROP Burning Grounds by open burning. These energetic and reactive hazardous wastes are generated from the following sources:

IV.B.1.a. Class 1.1 and 1.3 propellants manufactured at the Bacchus Facility (e.g. cured and uncured propellants, excess propellants and propellant scraps);

IV.B.1.b. Explosive ingredients (e.g., HMX, RDX, aluminum powder, nitrocellulose and ammonium perchlorate);

IV.B.1.c. Waste nitroglycerin and 1,2,4-butanetriol trinitrate (BTTN) which are liquid explosives manufactured at the Bacchus Facility that are diluted and adsorbed in wood pulp to make them safer to handle;

IV.B.1.d. Production materials contaminated with reactive residues (e.g., rags, gloves, other personal protective equipment, plastics, rubber and paper that were contaminated with explosive materials during the manufacturing process);

IV.B.1.e. Small rocket motors and initiating devices;

IV.B.1.f. Reactive laboratory wastes which may contain solvents;

IV.B.1.g. Wastewater treatment sludge generated from the processing of explosive ingredients and propellants defined in R315-261 of the Utah Admin. Code as a K044 listed hazardous waste;

IV.B.1.h. Reactive bag house dust generated from the processing of explosive ingredients and propellants;

IV.B.1.i. Waste developmental propellants; and

IV.B.1.j. NG remover, a chemical mixture added to nitroglycerin that chemically breaks it down and renders it less hazardous so that it can be handled if it is spilled. NG remover is a Class 1.1 reactive hazardous waste for the potential presence of nitroglycerin.

IV.B.2. Only D003 reactive hazardous waste as defined by R315-261 of the Utah Admin. Code may be treated at the NIROP Burning Grounds. Reactive hazardous waste thermally treated at the NIROP Burning Grounds may also contain the follow EPA waste codes: D001, D005, D008, D038, F001, F002, F003, F004, F005 and K044.

IV.B.3. The Permittees are prohibited from thermally treating reactive hazardous waste from sources not identified in Condition IV.B.1., and from classes and compositions not included in Condition IV.B.2., including wholly inert items and improvised explosive devices (e.g. homemade bombs), chemical and energetic reactive hazardous wastes that will detonate under open burning conditions or reactive hazardous wastes that contain free liquids.

IV.B.4. The Permittees shall only thermally treat by open burning the reactive hazardous wastes at the NIROP Burning Grounds identified in Conditions IV.B.1. and IV.B.2.

IV.B.5. The addition of hazardous waste codes to Condition IV.B.2. requires modification of the permit as specified in R315-124-5 of the Utah Admin. Code and Condition I.G.1.

IV.B.6. The Permittees shall comply with the waste compatibility requirements of Condition II.I.

IV.C. GENERAL OPERATING CONDITIONS

IV.C.1. The Permittees shall comply with the following treatment limits for the NIROP Burning Grounds:

IV.C.1.a. The Permittees shall not treat more than 4500 pounds of reactive hazardous waste in a calendar day;

IV.C.1.b. Except as allowed in Condition IV.C.1.d, the Permittees shall not treat more than 500 pounds of reactive hazardous waste in any burn pan per burn;

IV.C.1.c. At any time, ~~The~~ the Permittees shall not treat more than 500 pounds of reactive hazardous waste per burn in Burn Cages 12 or 19 ~~per burn~~;

IV.C.1.d. Except as prohibited in IV.C.1.c., ~~The~~ the Permittees may exceed the 500 pound burn pan limit to treat large blocks of cured propellant that are cast with a motor. These large blocks of cured propellant are referred to as: necks, donuts, slugs and casting dam reservoirs. When exceeding the 500 pound burn pan limit to treat one of these large blocks of cured propellant, the Permittees shall not treat waste on any burn pan adjacent to the burn pan that has more than 500 pounds; and

IV.C.1.e. The Permittees shall operate the NIROP Burning Grounds in accordance with the quantity-distance requirements identified in Section 2.2.1 and 2.3 of Attachment 2.

IV.C.1.f. The Permittees shall not treat more than 160,000 pounds of reactive hazardous waste at the NIROP Burning Grounds in a calendar year. This 160,000 pound limit shall be established by adding the total weight of reactive hazardous waste and all donor and initiator materials. ~~Donors~~ Donor material shall include all pallets, cardboard, packaging material, absorbents and diesel fuel.

IV.C.2. The Permittees shall maintain the integrity of the NIROP Burning Grounds to ensure that they meet the performance standards of R315-264-600 through 603 of the Utah Admin. Code and minimize the potential impacts to human health and the environment. The Permittees shall adhere to site specific Best Management Procedures (BMPs) identified in Section 4.6 of Attachment 4, ATK's procedure document 21000GV0001 "Burning Propellant at NIROP Burning Grounds", all other applicable provision of Attachments 2 and 4 and the following conditions:

IV.C.2.a. The Permittees shall conduct all open burn operations within the secure area designated as the NIROP Burning Grounds with controlled access as identified in Attachment 4, Figures 4-6.~~8~~10 and ~~9~~11;

IV.C.2.b. The Permittees shall post warning signs around the NIROP Burning Grounds to keep unauthorized personnel out;

IV.C.2.c. The Permittees shall maintain the egress paths for the NIROP Burning Grounds identified in Attachment 6, Figure 6.7-2;

IV.C.2.d. The Permittees shall keep the main gate into the NIROP Burning Grounds open whenever operators are working inside the NIROP Burning Grounds;

IV.C.2.e. The Permittees shall keep all gates and doors into a burn pan or cage open while operators are inside;

IV.C.2.f. The Permittees shall always prepare outer burn pans for ignition first and work towards the center of the NIROP Burning Grounds;

IV.C.2.g. The Permittees shall disconnect the firing system for the NIROP Burning Grounds whenever operators are in the ~~Quntaitative~~Quantitative D[CN1]istance for this treatment unit. The firing system shall only be active or armed when operators are conducting a pre-burn resistance check, as specified in Attachment 4, Section 4.6.1, when the firing system is being maintained and no waste is present in the NIROP Burning Grounds, and after all operators have exited the NIROP Burning Grounds and retreated to the firing control room in preparation of initiating a ignition as specified in Condition IV.F.2.i;

IV.C.2.h. The Permittees shall assess and monitor meteorological conditions to ensure operators are not exposed to risks from lightning strikes or other adverse weather conditions that would preclude the safe operation of the NIROP Burning Grounds. The Permittees shall record the following meteorological conditions prior to each burn in the facility operating record: wind direction, wind speed, temperature and sky conditions (sunny, cloudy, partly cloudy, rain or snow);

IV.C.2.i. The Permittees shall comply with all requirements for pre-burn activities, placement of waste on burn pans, squibbing and ignition and the post-burn inspection and cleanup activities identified in Condition IV.D, E, F, G, H and I.

IV.C.2.j. The Permittees shall provide operators with access to a telephone or two-way radio that can be used to contact support personnel, including security, safety and fire fighting units, whenever the operators are inside the NIROP Burning Grounds;

IV.C.2.k. The Permittees shall maintain the integrity of the NIROP Burning Grounds and support equipment through regular inspections and in accordance with the inspection plan in Attachment 4 and 5. Inspection records shall be maintained at the facility;

IV.C.2.l. The Permittees shall train all operators of the NIROP Burning Grounds in accordance with Condition II.H. and Attachment 7 of this Permit;

IV.C.2.m. The Permittees shall not operate the NIROP Burning Grounds without adequate fire protection equipment and containment measures (e.g. firebreaks) to assure the confinement and control of any fire resulting from the open burn operations at the NIROP Burning Grounds; and

IV.C.2.n. The Permittees shall not treat propulsive items at the NIROP Burning Grounds, unless the item has been rendered non-propulsive in accordance with Attachment 4, Section 4.6.2 or is a small ordnance item. All ordnance items will be treated in Burn Pan 16, Cage 12 or Cage 19.

IV.C.3. The Permittees shall operate the NIROP Burning Grounds to prevent unacceptable risk of cancer and non-cancer effects to on-site workers and off-site residents and to minimize significant effects to the ecosystem surrounding the NIROP Burning Grounds. The Permittees shall maintain compliance with the environmental performance standards listed in R315-264-600 through 603 of the Utah Admin. Code and update the information annually in accordance with Condition II.G.2.

IV.C.4. The Permittees shall adhere to the following conditions to prevent unacceptable risk of cancer and non-cancer effects due to exposure to emissions from the open burning operations:

IV.C.4.a. The cumulative carcinogenic risk to on-site workers shall not exceed an occurrence rate of 1.0×10^{-4} (one in ten thousand) for the closest potential receptors which are Bacchus Facility workers. The risk shall be calculated according to the methodology in Condition II.G.2.a. and II.G.2.d. The maximum weight includes the reactive hazardous waste, donors and initiators, to be treated at the NIROP Burning Grounds shall not exceed 4,500 pounds per burn;

IV.C.4.b. Reserved; and

IV.C.4.c. The cumulative carcinogenic risk to actual or potential off-site receptors shall not exceed 1.0×10^{-6} (one in a million). The cumulative non-carcinogenic hazard to actual or potential off-site receptors shall not exceed a hazard index of 1.0 for any 24-hour period following initiation of a burn.

IV.C.5. Based on the air dispersion and deposition modeling and the human health risk assessment for the NIROP Burning Grounds, the Permittees shall adhere to the following conditions:

IV.C.5.a. Operations at the NIROP Burning Grounds shall not release more than 9.9 tons of HCl or chlorine in a calendar year;

IV.C.5.b. The Permittees shall only conduct large burns when the surface wind direction is less than or equal to 112° or more than or equal to 270°, and the wind speed is not greater than 15 miles per hour. A large burn is defined as being greater than 500 pounds and not more than 4500 pounds;

IV.C.5.c. The Permittees shall only conduct thermal treatment of a waste that has a chlorine content of greater than 5%, when the surface wind directions of less than or equal to 112° or more than or equal to 270°, and the wind speed does not exceed 15 miles per hour;

IV.C.5.d. The Permittees shall comply with the following conditions when conducting thermal treatment of large burns or burns that have a chlorine content of greater than 5%:

IV.C.5.d.i. All large burns of waste shall be treated between the hours of 1:00 pm and 5:00 pm;

IV.C.5.d.ii. All large burns of waste that has a chlorine content of greater than 5% shall be treated between the hours of 1:00 pm and 5:00 pm; and

IV.C.5.d.iii. Burns of waste quantities less than 500 pounds that has a chlorine content of greater than 5% may be treated during the hours of 10:00 am and 12:00 pm and 1:00 pm and 5:00 pm provided that the Permittees comply with condition IV.C.5.c.

IV.C.5.e. The Permittees may conduct small burns between the hours of 10:00 am and 12:00 pm, and 1:00 pm and 5:00 pm. A small burn is defined as being no more than 500 pounds and having a chlorine content of less than 5%. Small burns shall not be restricted by the surface wind direction or its velocity; and

IV.C.5.f. The Permittees may burn up to 100 pounds per year of PPC laboratory waste between the hours of 7:00 am and 10:00 am. This PPC laboratory waste must contain unstable Class 1.1 propellant and be identified as "PPC/urgent" waste on the Hazardous Waste Explosive tag identified in Attachment 4, Figure 4-2.~~1~~3;

IV.C.5.g. The Permittees shall not conduct an open burn of waste ~~During~~ during Salt Lake County "No Burn" periods or "Mandatory Action" days when the Utah Division of Air Quality is restricting wood burning stoves in Salt Lake County, except that the Permittees may burn up to 400 pounds per day of unstable wastes including nitroglycerine waste, laboratory generated wastes and unburned waste from a previous burn. These unstable waste burns are not restricted by the surface wind direction.

IV.C.5.h. The Permittees shall not conduct an open burn when the sustained wind speed exceeds 15 miles per hour.

IV.D. WASTE TRACKING

IV.D.1. The Permittees shall track all reactive hazardous waste in accordance with Section 4.3.1 of Attachment 4, and maintain this information in the operating record including the type and amount of all donor materials and initiators used during open burn operations at the NIROP Burning Grounds.

IV.E. PRE-BURN ACTIVITIES

IV.E.1. Prior to bringing any reactive hazardous waste into the NIROP Burning Grounds for thermal treatment, ~~The~~ the Permittees shall conduct a pre-burn inspection in accordance with the requirements identified in Attachment 4 and 5 of this Permit. The pre-burn inspection shall be documented on the inspection form identified in Attachment 4, Figure 4-6.~~10~~12, and maintained in the operating record for the NIROP facility. The Permittees shall comply with the following conditions:

IV.E.1.a. The pre-burn inspection shall be conducted every day the Permittees conduct a burn at the NIROP Burning Grounds and once every calendar month if no pre-burn inspection has been conducted during that calendar month;

IV.E.1.b. Any burn pan or cage that fails one or more of the pre-burn inspection criteria shall be removed from service until the problem is corrected;

IV.E.1.c. If the radio or telephone communication system is unavailable, the NIROP Burning Grounds shall be shut down until the problem is corrected;

IV.E.1.d. If any of the emergency or fire protection equipment is missing or not working properly, the NIROP Burning Grounds shall be shut down until the problem is corrected;

IV.E.1.e. All leaks or spills of diesel fuel shall be cleaned up before the NIROP Burning Grounds can be operated; and

IV.E.1.f. The loss of the warning siren or flashing light for the NIROP Burning Grounds will require that the unit be shut down until the problem is corrected. Except, ~~If~~ if the Permittees must use [CN2]the NIROP Burning [HZ3]Grounds when the warning siren or flashing light is not working, the Bacchus Facility Fire Department or area supervisor shall enter and inspect the area within the QD for the NIROP Burning Grounds and assure that no unauthorized employees are present in the area. If any unauthorized employees are found within this area, they will be escorted from the area. Open burning operations can commence once the fire department or area supervisor certifies in the operating record that the area is clear.

IV.F. PREPARING WASTE FOR THERMAL TREATMENT BURN

IV.F.1. Prior to placing any reactive hazardous waste on a burn pan or into a burn cage, the Permittees shall comply with all provisions Conditions IV.C, D and E of this Permit. The Permittees shall also comply with the following conditions:

IV.F.1.a. There shall be at least two operators present when a burn pan or cage is in the process of being loaded with reactive hazardous wastes as defined in Condition IV.B.1.;

IV.F.1.b. There shall not be more than six operators inside the NIROP Burning Grounds while reactive hazardous wastes as defined in Condition IV.B.1. are being loaded onto a burn pan or into a burn cage;

IV.F.1.c. Only one vehicle may be unloaded at one time at the Burning Grounds;

IV.F.1.d. The burn pans and cages shall be loaded in accordance with the provisions identified in Attachment 4, Figure 4-6.1~~1~~3 and ATK procedure document 21000GV0001 "Burning Propellant at NIROP Burning Grounds", an internal confidential document;

IV.F.1.e. Due to incompatibility issues, NG remover shall not be treated with other reactive hazardous wastes. NG remover shall be treated on a burn pan by itself;

IV.F.1.f. All cardboard placed underneath all liquid explosive slums to contain any free liquid that may not be fully absorbed in wood pulp and all additional combustible material or donor material used to assure a complete burn shall be counted towards the daily treatment limit of 4,500 pounds and recorded in the operating record for the NIROP Burning Grounds;

IV.F.1.g. All slum pots and SLIDs used as accumulation containers shall be inspected after use. If there is any contamination in the containers they shall be cleaned or decontaminated in accordance with the procedures identified in Attachment 4, Section 4.6.2 before being reused;

IV.F.1.h. The Permittees shall attempt to treat all reactive hazardous waste placed on a burn pan or in a burn cage within 24 hours of being placed on a burn pan or in a burn cage unless the meteorological condition identified in Conditions IV.C.2.h and IV.C.5 prohibit the safe operation of the NIROP Burning Grounds; and

IV.F.1.i. The Permittees shall document in the operating record the burn pan or cage number, and the burn station for each SLID, slum and container of reactive hazardous waste that is treated at the NIROP Burning Grounds.

IV.F.2. Prior to beginning the final preparations for an open burn described in Attachment 4, Section 4.6.3., the Permittees shall comply with Conditions IV.C.1, 2 and 5, and shall have completed and complied with all provisions of Conditions, IV.D, E and F. The Permittees shall also comply with the following conditions:

IV.F.2.a. Burn pans and burn cages can-not be squibbed, have ignition trains prepared or igniters wired, until all non-essential personnel leave the NIROP Burning Grounds;

IV.F.2.b. Whenever employees are "squibbing" as defined in Section 4.6.3 of Attachment 4, preparing ignition trains and wiring igniters, they shall always be observed by an employee, who has access to a telephone or two-way radio and can arrange emergency assistance or summon help in the event of an emergency. This observer shall be at least 400 feet from the NIROP Burning Grounds and maintain constant visual surveillance of the operators inside the NIROP Burning Grounds;

IV.F.2.c. All "squibbing", ignition train preparation and igniter wiring operations shall be conducted by at least two employees;

IV.F.2.d. Liquid explosives slums shall be squibbed first;

IV.F.2.e. Reserved;

IV.F.2.f. When "squibbing", preparing igniter trains, and wiring igniters, the Permittees shall start at the outside boundary of the NIROP Burning Grounds and work towards the center;

IV.F.2.g. The Permittees may reactivate the firing system for the NIROP Burning Grounds only after all operators have exited the QD for the treatment unit;

IV.F.2.h. As the operators leave the NIROP Burning Grounds they shall close the gate to the burning grounds and block the access road at the firing system control room;

IV.F.2.i. After all operators have exited the NIROP Burning Grounds and retreated to the firing control room, the operators may replace the firing system interlocks in the firing system control console and activate the firing system control computer;

IV.F.2.j. After activating the firing system control computer, the operators shall confirm that the flashing red light was automatically activated and that the siren sounded for 30 seconds to alert all ATK personnel that an open burn is about to start and that they should vacate the QD area for the NIROP Burning Grounds. If the flashing lights or siren are not operational, the Permittees shall comply with Condition IV.E.1.f. before initiating the thermal treatment;

IV.F.2.k. After the warning identified in Condition IV.F.2.j. has been completed, the Permittees shall conduct a pre-ignition resistance check of the firing system to assure that the igniters have been installed correctly into the hard-wired portion of the firing system. If any firing circuit fails this test, the Permittees shall perform the following tasks:

IV.F.2.k.i. Remove the interlocks for the firing control system, deactivating the firing control system;

IV.F.2.k.ii. At least two operators shall reenter the NIROP Burning Grounds, while being observed in accordance with Condition IV.F.2.b., and correct the problem;

IV.F.2.k.iii. If the resistance problem cannot be immediately corrected, the operators may connect a separate igniter wire to the pylon at an adjacent burn pan or cage. If all adjacent burn pans are loaded and a spare firing circuit is not available, the area supervisor may attempt to fire the burn pan or cage using the questionable pylon during the burn; and;

IV.F.2.k.iv. After the problem with the firing circuit has been corrected the operators shall repeat the steps described in Conditions IV.F.2.g, h, i, j and k, and proceed with activating the firing system.

IV.F.2.l. The burn pans and cages shall be fired in accordance with the provision of Attachment 4, Section 4.6.3 of this Permit;

IV.F.2.m. All thermal treatment events at the NIROP Burning Grounds shall be observed with a video camera from the firing control room or immediately outside the firing control room;

IV.F.2.n. In the event that none of the burn pans or cages ignite, the operators shall wait 30 minutes before removing the firing system interlocks and reentering the NIROP Burning Grounds to correct the problem. After correcting the problem, the operators shall repeat the steps described in Conditions IV.F.2.g, h, i, j and k, and proceed with activating the firing system;

IV.F.2.o. If at least one burn pan or cage ignites, then the operators shall wait at least four hours before reentering the NIROP Burning Grounds and correcting the problem. After the

problem has been corrected the operators shall repeat the steps described in Conditions IV.F.2.g, h, i, j and k, and proceed with activating the firing system;

IV.F.2.p. Prior to ignition, the area supervisor shall review the placement of the waste on the pans and the "squibbing" and ignition preparation activities; and

IV.F.2.q. All information in the NIROP Burning Grounds Log forms shall be maintained in accordance with the requirements of R315-264-73 of the Utah Admin. Code and entered into the operating record for the NIROP facility. The operating record for the NIROP Burning Grounds includes the electronic hazardous waste tracking databases.

IV.G. POST-BURN ACTIVITIES

IV.G.1. Following the completion of an open burn at the NIROP Burning Grounds, the Permittees shall conduct the post-burn inspection and cleanup activities identified in Attachment 4, Section 4.6.4. of this Permit and shall comply with Conditions IV.C.1, 2 and 3, and shall have completed and complied with all provisions of Conditions, IV.E and F.

IV.G.2. The Permittees shall inspect the NIROP Burning Grounds and fill out the post-burn inspection form (Attachment 4, Figure 4-6.1~~5~~7) to the extent possible within 24 hours of completing an open burn unless one of the exceptions identified in IV.G.2.j. or k. applies. The post-burn inspection shall be finalized on the same day that cleaning activities for the burn are completed. The tasks identified below must be completed as part of the post-burn inspection:

IV.G.2.a. Prior to entering the NIROP Burning Grounds the operators shall deactivate the firing control system and remove the interlock;

IV.G.2.b. Document any burn pan or cage with an open flame, hot spot or smoldering residue;

IV.G.2.c. Document any burn pan or cage with unburned residue;

IV. G.2.d. Document any burn pan or cage with unburned reactive hazardous waste and identify if possible in the operating record why the waste did not burn;

IV.G.2.e. Inspect for any unburned waste that was ejected from a burn pan or cage during the last treatment event. Such waste shall be picked up and placed on a burn pan or in a burn cage;

IV.G.2.f. Record on the inspection form the date that the burn pans and cages were cleaned or the reason why a burn pan or cage could not be cleaned within 24 hours after completing the open burn;

IV.G.2.g. Record on the inspection form the date that the asphalt surface around the burn pans or cages was cleaned or the reason why the asphalt surface around a burn pan or cage could not be cleaned within 24 hours after completing the open burn;

IV.G.2.h. Identify the burn pans or cages where unburned waste is being stored;

IV.G.2.i. Evaluate the condition of the safety equipment identified in Figure 4-6.1~~5~~7 in Attachment 4;

IV.G.2.j. The Permittees may postpone post-burn activities at the NIROP Burning Grounds if lightning strikes or adverse weather condition prohibit the safe operation of the NIROP Burning Grounds. Lightning strikes closer than five miles restrict attended operations at the Bacchus Facility. The Permittees shall document the reasons for the delay in the facility's operating record; and

IV.G.2.k. The Permittees may delay the post-burn inspection for burns involving bulk propellant that occurred on the last working day of a week. The post-burn inspection shall be conducted on the following Monday or within 4 days of the last working day of the previous week, unless the meteorological conditions identified in Condition IV.G.2.j. prohibit re-entry into the NIROP Burning Grounds. The Permittees shall document the reasons for the delay in the facility's operating record.

IV.G.3. Within 24 hours of completing an open burn, the Permittees shall remove all treated residues from the burn pans, cages and asphalt. If the Permittees can-not remove all of the treated residues from the burn pans, cages and asphalt within the 24 hours, due to weather conditions, such as, snow or ice covering the burn pans, cages and asphalt, the Permittees shall document the following information in the operating record for the NIROP Burning Grounds:

IV.G.3.a. The reason for the delay in doing the post-burn clean up;

IV.G.3.b. Reserve;

IV.G.3.c. The date when burn pans, cages and asphalt were cleaned; and

IV.G.3.d. Except as delayed by the conditions described in Condition IV.G.2.j and k, the area supervisor shall review the NIROP Burning Grounds log and post-burn inspection forms within 24 hours of completing a thermal treatment event or open burn. The review shall assure that all of the recorded information is correct and identify any items that may require corrective action including any burn pan or cage that failed to ignite, had an ignition problem or misfired, had a detonation, where the burn did not propagate as expected or any other unexpected event.

IV.G.4. Open burn operations at the NIROP Burning Grounds may result in the generation of untreated residue and unburned wastes. The Permittees shall manage these residues and wastes in accordance with the following provisions:

IV.G.4.a. Small amounts of untreated residue, as defined in Attachment 4, Section 4.6.4, shall be considered newly generated waste and shall be logged and tracked as such in the explosive waste tracking system. This small amount is defined as less than 5% of the total volume placed on the pan or in the cage. The primary option for managing this waste is to burn it by 5:00 pm of the following calendar day. If the untreated residue can-not be treated by 5:00 pm of the following calendar day then it shall be managed in accordance with R315-262 of the Utah Admin. Code;

IV.G.4.b. Unburned waste resulting from a misfire or an interrupted ignition shall be treated by 5:00 pm of the calendar day following the date of the first attempt to treat this waste. For the purposes of this Permit, an interrupted ignition occurs when anything greater than 5% of the waste placed on a burn pan or in a cage fails to ignite. This unreacted waste shall not be considered a newly generated residue. If the Permittees are unable to treat the unburned

waste by 5:00 pm of the following calendar day, the Permittees shall cover the waste and manage the burn pan or cage in accordance with R315-262 of the Utah Admin. Code. If the cumulative storage time for the unburned waste both while in storage prior to treatment and while on the burn pan or in the burn cage is greater than 90 days, the Permittees shall request an emergency storage permit in accordance with R315-270-61 of the Utah Admin. Code;

IV.G.4.c. For reactive hazardous wastes that have been in storage for greater than 90 days when ~~they~~ it is~~are~~ placed on a burn pan or in a burn cage and which do not completely burn, the Permittees shall treat all unburned or unreacted waste by 5:00 pm of the calendar day following the date of the initial attempt to treat the waste. If the Permittees are unable to treat the unburned or unreacted waste by 5:00 pm of the following calendar day, then the Permittees shall request an emergency storage permit in accordance with R315-270-61 of the Utah Admin. Code; and

IV.G.4.d. Due to safety concerns, the Permittees can~~-~~not cover unburned wastes if temperatures fall below certain levels (54 degrees (F) for nitroglycerine wastes and 10 degrees (F) for Class 1.1 propellant). The Permittees shall request an emergency permit in accordance with R315-270-61 of the Utah Admin. Code for these wastes unless ~~they~~ it can be treated or covered by 5:00 pm of the calendar day following the date the waste was placed on a burn pan or in a burn cage. If the cumulative storage time for this unburned waste both while in storage prior to treatment and while on the burn pan or in the burn cage is greater than 90 days, the Permittees shall request an emergency storage permit in accordance with R315-270-61 of the Utah Admin. Code, unless the waste can be treated by 5:00 pm of the calendar day following the date the waste was placed on a burn pan or in a burn cage.

IV.G.4.e. Ordnance wastes burned at the NIROP Burning Grounds shall be burned twice to assure that the treatment is complete. Since the second burn is part of the prescribed treatment methodology for this waste stream, ordnance waste will not be considered as newly generated waste after the first burn. If the ordnance waste can~~-~~not be reburned by 5:00 pm of the following calendar day from the date of the first burn, then the Permittees shall manage the ordinance waste in accordance with R315-262 of the Utah Admin. Code. The Permittees shall conduct weekly inspections of the stored ordinance waste until it can be treated the second time. The weekly inspection shall be documented on the weekly inspection log, see Attachment 5, Figure 5-2.~~5~~3.

IV.G.5. The Permittees shall manage all treatment residues generated during post-burn activities in accordance with this Permit and R315-262 of the Utah Admin. Code.

IV.H. LEACHATE MANAGEMENT AND RUN-ON AND RUN-OFF CONTROLS

IV.H.1. The Permittees shall manage all leachate collected from a burn pan or cage in accordance with this Permit and R315-262 of the Utah Admin. Code.

IV.H.2. The Permittees shall maintain run-on diversion structures in accordance with this Permit and R315-264-600 through 603 of the Utah Admin. Code. The Permittees shall inspect the condition of those structures annually to assure that they are in good repair. The annual inspection shall be documented in the operating record for NIROP Burning Grounds.

IV.H.3. Run-off from precipitation that falls within the operating area of the NIROP Burning Grounds shall be managed in accordance with R315-264-600 through 603 of the Utah

Admin. Code, using asphalt curbing, berms, and ground slope to direct all storm water to two collection areas, which then convey the collected storm water to a treatment plant. The treatment plant for the management of precipitation run-off from the NIROP Burning Grounds is designed to handle storm water generated within the operating area of the NIROP Burning Grounds for a 25-year, 24-hour storm event, and shall be operated in accordance with the Department of Environmental Quality, Division of Water Quality's permit.

IV.H.4. All leachate and waste solids collected or generated as described in Conditions IV.H.1, 2 and 3 shall be sampled and analyzed in accordance with Condition II.D and Attachment 3.

IV.I. TREATMENT RESIDUE AND ASH MANAGEMENT

IV.I.1. All treatment residue and ash generated from the NIROP Burning Grounds operations shall be managed in accordance with Conditions III.E.4. and IV.G.3, and the procedures in Attachment 4.

IV.I.2. Sampling and analysis of treatment residues and ash generated during operations at the NIROP Burning Grounds shall be performed in accordance with Condition II.D. and Attachment 3.

IV.J. INSPECTION SCHEDULES AND PROCEDURES

IV.J.1 The Permittees shall conduct inspections of NIROP Burning Grounds in accordance with Conditions II.F, IV.E and G, and Attachment 5.

IV.K. ENVIRONMENTAL MONITORING REQUIREMENTS

IV.K.1. The Permittees shall comply with all environmental monitoring requirements identified in Condition IV.K and the Soil Monitoring Plan in Attachment 9 of this permit.

IV.K.2. Reserve;

IV.K.3. Reserve;

IV.K.4. The Permittees shall sample the Tier 1, Tier 2 and Bacchus Worker locations identified in the Soil Monitoring Plan annually or at a frequency determined by the Director in writing. The Permittees shall submit a report on the soil monitoring program to the Director annually or at a frequency determined by the Director and communicated via letter to the Permittees. This report shall be submitted to the Director by March 1st of the calendar year following each sampling event.

IV.K.5. If the Director determines after reviewing each report on the soil monitoring program that any component of the Soil Monitoring Plan needs to be updated, the Director will inform the Permittees in writing which components of the Soil Monitoring Plan to be revised or updated.

IV.K.6. If the Permittees are required to update the Soil Monitoring Plan for the NIROP Burning Grounds, the Permit shall be modified in accordance with Condition I.D. of this Permit.

IV.K.7. The Permittees shall monitor groundwater up and down gradient of the NIROP Burning Grounds in accordance with Attachment 10 of the ATK Launch Systems, Bacchus Facility – Plant 1 Permit.

IV.L. ECOLOGICAL RISK

IV.L.1. Within 180 days of issuance of this Permit, the Permittees submitted an Ecological Risk Assessment Protocol document to the Director for approval. The Director provided written comments to the Permittees identifying the deficiencies in the Ecological Risk Assessment Protocol document. The Permittees addressed the comments and submit a revised Ecological Risk Assessment Protocol document to the Director for approval. The permittees may request a waiver of ecological risk assessment and provide justification for a waiver in accordance with R315-101-5.3(a)(8) of Utah Admin. Code.

IV.L.2. If a waiver is not pursued by the Permittees or is not granted by the Director, the permittees, within one year of receiving approval of the Ecological Risk Assessment Protocol document, shall submit an Ecological Risk Assessment to the Director for approval. If the Director is unable to approve the Ecological Risk Assessment, he shall provide written comments to the Permittees identifying the deficiencies in Ecological Risk Assessment. The Permittees shall address the comments and submit a revised Ecological Risk Assessment to the Director for approval within 60 days of receipt of written comments.

IV.L.3. Within 30 days of receiving approval of the Ecological Risk Assessment, the Permittees shall submit a request to modify Condition II.G. of this Permit in accordance with Condition I.D. to add performance standards for the acceptable ecological risk associated with the operation of the NIROP Burning Grounds.

IV.M. Reserved

IV.N. FACILITY MODIFICATION/EXPANSION

IV.N.1. Modification of the design plans and specifications in Attachment 2 and 4 or construction of additional treatment units shall be allowed only in accordance with R315-124-5 of the Utah Admin. Code.

IV.O. CLOSURE AND POST CLOSURE

IV.O.1. The Permittees shall close the NIROP Burning Grounds in accordance with the Closure Plan in Attachment 8.

IV.P. NIROP BURNING GROUNDS OPERATING RECORD

IV.P.1. The Permittees shall maintain an operating record at the Bacchus Facility that describes the operation of the NIROP Burning Grounds. The operating record for the NIROP Burning Grounds shall, at a minimum, include the following information:

IV.P.1.a. All information required by R315-264-73 of the Utah Admin. Code;

IV.P.1.b. Copies of all inspections required by this module;

IV.P.1.c. All waste tracking information identified in Condition IV.D.;

IV.P.1.d. The burn logs for each burn and all waste tags removed from the containers before a burn;

IV.P.1.e. A detailed description of the meteorological conditions during each burn;

IV.P.1.f. Copies of all reports identified in Condition II.G.1. and required by Conditions II.G.2, and IV.K and L; and

IV.P.1.g. A running total of the type and quantity of reactive hazardous waste that has been treated at the NIROP Burning Grounds during the calendar year.

List of Acronyms

AP	Ammonium Perchlorate
ASTM	American Society for Testing and Materials
ATK	ATK Launch Systems, Inc.
bgs	below ground surface
C	Celsius
CFR	Code of Federal Regulations
DEQ	Utah Department of Environmental Quality
DOD	Department of Defense
DOT	Department of Transportation
DSHW	Division of Solid and Hazardous Waste
ES-1	Explosive Storage #1
ES-2	Explosive Storage #2
ES-3	Explosive Storage #3
ESD	Electrostatic Discharge
FEMA	Federal Emergency Management Agency
GEM	Graphite Epoxy Motor
GW	Groundwater Well
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMX	Cyclotetramethylene Tetranitramine
HS-1	Hazardous Storage #1
HTPB	Hydroxy-Terminated Polybutadiene
HWCP	Hazardous Waste Contingency Plan
HWMU	Hazardous Waste Management Units
IC	Incident Commander
ISB	Intermountain Seismic Belt
LDR	Land Disposal Restrictions
LEPC	Local Emergency Planning Commission
MSDS	Material Safety Data Sheet
NC	Nitrocellulose
NFPA	National Fire Protection Association
NG	Nitroglycerin
NIROP	Naval Industrial Reserve Ordnance Plant
OSHA	Occupational Safety and Health Association
PGA	Peak Horizontal Ground Acceleration
RBC	Risk-based Concentration
RCRA	Resource Conservation Recovery Act
RDX	Cyclotrimethylene Trinitramine
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RH-1	Resthouse #1
RSL	Regional Screening Level
SLID	Slum-in-a-Drum
SOP	Standard Operating Procedure
SOW	Scope of Work
SVOC	Semi-Volatile Compounds
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	Treatment, Storage, and Disposal Facility

UAC	Utah Administrative Code
UCL	Upper Confidence Limit
UHC	Underlying Hazardous Constituents
USEPA	United States Environmental Protection Agency
UTTR	Utah Test and Training Range
VOC	Volatile Organic Compound
WAP	Waste Analysis Plan
WQU	Water Quality Unit
WWTP	Wastewater Treatment Plant

2.0 FACILITY DESCRIPTION

The Bacchus Facility is located on the west side of the Salt Lake valley in West Valley City, Utah and unincorporated Salt Lake County. The facility includes over 400 buildings used to produce and prepare propellant ingredients, manufacture solid propellants and produce solid propellant rocket motors.

2.1.1 General Description of the Bacchus Facility

The Bacchus Facility includes the following subparts: Plant 1; the Naval Industrial Reserve Ordnance Plant (NIROP); Bacchus West; and a number of off-site groundwater sampling wells. This permit application specifically addresses the hazardous waste management facilities at NIROP. In order to provide a complete description of the processes that generate, store and treat hazardous waste at NIROP, it will be necessary to include other Bacchus Facility waste generating and storage facilities in this narrative.

The subparts that comprise the Bacchus Facility are all operated by ATK Launch Systems, Inc., (hereafter referred to as ATK) a wholly owned subsidiary of Northrop Grumman Corporation. The contiguous areas covered by this application are shown on Figure 2-1.1a. In terms of ownership, the NIROP portion of the Bacchus Facility is owned by the Navy. Plant 1 and a portion of the Bacchus West facilities are owned by ATK. However, most of the Bacchus West property is owned by and leased from the Kennecott Corporation.

The Bacchus Facility occupies about 10,000 acres within West Valley City, Utah and unincorporated Salt Lake County. It is located approximately four miles south of the unincorporated town of Magna and about 18 miles southwest of Salt Lake City, Utah. Transportation access includes 8400 West (Utah Hwy 111) that passes through the plant, 4100 South and 5400 South that are along the north and south plant boundaries, and a railroad spur runs through the facility.

The Hercules Company established the Bacchus Facility in 1915 as a producer of commercial blasting powder. The plant was renovated into a modern solid rocket propulsion facility in 1958 with research, development, and production capability. Alliant Techsystems, Inc. acquired the facility in March 1995 when they purchased Hercules Aerospace from the Hercules Company. Orbital Sciences Corporation merged with Alliant Techsystems, Inc. Defense and Aerospace Divisions in February 2015 to form Orbital ATK, Inc. Orbital ATK, Inc. was then purchased by Northrop Grumman Corporation in June 2018 and was renamed as Northrop Grumman Innovation Systems, Inc.

Both reactive and non-reactive hazardous wastes are generated at the Bacchus Facility. These wastes are accumulated, stored or treated at one of the onsite RCRA permitted or interim status hazardous waste management units (HWMUs). Reactive wastes and reactive contaminated wastes are thermally treated at the NIROP Burning Grounds or shipped off-site to an appropriate hazardous waste management facility. Non-reactive hazardous wastes are stored until shipped to appropriate off-site hazardous waste management facility. A more detailed description of these HWMUs and their operations are described in Section 2.2, Description of Hazardous Waste Management Units, and in Section 4.0, Process Information.

2.1.2 Facility Security

The facility is secured by chain link and barbed wire fencing that surrounds the active site. The perimeter fence has warning signs posted at about 500 ft intervals, at corners, and at each gate. The warning signs display the words "Danger Explosives, No Trespassing." In addition, the HWMUs have warning signs to inform employees and discourage unauthorized access.

The facility has three primary access points through the Main, Bacchus West and NIROP gates which are shown on Figure 2-1.1b. The Main and Bacchus West gates are manned during normal business hours and the NIROP gate is manned on an as needed basis. All gates are either locked or controlled by card readers when security personnel are not present. The facility is patrolled by security guards.

2.1.3 NIROP

NIROP was originally built by the Air Force for production of Minuteman Stage III rocket motors. It is located immediately north of Plant 1. When Minuteman motor production finished, the facilities were temporarily converted to the production of mini-mine explosives. NIROP now supports Navy programs and other production programs permitted by the Navy. The processes conducted at NIROP are similar to those described at Plant 1, and includes activities such as propellant ingredient preparation and handling, motor curing and storage, final assembly, inspection, machining and shipment.

Laboratory facilities at Bacchus Facility once involved many buildings at Plant 1 and NIROP, but most labs were relocated to the ATK-Promontory Facility in 2001-2002. Laboratory activities include, but are not limited to propellant research, process development, materials development, destructive and nondestructive testing, standards measurement, and applied physics research.

2.1.4 Plant 1

Plant 1 supports manufacturing, production testing, shipping, and research and development functions. Production facilities comprise the largest area and occupy the greatest number of buildings at Plant 1. The activities conducted in the production facilities include the preparation of empty rocket motor chambers, preparation and handling of propellant ingredients, mixing and curing of propellant ingredients, propellant mold assembly/disassembly, propellant machining, in-process storage, final assembly, and shipping.

2.1.5 Bacchus West

The Bacchus West facility is adjacent to and contiguous with Plant 1, and is located west of 8400 West. It consists of buildings where large solid propellant rocket motors are manufactured. The processes conducted at Bacchus West are similar to those at Plant 1 and NIROP, but generally operate under automated control. Closed ingredient handling systems are used in all possible applications to prevent contamination of the processes, products, and environment.

2.2 DESCRIPTION OF HWMUs

HWMUs at the Bacchus Facility include storage and treatment areas for the management of listed and characteristic hazardous waste. In addition, the Bacchus Facility operates a number of hazardous waste accumulation areas in accordance with the generator requirements for satellite accumulation and the less than 90-day hazardous waste accumulation rules.

2.2.1 Description of Hazardous Waste Container Storage Units

The NIROP portion of the Bacchus Facility has three hazardous waste container storage units and one treatment unit that are operated in accordance with the requirements of R315-264-170 through 178 and R315-264-600 through 603 of the Utah Administrative Code (Utah Admin. Code). These units are:

- ES-2 - a container storage building;
- ES-3 - a container storage building;
- NIROP Burning Grounds - a thermal treatment facility; and
- Ash Storage Pad - a container storage pad

2.2.2 ES-2

ES-2 is a container storage area where ATK accumulates and stores waste explosives (Figure 2-2.2). ES-2 has a storage capacity of up to 40,000 pounds of explosive waste. The floor plan of the building is shown in Figure 2-2.3.

This building was originally constructed to store and weigh dry propellant ingredients and was later converted to a waste storage building. ES-2 is a totally enclosed concrete and steel structure. This building is protected by a deluge sprinkler system. Fire symbols appropriate for the greatest waste hazards are posted on the exterior of the building. A fire hydrant is located within 150 ft of the building.

2.2.3 NIROP Burning Grounds

The NIROP Burning Grounds (Figure 2-2.4) is a thermal treatment unit designed to safely treat waste explosives by open burning. The following wastes can be treated at this facility: bulk propellants, NG wastes, and laboratory and other explosive wastes associated with testing and manufacturing operations at the facility. Explosive wastes are normally burned during the daylight hours. No explosive wastes are treated by open detonation at the NIROP Burning Grounds and the pans are designed to prevent fragmentation should a detonation occur.

The NIROP Burning Grounds consists of five-plus acres (Figure 2-2.5), enclosed by a chain-link fence. The center point of the NIROP Burning Grounds is located at GPS coordinates 40° 40.643' N and 112° 05.133' W. The northern fence boundary is 1,397' from 4100 South, along the north boundary of NIROP.

The NIROP Burning Grounds contains 17 burn pans that are surrounded on three sides by 5' high earthen berms. The burning pans are placed on an asphalt containment area that is about 30' by 40'. The asphalt containment and earthen berms are separated by a small curb, about 8" high. The asphalt is 3" thick over 9" of road base. The burning pans are about 50' apart. Each burning pan has a semi-circular bottom, 5' wide and 25' long. The burning pans are constructed of 1/4 - 3/8" thick carbon steel and are filled with pea gravel (Figure 2-2.6) (Figure 2-2.7).

The burn pans are designed to collect precipitation and water used to cool hot spots after a burn. Leachate is removed by connecting a vacuum truck hose to a Camlock fitting attached to the bottom of each pan. The leachate is accumulated in storage tanks prior to being discharged to a POTW or shipped to an off-site TSDF disposal facility.

In addition to the burn pans, the NIROP Burning Grounds has two burn cages (Cages 12 and 19) (Figure 2-2.8) that are used to treat wastes which are lightly contaminated with small amounts of explosives. Each cage dimensions are 12' high x 12' wide x 14' long. Three-inch diameter schedule 40 steel pipe is used as the support structure for the cages. The cages are covered with a metal fabric on the sides and top. Each cage has a large access door on the south side and a small access door on the north side. Cages 12 and 19 also have a leachate collection system similar to the system used on burn pans.

The burning grounds have several small storage sheds for the storage of base grain, diesel, extra slum pots, squibs, and other necessary tools. A buried electrical firing system is used to remotely ignite each of the burning pans or cages. The control panel for this system is located inside a locked control room outside the fenced treatment area.

Water is available inside the burning grounds to quench burning pan residues when necessary or to eliminate "hot spots" that remain from the previous day's burn.

Telephone service is available in the control room and near the main gate of the NIROP Burning Grounds. NIROP Burning Ground operators will always have a means of contacting emergency services, whenever ATK personnel are inside the NIROP Burning Grounds. Fire extinguisher and fire blankets are strategically located near burning pans for emergency use. The NIROP Burning Grounds is equipped with a pole-mounted red rotating light and siren. The siren is used to signal a pending burn prior to ignition and the red light is illuminated prior to ignition. Three fire hydrants are located along the eastern boundary of the NIROP Burning Ground.

Only authorized personnel are permitted on the NIROP Burning Grounds site. Visitors to the area must be approved and escorted by Environmental Operations' personnel.

The NIROP Burning Grounds is located 1,650' from Highway 111 and 1,397' from 4100 South. These roads form the west and north plant boundaries, respectively. Because of the proximity of the burning grounds to these roads, ATK conducted a hazards evaluation of the operations and its location. Based on the evaluation findings, the NIROP Burning Grounds operations were determined to be located at a sufficient distance from the property lines to protect human health and the environment from any imminent danger.

In 1989-90, the Navy evaluated the location and operation of the NIROP Burning Grounds in relation to their quantity/distance (Q/D) requirements. The evaluation was conducted according to NAVSEA OP5, Volume 1, Revision 4, Paragraph 11-3.2. The criteria in this guidance determined that the safe setback distance for the NIROP Burning Grounds, where non-fragmenting explosives are treated by open burning, must be located at a distance where the peak positive incident pressures are less than or equal to 1.0 psi.

Based on the findings of this evaluation, a maximum explosive limit of 4,500 pounds per day was established. During normal operations there are no measurable overpressures generated. As an additional safety measure, the location of the NIROP Burning Grounds is located so that a simultaneous detonation of 4,500 pounds of explosives would generate an overpressure of 0.50 psi at the nearest property boundary, well below the maximum allowable limit of 1.0 psi.

In addition, the Utah Department of Environmental Quality (DEQ) established guidance for OB/OD treatment facilities. The Bacchus Facility used the DEQ's "*Draft OB/OD Guidance,"* dated April 1996 to evaluate the NIROP Burning Grounds setback distances. Table 1 (Minimum Safe Setback Distances for Open Burning Operations) and Figure 2 (Distance Setback for Open Burning Units) were used to interpolate the setback distance required to treat 4,500 pounds of explosive waste. The OB/OD Guidance suggests that a safe distance must be 1320' or more, which is within the current treatment area's location.

The open burning operation at the NIROP has an Approval Order (AO) issued by the Division of Air Quality, which limits daily amounts to 4,500 pounds per day. When there is a "No burn" order in effect for wood burning stoves in Salt Lake County, ATK is allowed to burn up to 400 pounds of unstable wastes, laboratory wastes and unburned waste from a previous burn. The above wastes can be burned regardless of wind direction.

Larger open burns or burns where the waste has a chlorine content that is greater than 5% of the waste's formulation are restricted. These wastes can only be open burned when the surface wind directions of less than or equal to 112° or more than or equal to 270°, and the wind speed does not exceed 15 miles per hour.

2.2.4 Ash Storage Pad

The Ash Storage Pad is a 45' x 45' concrete pad located just outside of the NIROP Burning Grounds fence. The pad is designed to contain two storage containers (Figure 2-2.9). The pad may also be used to accumulate trash and scrap metal generated at the NIROP Burning Grounds. All scrap metal generated at the NIROP Burning Grounds is visually inspected to assure that it has been decontaminated. Decontamination is considered adequate when the visual inspection documents that all surfaces have been exposed to flames during the treatment process. The trash/scrap metal dumpster will not need to be covered. All hazardous waste stored on the pad will be managed in accordance with R315-264-170 through 178 of the Utah Admin. Code. This storage unit has a maximum storage capacity of 50 cubic yards.

2.2.5 ES-3

ES-3 is a container storage area where ATK accumulates and stores waste explosives (Figure 2-2.10). ES-3 has a storage capacity of up to 25,000 pounds of explosive waste. The floor plan of the building is shown in Figure 2-2.11.

This building was originally constructed as a manufacturing building for Minuteman rockets and was later converted to a waste storage building. ES-3 is a totally enclosed concrete and timber structure. This building is protected by a deluge sprinkler system. Fire symbols appropriate for the greatest waste hazards are posted on the exterior of the building. A fire hydrant is located within 150 ft of the building.

2.3 QUANTITY DISTANCE DETERMINATION

The facility uses the Department of Defense (DOD) guidance to calculate quantity distance relationships. The evaluation was conducted according to NAVSEA OP5, Volume 1, Revision 4, Paragraph 11-3.2. The method used to determine safe quantity distance relationships for both Class 1.1 and 1.3 propellants is provided below.

The quantity distance relationship for Class 1.3 propellant is determined by the following formula: $\mathbf{D = 5W^{1/3}}$. Where W is the weight of Class 1.3 propellant and D is the safe distance. The formula applies to Class 1.3 propellant and Class 1.3 propellant ingredients. The safe distance is defined as the interline protection for mass fire for Class 1.3 propellant.

The quantity distance relationship for Class 1.1 propellant is determined by the following formula: $\mathbf{D = 18W^{1/3}}$. Where W is the weight of a Class 1.1 explosive and D is the safe distance. The formula applies to Class 1.1 propellant and Class 1.1 propellant ingredients. The safe distance is defined as the unbarricaded interline protection for Class 1.1 propellant. Refer to Figure 2-3.12 for safe distances for the hazardous waste storage facilities and significant 90-day accumulation areas identified in this application.

The quantity distance relationship for ES-2 is based on the more conservative requirement for a Class 1.1 explosive.

ES-3 will have two separate explosive limits based upon quantity distance relationships. Any time that ES-3 contains a Class 1.1 waste, the explosive limit for the building will be 10,000 pounds. This includes when both Class 1.1 and 1.3 wastes are stored in the building. Any time that ES-3 exclusively contains a Class 1.3 waste, the explosive limit for the building will be 25,000 pounds.

2.4 ACCUMULATION STATIONS

The NIROP maintains less than 90-day storage areas and wastewater collection tanks.

2.4.1 Accumulation Stations

Waste accumulation stations support most of the waste-producing operating buildings at the NIROP. Waste handling processes are discussed in more detail in Section 4. The number of accumulation stations varies according to need. Accumulation stations at explosive generating operations are referred to as “slum sheds”. Slum sheds are three-sided wooden structures, typically 6’ x 17’ x 8’ high (Figure 2-4.13). They are built on a concrete pad open to the north to protect explosive wastes from southern sun exposure. A similar structure is used at nearly every accumulation station but the design is not necessarily standardized.

2.4.2 Wastewater Collection Tanks

Wastewater collection tanks are used to collect process and building wash water. There are approximately 10 tanks located at individual buildings on the NIROP. The majority of the wastewater collected on the NIROP is collected and discharged to the sewer after being processed at the Plant 1 Waste Water Treatment Plant (WWTP). The piping for most of the tanks is above ground, however, when underground piping is necessary it is double-walled. Cloth filters are used, where applicable, to prevent propellant or explosives particulates from entering the tank. Filters contaminated with explosives are thermally treated at the NIROP Burning Grounds. All tanks

have level indicators, and use either secondary containment leak detection or visual confirmation where leaks can be visually identified.

2.5 LOCATION INFORMATION

The following sections contain information relating to the surface topography of the facility, consideration for potential seismic activity, floodplain location, and on-site traffic control.

2.5.1 Topographic Map Information

Figure 2-5.14 and Figure 2-1.1b are topographic and physiographic maps of the Bacchus Facility that shows the location of Plant 1, NIROP, and Bacchus West. These maps combined also show the surface contours, surface water flow and drainage directions, plant facilities, security fences and gates, and the hazardous waste management facilities.

2.5.2 Surface Run-on/Run-off

Highly fractured limestone and quartzite, and permeable alluvial deposits near the mountain front, allow most of the run-off originating in the Oquirrh Mountains to infiltrate into the subsurface before it reaches the facility. Therefore, run-off from the Oquirrh Mountains to the valley floor is limited. Stream flow from the Oquirrh's is intermittent and occurs primarily during the spring and summer run-off months from snowmelt and precipitation.

Streams that flow across the facility originate in the Oquirrh Mountains to the west. The main streams that contribute surface water to the facility are Coon Creek and an unnamed stream in Harkers Canyon. These streams converge immediately upstream of the facility. The stream is known as Coon Creek below the confluence. The Coon Creek drainage enters the Bacchus Facility via a culvert under State Highway 111, and exits to the south of 4100 South or can divert through the flood detention basin before discharge.

Except for Coon Creek, no major drainages enters or crosses the Bacchus Facility. Run-off from most areas on the site occurs as overland flow that collects in small northeast trending channels that follow the local topography.

2.5.3 Surface Springs

Several small intermittent springs originate from a cut slope both south and east of the NIROP Burning Ground. Dependent upon local precipitation the springs may flow all year, or cease producing for a period of time. Flow from the springs enters the drainage basin, eventually feeding into the Coon Creek channel south of 4100 South. Depending on the location of the spring, the flow is channeled to the east around the NIROP Burning Grounds or enters a culvert that passes beneath the NIROP Burning Grounds.

The drainage/detention basin is present in an excavation created decades ago during gravel mining operations. This area has since become a natural wetlands-type environment. The springs near the NIROP Burning Grounds contain reportable concentrations of perchlorate. However, since no recordable concentrations have been identified in the surface water discharged from the detention basin into Coon Creek, it is believed that the low concentration contaminants are being accumulated in the vegetation, degraded biologically by bacteria and microorganisms naturally, or diluted by uncontaminated water sources.

2.5.4 Floodplain Boundary

Between 1983 and 1986, the region surrounding the facility experienced a cycle of above-normal precipitation. The increased run-off accelerated erosion of Coon Creek and other minor channels. The channel surface for Coon Creek degraded to levels that in a few locations are now several feet below the previous channel surface. The most current map published September 21, 2001 (Figure 2-5.15) by the Federal Emergency Management Agency (FEMA) showing the 100-year floodplain boundary, does not indicate a change in the delineation of the floodplain boundary. An independent engineer has reviewed the floodplain boundary (reference: R.B. White, letter to R.A. Bowlin, "Review of Floodplain Information in Bacchus Facility - Plant 1, Part B Permit Application," February 13, 2006). A visual inspection of the Coon Creek channel also does not indicate any apparent erosional floodplain concerns.

2.5.4.1 Floodplain Considerations

A copy of the FEMA Flood Insurance Rate Map for the area of the NIROP that includes the Burning Grounds, Ash Storage Pad, and ES-2 is presented as Figure 2-5.15. ES-3 is located east of the map border shown in Figure 2-5.15 and is well outside the Coon Creek floodplain. None of the hazardous waste management areas on the NIROP are located within or immediately adjacent to a 100-year flood plain (Zone A designation).

2.5.5 Wind Direction

The wind rose (Figure 2-5.16) for the Salt Lake Valley shows the distribution of wind speeds and the frequency of the varying winds directions. The wind rose presents data collected from the Salt Lake City Airport (WBAN Station 24127) between 1988 and 1992, during the ozone season (May through September). The wind rose was taken from the USEPA website for NAAQS-Ozone. The predominant wind direction is from the north-northeast, 15.8% of the time, at a speed of 16 knots (18.4 miles per hour) or less. Total northerly wind frequency is about 40%. The next most predominant wind direction is from the south-southeast, 14.5% of the time, at a speed of 21 knots (24 miles per hour) or less. Total southerly wind frequency is about 27%.

2.5.6 Miscellaneous Facilities

A production well and water storage tank are located in the foothills above (approximately 1-mile west) the Bacchus West production facilities. This withdraw well is currently not in use, but could be brought into service if required. This system was designed to supply pressurized potable water to the facilities and for fire protection (deluge) systems and hydrants throughout the entire plant. This system is accessed by a system of internal roads that connect the buildings and facilities at the Bacchus Facility. Fire control water is supplied through underground water lines.

The facility sanitary sewage system consists of sewage collection and septic systems, specific to areas in each plant. A domestic sewage collection system connects the Plant 1 and NIROP buildings and a few production buildings to the Magna sewer. Individual septic tank and drain field systems serve the majority of buildings in the NIROP, Plant 1, and Bacchus West operating areas.

2.5.7 Seismic Considerations

The location and potential affect an earthquake within the local Intermountain Seismic Belt (ISB), more specifically the Wasatch Front, could have on the facility has been evaluated. The general

consensus is that a Magnitude 6.5 or greater earthquake may occur along the Salt Lake Valley segment of the Wasatch Fault at any time.

2.5.7.1 Location

The facility is located within the Salt Lake Valley at the eastern edge of the Basin and Range Physiographic Province. More specifically, the site is located within the Magna Block, just east of the Oquirrh Mountains (Tooker, E.W. and Roberts, Ralph J., 1961). In Utah, the ISB coincides with the boundary between the Basin and Range Physiographic Province to the west and the Colorado Plateau to the east. The Basin and Range Physiographic Province is characterized by north-south trending normal faults, caused by spreading from lateral tension and local uplift. In addition to deep-seated basement faulting, the spreading of the valleys also causes sympathetic and antithetic faulting in the sediments overlying the basement structures.

The Magna Block and northern Oquirrh stratigraphy are part of the upthrust portion of the North Oquirrh Thrust Fault. The Oquirrh Mountains are a tilted fault block associated with the eastern portion of the Basin and Range Physiographic Province. Faulting associated with Basin and Range along the local uplifted mountain ranges, i.e. Wasatch, Oquirrh, and Stansbury, occurs only on the western side of the ranges (Utah Geological Survey, 2003, Map 193DM). There are no documented faults on the east side of the Oquirrh Mountains associated with Basin and Range or other Tertiary and early Quaternary tectonic activity (Tooker and Roberts, 1961).

The only documented sympathetic and antithetic faulting in the Salt Lake Valley near the facility is the West Valley Fault Zone (Figure 2-5.17 and 2-5.18). The faults in this zone primarily dip toward the east in antithetic response to weakness in the valley sediments caused by movement along the Salt Lake City section of the Wasatch Fault Line. No documentation has been found to suggest that the West Valley Fault Zone is tectonic in nature (basement controlled).

2.5.7.2 Geologic Control

Tooker and Roberts produced the "Geologic Map of the Magna Quadrangle, Salt Lake County, Utah (1971)". The map shows a northeast trending normal fault, downthrown to the east, which passes within 0.4 miles of the NIROP Burning Grounds. This fault is associated with pre-uplift of the Oquirrh's and is extended to the northeast based on a small outcrop of the Kessler Canyon Formation just east of Magna. There is no evidence that this fault was active during the formation of the Basin and Range Physiographic Province. However, the "Interim Geologic Map of the Magna Quadrangle", Open File 424, UGS, August 2004, does not show this fault to be present.

One of the primary linear surface features is Coon Creek. An earlier impression was that the location of Coon Creek might have been fault controlled, however, a current review of the data does not support this conclusion. None of the published geologic maps indicates a fault structure near the surface in the area of Coon Creek that would effect the direction of drainage. Coon Creek appears to be controlled by folds in the geologic substrate as it exits the Oquirrh Mountains. From this it can be concluded that the direction of flow is within the preferred path of erosion. The upper portion of Coon Creek is in a structural synclinal trough that is perpendicular to faulting throughout most of its course. The redirection from east-northeast to a northerly trend on Plant 1 is not believed to be fault controlled. The majority of the faults shown in the Tooker/Roberts map, are associated with the Oquirrh Mountains, and are compressional or shear features of pre-Tertiary age. Only a few of the faults appear to be extensional and associated with horst and graben release.

Stratigraphic information collected by ATK suggests that Coon Creek has maintained its approximate line prior to and following the presence of Lake Bonneville.

Borings at the site and north of 4100 South have occasionally encountered Tertiary sediments of volcanic origin. About 8000 feet north of the site, the borings for groundwater monitoring wells GW-79, 80, 81, and 82 encountered a Tertiary volcanic material at varying depths. It was initially thought that this change in depth of the upper contact was related to faulting. However, this would mean that a total vertical fault displacement of more than 150 feet, more than any known Holocene fault in the valley, had occurred. The volcanic material appears to be at least 60 feet thick, based on borings. However, none of the borings have penetrated this unit to confirm the thickness of this geologic unit.

Borings along the northern boundary of the site seem to indicate a similar subsurface condition. Although borings for GW-53 and GW-54 did not encounter the volcanic unit near the termination depth, the boring logs document that volcanic material and cobbles are present at a depth similar to where they appear in the boring logs of GW-79, 81, and 82. No volcanic debris was identified in the next boring to the west (GW-52), which was terminated at a depth approximately 60 feet deeper than GW-53 and 54. It is believed that the streams eventually cut through the volcanic layer exposing the Tertiary sediments below. Later with the formation of Lake Bonneville, sediments covered the volcanic material to the present surface, allowing the current upper and lower water bearing sediments to be in contact.

A recent review of the data concluded that this is not a fault-induced graben, but simply an erosional feature. The volcanic layer appears to have been deposited as a flow from somewhere in the southern Oquirrh's during mid-Tertiary time. A trough identified during the installation of GW-80 appears to have been cut by erosion from stream running out of the Coon and Harkers canyons which followed the topography northward, bound on the west by the uplifted Oquirrh's, near the location of present day Coon Creek.

2.5.7.3 Local Faulting

Various faults and linears are documented or inferred to be present near the facility. Some of the more pertinent ones are discussed below.
The Granger fault, as named by Marine and Price (1964) and evaluated by Keaton and others (1987), is the nearest Holocene age fault with possible recent displacement. It is located about five miles east-northeast of the site. The Granger and Taylorsville faults to the east comprise the West Valley Fault Zone (Figure 2-5.17).

Slentz (1955) refers to a suspected east-trending fault passing south of the old gravel pits. The evidence used to infer the existence of such a fault consisted of steep dips in rocks of the Salt Lake Group as exposed in the gravel pits, warm water from rising groundwater in the bottom of the gravel pits, and the east-trending landform on which the Provo Level Shoreline of the ancient Lake Bonneville has been eroded.

Cook and Berg (1961) found a northeast-trending, southeast-facing gravity anomaly they interpreted to represent a fault close to the Oquirrh Mountains south of the site and swinging northeastward through the site. They used Slentz's evidence to support their interpretation of the

gravity anomaly. There is no surface expression or documentation to verify the existence of this fault.
Examination of stereoscopic aerial photographs dating from 1946 to 1965 revealed that Lake Bonneville shoreline features across the site were continuous and showed no evidence of disturbance by fault offset. Since the shoreline features at the site are greater than 10,000 years old, absence of fault offset clearly indicates the absence of Holocene faults within the 3,000 ft radius. Observations of the distribution of bedrock exposures in the area made during site reconnaissance supports the interpretation of the aerial photographs and further indicates that the presence of a possible east-trending fault south of the old gravel pits, as inferred by Slentz (1955), certainly does not affect Lake Bonneville deposits and probably does not exist. Figure 2-5.19 presents geologic features identified at Bacchus Facility during field reconnaissance.

A geologic map of the area included in Sterns (1984) shows five faults relatively close to the Bacchus Facility. The largest of these faults has been named the Principal Marginal Fault. The other four faults, which are not named, are shown to pass through or within 3,000 ft of the Bacchus Facility. However, the faults identified by Stearns (1984) are in the extreme northeastern portion of the Bacchus Facility and are not within 3000 ft from the NIROP Burning Grounds, Ash Storage Pad, or ES-2. The geologic cross-section included in Sterns (1984) shows the upper surface of the Salt Lake Group and the lower part of the Lake Bonneville deposits to be faulted. Such an interpretation would indicate that the most recent movement of the faults was younger than late Pleistocene, and possibly Holocene.

2.5.7.4 Seismic Activity

Seismic activity has been documented in 1962 and later years, clustered north of the Bacchus Facility in the Magna area. Based on an evaluation of published geologic data supplemented by examination of stereoscopic aerial photographs and field reconnaissance, no faults that have had displacement in Holocene time (<10,000 years before present [b.p.]) are present within 3,000 ft of any hazardous waste management facilities at the facility. Furthermore, published geologic studies pertaining to the site area do not indicate the presence of Holocene faults within five miles of the site. This complies with R315-264-18 (a) (1) of the Utah Admin. Code with regards to location standards for hazardous waste treatment, storage or disposal facilities. A major earthquake of > 6.5M could still possibly generate ground shaking and potential liquefaction at the facility.

The intensity of ground shaking caused by the vibrations of passing seismic waves is dependant on the location and magnitude of the earthquake and the geologic conditions of the site. The most recent publication on ground shaking in the Salt Lake Valley area is “Earthquake Scenario & Probabilistic Ground Shaking Maps for the Salt Lake City, Utah, Metropolitan Area”, Utah Geological Survey, Miscellaneous Publication 02-5, 2002 (MP 02-5).

The MP 02-5 report presents hazard maps that show the frequency-dependent amplification of unconsolidated sediments in the Salt Lake Valley. In summary, locations along the bench areas near the Wasatch Fault will exhibit the highest peak accelerations, while the central portion of the valley will show lower peak accelerations due to damping. The site is situated on, what is termed in the report as, lacustrine alluvial gravels (Figure 2-5.20). This material, along with a shallowing of the sediments near the Oquirrh Mountains would cause an increase in ground shaking. The study estimates the peak horizontal ground acceleration (PGA) in the site area to be between 0.5g

and 0.6g (Figure 2-5.21). This level of PGA is considered moderate to heavy, with slight damage to specially designed structures and considerable damage to ordinary buildings.

Long-term explosive storage buildings ES-2 and ES-3 are large timber, wood framed structures. Both ES-2 and ES-3 are surrounded and supported on three sides by earthen bunkers. Evaluation by our Facility Engineering Department indicates that because of the size, light ground loading, building construction, and earthen bunkers, these buildings should fare well should ground shaking from a Wasatch Fault earthquake occur. The NIROP Burning Grounds and the Ash Storage Pad do not contain any significant structures, and are not considered to pose a significant risk due to seismic activity.

Liquefaction occurs when water-saturated sandy soils are subjected to ground shaking and loss of bearing strength during an earthquake, generally of at least a magnitude of 5.0. The likelihood of liquefaction caused damage is greatest where the groundwater is shallow. Damage can be either subsidence in nature or induced ground/slope failure (landslides). The most recent publication on liquefaction in the Salt Lake Valley area is "Geologic Evaluation and Hazard Potential of Liquefaction-Induced Landslides along the Wasatch Front, Utah", Utah Geological Survey, Special Study 104 (SS104). Liquefaction is not generally a life-threatening hazard. However, failures initiated by liquefaction can present a hazard to life as well as property. Thirteen liquefaction-induced landslides have been identified along the Wasatch Front (SS104). There are no published reports on subsidence or landslides along the eastern slopes of the Oquirrh Mountains.

Liquefaction generally occurs in areas of shallow groundwater (generally less than 30 ft deep) and loose sandy soils. Earthquake-induced liquefaction may cause four principal ground-failure types: 1) loss of bearing strength on relatively flat ground, 2) ground oscillation where the ground slope is less than 0.1 percent, 3) later-spread landslides where slopes range between 0.1 and 5.0 percent, and 4) flow failures where slopes exceed 5.0 percent (SS104). Only the first two failure types could possibly occur at the NIROP facility. Depth to groundwater varies significantly across the NIROP. Beneath the Burning Grounds and the Ash Storage Pad the groundwater is about four feet below ground surface, whereas, at ES-2 the groundwater is about 140 feet below ground surface. Because of the shallow depth to groundwater beneath the Burning Grounds and the Ash Storage Pad, liquefaction may cause differential settling of the asphalt and concrete slabs. Since there are no significant structures at either unit, no significant concerns of release are present. Beneath ES-2, the depth to groundwater is deep enough to mitigate potential vertical sand blows and lateral spreads that could cause settlement of the ground surface due to liquefaction. Therefore, liquefaction should not pose any serious risk to the waste storage units at the facility

2.6 ACCESS CONTROL AND TRAFFIC

The Bacchus Facility can be accessed from 8400 West (Utah Highway 111) that passes through the plant and from 4100 South and 5400 South that are along the north and south plant boundaries. A railroad spur used by ATK also accesses the plant.

The Bacchus Facility is secured by chain link and barbed wire fencing that surrounds the site. The perimeter fence has warning signs posted at about 500 ft intervals, at corners, and at each gate. The warning signs display the words "Danger Explosives, No Trespassing." In addition, the

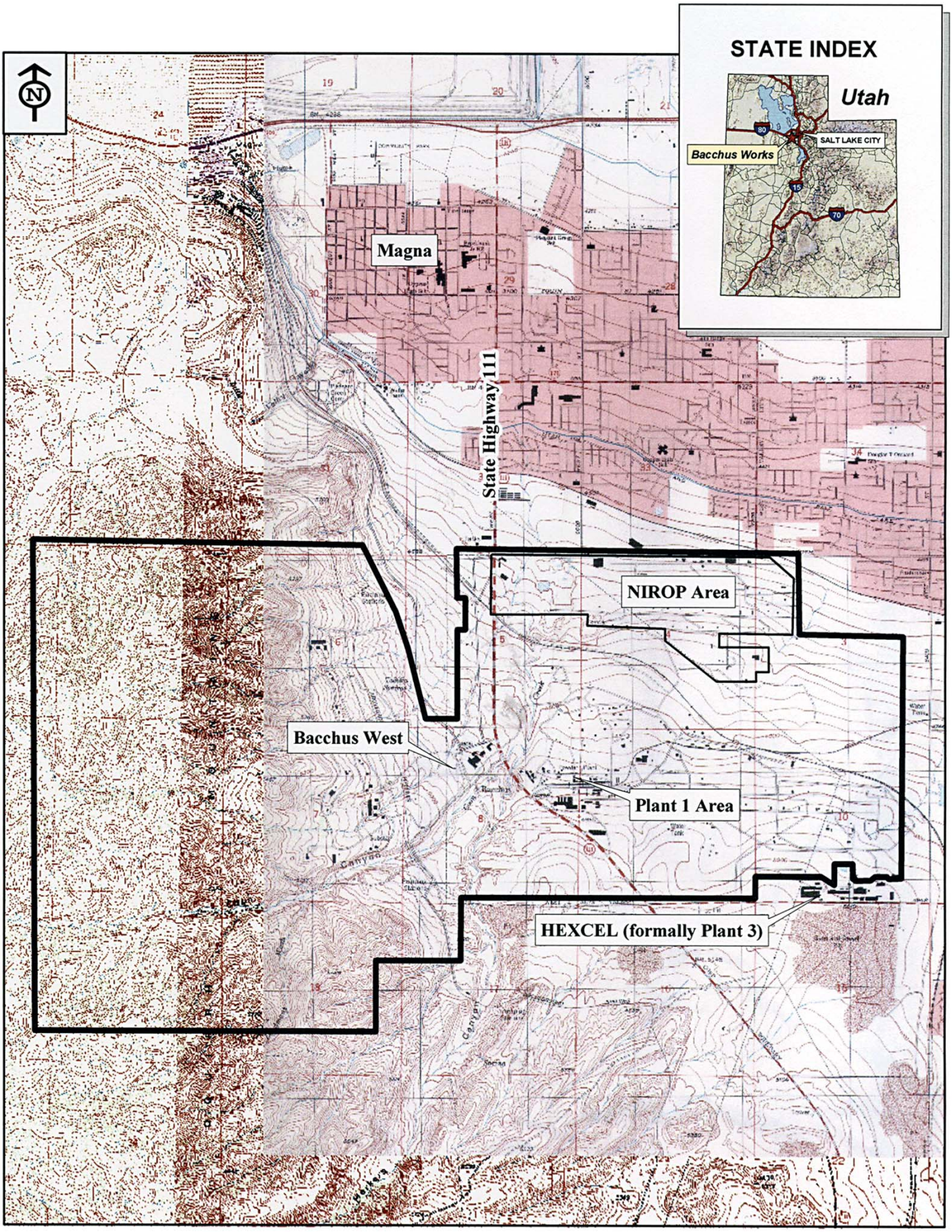
operating HWMUs have warning signs that comply with R315-264-14(c) of the Utah Admin. Code to inform employees and discourage unauthorized access.

The Bacchus Facility has three primary access points - the Main, Bacchus West and NIROP gates. The Main and Bacchus West gates are manned during normal business hours, and the NIROP gate is manned on an as needed basis. All gates are locked or controlled by magnetic card readers when security personnel are not present. The site is also patrolled by security guards on a 24-hour basis.

Roads to the operating HWMUs are surfaced with asphalt or compacted road base. Minimum design loading criteria is based on 8,000 pounds per wheel (16,000 pounds per single axle and 32,000 pounds per tandem axle). Each operating HWMU has parking and maneuvering space to facilitate the unloading and loading of wastes. See Figure 2-1.1b for details.

2.7 SAFETY RESTRICTIONS

No unusual traffic patterns exist. Main, secondary, and other roads are controlled by stop signs. Speed limits are posted throughout the Bacchus Facility. Bacchus Facility personnel operating motor vehicles must possess a valid Utah State driver's license. Forklift operators must pass additional classroom and operating exams for each individual forklift they are assigned to operate. Disciplinary action may be taken for any traffic violation.



Source base map: USGS 1:24,000 Quadrangles "Magna, UT", "Farnsworth Peak, UT"

0 0.5 1 Miles

Figure 2-1.1a
ATK Launch Systems Inc. - Bacchus

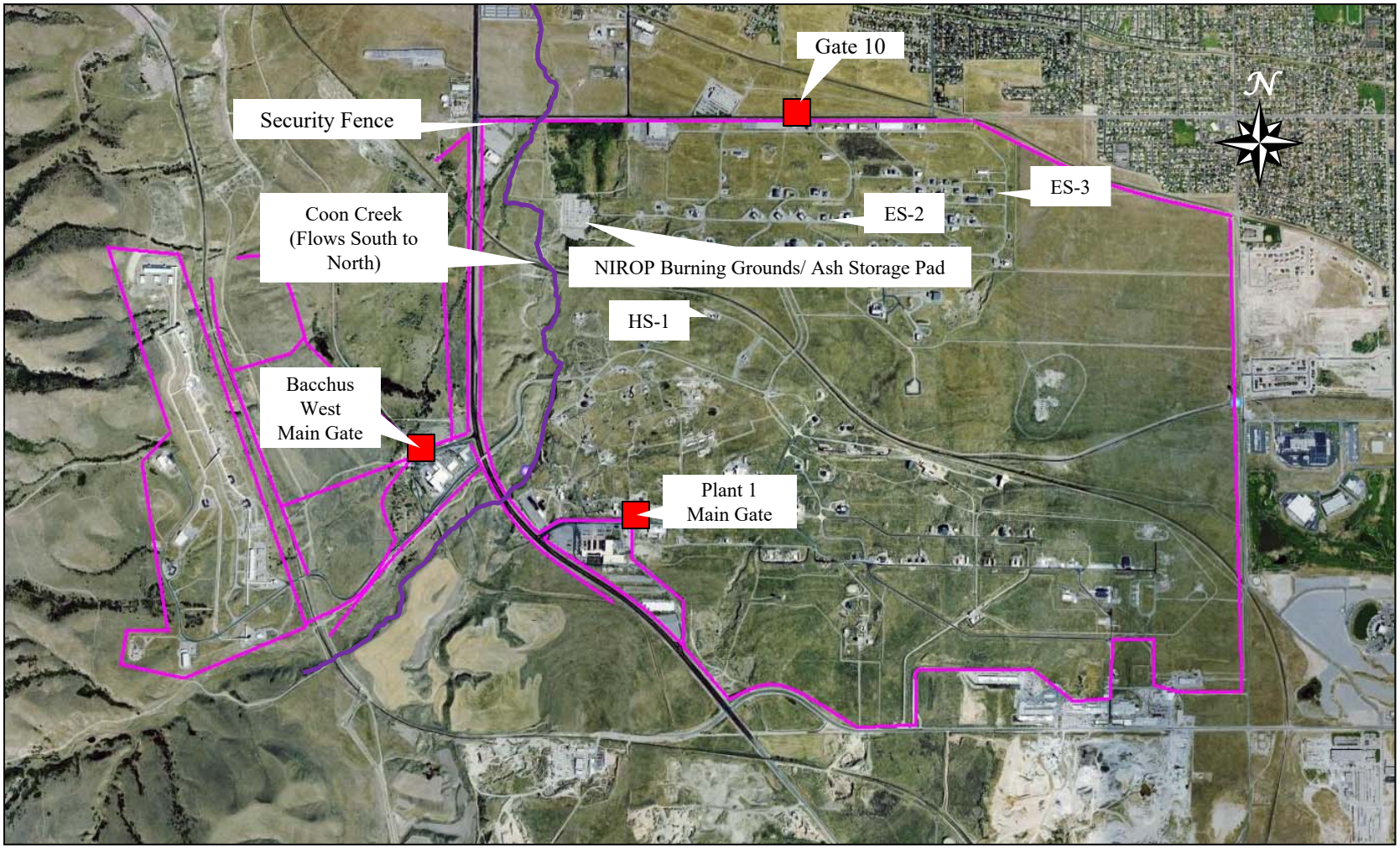


Figure 2-1.1b
ATK Bacchus Facility

Figure 2-2.2
ES-2 Explosive Storage Building

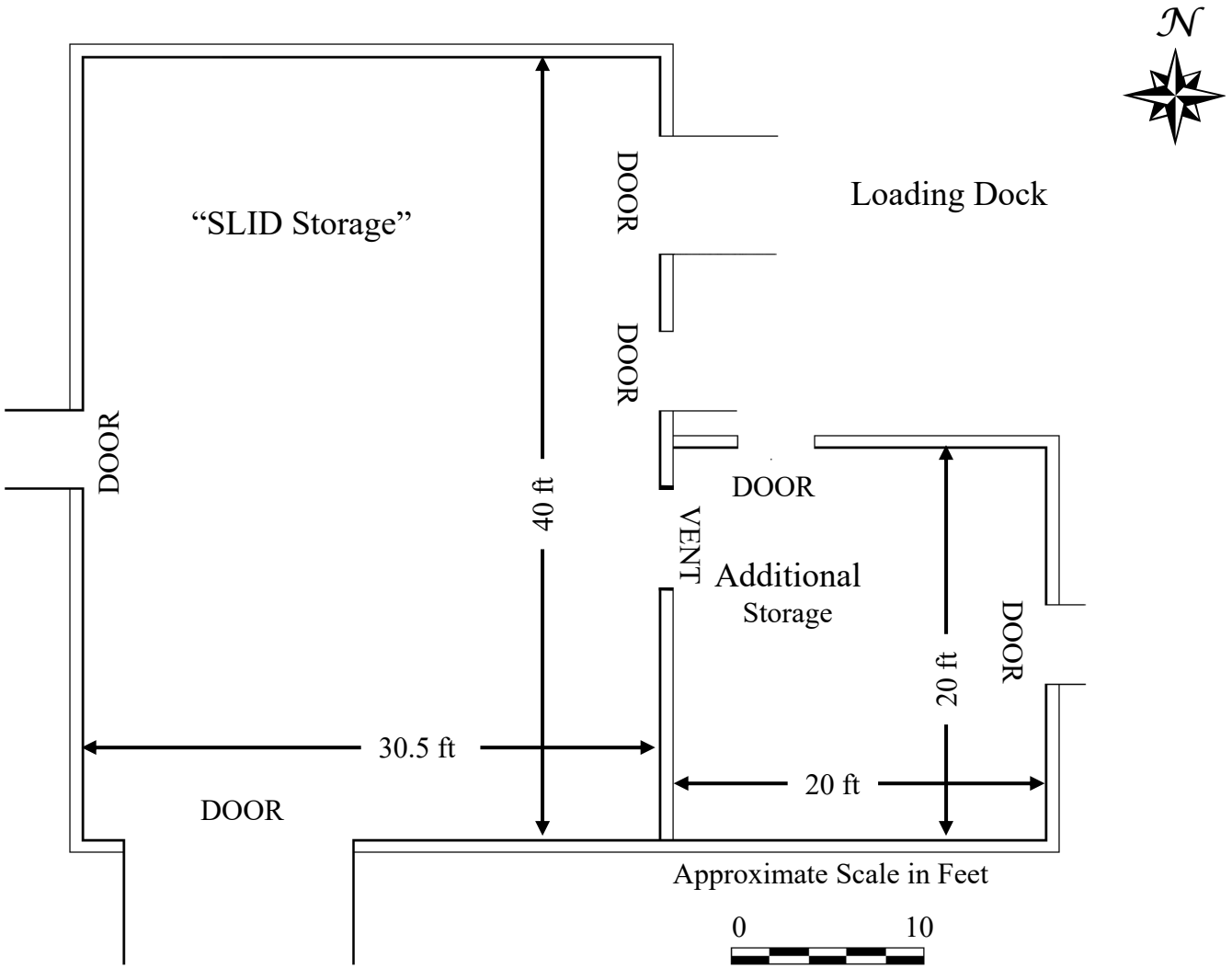


Figure 2-2.3
ES-2 Floor Plan (Revised 5/25/2011)

Figure 2-2.4
NIROP BURNING GROUNDS

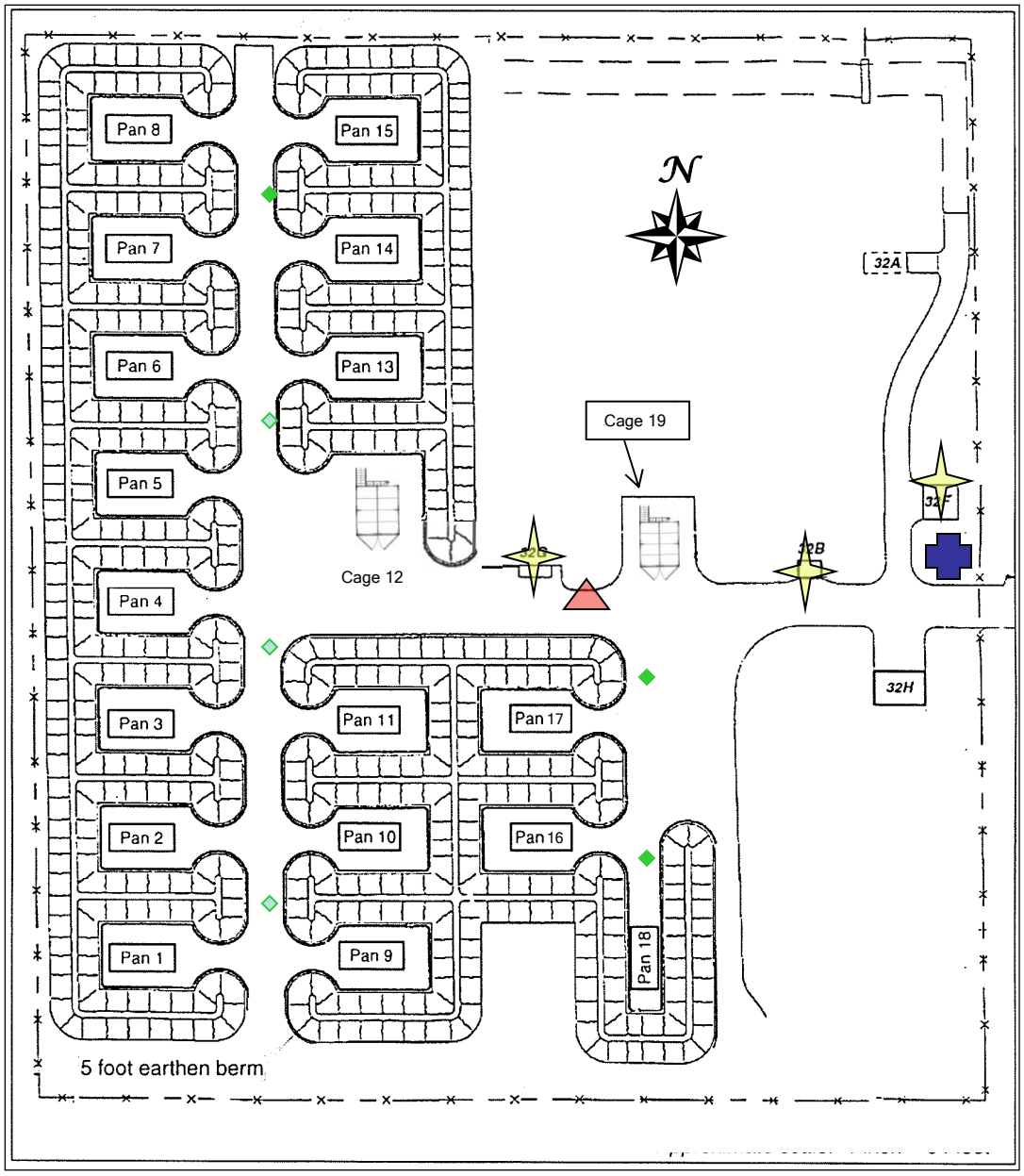


Figure 2-2.5
NIROP Burning Grounds

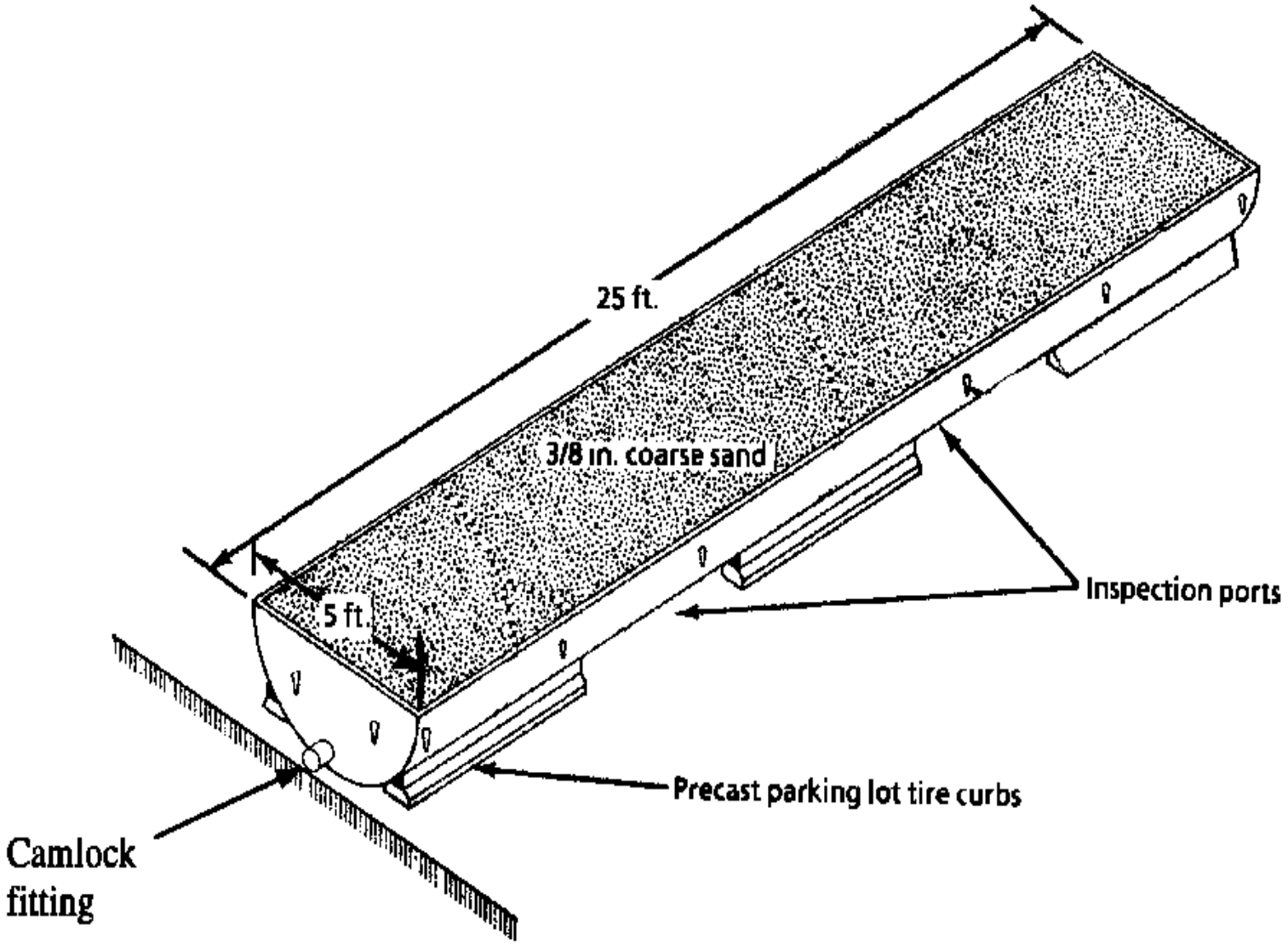


Figure 2-2.6
Burn Pan

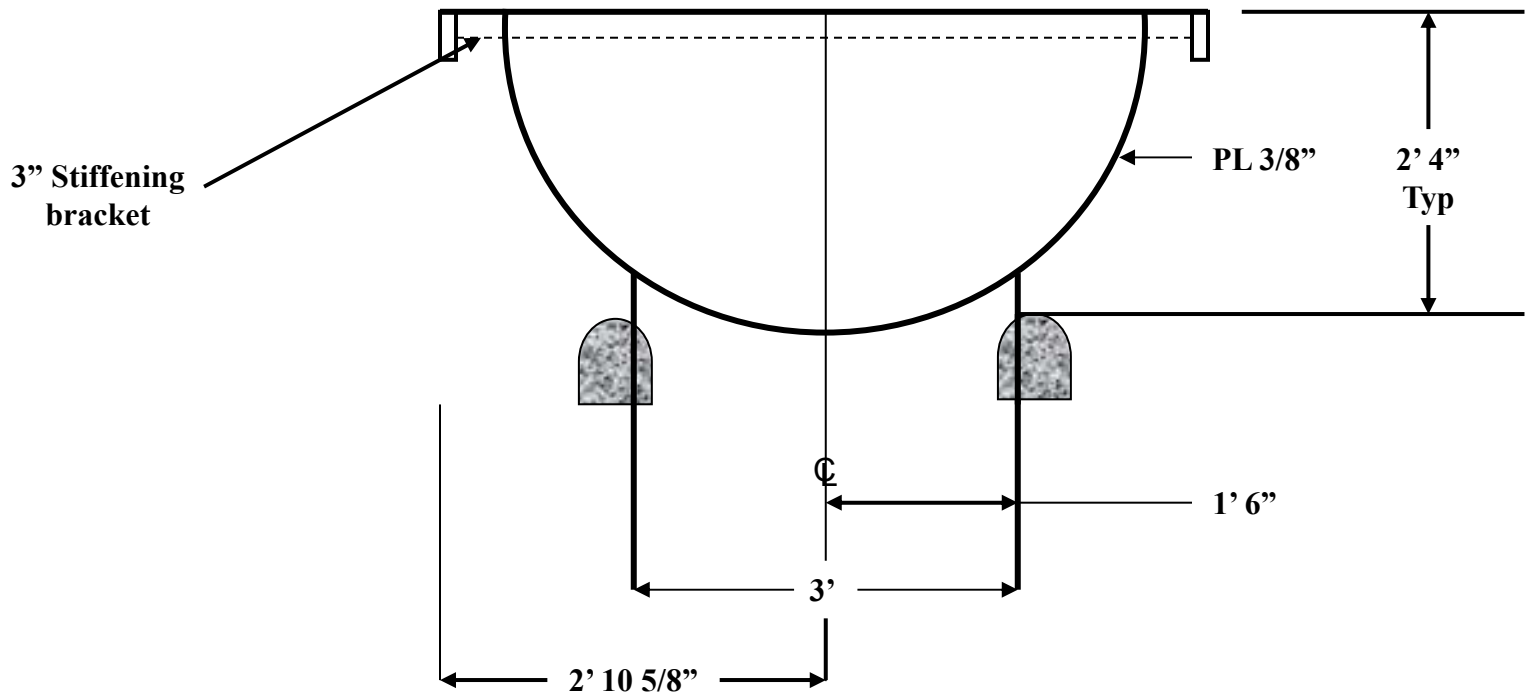


Figure 2-2.7
Burn Pan Cross-section

Figure 2-2.8 Burn Cage 19
(Picture is looking North)

Figure 2-2.9
Ash Storage Pad

Figure 2-2.10
ES-3 Explosive Storage Building

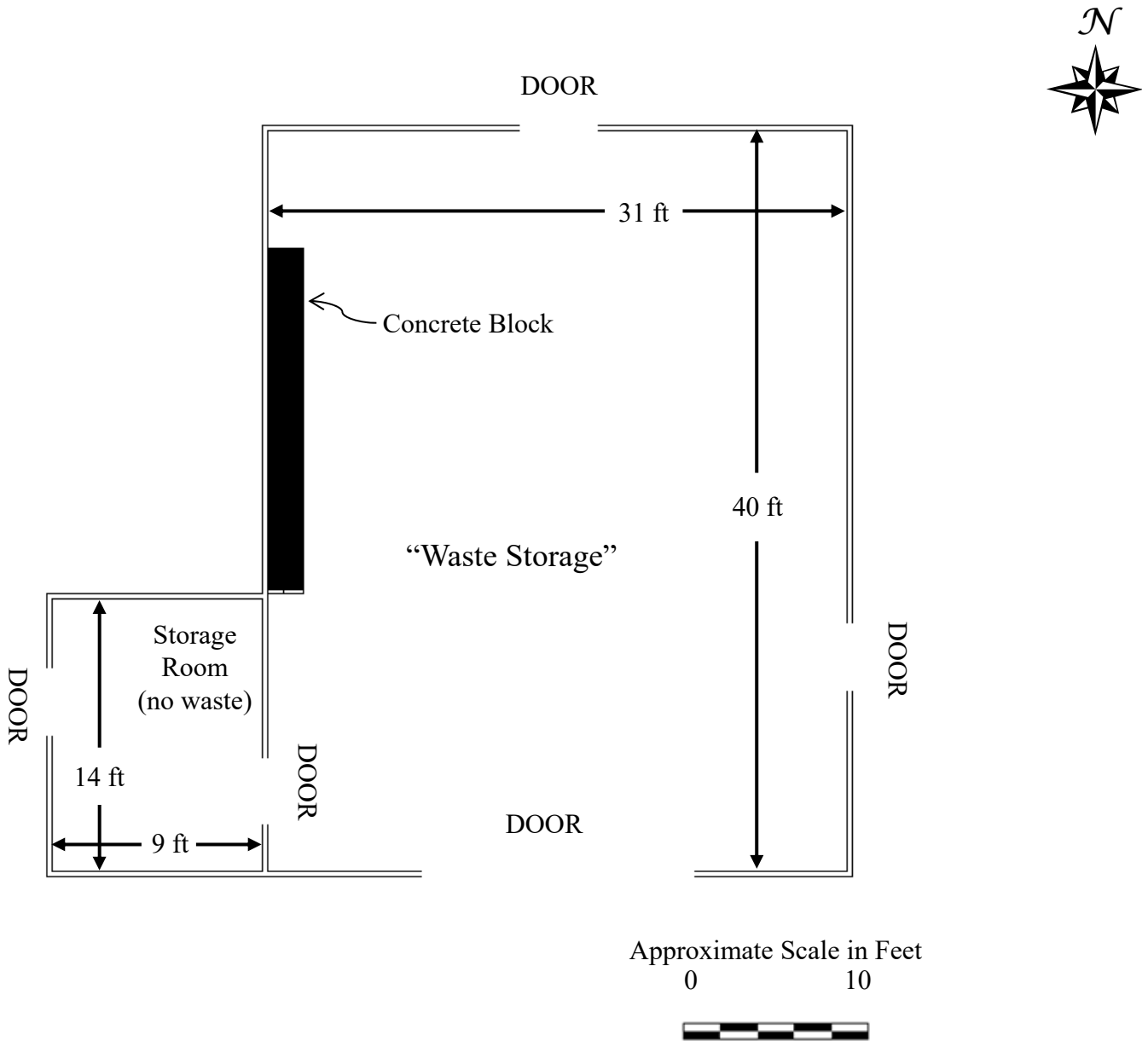


Figure 2-2.11
ES-3 Floor Plan

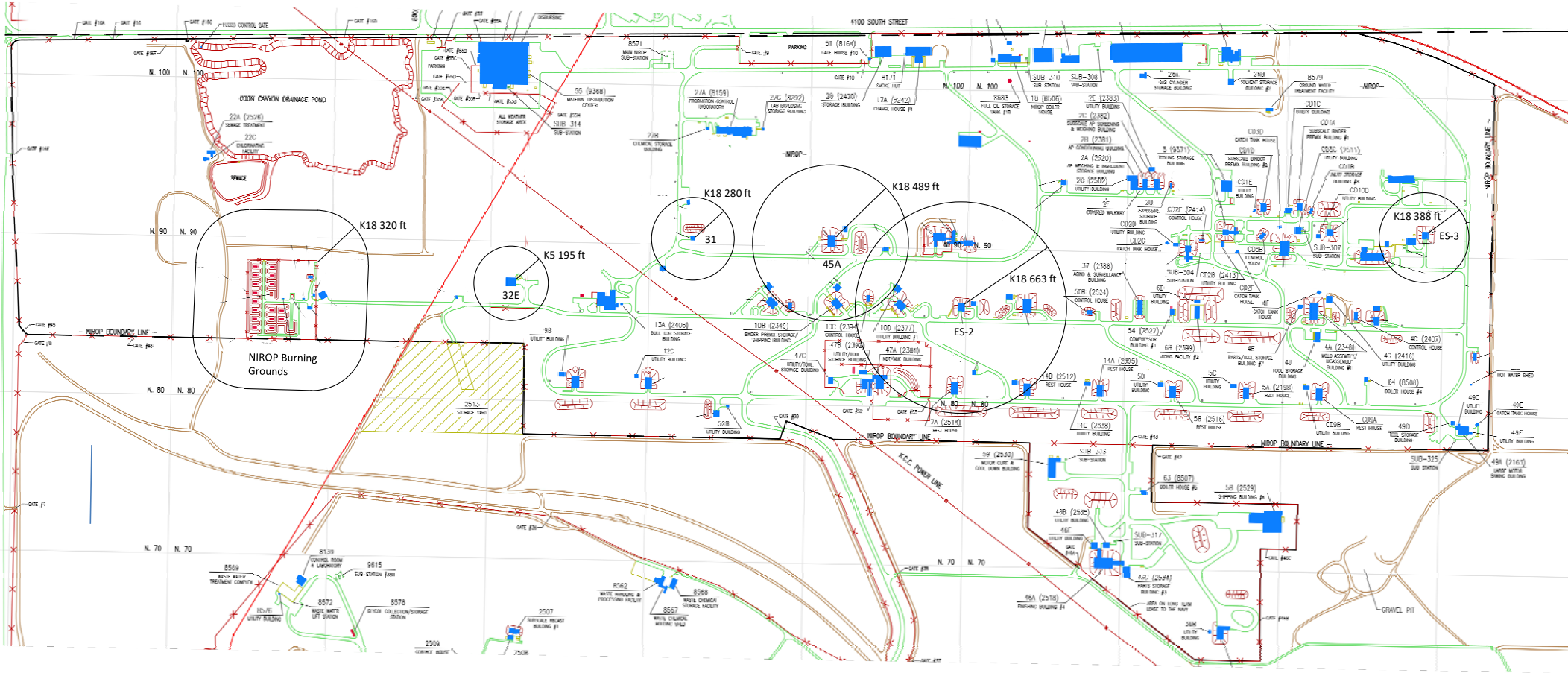


Figure 2-3.12
Quantity/Distance Map for NIROP

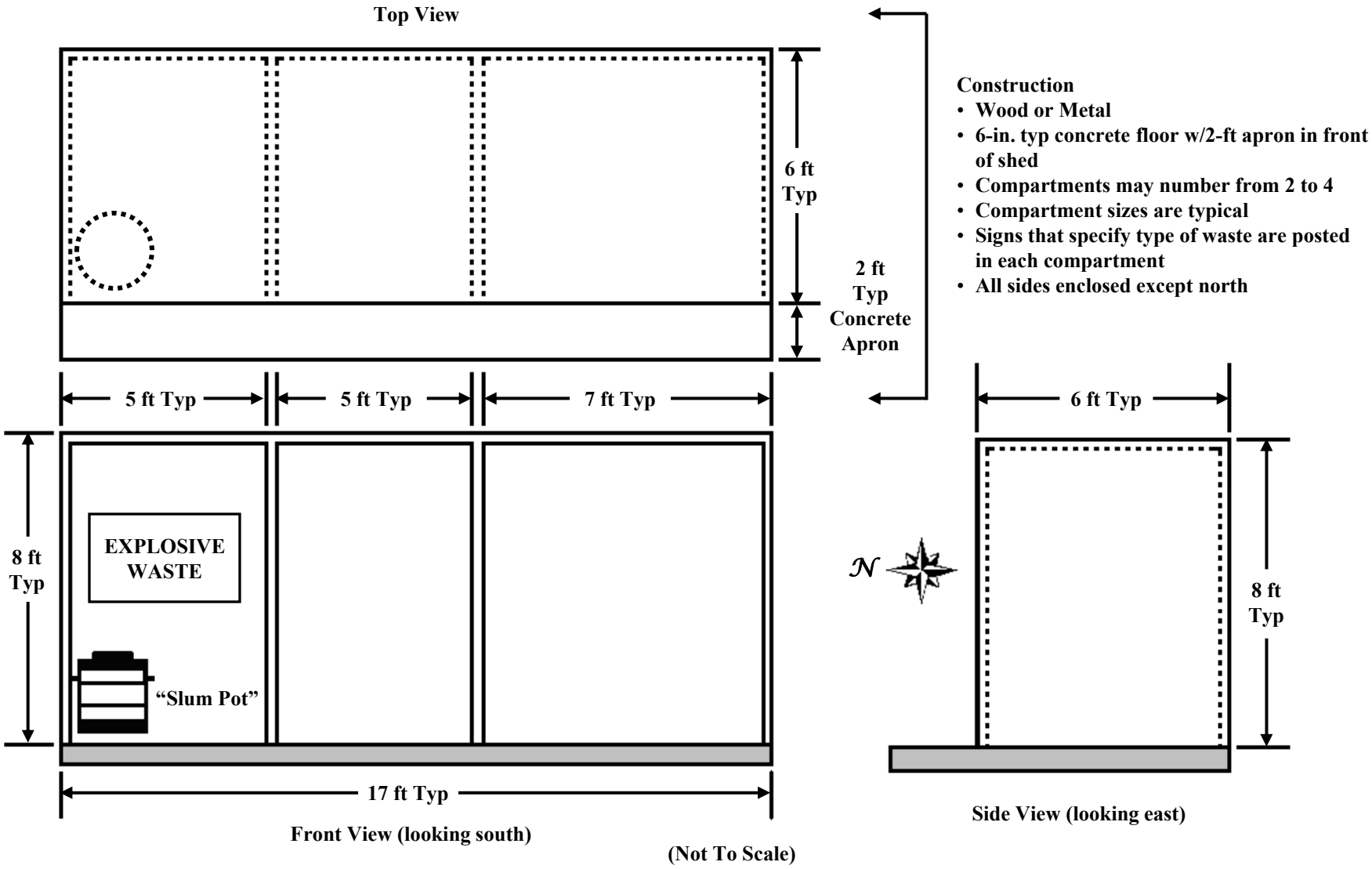


Figure 2-4.13
Hazardous Waste Collection (SLUM) Shed

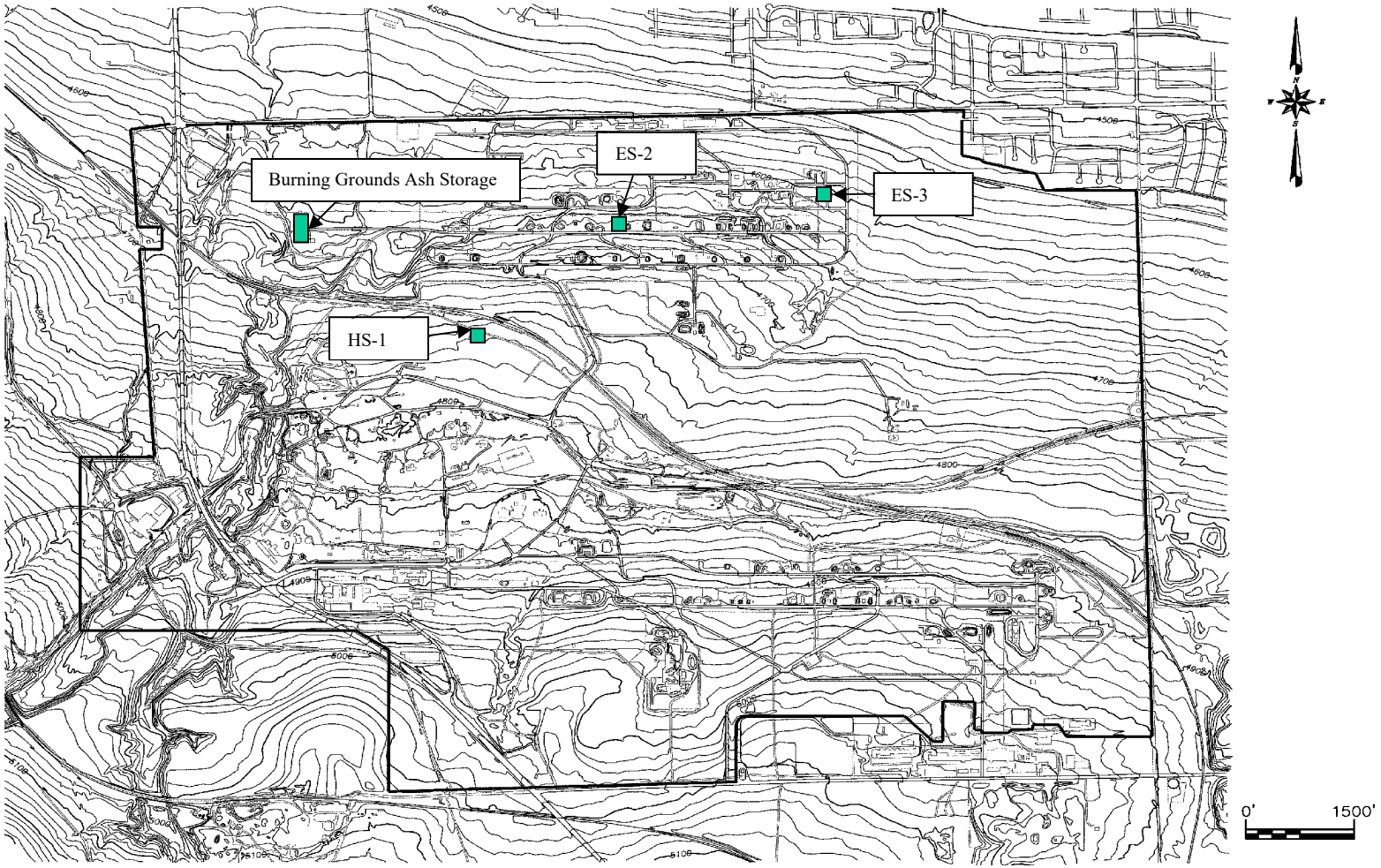


Figure 2-5.14
ATK-Bacchus Topographic Map

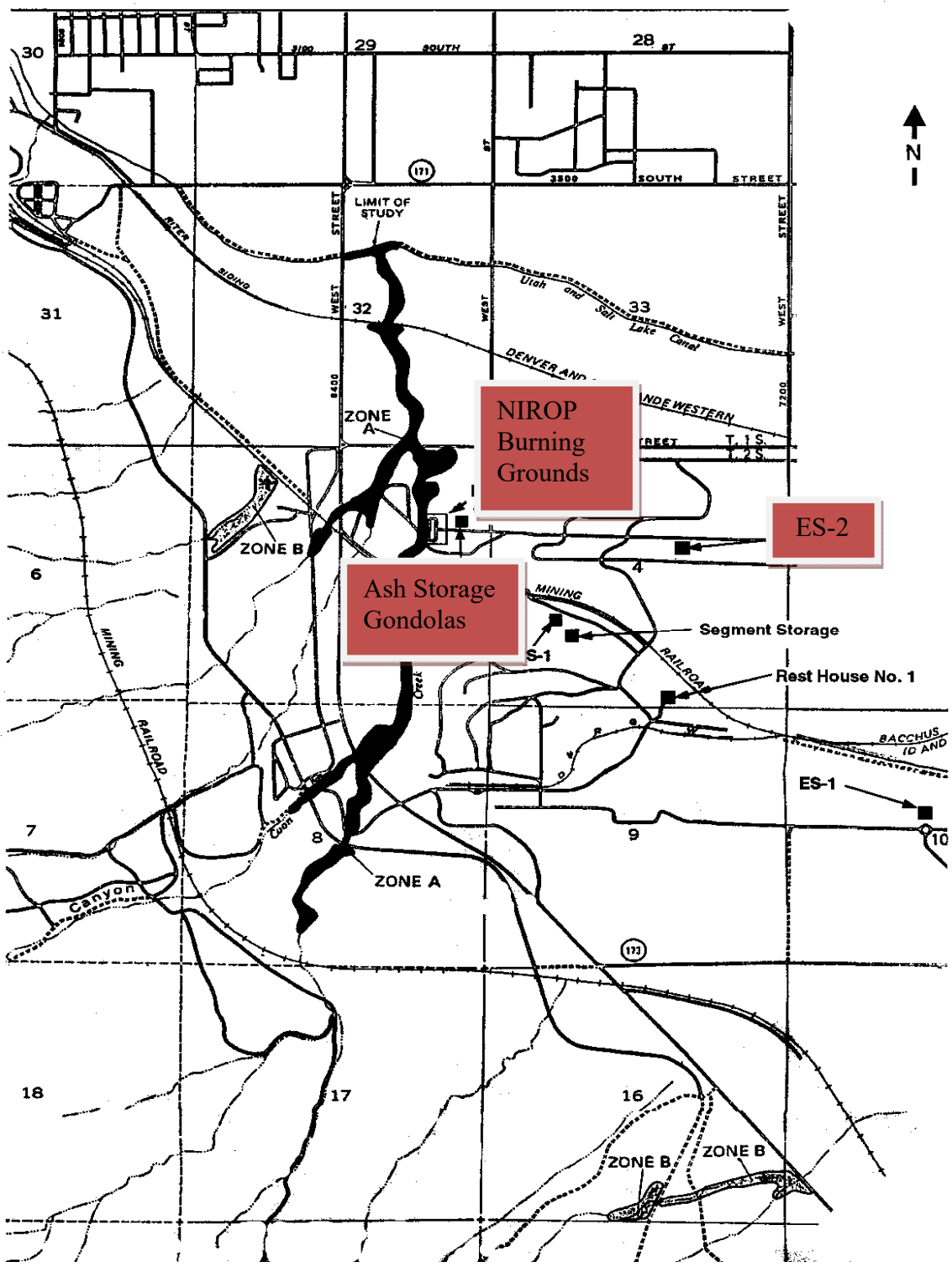


Figure 2-5.15
Granger Area FEMA Flood Plain

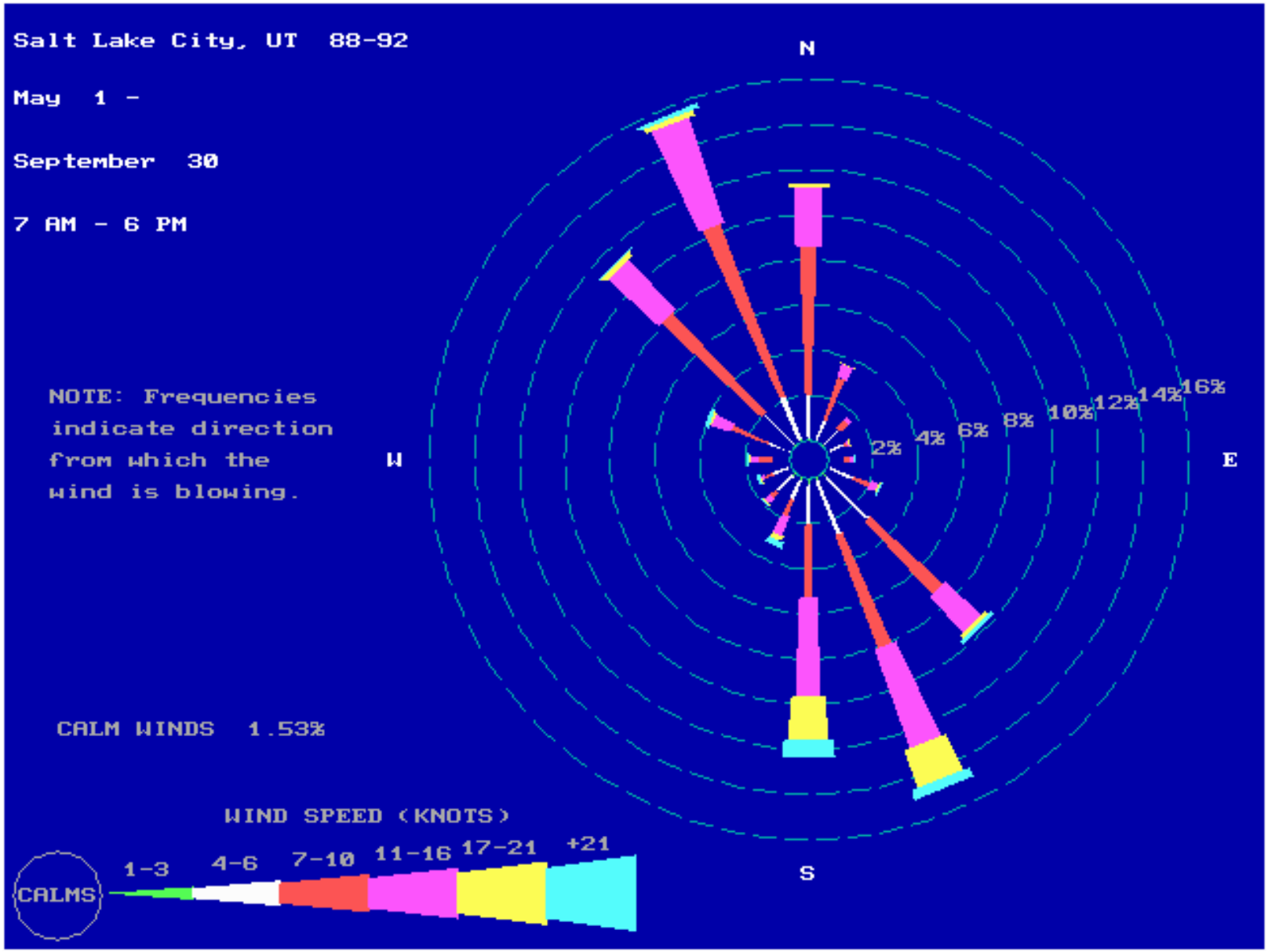


Figure 2-5.16
Salt Lake Valley Wind Rose

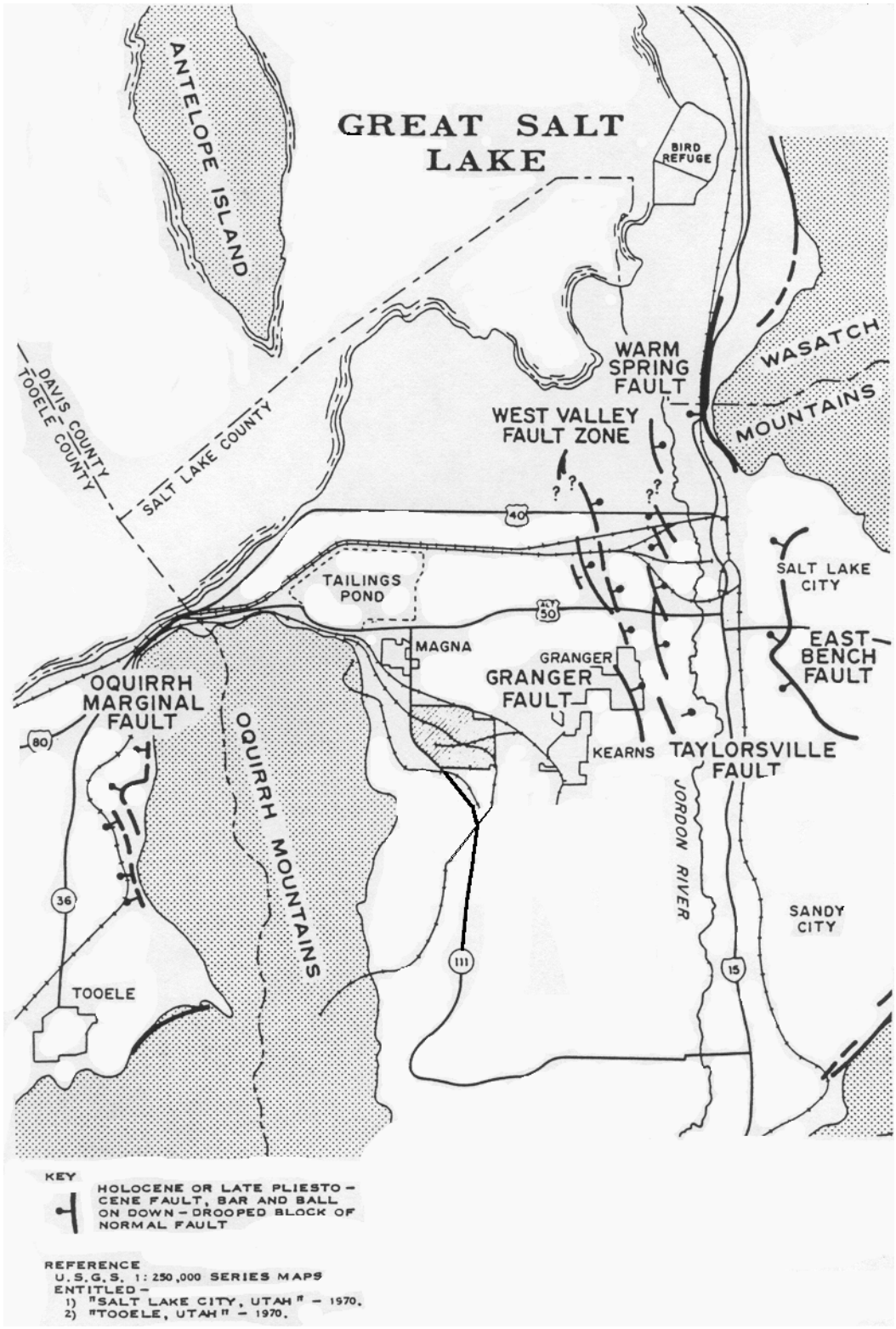


Figure 2-5.17
Salt Lake City Area Geologic Faults

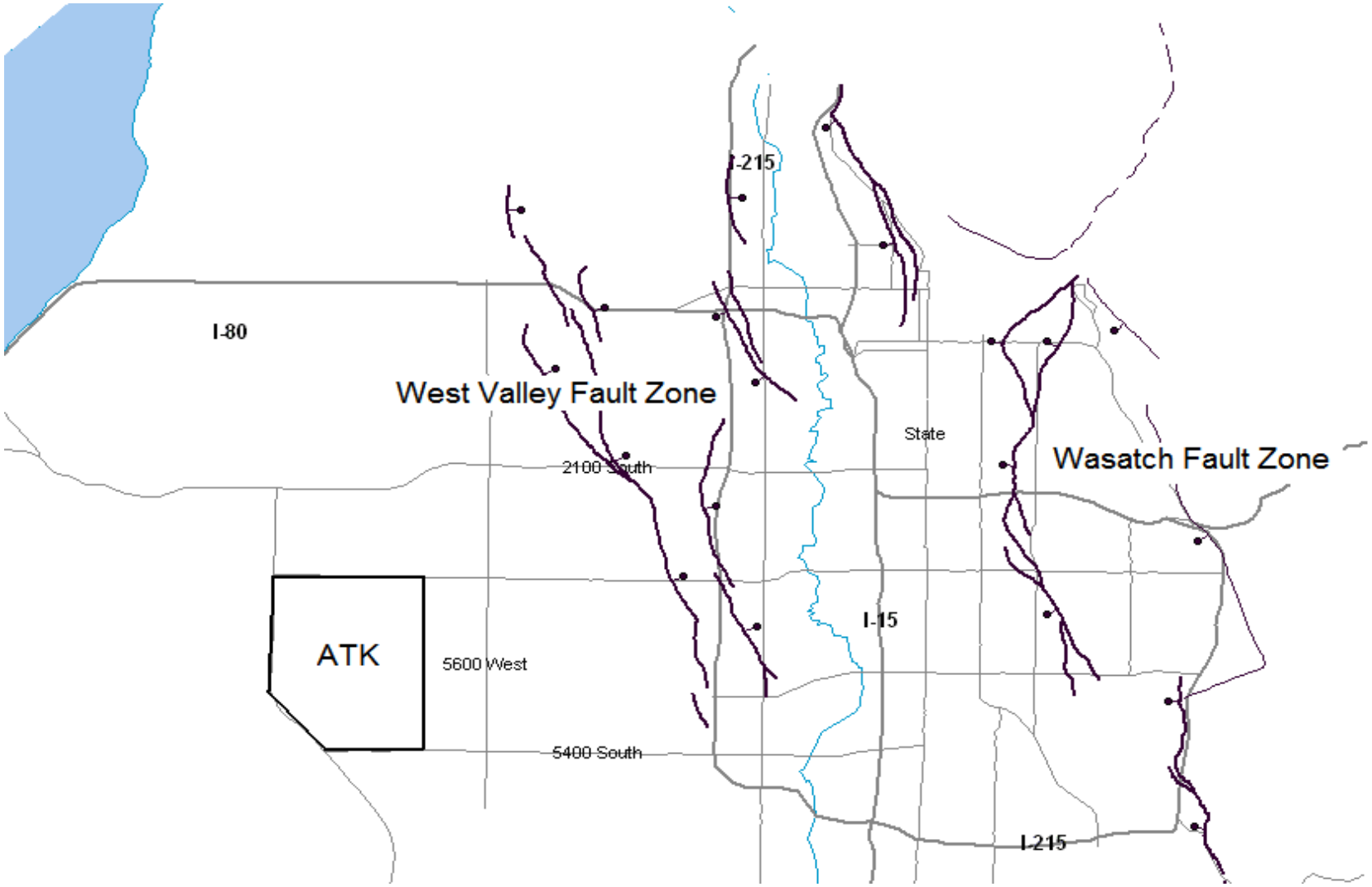


Figure 2-5.18
Faults in the Salt Lake Valley

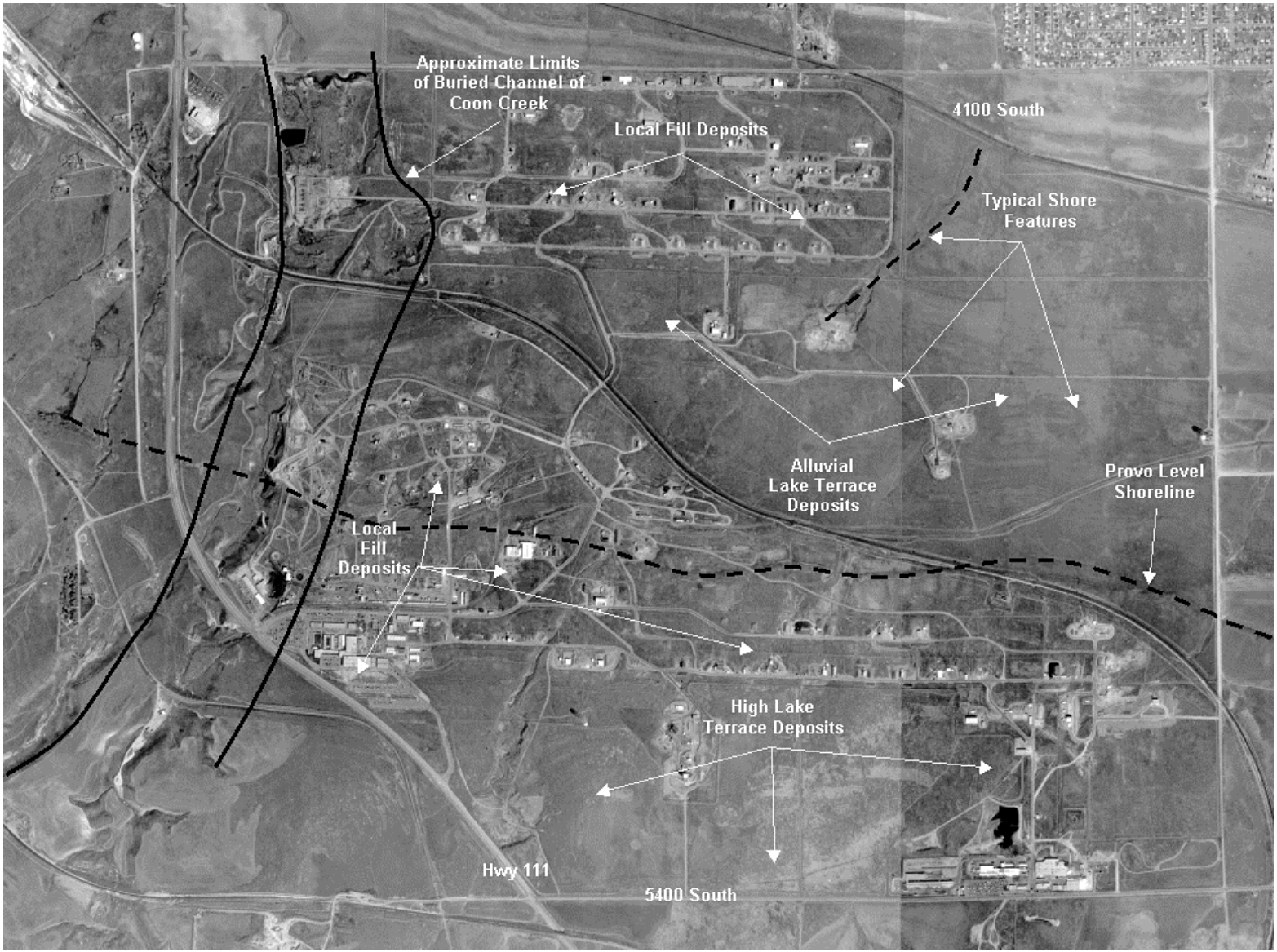


Figure 2-5.19
Bacchus Facility Geologic Features

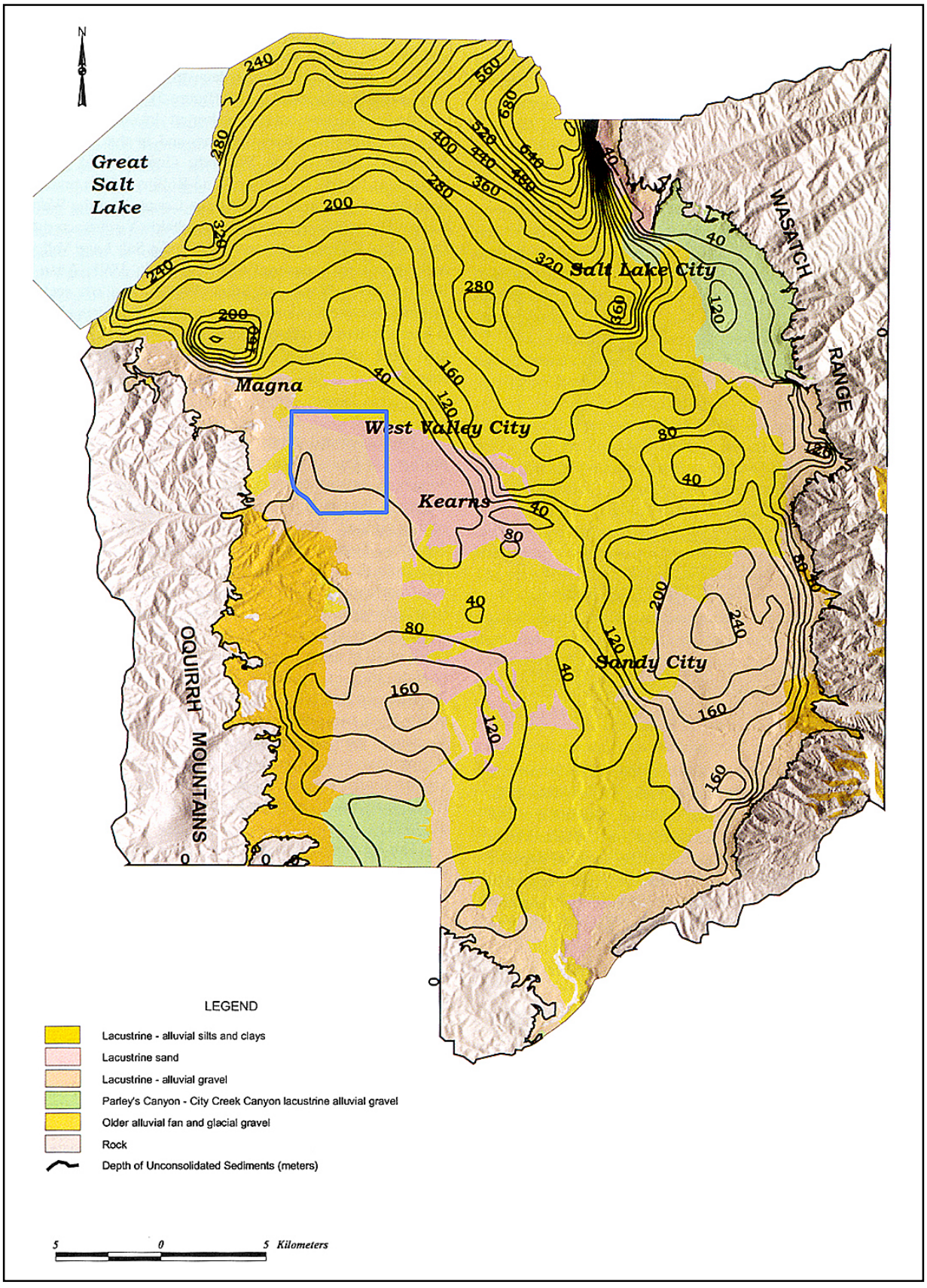


Figure 2-5.20
Site-response Units and Depth of Quaternary Valley Fill.
UGS MP 02-5, 2002

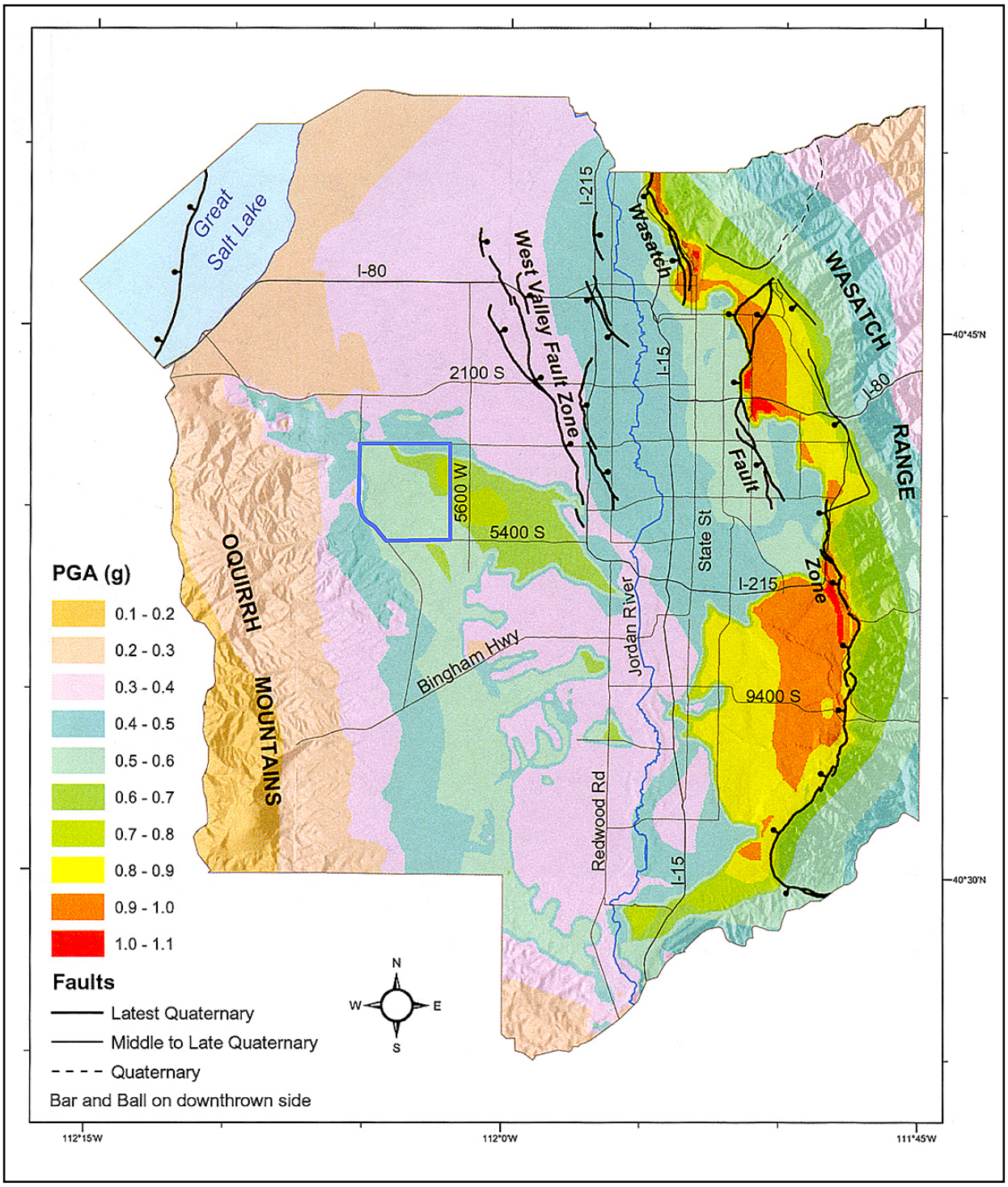


Figure 2-5.21
Salt Lake City Segment, Wasatch Fault M 7.0 Earthquake, Peak Horizontal Acceleration (g) at Ground Surface
UGS MP 02-5, 2002

3.0 WASTE ANALYSIS PLAN

3.1 INTRODUCTION

This Waste Analysis Plan (WAP) was prepared to support the Part B permit application for the NIROP facility. The plan is intended to provide guidance and assistance in sampling and testing of the two general categories of hazardous waste at the NIROP facility. These two groups include "reactive waste", and "chemical waste". The term "reactive waste" consists of propellant and explosive waste, as defined in R315-261-23 of the Utah Admin. Code. The term "chemical waste" is the term used to describe all non-reactive hazardous waste, or unknown potential hazardous waste. This category could include drummed waste, lab packs, bulk wastes, and waste from offsite ATK facilities or other sources. The plan outlines a process for making a hazardous waste determination for both of these general waste categories. This plan will be on file with the Environmental Services group.

The WAP was developed to ensure that all reactive waste will be properly characterized prior to being stored and/or treated. The WAP also outlines how chemical wastes that are being stored prior to shipment to an offsite disposal facility will be characterized. Information on these waste chemicals is obtained from process knowledge, MSDSs, and chemical analysis.

3.1.1 Site History

The Bacchus Facility has been manufacturing explosives at this site for over 90 years. The facility started as a dynamite manufacturing plant, and later began building rocket motors and other related products. Refer to Section 2 paragraph 2.1.1 in this application for a complete site description.

3.2 WASTE ACCEPTANCE PROTOCOL

3.2.1 Acceptance of On-Site Reactive Waste for Storage and Treatment

All reactive wastes must be characterized before they can be accepted for storage prior to treatment. The characterization will identify the type of reactive waste as defined in Section 3.1, and determine whether the waste exhibits any additional hazardous waste characteristics and if it is listed in accordance with R315-261-20 through 33 of the Utah Admin. Code. ATK shall gather and maintain waste characterization information for wastes generated at the Bacchus Facility using, at a minimum, the following sources of reference information:

- Propellant name and formulation
- Propellant ingredient chemical information
- MSDS
- Generator process knowledge
- DOT Emergency Response Guide
- DOT hazard classification and supporting test data
- Chemical Propulsion Information Agency Manual

This information is used to categorize reactive materials into separate waste streams. Separate waste streams are necessary for accumulation and storage of explosive waste prior to treatment at the NIROP Burning Grounds. Waste stream information is conveyed to generators to assure explosive waste is properly prepared for treatment.

The DOT has strict requirements for transportation of explosives as specified in 49 CFR 172.101 Hazardous Materials Table. Information used to obtain a DOT shipping classification is used as the basis for profiling explosive waste with offsite TSDFs.

Any new propellants or other reactive wastes will be characterized using the above referenced materials before they are accepted for storage prior to treatment. Any waste that does not fit an existing waste stream, must be characterized before the waste can be accepted. In the event that a reactive waste cannot be properly characterized with existing information, additional information will be obtained, which may include laboratory analysis.

Laboratory wastes can be characterized using generator knowledge. Upon receipt of the reactive waste at permitted storage facilities, all containers are inspected to verify proper labeling, and packaging. The total quantity and type of propellant is then recorded as described in Section 4.3.1.

3.2.2 Acceptance of Hazardous Chemical Waste for Storage and Offsite Disposal

Hazardous chemical waste generated at the Bacchus Facility or other ATK facilities can be accepted for storage at HS-1. Upon receipt of hazardous waste at HS-1, all containers are visually inspected to verify proper labeling, packaging and paper work. When the waste is accepted it is entered into the chemical waste tracking system discussed in Section 4.3.

All wastes received from an off site source have been characterized in advance, and are assigned a container number at the time of delivery. Each shipment is visually inspected to verify that the type and quantity of the waste matches the appropriate waste stream and manifest. The manifest numbers for off-site generated hazardous waste are entered into the chemical waste tracking system upon acceptance. Waste generated onsite may be characterized after delivery to the permitted storage area following the protocol identified in Section 4.6.

Whenever a waste is accepted all of the pertinent information on the waste is entered into the operating record. This information shall, at a minimum, include the waste stream description, EPA codes, quantity, date of generation, date received, storage location and date it was shipped off site for disposal. The chemical waste tracking system will also include the manifest number(s) for all hazardous waste received from an off site source and all off-site shipments of hazardous waste to a TSDF. At a minimum the following resources are used to help characterize chemical waste:

- R315-261 of the Utah Admin. Code
- Generator process knowledge
- MSDS
- Laboratory analysis
- National Institute for Occupational Safety and Health: Pocket Guide to Chemical Hazards

3.2.3 Acceptance of Off-site Generated Reactive Waste

ATK periodically receives reactive waste at the Bacchus Facility from off-site locations. This waste is accepted by ATK for storage at the Bacchus facility prior to being shipped off-site for treatment and/or disposal at an approved TSDF. All off-site generated wastes must be approved in advance according to the criteria in Section 4.8. Before the waste is

accepted into storage, ATK reviews the shipping papers and visually inspects the container(s) to confirm that container(s) and shipping papers agree and that the waste description meets the previously approved waste. Discrepancies will be resolved with the generator before the waste is accepted. After the waste has been visually inspected and accepted by ATK it will be entered into the Bacchus Facility's explosive waste tracking system described in Section 4.3 and managed at one of the explosive waste storage sites described in Section 2.2.

3.3 TESTING CRITERIA

3.3.1 Parameters and Rationale for Testing Reactive Wastes

Reactive waste may carry several hazardous waste codes, but will always be identified as a D003 waste for reactivity and such wastes are generally classified as explosives. Due to the inherent hazardous nature of reactive wastes, this material is not routinely sampled or analyzed as part of this WAP. In addition to classifying and characterizing the reactive waste managed at the Bacchus Facility in accordance with R315-261 of the Utah Admin.Code, ATK will assess the emission hazards associated with the open burning of these hazardous wastes as required inR315-264-601 of Utah Admin. Code Environmental Performance Standards. Figure 3-2 the Reactive Waste Treatment and Disposal Decision Matrix, diagrams the steps and decisions that are addressed whenever reactive waster are treated and subsequently disposed.

3.3.2 Parameters and Rationale for Testing Chemical Waste

ATK generates two general categories of solid waste at the Bacchus Facility that can be defined as hazardous in accordance with R315-261 of the Utah Admin. Code: 1) off-specification commercial chemical products, and 2) spent materials. Figure 3-3 the Chemical Waste Characterization and Disposal Decision Matrix, identifies how ATK will decide whether a waste is hazardous as defined by R315-261 of the Utah Admin Code.

Off-specification commercial chemical products are chemicals that have not been altered from their original manufactured formulation but are discarded for some reason. The most common reason for discarding these chemicals is because they are no longer needed or the shelf life has been exceeded, generator knowledge can be used to characterize these wastes. Detailed information on commercial chemical products is available on the MSDSs.

A spent material is any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without being processed or reclaimed. ATK should have process knowledge for all of its spent material waste streams. Annual evaluation will be performed to verify chemical composition and concentration ranges. All new or modified spent material waste streams will be initially assessed at the point of generation and annually thereafter to maintain proper characterization of all waste streams.

3.4 TEST METHODS AND SAMPLING

3.4.1 Test Method [R315-264-13 of Utah Admin. Code]

ATK will make a hazardous waste determination for all waste streams generated, stored or treated at the Bacchus Facility. This waste stream evaluation will be made utilizing process knowledge and/or analytical testing. All analytical testing will be completed at a Utah certified laboratory. Only EPA approved test methods, selected from the most current version of SW-846 list ("Test Methods for Evaluating Solid Waste, Physical and

Chemical Methods"), will be used. Test method selection will be made, based on the most applicable method as described in Chapter Two of the SW-846 publication. New test methods will be used only after they have been approved by the EPA. The laboratory will certify new methods during the annual certification process. Specific methods which may be used to characterize wastes are listed in Figure 3-4.

3.4.2 Sampling Methods [R315-264-13(b)(3), and R315-261-1090 of the Utah Admin. Code]

Waste sampled at the Bacchus Facility consists of new waste, unknown waste, waste from changed processes, and waste sampled for annual re-verification analysis. Representative samples will be collected and handled in accordance with the procedures and protocols identified in Table 3-1. At a minimum the following safety precautions are used when sampling waste materials:

- Chemical resistant gloves and safety glasses will be used while sampling all waste. Based on the chemical hazards and splash potential, protective clothing and a splash shield or respirator may also be utilized.
- Non-sparking tools will be used to sample any waste that presents a fire hazard.
- All necessary equipment and materials will be available prior to sampling.

Table 3-1

	Container/Containment Type					
Waste Matrix	**Drums, Totes**	**Boxes, Bags, Sacks**	**Storage Tanks**	**Ponds, Lagoons, Pits**	**Tankers**	**Roll-Off Bins**
Free Flowing Liquids/Slurries	Coliwasa	N/A	Pump/Dipper	Dipper	Dipper	N/A
Sludges	Trier/Spoon	N/A	N/A	N/A	N/A	Trier/Bucket/Shovel
Moist Powder/Granules	Trier/Spoon	Trier/Spoon	N/A	N/A	N/A	Trier/Shovel
Dry Powder/Granules	Thief/Spoon	Thief/Spoon	N/A	N/A	N/A	Thief/Shovel
Sand/Packed Powder	Auger/Spoon	Auger/Spoon	N/A	N/A	N/A	Auger/Shovel
Large Grained Solids	Large Trier/Spoon	Large Trier/Spoon	N/A	N/A	N/A	Large Trier/Shovel
Debris (i.e. Rags, Gloves, Towels, etc.)	Rag[1]	Rag[1]	N/A	N/A	N/A	Rag[1]

[1] The rag technique is used for sampling solid material such as rags, gloves and paper towels. After a container has been selected, it is opened and a representative sample collected and placed in the sample container. One or more of the varied materials (e.g. gloves, tongue depressors, rags, paper, plastic, etc.) is sampled depending on the mix of the container.

A variety of sampling equipment and materials will be used to collect waste samples. Types of equipment and specified sampling methods are described in the SW-846 publication. No reusable sampling equipment will be used.

Drummed consolidation waste will be randomly sampled each year as outlined in Table 3.2 below. "Average Monthly Drum Number" will be based on the previous calendar years average monthly drum inventory, for each waste stream. Samples will be obtained annually.

Table 3.2	
Average Monthly Drum Number	Aliquots Selected
2 to 8	2
9 to 27	3
28 to 64	4
65 to 125	5
126 to 216	6
217 to 343	7
344 to 512	8

The above table is based on a table found in ASTM D 140-70, "Standard Methods of Sampling Bituminous Materials," ASTM D 140-70.

All sample containers used during a sampling event will be new, and certified clean from a reliable source. Container selection will be based on the chemical/container compatibility, physical state and sample volume. A label will be attached to each sample container which will include the following minimum information:

- Sample number
- Samplers name
- Date
- Time
- Location

In addition to the information included on the label, the chain of custody, which accompanies all waste characterization samples, will also include the following:

- Composite or grab sample
- Number of containers
- Remarks section
- Relinquishment signature block

ATK will assure that all samples will be preserved as specified in SW-846 while they are in storage at the Bacchus Facility and while in transit to the testing laboratory.

3.5 FREQUENCY OF ANALYSIS

3.5.1 Frequency of Analysis for Reactive Waste [R315-264-13(b)(4) of the Utah Admin. Code]

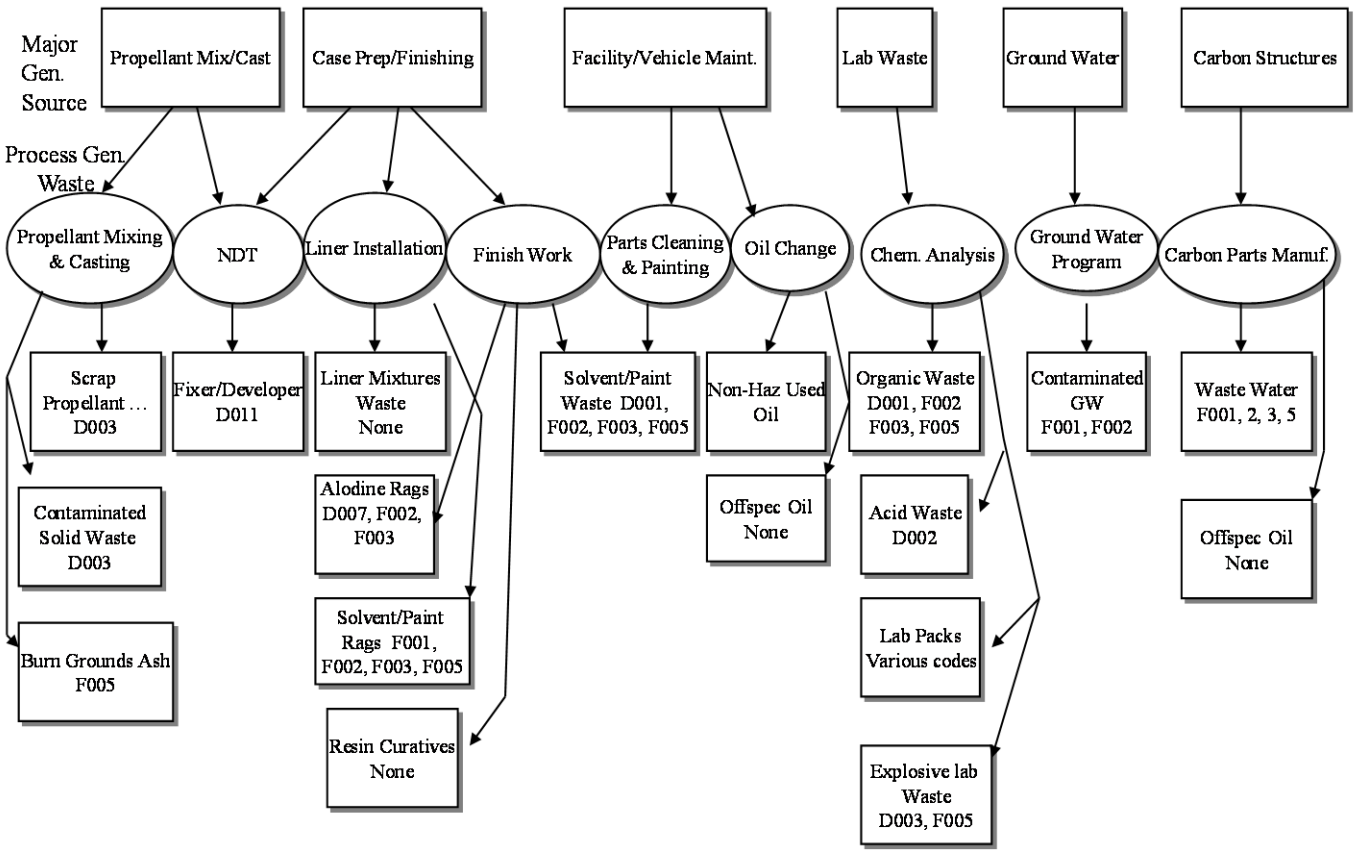
All waste treated at the NIROP Burning Grounds are generated at the Bacchus Facility. These reactive wastes are derived from energetic materials that have been manufactured to strict specifications. Therefore, the chemical composition of each formulation is well

known. As discussed above, ATK characterizes all reactive waste streams using generator knowledge. While these energetic waste streams are not analyzed prior to being treated, ATK reviews all reactive waste streams on an annual basis or any time the manufacturing process changes.

3.5.2 Frequency of Analysis for Chemical Waste

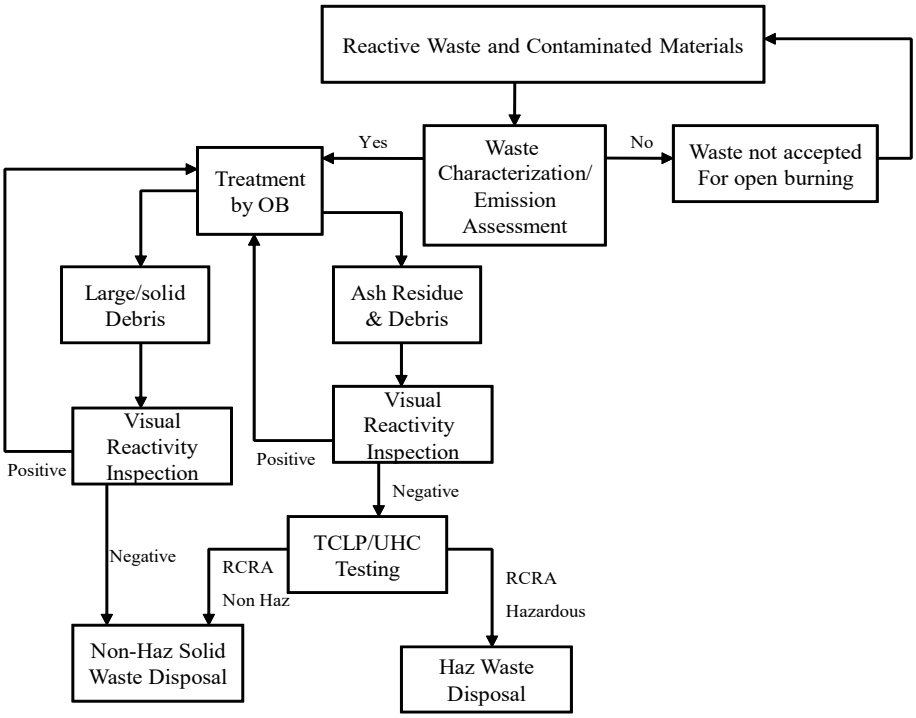
The industrial processes at the Bacchus Facility generate a number of routine waste streams. Figure 3-1 shows major waste streams and processes generating these wastes. These waste streams will be evaluated annually to verify that the waste characterization is still accurate. The waste characterization will also be re-evaluated whenever the process that generated the waste changes to determine if the process change altered the characteristics of the waste stream.

Off specification commercial chemical products are well characterized by the information of their MSDSs. These wastes are not analyzed on a routine basis.

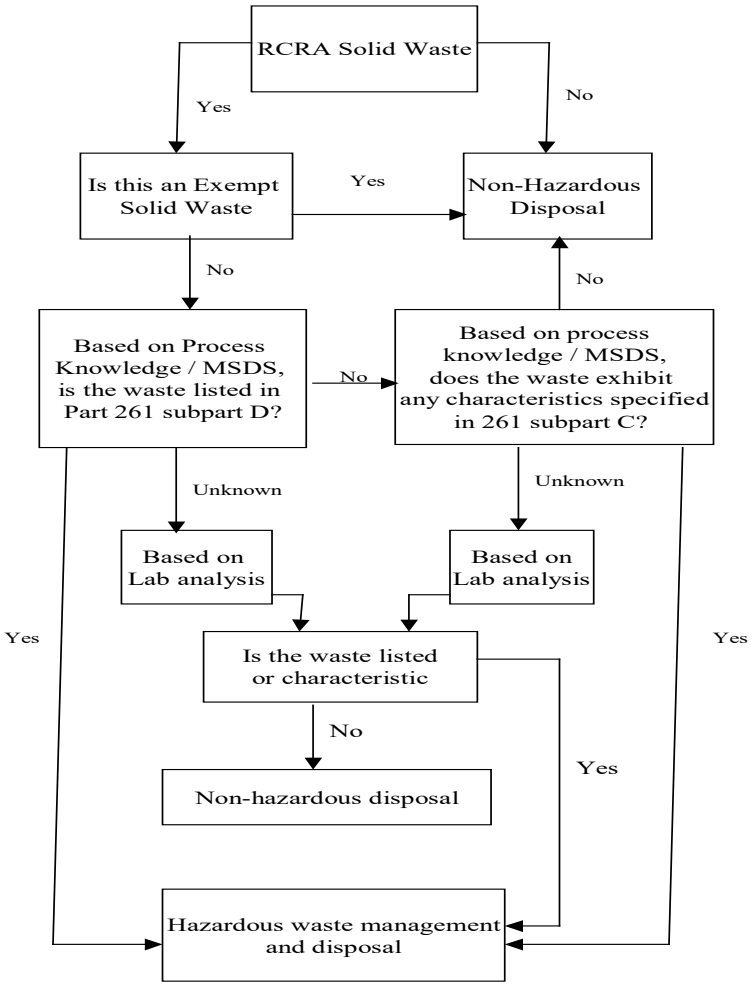


Note: The EPA codes included above are primary codes only; The above list includes major waste streams only.

Bacchus Facility Waste Generation
Figure 3-1



Reactive Waste Treatment and Disposal Decision Matrix
Figure 3-2



Chemical Waste Disposal Decision Matrix
Figure 3-3

Figure 3-4

Analytical Methods for Metals

Parameter	Analytical Method	Preparation Method [1]
Arsenic	EPA 6010C	EPA 3005A (W) & 3050B (S)
Barium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Beryllium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Boron	EPA 6010C	EPA 3005A (W) & 3050B (S)
Cadmium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Chromium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Copper	EPA 6010C	EPA 3005A (W) & 3050B (S)
Lead	EPA 6010C	EPA 3005A (W) & 3050B (S)
Manganese	EPA 6010C	EPA 3005A (W) & 3050B (S)
Mercury	EPA 7470A (W) & 7471B (S)	EPA 7470A (W) & 7471A (S)
Molybdenum	EPA 6010C	EPA 3005A (W) & 3050B (S)
Nickel	EPA 6010C	EPA 3005A (W) & 3050B (S)
Selenium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Silver	EPA 6010C	EPA 3005A (W) & 3050B (S)
Thallium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Vanadium	EPA 6010C	EPA 3005A (W) & 3050B (S)
Zinc	EPA 6010C	EPA 3005A (W) & 3050B (S)

Analytical Methods for Organics

Parameter	Analytical Method	Preparation Method
Volatle Organics	EPA 8260D~~B~~	EPA 5030B (W) & 5035A (S)
Semivolatile Organics	EPA 8270~~D~~E	EPA 3510C (W) & 3550C (S)[HZ1]
TPH	EPA 8015C	EPA 3510C (W) & 3550C (S)
TOC	EPA 9060A (W only)	EPA 9060A (W only)
Oil & Grease	EPA 1664A (W only)	EPA 1664A (W only)

Miscellaneous Test Methods

Parameter	Analytical Method	Preparation Method
pH	EPA 9040C (W) & 9045D (S)	EPA 9040C (W) & 9045D (S)
Ignitability	EPA 1010A (W only)	EPA 1010A (W only)
Toxicity	EPA 6010C/7470A (Metals) EPA 8260B (Volatile Organics) EPA 8270D (Semivolatile Organics)	EPA 1311 Followed by 3010A/7470A[2] EPA 1311/5030B EPA 1311/3510C
Explosives	EPA 8330A	EPA 8330A
Perchlorate	EPA 314.0	EPA 314.0
Anions	EPA 9056A	EPA 9056A (W) & 5050 (S)
TSS	SM 2540D	SM 2540D
TS	SM 2540B	SM 2540B

[1] The 'W' indicates a water matrix. Samples that are water soluble liquids (or aqueous phase) fit into this category. Non-aqueous liquids are usually treated as solids depending on the test method. In the case of an oil matrix that cannot be analyzed by the solid preparation method, a waste dilution is often performed. The ‘S” indicates a solid matrix.

[2] Mercury will be prepared using Method 7470A.

4.0 PROCESS INFORMATION

ATK has two distinct hazardous waste management systems for the Bacchus Facility, one for reactive wastes and one for chemical wastes. All hazardous waste management operations at the Bacchus Facility are conducted or are under the management of ATK. The collection and processing of information required by these two systems are addressed separately in the following text.

4.1 WASTE CHARACTERIZATION

Wastes will be characterized to identify hazardous properties to ensure they are properly managed. Attachment 3 identifies the WAP that will be used to characterize and classify both reactive and chemical wastes.

4.1.1 Reactive Waste

The primary products produced at the Bacchus Facility are solid rocket motors cast with either nitrate ester or composite propellants. Nitrate ester propellant is classified as a DOT Class 1.1 explosive material. A nitrate ester propellant usually contains a liquid explosive, such as nitroglycerin (NG), that is mixed with solid ingredients such as nitrocellulose, HMX, RDX, aluminum and ammonium perchlorate. Composite propellants manufactured at the Bacchus Facility are classified as a DOT Class 1.3 explosive material. A composite propellant usually contains of a non-explosive liquid binder mixed with aluminum and ammonium perchlorate.

Reactive wastes are produced from the manufacturing process includinge~~,~~ but are not limited to the following: cured and uncured propellants; rocket motors; small initiating devices; propellant scrap; and explosive ingredients (HMX, aluminum, ammonium perchlorate, etc.). Liquid explosive wastes, such as NG, are diluted and adsorbed in wood pulp. Reactive wastes also include materials such as rags, gloves, other personal protective equipment, plastics, rubber and paper that were contaminated with explosive materials during the manufacturing process.

Waste Class 1.1 and Class 1.3 explosive materials are characteristic hazardous wastes for reactivity (D003). Nearly all of the reactive wastes generated at the Bacchus Facility are reactive due to the presence of propellants and explosives. Some reactive wastes, such as those from laboratory operations, may contain solvents which would also be a listed waste defined by R315-261 of the Utah Admin. Code. Wastewater treatment sludge generated from the processing of explosives is a K044 listed hazardous waste.

Class 1.1 explosive materials include powdered or granulated ingredients (nitrocellulose, HMX, RDX, aluminum, ammonium perchlorate and base grain); liquid explosives (NG, binder premix, and NG remover); nitrate ester propellants; and ordnance items. Class 1.3 reactive wastes specifically contain composite propellant. Other categories of reactive waste, such as waste developmental propellant, K044 waste and laboratory waste, can be a Class 1.1 or Class 1.3 explosive material depending on the chemical composition of the product at the point of generation.

NG remover is a chemical mixture added to nitroglycerin to chemically break it down and make it less hazardous to handle if it has been spilled. Wastes containing NG remover are considered Class 1.1 reactive wastes for the potential presence of NG.

4.1.2 Chemical Waste

ATK defines chemical waste as non-explosive characteristic and listed hazardous wastes that are generated by operations at the Bacchus Facility. Chemical wastes also include~~;~~ used oil, universal wastes, and non-RCRA wastes. All wastes generated at the Bacchus Facility are evaluated for hazardous waste properties. This evaluation includes generator knowledge, information obtained from the manufacturer's safety data sheets (SDSs) and laboratory analysis. The Waste Analysis Plan (Attachment 3) provides the procedures, techniques and protocols that will be used to evaluate wastes generated at the Bacchus Facility.

4.2 HAZARDOUS WASTE GENERATION AND COLLECTION

Wastes generated at the Bacchus Facility are from batch or continuous operations. These wastes are accumulated in accordance with R315-262 of the Utah Admin. Code. Waste accumulation stations are operated under either the less than 90-day rules or the satellite accumulation rules. Operators that produce wastes are instructed in the proper requirements for the collection, storage and disposal of these wastes.

4.2.1 Reactive Waste Generation and Collection

ATK uses a variety of containers to store reactive wastes at the Bacchus Facility. The standard containers used at the Bacchus Facility are described in this section. However, due to the nature of our business, new types of containers will be required in the future, and cannot be described in this application. In lieu of describing all containers, the basic criteria for selecting and using containers are provided. Containers will be selected using the DOD Contractor's Safety Manual for Ammunition and Explosives (DOD 4145.26-M). All containers for reactive waste that are currently used, or will be used in the future will meet the DOD 4145.26-M requirements.

Operating buildings generating reactive wastes use a variety of collection containers as described below:

Slum bags – Slum bags are antistatic plastic bags used to containerize reactive waste and line containers that accumulate reactive wastes. Slum bags are used to line slum pots and fiberboard drums.

SLIDs - Excess pure propellant is collected in cardboard/wood containers known as SLIDs, or "slum-in-a-drum", which typically can hold up to 500 pounds of waste propellant. A SLID allows a significant amount of excess propellant to be collected in one container, reducing handling requirements for large amounts of propellant waste. SLIDs are constructed from cardboard "Sona" tubes (used as forms for cement pillars) that are glued and sealed onto a pallet. A groove is routered into the pallet's surface to accept the form as shown in Figure 4-2.1. Excess pure propellant is placed in a SLID at the end of the manufacturing process; the open tops of the SLIDs are then covered with antistatic plastic and sealed with tape. SLIDs are also used at storage buildings to hold slum bags, and to contain certain wastes during burning.

Slum pots - Contaminated materials generated during the manufacturing process (rags, gloves, personal protective wear, plastics, etc.) and smaller amounts of waste propellant are collected in aluminum containers that are commonly referred to as "slum pots". Slum pots are specifically designed for the collection, transportation, and temporary storage of reactive waste within the operational boundaries of the Bacchus Facility.

Slum pots are constructed of seamless cold rolled aluminum that is 18 3/4 inches high by 18 3/4 inches in diameter and is ¼ inch thick or equivalent (see Figure 4-2.2). Each pot has two lifting handles and has a hard rubber lid and hard rubber bottom that cushion and resist any abrasion during transportation. Both the lid and bottom are non-sparking. Slum pots are lined with antistatic plastic bags (known as "slum bags") that contain the waste. When full the waste is sealed inside the slum bag with a plastic tie.

Fiberboard drums – Contaminated wastes that are too large for slum pots or are generated in large volumes are collected directly into commercially available 30-gallon fiberboard drums. These drums have a removable lid that can be sealed in place with a locking chime after the drum is filled. Fiberboard drums selected for this application are approved by DOT for highway transportation of hazardous materials and can be used to ship these wastes off-site for treatment and disposal.

Pizza boxes – Dry ingredients that can detonate during treatment ~~-~~will be placed in large flat cardboard boxes, similar to a pizza box that allow the material to treated by open burning while minimizing the potential to detonate during treatment.

Tanks - Explosive contaminated wastewater, which is not classified as hazardous waste, is collected in wastewater tanks at the points of generation. When appropriate, propellant "chips" and other suspended solids are filtered out before the wastewater reaches the tank, and when the wastewater is pumped out of the tanks. The wastewater is pumped into tanker trucks where it is either: 1) delivered to a wastewater treatment plant where it is treated, if necessary, before being discharged to a local POTW; or 2) transported off-site for treatment and disposal. Filters containing "chips and other suspended solids are accumulated in slum bags and treated and disposed of in accordance with the applicable hazardous waste management rules.

Other Containers – Large blocks of cured propellant are containerized by wrapping the waste in plastic and placing it on wood pallets. Ammunition cans are used to hold initiating and ordnance items. Waste rocket motors are generally large enough to be their own container.

Operating personnel accumulate reactive waste in these containers as it is generated. Liquid reactive wastes, typically containing nitroglycerin, are diluted and absorbed in wood pulp to reduce their sensitivity. The absorbed liquid reactive wastes are then accumulated in slum pots.

When a reactive waste container is full or at the end of an operating shift, it is closed or sealed as applicable for the container. The hazardous waste explosive tag shown in Figure 4-2.3 is filled out and attached to the container. Operators at the buildings that generated the waste enter pertinent information from the hazardous waste explosive tag into the electronic waste tracking system described in Section 4.3.1.

Most operating buildings that generate reactive waste have an explosive waste collection shed located approximately 50 feet from the operating building. Except as described below, waste containers are placed in these collection sheds to facilitate removal of waste propellant, explosive and reactive wastes from the operating buildings. The collection sheds are constructed of wood or corrugated metal and are secured to a six-inch concrete floor. The sheds are closed on three sides with the open

front facing north (see Figure 4-2.4). The north aspect of the open front ensures that the wastes are not exposed to direct sun while it is in this temporary storage shed.

When managing reactive wastes, ATK building operators use the temporary collection sheds as satellite accumulation stations. Reactive wastes are placed in these sheds either as they are generated or at the end of each operating shift. Waste containers that are not full at the end of a shift are sealed, a hazardous waste explosive tag is attached to the container and they are moved to the temporary collection shed. There are three exceptions when ATK does not use these temporary collection sheds as described above: 1) Cold weather restrictions where certain Class 1.1 materials must remain inside operating buildings because of safety concerns with freezing; 2) Large objects such as SLIDs where use of a dock at the operating building allows for more efficient and safe handling of the waste; and 3) Buildings which infrequently generate reactive wastes.

Containerized explosive wastes are picked up from the collection sheds using a vehicle approved for the transport of explosive wastes in accordance with the satellite accumulation requirement of R315-262-15 of the Utah Admin. Code). Extreme care is used when handling all explosive wastes. The wastes are transported to either a less than 90 day explosive storage building or a permitted explosive storage unit while the treatment preparations are being made. Explosive wastes will always be segregated by explosive classification. Containers that hold wastes in accumulation sheds or at the point of generation of different explosive classification will be stored in separate bays of the storage location and separated by a partition. While in storage, slum bags containing similar types of explosive waste are often combined together in larger containers, such as empty SLIDs, to allow storage that is more efficient. Note that liquid explosive wastes always remain in slum pots during storage. The main areas used for explosive waste storage other than satellite accumulation areas are:

- Building 32E – This less than 90-day hazardous waste storage building is the primary building where Class 1.3 wastes are stored prior to treatment. Class 1.1 materials cannot be stored in this building. This building is a precast concrete structure with a loading dock. The building is clearly marked with the appropriate fire symbols on the exterior of the building. This building can store up to 59,000 pounds of Class 1.3 explosives.

- Building 31 – This less than 90-day hazardous waste storage building can be used to store Class 1.1 and/or Class 1.3 materials prior to treatment. The building is constructed of wood with an elevated floor at truck bed height. The building is protected by a sprinkler system and marked with the appropriate fire symbols. The floor is completely covered with lead sheeting for continuous grounding. Building 31 is equipped with a fan ventilation system because reactive laboratory wastes containing solvents are stored in the building. Other waste generated in small quantities, such as waste ordnance, are also stored in this building. Building 31 has a maximum storage limit of 3,000 pounds.

- Building 45A – This less than 90-day hazardous waste storage building that is used to store Class 1.1 and/or Class 1.3 materials prior to treatment. Building 45A is an earth covered bunker style building. The building is protected by a sprinkler system, and has the appropriate fire symbols on the building exterior.

The building is cited for 16,000 pounds of Class 1.1 or 50,000 pounds of Class 1.3 explosives. The building defaults to the Class 1.1 storage limits any time both Class 1.1 and Class 1.3 materials are stored in the building.

- NG Remover Storage Shed – This less than 90-day hazardous waste storage building is used to store wastes exposed to NG remover. NG remover reacts with NG at low concentrations allowing these wastes to be handled safely. No other type of reactive waste is stored in this building when NG remover is present. The facility is a wooden shed with Class 1.1 fire symbols prominently marked on the building's exterior. The building can store no more than 5 pounds of Class 1.1 explosives.

- Building 2347, Explosive Storage 2 (ES-2) – ES-2 is a long-term explosive waste storage facility, which is further described in Section 4.4.

- Building CD6A, Explosive Storage 3 (ES-3) – ES-3 is a long-term explosive waste storage facility, which is further described in Section 4.4.

Propellant and explosive operating buildings at the Bacchus Facility, including but not limited to explosive waste storage areas, are designed and constructed in accordance with strict federal standards. These standards identify the criteria that must be used to construct buildings where reactive material will be used and/or stored. These standards also require that explosive buildings to be separated by sufficient distance, or a quantity-distance relationship, to prevent an explosive event in one building from propagating to another building. Quantity-distance rules also control the location of propellant and explosive operating buildings with regard to public property (highways, parks, etc,) and private property. All buildings used for temporary storage of waste explosives, including the temporary storage sheds, are correctly sited with respect to the applicable quantity-distance rules. Section 2.3 provides a narrative on the quantity-distance rules. Refer to Figure 2-3.12 for safe distances for prominent 90-day storage and permitted facilities.

4.2.2 Chemical Wastes

The operations at NIROP generate a wide variety of chemical wastes incidental to the manufacturing processes. These wastes include both listed and characteristic hazardous wastes in solid and liquid forms. Special classification wastes streams, such as used oil, universal wastes and non-RCRA wastes are also generated and collected. Chemical wastes are accumulated and stored in a variety of containers, all of which are compatible with the waste and can be opened and closed. All containers shipped off-site for disposal meet applicable DOT container requirements. There are three different types of chemical wastes which are generated at NIROP: (1) routinely generated waste, (2) non-routinely generated waste, and (3) small container waste.

Routinely generated chemical wastes include but are not limited to paints, coatings, solvents, and contaminated solids. These wastes are generated in a quantity, which fills its container in less than 90-days. Non-routinely generated wastes are generated infrequently and at low volumes. Routinely and non-routinely generated wastes are collected in a variety of containers. The waste containers will always compatible with the waste.

Small container wastes include but are not limited to a wide variety of off-specification commercial chemical products. The sources for these wastes include shelf-life expired commercial chemical products, unused commercial chemical products, aerosol cans, laboratory chemicals, and/or unique chemicals that are not routinely received. A waste that does not leave its original container can easily be characterized using generator knowledge.

Routinely generated chemical wastes and small container wastes generated at the NIROP Facility are transferred to HS-1 (refer to Part B Permit for ATK Launch Systems Inc., Bacchus Facility – Plant 1, UTD001705029, for full description and capabilities of HS-1) for storage prior to being shipped off-site to an approved TSDF for treatment and/or disposal.

4.2.3 Other Hazardous and Non-Hazardous Waste Streams

Special classification waste streams, such as used oil, universal wastes and non-RCRA waste are also generated at the NIROP facility. These waste steams are collected, characterized and transferred to the HS-1 for management prior to being shipped off-site for disposal. However, ATK does generate scrap metal at the NIROP Burning Grounds that is accumulated in a gondola on the Ash Storage Pad. All of these waste streams are managed in accordance with applicable regulatory requirements.

4.3 WASTE TRACKING

ATK maintains an electronic waste tracking record for the Bacchus Facility to collect and manage information about reactive wastes generated at both the Plant 1 and NIROP operations. This tracking system uses a combination of paper records and an electronic database.

4.3.1 Reactive Wastes

Wastes being accumulated in containers at any operating area within the Bacchus Facility are labeled and managed in accordance with R315-262 of the Utah Admin. Code for either a satellite accumulation or less than 90-day hazardous waste storage area. The electronic tracking system maintains the following information to monitor cradle to grave waste handling practices:

- Tag # - a unique number used to track the waste (see Figure 4-2.3);
- Date - identifies the generation date;
- Building # - identifies where the waste was generated;
- Explosive category for each type of explosive waste generated on plant;
- Explosive and total weight of the container;
- Identify who prepared and approved the waste at the site of generation;
- Pick-up Date - date picked up from the waste generation site;
- Identify all storage locations and transfer dates prior to treatment;
- Identify the date the waste transferred to the Burning Grounds for treatment; and
- Identify pan # and burn station where treatment occurred.

The electronic tracking system maintains information on all containers of reactive waste in storage including the time in storage, and has the capability to track the total amount of wastes in storage at each storage location. It also tracks the total weight of waste placed on each burn pan and the total weight of waste burned on any given day.

For reactive wastes that are shipped off site for treatment and disposal, the system maintains the following information: the manifest number, transporters, manifest ship date, and manifest return date. In the event a number of slum bags are consolidated before shipping into a large reusable container, the waste tracking system will identify wastes by tag numbers that are aggregated into the larger shipping containers.

In the event the electronic tracking system is not operable, the information will be tracked using paper copies until the electronic system is operable. In the event this occurs, ATK will transfer all information to the electronic system within 72 hours of the system becoming operational again.

4.3.2 Chemical Waste Tracking For Routine and Non-Routine Generated Waste

ATK maintains an electronic waste tracking record for the Bacchus Facility that is used to collect and manage information about routinely and non-routinely generated waste that is generated at both the Plant 1 and NIROP operations. This tracking system uses a combination of paper records and an electronic database.

Wastes being accumulated in containers at any operating area within the Bacchus Facility are labeled and managed in accordance with R315-262 of the Utah Admin. Code for either a satellite accumulation or less than 90-day storage area. The chemical waste tracking system maintains the following information to monitor cradle to grave waste handling practices:

- Drum # -- A unique number assigned by ATK to each waste container;
- Waste Stream – ATK's unique internal waste stream profile which includes all RCRA waste codes for the waste;
- Building # -- Building in which waste was generated;
- Manifest # -- Manifest number in which the waste was shipped under;
- Accumulation Date -- Date the container was given a number and delivered to a specific building;
- Pickup Date -- Date the container was received at HS-1;
- Quantity -- Weight of container ready for shipping;
- Status -- A code given to each container indicating whether it is in process or shipped to disposal facility;
- Storage -- Identifies storage locations;
- TSDF -- The facility where the material was delivered;
- Transporter -- The transporter used to transport the shipment;
- Ship Date -- Date the shipment left the facility;
- Return Date -- Date that the fully signed manifest is received by ATK;
- Notes -- A description of the shipments contents.

4.3.3 Chemical Waste Tracking for Small Containers

Small containers of waste (i.e. waste that is eventually consolidated into a lab pack) are entered into the small container database and stored in the appropriate cabinet based on the DOT classification for the material. This tracking system uses a combination of paper records and an electronic database. Small containers are accumulated until an adequate quantity has been amassed to fill a lab pack container. All lab pack containers are entered into the electronic tracking system as a non-routine generated waste. The following information is collected for each small container of waste:

- Name - chemical or commercial name of the waste and the applicable RCRA waste codes;
- Container # - database tracking number;
- Size - size of the container;
- Type - type of container (e.g. plastic, glass, metal, etc);
- State - physical state of the waste;
- Date - date received; and
- DOT - Department of Transportation classification.

Any small container held in storage for longer that one year will be managed in accordance with Section 4.9.

4.4 HAZARDOUS WASTE STORAGE

ATK may store hazardous wastes at the Bacchus Facility prior to disposal. Reactive and chemical wastes are stored in designated facilities described in this section and segregated according to compatibility requirements.

4.4.1 HS-1

Chemical wastes generated at NIROP are managed by ATK at the HS-1 storage area, which is part of the Plant 1 Permit.

4.4.2 ES-2

ES-2 (Figure 4-4.5) can be used to store any of the explosive wastes listed in Section 4.1.1. Figure 4-4.6 shows a floor plan and a typical storage configuration of the building. A minimum 30-inch aisle space will be maintained between rows of containers. Rows will not be more than two containers deep. All containers of waste in storage will be closed except when waste is being added to or removed from the container. Each container of waste will be labeled with a Hazardous Waste Explosive tag. Each tag includes the unique identification number (bar code) which will be used the track the waste in the reactive waste electronic database system described in Section 4.3

Storage compatibility will be maintained by requiring a 30-inch minimum space between 1.3 and 1.1 propellants and/or propellant ingredients. NG remover will not be stored in this building.

This building has an automatic fire protection system, so that a fire can be fought remotely. Employees are not permitted to fight fires inside an explosive storage building.

ES-2 is a totally enclosed building, so there are no precipitation run-on or run-off concerns. Free liquids are not stored in the building.

4.4.3 Ash Storage Pad

The Ash Storage Pad (see Figure 4-4.7) is used to accumulate and store treatment residue and clean-up materials generated during open burning activities at the NIROP Burning Grounds. The treatment residue is typically stored in a 20 cubic yard, lined, storage container. A minimum 30-inch aisle space will be maintained between all containers stored on the pad.

The containers of waste stored on this storage pad will be identified using the unique drum number issued by the electronic waste tracking system or with the label used while the container was being generated.

Incompatible wastes will not be stored on this pad.

This storage pad is exposed to precipitation. Precipitation run-on or run-off controls are addressed using the following constraints:

1. All hazardous waste storage containers will be covered except when wastes are being added or removed,
2. All waste spilled while being transferred to a storage container will be immediately cleaned up, and
3. No free liquids will be stored on the pad.

A trash (including scrap metal) collection container may also be located on the pad. This container may remain open. ATK will not exceed the 50 cubic yard storage capacity for this unit and all solid waste stored on this pad will count against the storage capacity.

4.4.4 ES-3

ES-3 (Figure 4-4.8) can be used to store any of the explosive wastes listed in Section 4.1.1. Figure 4-4.9 shows a floor plan and a typical storage configuration of the building. A minimum 30-inch aisle space will be maintained between rows of containers. Rows will not be more than two containers deep. All containers of waste in storage will be closed except when waste is being added to or removed from the container. Each container of waste will be labeled with a Hazardous Waste Explosive tag. Each tag includes the unique identification number (bar code) which will be used the track the waste in the reactive waste electronic database system described in Section 4.3

Storage compatibility will be maintained by requiring a 30-inch minimum space between 1.3 and 1.1 propellants and/or propellant ingredients. NG remover will not be stored in this building.

This building has an automatic fire protection system, so that a fire can be fought remotely. Employees are not permitted to fight fires inside an explosive storage building.

ES-3 is a totally enclosed building, so there are no precipitation run-on or run-off concerns. Free liquids are not stored in the building.

4.5 TREATMENT OF REACTIVE WASTE

The treatment of reactive wastes will vary due to treatment options and methods. The treatment options include, but are not limited to, open burning on-site at the NIROP Burning Grounds, open burning or detonation at the ATK facility near Promontory, Utah (ATK-Promontory), open burning or detonation at the Utah Test and Training Range (UTTR) located at Oasis, Utah or offsite treatment and disposal at another authorized TSDF. The following sections provide more details on the collection, management and disposal of reactive wastes at the Bacchus Facility.

4.5.1 Off-site Treatment of Reactive Waste

In addition to the RCRA manifest rules that govern the transportation of hazardous waste, the Department of Transportation (DOT) has additional regulations regarding the transportation of explosive materials and wastes on public highways. The shipping containers and transportation handling techniques for all explosive materials and wastes must be examined as per DOT 49 CFR 173.51or an authorized military agency prior to shipment. Testing is often necessary to determine the hazardous nature of each explosive material or waste and to verify the integrity of the packaging method selected for each material or waste. Reactive wastes that are amenable to transportation on the public highways can be shipped off-site to an approved hazardous waste treatment facility. ATK follows all applicable State and Federal requirements whenever explosive wastes are shipped from the Bacchus Facility to insure that they are shipped safely.

The primary off-site treatment facility for the Bacchus Facility is the ATK's Promontory Facility located approximately 100 miles north of the Bacchus Facility. The Promontory Facility is located in a more remote area than the Bacchus Facility and is an approved hazardous waste treatment facility, where reactive wastes can be open burned or detonated. ATK ships the majority of the Bacchus Facility's routinely generated reactive waste streams to the Promontory Facility. All reactive wastes shipped to the Promontory Facility will have DOT approved shipping methods. Reactive wastes that remain at the Bacchus Facility for open burning are difficult to ship because they are odd sized, generated in small quantities, have explosive safety hazards, or are a "forbidden explosive" as defined in R315-261-23 (8) of the Utah Admin. Code.

Some of the reactive wastes generated at the Bacchus Facility that are routinely shipped to the Promontory Facility include:

- SLIDs containing pure Class 1.1 or Class 1.3 propellant are shipped with a plywood cover placed over the top of each SLID and banded in place.

- Class 1.3 contaminated wastes: Slum bags containing contaminated wastes (rags, gloves, wipes, etc. contaminated with reactive material) are placed in lined, reusable plastic bins for shipment. Up to 350 pounds of waste can be aggregated in each bin. Each bin is closed and secured with plastic banding prior to shipment. Contaminated Class 1.3 wastes too large to fit in slum bags are shipped in individual, sealed 30-gallon fiberboard drums.

- Class 1.1 contaminated wastes: Slum bags containing contaminated wastes that that do not contain significant amount of solvents are placed in lined reusable plastic bins for shipment. Up to 350 pounds of waste can be aggregated in each bin. Each bin is closed and secured with plastic banding prior to shipment.

- Explosive contaminated packaging: Contaminated packaging, such as, the cloth and plastic bags that HMX and RDX products arrive in from the vendor. After being emptied, these contaminated bags are shipped to Promontory in sealed 30-gallon fiberboard drums for treatment.

- Waste HMX and RDX: HMX and\or RDX is wetted, with a minimum, of 15% by weight water and accumulated in plastic lined 30-gallon fiberboard drums. Additional packaging requirements for HMX or RDX are described later in this section.

Reactive wastes are also sent to UTTR, located approximately 70 miles west of the Bacchus Facility. UTTR is an approved hazardous waste treatment facility, permitted to open burn and open detonate reactive wastes that are the property of the Federal government. Whenever possible, waste rocket motors or segments that meet the federal property requirement are sent to UTTR for treatment. UTTR typically conducts operations in the spring, summer, and early fall. If necessary, wastes or materials are stored at an applicable storage unit by ATK at the Bacchus Facility until UTTR is available for disposal.

The Bacchus Facility is used as a staging point for surplus and obsolete rocket motors that are awaiting treatment at UTTR. These rocket motors are received at the Bacchus Facility by ATK as both products or hazardous wastes. Surplus rocket motors can be recalled by the owner prior to being treated and used for their intended purposes. Obsolete rocket motors are always shipped to UTTR as a hazardous waste using a hazardous waste manifest. ATK follows all applicable State and Federal requirements whenever these wastes are shipped from the Bacchus Facility to insure that they are shipped safely.

Large quantities of HMX or RDX are sent off-site for treatment and disposal. HMX and RDX may be sent to the UTTR since these explosives are supplied to ATK by the Federal government and are government property. Waste HMX and RDX can also be treated at the Promontory Facility or at another approved TSDF.

Before HMX and RDX can be transported over public highways, it must be wetted with a minimum of 15% by weight water. This is assured at the Bacchus Facility by adding 12 ounces of water for every 5 pounds of HMX or RDX. Waste HMX and RDX are accumulated for off-site treatment and disposal in plastic lined 30-gallon fiberboard drums, which hold up to 300 pounds of wetted HMX or RDX per drum. The plastic liners for these drums are secured with plastic bag ties to assure retention of water. The fiberboard drums and plastic liners are always maintained in a closed condition unless ATK is adding waste to the container or verifying the water content inside the bag. Packing will conform to 49 CFR 172.101 Hazardous Material Table requirements for HMX.

Waste HMX and RDX is accumulated until quantities permit efficient shipment. ATK usually stores waste HMX and RDX at ES-3, but this waste can also be stored at 45A and ES-2. ATK follows all applicable State and Federal requirements for the storage of these wastes while they are being stored on-site, and whenever these wastes are shipped from the Bacchus Facility to e~~i~~nsure that they are shipped safely.

Certain HMX or RDX wastes are not amenable for off-site treatment and disposal including mixtures of HMX or RDX with other ingredients or very wet HMX or RDX. Mixtures of HMX or RDX with other ingredients are burned in small increments of 10 pounds or less in pizza boxes. Very wet HMX or RDX is prepared for burning by adding 10 gallons or less of the wet mixture to wood pulp in an empty SLID or cardboard box. The wood pulp absorbs the excess water to form a paste like material

that also absorbs diesel fuel added to the mixture as extra fuel just prior to burning. When generated, these HMX or RDX wastes are stored at one of the permitted explosive storage units or in one of the less than 90-day explosive waste storage areas at the Bacchus Facility.

4.6 NIROP BURNING GROUNDS

Whenever operators are working inside the NIROP Burning Grounds, the following safety procedures are put into practice:

1. Egress paths are always maintained as shown in Figure 6.7-2;
2. The main gate into the NIROP Burning Grounds remains open;
3. All gates or doors into a burn pan or cage remains open while operators are inside;
4. Operators always prepare outer burn pans for ignition first and work towards the center;
5. The NIROP Burning Grounds firing system has two separate interlocks that are disconnected while operators are inside the NIROP Burning Grounds; and
6. Weather conditions are monitored to assure operators are not exposed to risks from lightning strikes.

The NIROP Burning Grounds (Figure 4-6.10 and Figure 4-6.11) is a hazardous waste thermal treatment unit designed to treat explosive wastes via open burning. This unit is not permitted to open detonate wastes. When conducting an open burn ATK follows the steps identified below:

1. Pre-burn inspection;
2. Placement of waste on burn pans;
3. Squibbing and ignition and
4. Post-burn inspection and clean up.

These steps are described in the following sections.

4.6.1 Pre-burn Inspection

Prior to bringing any reactive waste into the NIROP Burning Grounds, ATK conducts a pre-burn inspection (Figure 4-6.12). This inspection confirms that all previous cleaning activities are complete, and verifies the location of all untreated waste or unburned residue. The following operational items are checked during this inspection:

1. Previously used burn pans or cages are checked for untreated waste and unburned residue;
2. Previously used burn pans or cages are checked for ejected material;
3. Previously used burn pans or cages are checked to make sure that they were cleaned properly;
4. Burn pans or cages are checked for leachate leakage; and
5. A resistance check is conducted on the firing circuit for each burn pan and cage. This verifies that the previous burn did not damage or short circuit the firing system. Any resistance reading indicates that the firing circuit has been damaged or short-circuited.

Any burn pan or cage that fails one or more of the pre-burn inspection criteria will be removed from service until the problem is corrected. The pre-burn inspection also

checks the operational status of the communication systems (radios & telephone), the warning siren and flashing light, and the availability and status of the fire extinguishers, containment measures (e.g. firebreaks), fire blankets, diesel storage and interlocks~~.~~.

The following actions will be taken to address deficiencies found during the pre-burn inspection.

- A burn pan or cage will be taken out of service if the area immediately surrounding the burn pan or cage has not been cleaned including ejected material, there is leachate leakage from a burn pan or it has a short circuit in the firing system. The burn pan or cage cannot be returned to service until the deficiency has been corrected.

- The NIROP Burning Grounds must always have at least one operational form of communication (radio or telephone). The NIROP Burning Grounds will be shut down if no radio or telephone is available.

- An inoperable fire extinguisher or the loss of any of the fire blankets (see Table 6.4) will shut down the facility until the deficiency can be corrected.

- All leaks or spills of diesel fuel must be addressed before the NIROP Burning Grounds can be operated. Large leaks associated with the diesel storage system may require that the storage system be shutdown and drained. If this situation occurs, ATK will use an alternate source of diesel fuel until the diesel fuel storage system can be repaired.

- The siren and flashing light will be tested prior to any burn. The loss of siren and/or flashing light will require that ATK shut down the NIROP Burning Grounds until the problem is corrected. If ATK must use the NIROP Burning Grounds they will have the Bacchus Facility Fire Department or area supervision enter and inspect the area around the NIROP Burning Grounds to assure that personnel not directly involved with the hazardous waste treatment operations are not in the area. At a minimum, the area to be inspected will be the quantity distance area depicted around the Burning Grounds in Figure 2-3.12. If any unauthorized employees are found during the inspection, they will be escorted from this area. Open burning operations can commence once the fire department or area supervisor have cleared the area.

The pre-burn inspection is required on days when an open burn is conducted. A pre-burn inspection will be conducted once every calendar month if no pre-burn inspection has been conducted during that calendar month.

4.6.2 Placement of Waste on Burn Pans

Following the completion of an acceptable pre-burn inspection, containers of reactive wastes are delivered to the NIROP Burning Grounds in a transportation vehicle approved by the Bacchus Facility Safety Department. The transport vehicle is backed up to a burn pan and the reactive wastes are transferred onto the burn pan. For large items, such as SLIDs, a forklift is used to unload the vehicle and transfer the reactive wastes onto the burn pan. At least two, but no more than six operators are involved in the waste unloading operation. Only one vehicle is unloaded at a time.

With limited exceptions (e.g., propellant necks), a maximum of 500 pounds of waste can be placed on each burn pan or inside a burn cage, including Cage 12 and Cage 19. The NIROP Burning Grounds has a treatment limit of 4,500 pounds per day.

Certain reactive wastes such as dry ingredients, liquid explosive slums and Class 1.1 propellant slums have significant explosive safety hazards. Therefore, these wastes are handled in accordance with the details provided in Figure 4-6.13. Operators at the NIROP Burning Grounds are trained in accordance with the procedures described in ATK procedure document 21000GV0001 "Burning Propellant at NIROP Burning Grounds", an internal confidential document. Revisions to this document are managed by the Bacchus Facility Production Control group in accordance with internal procedure OP-43 "Bacchus Manufacturing Documentation Control" and require written authorization from the Environmental, Operations and Safety departments. Operators are trained to new revisions of this procedure within 30 days of issuance using the training system described in Section 7.

Cardboard is placed underneath all liquid explosive slums to contain any free liquid that may not be fully absorbed in wood pulp. Likewise, wood pallets are placed under explosive wastes that are collected wet or need additional combustible material to assure a complete burn.

Burn pan 16 (Figure 4-6.14) is surrounded by a cage and is used to burn small ordnance items or other items that may move somewhat during burning. This cage is not intended for intact rocket motors or larger items known to be propulsive. Propulsive items must be rendered non-propulsive before they can be burned at the NIROP Burning Grounds. For example, this may involve cutting or splitting a rocket motor in half or securing to a burn pan before treatment. Ordnance items often burn with no visual indication that the reactive waste material has been completely treated. For this reason, ordnance items are always burned twice.

Cages 12 and 19 (Figure 4-6.15) are used for wastes which are contaminated with small amounts of Class 1.1, Class 1.3, or dry ingredients. These wastes are lightly contaminated materials (e.g., lightly contaminated slum bags, packaging, contaminated containers, etc.) and are stacked inside the cage to promote a complete burn.

Immediately after placing waste on a pan, the empty container is inspected for any contamination. SLIDs and slum pots are reused if no contamination is found. If contamination is found it is carefully cleaned at the NIROP Burning Grounds with a rag and solvent, which is then placed on the burn pan or cage for treatment. Soap and water is the solvent used for cleaning slum pots contaminated with wastes that do not contain HMX. Butyrolactone (BLO) is the solvent used for wastes that do contain HMX and that are not easily cleaned with soap and water. If the container is a slum pot that could not be decontaminated simply by wiping down the container, it is taken to the Waste Water Treatment Plant where it can be steam cleaned prior to reuse. If a SLID cannot be decontaminated, it will be burned.~~–~~ Note that these cleaning steps are used for SLIDs and slum pots located throughout the Bacchus Facility.

Each burn pan is divided into 16 burn stations that are identified on the side of each burn pan. After placing the explosive waste in a burn pan the treatment date, burn pan number and burn station are recorded as described in Section 4.3.1. Larger items such

as SLIDs are placed in a burn pan and assigned the closest burn station, this information is entered onto the explosive waste tag and into electronic reactive waste database as described in Section 4.3.1. Cage 12 and Cage 19 do not have burn stations, so only the cage number and station No. 1 is recorded in the electronic reactive waste database as described in Section 4.3.1. After all of the explosive waste tags have been gathered they are used to complete the Burning Grounds Log Sheet shown in Figure 4-6.16.

4.6.3 Squibbing and Ignition

After all of the burn pans and cages have been loaded the transport vehicles have been removed and all non-essential personnel leave the NIROP Burning Grounds, ATK begins the final preparations for the burn. The final step in preparing a burn known as "squibbing", which is defined as cutting the container open, adding diesel, if necessary, and attaching the igniter. The squibbing operation is completed by a minimum of two operators. A separate employee, who can provide emergency assistance or summon help in the event of an emergency, observes their activities. This typically occurs using the camera system at the NIROP Burning Grounds. In the event that the camera is not working, the observer must remain a minimum of 400 feet from the NIROP Burning Grounds and maintain constant visual surveillance. This person will always have immediate access to an emergency communication device.

With the exception of pure propellant in SLIDs and other forms of pure propellant, all waste is sprinkled with diesel fuel to assure ignition and complete burning. Slum bags are carefully split open with a linoleum knife to expose the waste and sprinkled with diesel fuel. HMX and RDX arrive at the NIROP Burning grounds in cardboard boxes, which are sprinkled with diesel fuel immediately after the lid of the cardboard boxes is removed to expose the HMX and RDX. Other containers such as 1) vent socks in shallow cardboard boxes and 2) diapers in fiberboard drums have diesel applied to the container contents. Wastes containing significant amounts of AP or AP\aluminum mixtures are heavily soaked with diesel fuel to assure an even burn. An MSDS for the diesel fuel is included in Appendix 4-A.

For safety reasons, burn pans with liquid explosive slums are squibbed first. Liquid explosive slums are not treated in any of the burn cages. The contents of these slum bags are carefully spread out on the cardboard as described in Figure 4-6.13 prior to being wetted with diesel fuel.

An ignition train consisting of a Class 1.1 or Class 1.3 granular explosive is then poured in an approximate one-half inch high by four inch wide train down the length of the burn pan. This ignition train connects all of the waste to the ignition source and is used for all types of reactive waste placed on a burn pan. ~~–~~Near the firing circuit location (metal pylon at front of the burn pan), approximately one cup of ignition powder is placed at the point where the igniter will be inserted. An MSDS for the granular ignition powder is included in Appendix 4-B.

Igniters are constructed by ATK at the Bacchus Facility and consist of two approximate 6-foot long lengths of wire connected together at the center to a short 2-inch length of nichrome wire. The nichrome section of the igniter is inserted into ignition train and the other ends of the wire are twisted onto the firing circuit at the pylon.

After all of the prepared burn pans and cages are readied for firing, the operators retire to the control room. The interlocks are placed into the firing control console and the firing control computer is activated. A flashing red light and 30-second siren are activated once the firing system is operational to alert personnel inside the QD for the NIROP Burning Grounds that a burning operation is about to be started.

The firing system then performs a resistance check to assure that the igniters have been installed correctly into the hard-wired portion of the firing system. Each firing circuit must have a resistance of 50 ohms or less. In the event that one or more burn pans or cages have a bad resistance reading, operators remove the interlocks and deactivate the firing system, then reenter the NIROP Burning Grounds to correct the problem. If the resistance problem cannot be immediately corrected, a separate igniter wire is run from the pylon at an adjacent burn pan or cage. If a spare firing circuit is not available (all adjacent burn pans are loaded), an attempt to fire the burn pan or cage using the questionable pylon may still be made during burning operations.

Each burn pan or cage is then ignited in the order selected by the operators. Burn order is generally selected to allow the waste to burn against the wind direction. The burn is observed with a video camera in the control room to verify proper ignition.

In the event of a misfire on one or more burn pans or cages, operators must wait a minimum period before reentering the NIROP Burning Grounds to correct the problem. If none of the burn pans or cages ignite, this minimum wait period is 30 minutes. If at least one burn pan or cage ignites, then the wait period before reentering is a minimum of four hours and only when burning is mostly complete. Correction of the misfire may require running a separate igniter wire from the pylon at an adjacent burn pan.

The daily NIROP Burning Grounds Log is reviewed and maintained by area supervision. The sheet is reviewed to assure all items have been recorded and to note any items that may require corrective action. Note that this record also identifies the quantities of combustibles (cardboard, wood pallets), diesel fuel, and ignition train explosive used during each burn. All items will be documented and the information will be entered into the operating record database. The completed forms are maintained in accordance with the requirements of R315-264-73 of the Utah Admin. Code.

4.6.4 Post-Burn Inspection and Cleanup Barring an unusual situation such as a misfire, there is a 16-hour lapse before any operators can return to the NIROP Burning Grounds to inspect and cleanup after a burn. Each post-burn inspection and cleanup is documented using the checklist shown in Figure 4-6.17. Operators check for hot spots or smoldering residue prior to cleaning. Any burn pan found to contain a hot spot is isolated until the treatment is complete before proceeding with cleaning activities. Cleaning generally occurs the day after a burn depending on certain weather conditions. If it has snowed since the last burn, it may not be possible to clean unburned residue from a pan or cage, or to clean the asphalt around the pans or cages.

All residues remaining on the burn pans are visually inspected to determine if there is any unburned explosive residue. Unburned explosive residues are carefully gathered in one spot on the burn pan or cage and reburned or containerized as described below. All residues that have been completely treated are collected and containerized for proper off-site disposal. The NIROP Burning Grounds ash is a derived from hazardous waste

due to laboratory solvents. This ash is sent off-site for disposal in accordance with all applicable state and federal regulations. The treated residue may contain trace amounts of propellant constituents, but waste characterization has determined that it is no longer a D003 reactive hazardous waste. ATK characterizes the burn ground residues annually in accordance with Section 3.5.1 of this permit.

After the burn pans are cleaned, a mechanical sweeper is used to collect all treated residue from the asphalt around the burn pans or cages, if the asphalt does not have any accumulations of snow or ice. This collected material is containerized with the other treatment residue from the burn pans or cages for off-site disposal.

Leachate that collects inside the burn pans from wetting or precipitation is periodically removed from the burn pans with vacuum truck. The leachate is transported to an approved TSDF for disposal or discharged to a POTW.

Untreated residue and unburned waste will be managed in the following manner:

- Small amounts of untreated residue will be considered as newly generated waste and will be tracked as such in the explosive waste tracking system. This small amount is defined as 5% of the total volume placed on the pan or cage. The primary option for managing this waste is to burn it by 6pm of the following calendar day. If the untreated residue cannot be treated by 6pm of the following calendar day then it will be managed in accordance with R315-262 of the Utah Admin. Code.

- Unburned waste that results from a misfire or an interrupted ignition can remain on a burn pan. An interrupted ignition occurs when anything greater than 5% of the waste on the pan fails to ignite. In this situation, the waste is considered unreacted waste instead of newly generated residue. ATK will attempt to reburn the waste by 6pm of the following calendar day. If unforeseen circumstances prevent the burn from occurring by 6pm of the following day, the waste will be covered and the burn pan will be labeled and managed as a 90-day storage area in accordance with the requirements of R315-262 of the Utah Admin. Code. A plastic burn pan cover has been developed that can cover an entire burn pan. This cover will hold unburned waste on the burn pan until it can be treated under appropriate conditions. The cumulative storage time for the waste both in storage prior to burning and on the burn pan would be 90-days. If it is necessary to storage this waste for greater than 90-days, an emergency permit would be requested.

- Certain waste may already be older than 90-days when placed on a burn pan. If any such waste remains unburned after a burn attempt, the unreacted waste will be reburned by 6 pm of the following calendar day. If it is not possible to reburn this waste by 6 pm of the following calendar day, an emergency storage permit would be requested for this waste.

- Certain unburned wastes cannot be safely handled if temperatures fall below certain levels (54 degrees F for nitroglycerine wastes and 10 degrees for Class 1.1 propellant). These wastes must be left uncovered until the temperatures rises high enough to allow preparations for burning or handling (covering) for 90-day

storage. ATK will request an emergency permit if such waste cannot be burned or covered by 6 pm on the calendar day after the waste was set out.

- Ordnance wastes must be burned twice to assure that the treatment is complete. Since the second burn is part of the prescribed treatment methodology for this waste stream, ordnance waste will not be considered as newly generated waste after the first burn. If ordnance waste can not be reburned by 6 PM the following calendar day from the first burn then it will be managed in accordance with R315-262 of the Utah Admin. Code. This waste must be inspected weekly until the material is treated the second time. This inspection is documented on the weekly inspection log (Figure 5-2.3).

4.6.5 Run-on Run-off Controls

Run-on from precipitation is mitigated at the NIROP Burning Grounds by the use of earthen berms and asphalt curbing around the operating area. All precipitation falling outside of the NIROP Burning Grounds is channeled around the operating area, diverted to drainage structures and then forwarded to the drainage basin north of the operating area.

Run-off from precipitation that falls within the operating area of the NIROP Burning Grounds is managed using asphalt curbing, berms, and ground slope to direct all storm water to two collection areas, which then convey the collected storm water to a treatment plant (see Figure 8-4). The treatment plant is designed to handle storm water generated within the operating area of the NIROP Burning Grounds for a 25-year, 24-hour storm event.

4.7 OFF-SITE DISPOSAL

Prior to the shipment of any hazardous waste to an off-site TSDF, containers are marked and labeled and shipping papers are prepared in accordance with 49 CFR 172, and R315-262 and R315-264-1103Appendix I. Only permitted treatment storage and disposal facilities are used.

4.8 RECEIVING HAZARDOUS WASTE FROM OFF-SITE

ATK periodically receives chemical and reactive hazardous waste at the Bacchus Facility from off-site sources. This is usually limited to chemical and reactive hazardous waste generated at other ATK owned facilities. However, ATK does receive reactive hazardous waste, including but not limited to rocket motor segments that are not ATK generated hazardous waste for storage. All hazardous waste received from an off-site source will be managed at one of the permitted storage units. All off-site generated hazardous waste will be reviewed and approved prior to being accepted using the following criteria.

- EPA hazardous waste number(s);
- Physical description;
- Chemical description;
- Source of the waste;
- Sampling frequency;
- Parameter for Analysis;
- Handling code;
- Tracking system number;

- DOT shipping description; and
- Safe handling instructions

Upon receipt, all off-site generated hazardous waste will be visually inspected to ensure that it meets the acceptance criteria, the manifest is correct, and the containers are labeled, closed, in good condition and compatible with the waste. All discrepancies will be resolved with the generator before the waste is received. After the waste has been accepted, it will be managed using the tracking systems described in Sections 4.3.

Purge water generated by ATK at the Bacchus Facility's off-site groundwater monitoring wells is exempt from the prior approval requirements in this section, but it will be managed in accordance with R315-262 of the Utah Admin. Code, and tracked as described Section 4.3.

4.9 STORING WASTES FOR LONGER THAN ONE YEAR

Under the conditions described below the following materials may be stored for longer than one year:

- Wastes designated for disposal at UTTR where disposal arrangements and/or approvals cannot be completed within one year.
- Rocket motors or motor sections that lack adequate approvals to ship off-site and/or lack sensitivity data to develop a disposal plan in less than one year.

A report will be submitted annually no later than January 31st identifying any waste in storage longer than one year. This report will detail the steps taken to get the waste off-site, explain why ATK was unsuccessful in its attempt to ship this waste off-site and identify when ATK projects that they will be able to ship the waste off-site.

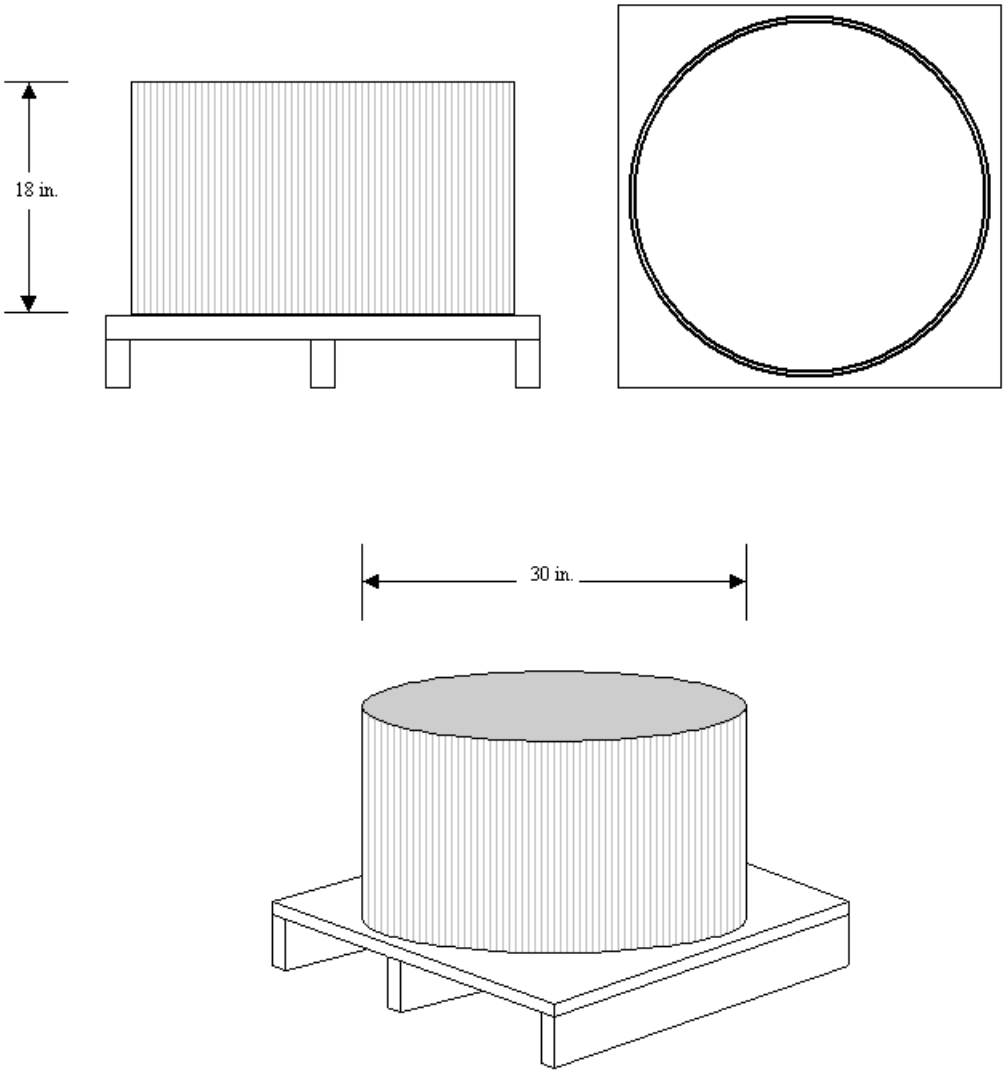
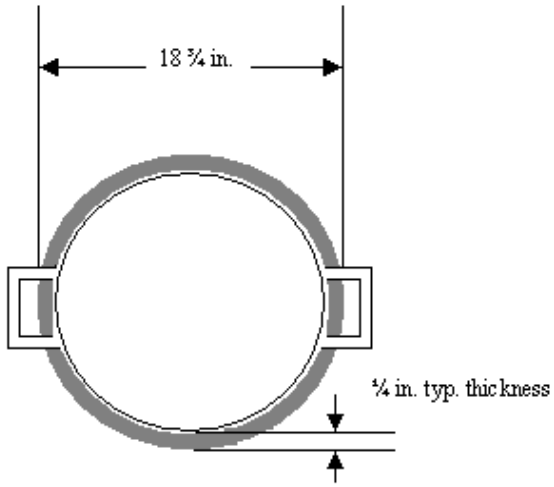
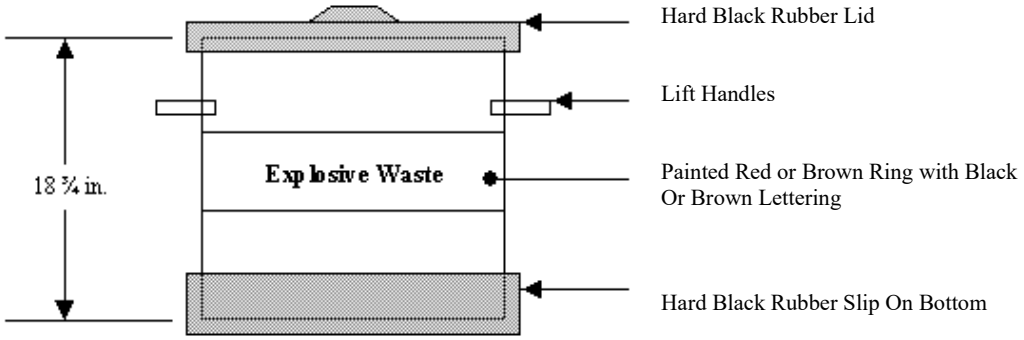


Figure 4-2.1
SLID (Not To Scale)



Top View (Lid Removed)



Front View

Construction
- Seamless Cold- Rolled Aluminum
- Welded Aluminum Handles
- Hard Rubber Lid and Bottom
- Painted Explosive Warning Band
  - Explosive Waste
  - HTPB Waste

Figure 4-2.2
SLUM POT (Not To Scale)

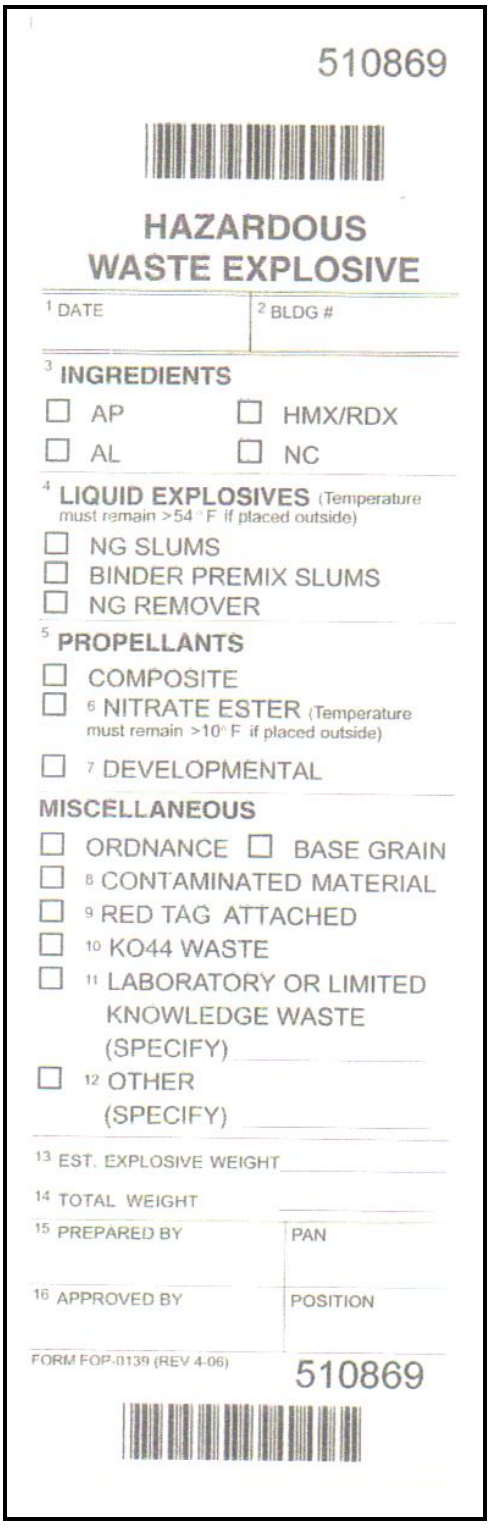


Figure 4-2.3
Hazardous Waste Explosive Tag

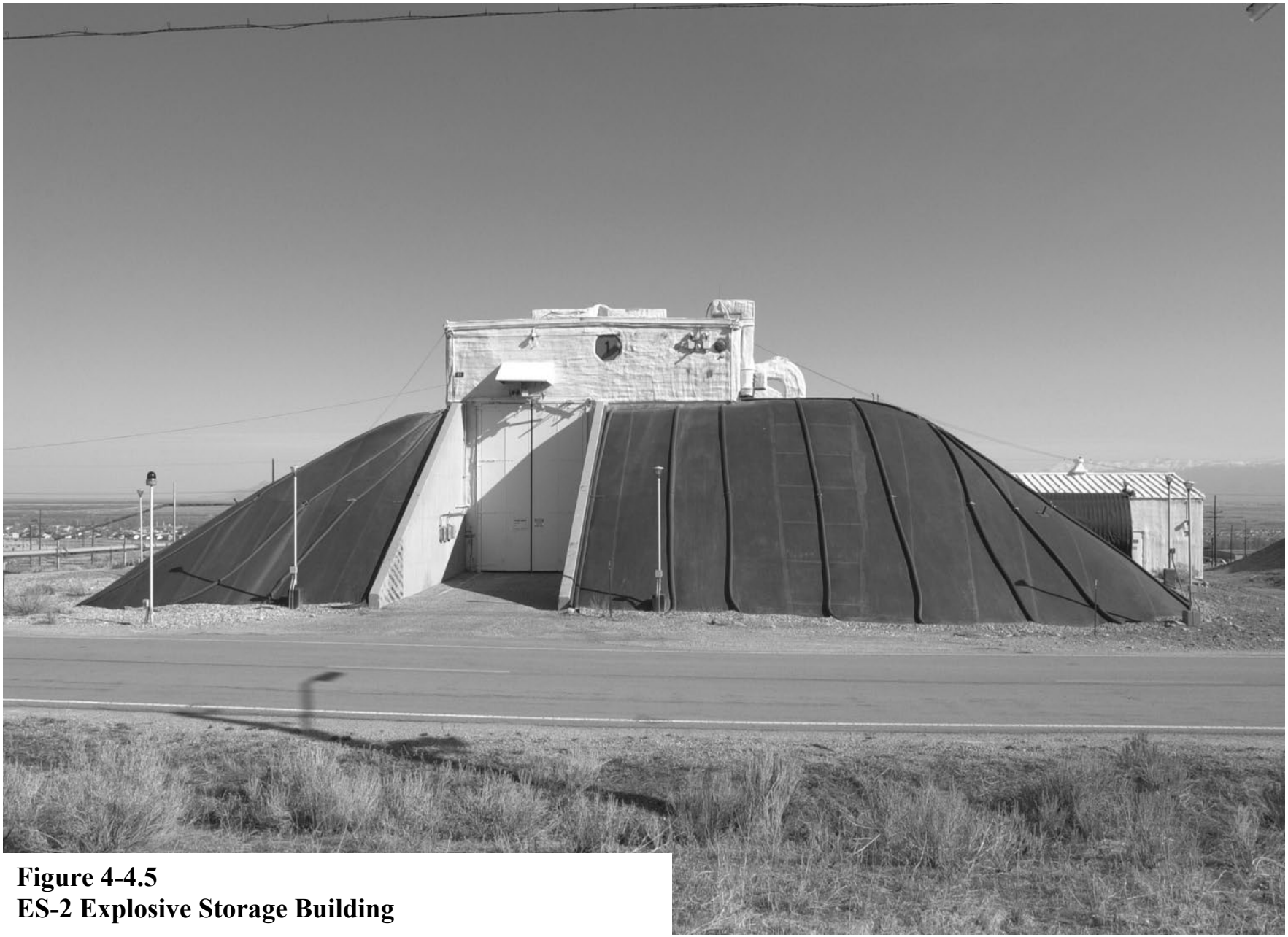


Figure 4-4.5
ES-2 Explosive Storage Building

ES-2 is cited for 40,000 pounds of Explosive waste

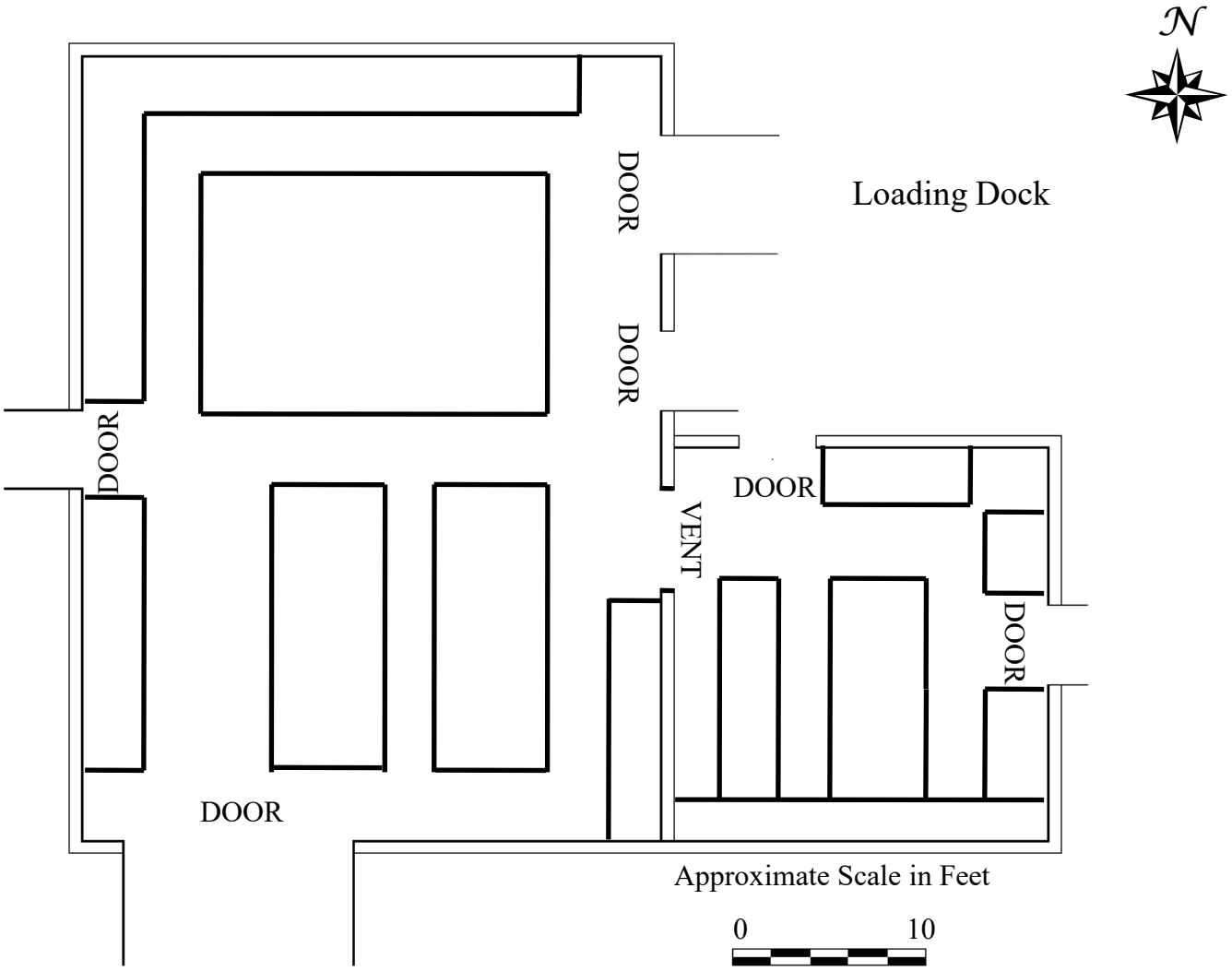


Figure 4-4.6
ES-2 Floor Plan and Typical Storage Configuration

Figure 4-4.7
Ash Storage Pad
Pad/Gondola

Figure 4-4.8
ES-3 Explosive Storage Building

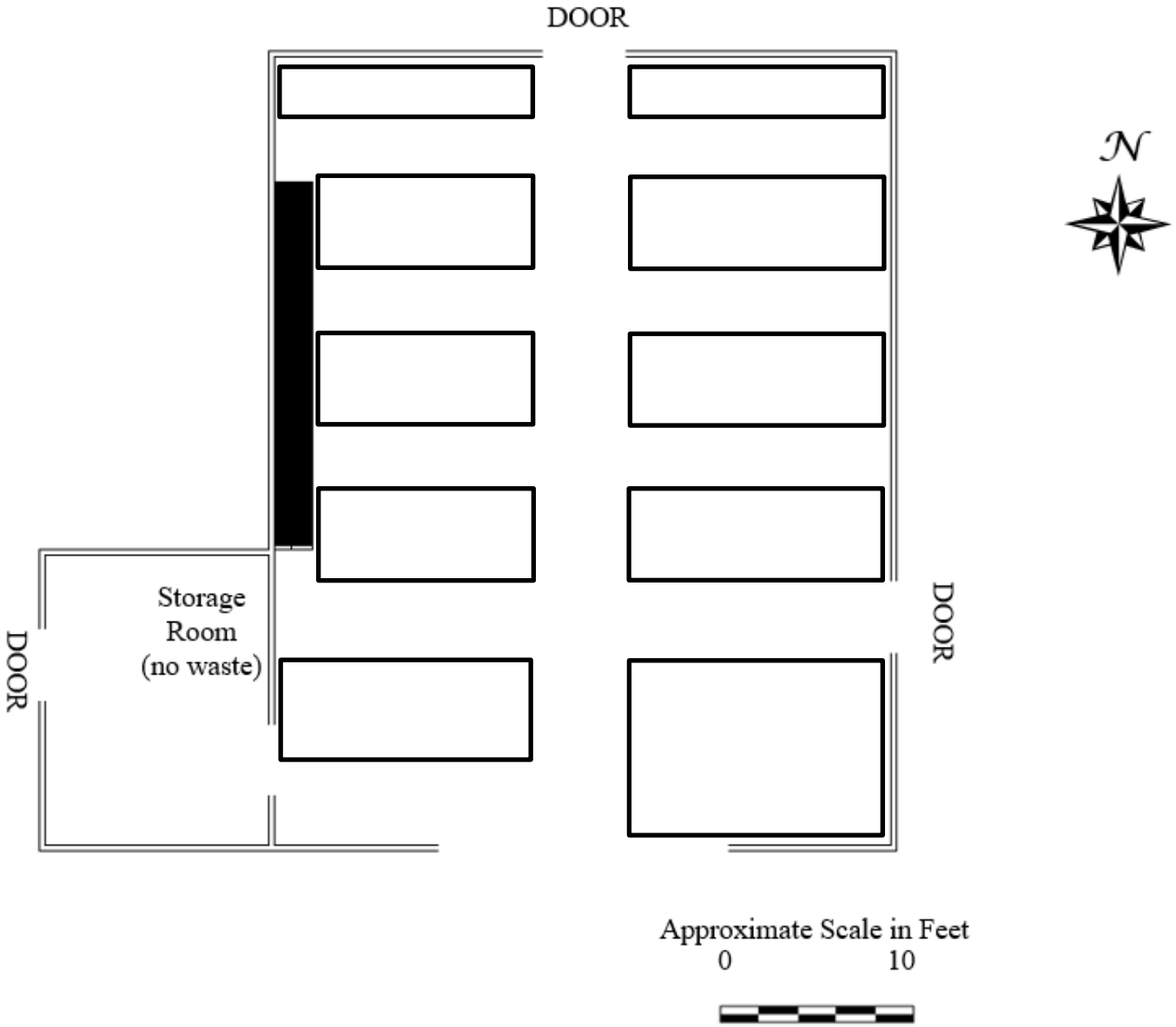


Figure 4-4.9
ES-3 Floor Plan and Typical Storage Configuration

Figure 4-6.10
NIROP BURNING GROUNDS

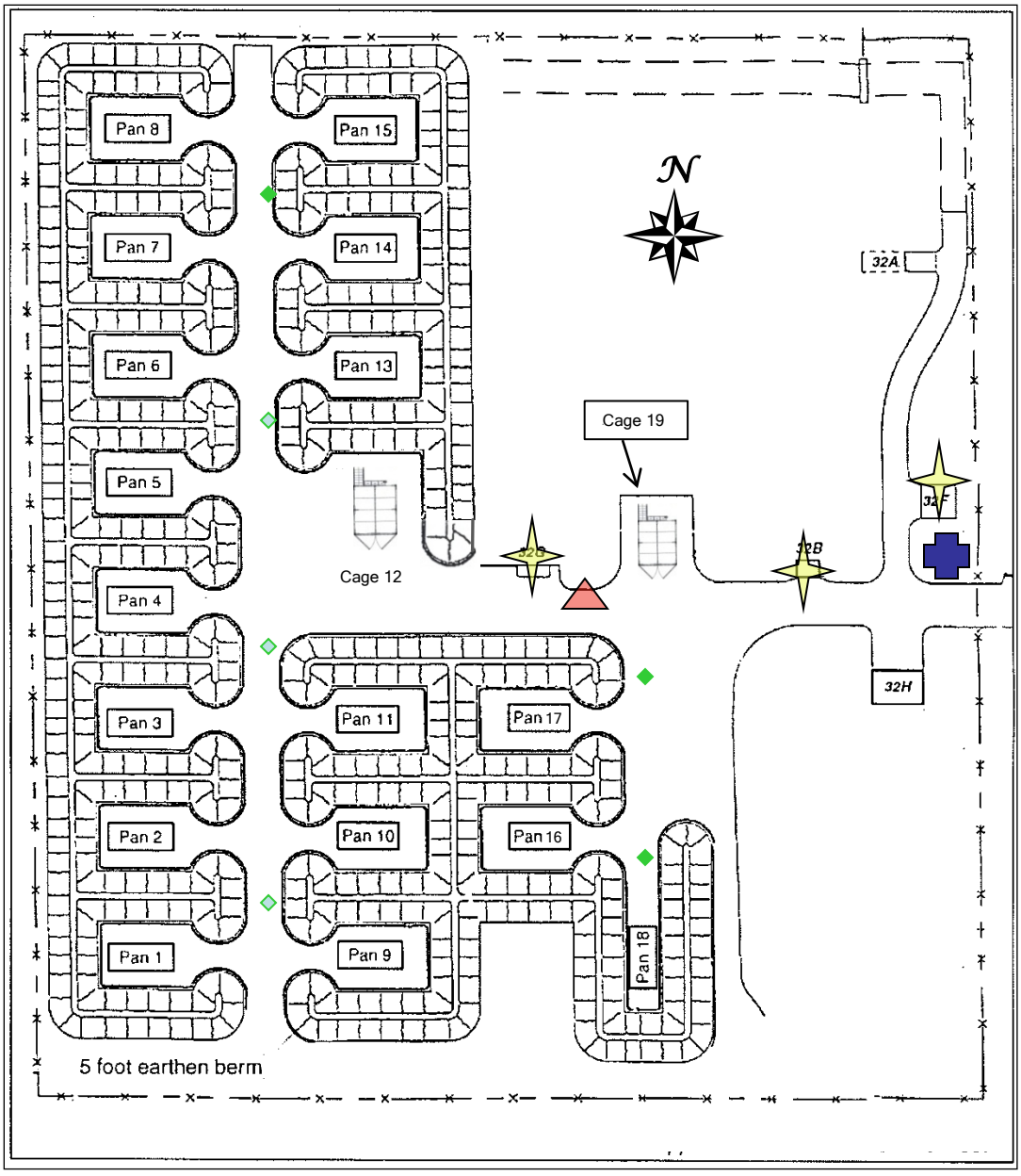


Figure 4-6.11
NIROP Burning Grounds

Telephone, Sirens, Flashing Lights

Fire Blankets

Fire Hydrant

Hose Bibs, Hose, and Racks

FIGURE 4-6.12

BURNING GROUNDS PRE BURN INSPECTION

RECORDED BY:_____ DATE:_____

SUPERVISOR:_____ TIME:_____

✓- ACCEPTABLE X – UNACCEPTABLE (Describe in Comments below)

PAN OR CAGE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
RESISTANCE CHECK FOR SHORT CIRCUITS	CHECK COMPLETE ☐ LIST PANS/CAGE THAT FAIL & ARE OUT OF SERVICE DUE TO RESISTANCE ISSUES _____																		
CHECK PREVIOUS POST BURN INSPECTION FOR LOCATION OF RESIDUE AND UNBURNED SLUMS, IDENTIFY WITH A ✓ NOTE LOCATION OF RESIDUE IN A BOX IN COMMENTS BELOW																			
SAFETY ITEMS AT CONTROL BUNKER	SIREN AND FLASHING LIGHT OPERATIONAL ☐ RADIO OPERATIONAL ☐ VERIFY BURNING GROUNDS SIGN IS INTACT AND IN GOOD REPAIR ☐ **FIRING SYSTEM KEY AND PLUG (RED) REMOVED FROM FIRING SYSTEM AND IN POSSESSION OF OPERATORS BEFORE ENTERING BURNING GROUNDS** ☐																		
INSPECT AND VERIFY ALL PANS OR CAGES ARE READY FOR FRESH WASTE (CLEANED, NO EJECTED MATERIAL, GATHERED RESIDUE, NO UNBURNED SLUMS)																			
PANS AND CAGES CHECKED FOR LEACHATE LEAKAGE																			
SAFETY ITEMS AT BURNING GROUNDS	TELEPHONE OPERATIONAL ☐ FIRE EXTINGUISHER OPERATIONAL ☐ FIRE BLANKETS (3) AVAILABLE ☐ DIESEL STORAGE ACCEPTABLE (NO LEAKS) ☐																		

COMMENTS: Describe any unacceptable conditions identified above. Describe unusual operational problems and corrective actions taken. Use back if necessary.

CORRECTIVE ACTION:

Figure 4-6.13
Restrictions on Placement of Explosive Waste at the NIROP Burning Grounds

Waste Type	Burn Pan Restriction/Requirement
Liquid Explosives	1. No other waste type may be placed on a pan with liquid explosives with the exception of waste base grain used for ignition purposes. 2. Liquid explosives wastes may not be placed in a cage. 3. A single bag or an aggregate of bags not to exceed 35 pounds total weight may be placed at a station; stations with liquid explosive waste must be separated by **four** feet. 4. Cardboard must be placed under each bag of liquid explosive waste.
Nitroglycerine remover	1. No other waste may be placed on a pan that contains nitroglycerine remover waste.
Class 1.1 waste	1. Bags containing primarily Class 1.1 propellant may only be placed in a single row down the middle of the burn pan. 2. Class 1.1 wastes must be separated from Class 1.3 wastes by a minimum of **three** feet. 3. D-5 casting necks may weigh up to 650 pounds. 4. Waste may not be placed on a pan parallel or opposite to a pan containing a D-5 casting neck. 5. Only **three** Class 1.1 diapers may be burned on pan. Each diaper must be contained within an empty SLID.
HMX and RDX (Dry Ingredient Wastestream)	1. Dry HMX or RDX or dry ingredient mixtures are burned in shallow 30" x 30" cardboard boxes. Only **four** boxes may be burned per pan. 2. Cardboard boxes of HMX or RDX or dry ingredient mixtures must be separated from each other by a minimum of **three** feet. 3. Very wet HMX or RDX waste must be burned in empty SLIDs or cardboard boxes and desensitized with wood pulp. No more than 10 gallons of very wet HMX or RDX may be placed in each container.
Vent Socks (Dry Ingredient Wastestream)	1. Lightly contaminated vent socks may be unrolled and placed in Cage 12 or Cage 19. 2. Heavily contaminated vent socks are burned in shallow cardboard boxes. Only **three** boxes may be placed on a burn pan. 3. No other waste type may be placed on a pan with heavily contaminated vent socks. 4. Heavily contaminated vent socks may only be placed in a single layer in the cardboard box.
AP and aluminum (Dry Ingredient Wastestream)	1. AP or aluminum waste must be separated by **three** feet from other wastes when burned on a pan (does not apply to Cage 12 or Cage 19). 2. AP or aluminum waste must be heavily dieseled to assure a uniform burn.
Laboratory or Propellant Development waste	1. Laboratory or propellant development waste must be separated by **three** feet from all other explosive wastes.
Ordnance or potentially propulsive items (Class 1.1 wastestream)	1. Ordnance or potentially propulsive items must be burned in Burn Pan 16, Cage 12, or Cage 19. 2. Ordnance or potentially propulsive items must be burned **three** feet from any other waste placed in Burn Pan 16, Cage 12 or Cage 19. 3. Ordnance items must be burned twice.
Class 1.3 waste	1. Class 1.3 wastes must be separated from Class 1.1 wastes by a minimum of **three** feet. 2. A maximum of **five** Class 1.3 diapers may be burned on a burn pan. Each diaper may remain in its fiberboard drum.
Note: With the exception of propellant casting necks, the weight limit for burn pans is 500 pounds including the weight of combustibles, ignition powder and diesel fuel unless limited by the above restrictions.	

Figure 4-6.14
Burning Grounds Cage 16

Figure 4-6.15
Burning Grounds Cage 19
(Picture is looking North)

FIGURE 4-6.16

BURNING GROUNDS LOG

Recorded By: _____ Date: _____

Checked By: _____ Time: _____

Supervisor : _____ Wind Direction - From: _____

Pan Burn Order: _____

✓ - Acceptable X - Unacceptable

PAN NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Slums Per Pan Total Slums All Pans																			
Explosive Wt./Pan Explosive Wt. All Pans																			
Total Wt./Pan Total Wt. All Pans																			
Liquid Explosive Slums Separated By 4 Feet Or More From Others																			

Description Of Slum		Slum Number	Explosive Weight	Total Weight
Liquid Explosive Slums	D003			
1.1 Explosive Slums	D003			
Catch Tank Slums	K044			
Lab Slums	D003			
Dry Ingredient Slums	D003			
1.3 Explosive Slums	D003			
NG Remover Slums	D003			
Unusual R&D Slums	D003			
Total Number and Weight of Slums				

Diesel -
Base Grain -
Combustibles -

Comments: Describe any unusual slums or operational problems and the corrective action taken. Use back if necessary.

Corrective Action:

FIGURE 4-6.17

BURNING GROUNDS POST BURN INSPECTION

RECORDED BY:_____ FOR BURN OCCURING ON:_____

SUPERVISOR:_____

✓- ACCEPTABLE X – UNACCEPTABLE (Describe in Comments Below)

PAN or CAGE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Pan or Cage checked for open flame or hot spots, if found check box below																			
Pans or Cages cleaned including: 1. Surface cleaned 2. Unburned residue collected on pans, cages or in separate container 3. Ejected items picked up and put on pan or cage 4. Surface around pans and cages swept to collect ash, weather permitting 5. BG ash placed in proper container 6. Cover residue or unburned waste if not burned by 5 PM, temperatures permitting																			
Date pan or cage cleaned (Operators Initial)																			

Identify Pans, Cages or Container with unburned residue _____

IDENTIFY SITUATIONS AFFECTING CLEANING THE DAY AFTER A BURN

☐ Unburned waste (Misfires, failure to ignite) PANS or CAGES _____

☐ Ordnance & bleed tubes (clean after second burn) CAGE 12, 16 or 19 (Circle)

☐ Bulk propellant burn on Friday PANS _____

☐ Snow covers pans between burn and cleaning PANS or CAGES _____

☐ Hot spots still observed on pans (Isolate pans) PANS or CAGES _____

☐ Open flame still observed on pans (Isolate Burning Grounds)
PANS or CAGES _____

☐ Cleaning of Cage 12 or Cage 19 (minimum 36 hours after ignition)

☐ Asphalt not swept because of snow, ice, precipitation, or winds over 35 mph

SAFETY ITEMS	STATUS
Radio is Operational	
Telephone is Operational	
Fire extinguishers are available for use	
Fire blankets (3) are available for use	
Diesel Storage Acceptable (no leaks)	
BG firing system key and plug remain with operators	

COMMENTS:

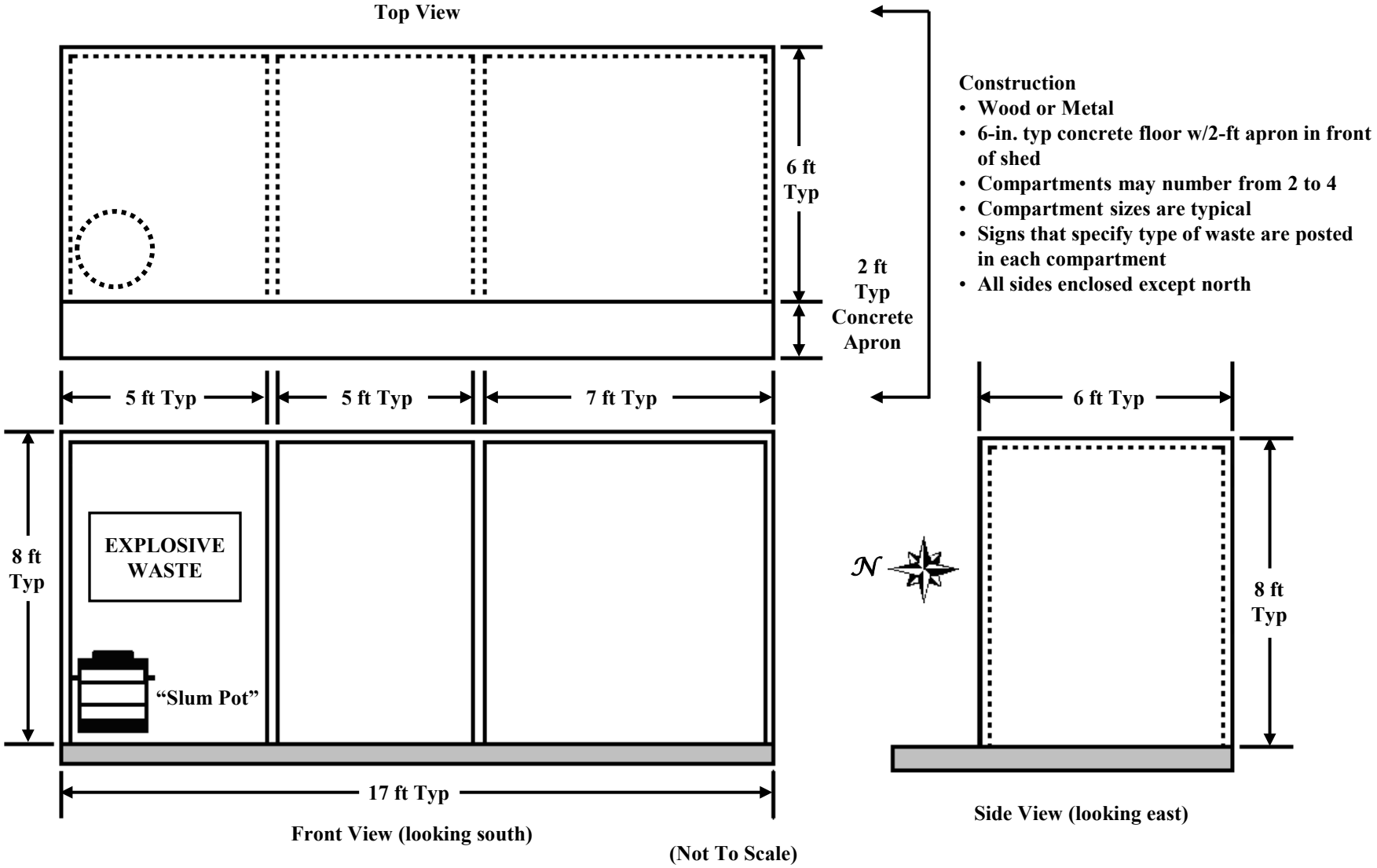


Figure 4-2.4
Typical Explosive Waste Temporary Collection Shed

GASC0210 Revised 12-JAN-1994 Printed 10-JAN-1996

No. 1 Diesel Fuel, No. 1 Fuel Oil

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Tradenames and Synonyms

Fuel Oil, No. 1
Diesel Fuel, No. 1
Diesel Fuel, No. 1, Low Sulfur
Kerosene, Low Sulfur
3501, 3511, 3554, 4195 - Conoco Product Codes

Company Identification

MANUFACTURER/DISTRIBUTOR
CONOCO INC.
P.O. BOX 2197
HOUSTON, TX 77252

PHONE NUMBERS

Product Information	1-713-293-5550
Transport Emergency	CHEMTREC 1-800-424-9300
Medical Emergency	1-800-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

 # Components

Material	CAS Number	%
Straight Run Kerosene	8008-20-6	
and/or		
Hydrodesulfurized Kerosene	64742-81-0	

Petroleum distillate exposure limit applies.

(Continued)

HAZARDS IDENTIFICATION

Potential Health Effects

Substance Information
Primary Routes of Entry: Skin, inhalation

The product may cause irritation to the eyes, nose, throat, lungs, and skin after prolonged or repeated exposure. Extreme overexposure or aspiration into the lungs may cause lung damage or death. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater overexposure may cause dizziness, slurred speech, flushed face, aortic plaques, heart beat irregularities, unconsciousness, and convulsions.

Pulmonary fibrosis has been reported in cable plant workers exposed to mist and vapors of mineral oils and kerosene for 5-35 years. Because of mixed exposures to mineral oils as well as kerosene, it is difficult to attribute these effects to kerosene alone.

Individuals with pre-existing diseases of the lungs, liver, or kidneys may have increased susceptibility to the toxicity of excessive exposures.

Combustion Product:
Carbon monoxide is a gas that can result from incomplete combustion of hydrocarbons, from detoxification of some chemicals like methylene chloride, tobacco smoke, and even from natural body processes. Carbon monoxide binds tightly to hemoglobin and interferes with oxygen transport to body tissues. Overexposure can cause headache, nausea, nervous system depression, coma, and death.

Carcinogenicity Information
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid
INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Wash skin thoroughly with soap and water. If irritation develops and persists, consult a physician.

(Continued)

FIRST AID MEASURES(Continued)

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians

Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400 mL water and mix thoroughly. Administer 5 mL/kg, or 350 mL for an average adult.

Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional toxic substances. Activated charcoal may induce vomiting, but may be given after emesis or lavage to absorb toxic additives. Steroid therapy in mild to moderate cases does not improve outcome. Bacterial pneumonia often occurs after exposure, but prophylactic antibiotics are not indicated and should be reserved for documented bacterial pneumonia.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point	115 F (46 C)
Method	TCC
Flammable limits in Air, % by Volume	
LEL	0.5
UEL	6
Autoignition	410 F (210 C)

NFPA Classification Class II Combustible Liquid.

Vapor forms explosive mixture with air. Vapors or gases may travel considerable distances to ignition source and flash back.

Extinguishing Media

Water Spray, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for personnel attempting to stop a leak. Water spray may be used to flush spills away from sources of potential ignition.

Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

(Continued)

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)
Remove source of heat, sparks, flame, impact, friction, and electricity including internal combustion engines and power tools. If equipment is used for spill cleanup, it must be explosion-proof and suitable for flammable liquid and vapors.

NOTE: Vapors released from the spill may create an explosive atmosphere.

Initial Containment
Dike spill. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up
Soak up with sawdust, sand, oil dry or other absorbent material.

HANDLING AND STORAGE

Handling (Personnel)
Avoid breathing vapors or mist. Wash thoroughly after handling. Wash clothing after use.

 # Handling (Physical Aspects)
Ground container when pouring. Keep away from heat, sparks and flames. Close container after each use. Do not pressurize, cut, weld, braze, solder, grind, or drill on or near full or empty container. Empty container retains residue (liquid and/or vapor) and may explode in heat of a fire.

Storage
Store in accordance with National Fire Protection Association recommendations. Keep container tightly closed. Store in a well ventilated place. Store away from oxidizers, heat, sparks and flames.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls
Use only with adequate ventilation. Keep container tightly closed.

Personal Protective Equipment
RESPIRATORY PROTECTION
None normally required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Select appropriate NIOSH-approved respiratory protective equipment when exposed to sprays or mists. Proper respirator selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure, and published respirator protection factors.

PROTECTIVE GLOVES
Should be worn when the potential exists for prolonged or repeated

(Continued)

EXPOSURE CONTROLS/PERSONAL PROTECTION(Continued)

skin contact. NBR or neoprene recommended.

EYE/FACE PROTECTION
Wear safety glasses. Wear coverall chemical splash goggles and face shield when the possibility exists for eye and face contact due to splashing or spraying of material.

OTHER PROTECTIVE EQUIPMENT
Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

Exposure Guidelines

Applicable Exposure Limits

Petroleum distillate exposure limit applies.

PEL	(OSHA)	500 ppm, 2000 mg/m3, 8 Hr. TWA
TLV	(ACGIH)	None Established
AEL *	(Du Pont)	None Established

* AEL is Du Pont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point	330-572 F (166-300 C)
Vapor Pressure	2 mm Hg @ 68 F (20 C)
Vapor Density	>1 (Air = 1)
% Volatiles	(by volume) Nil
Solubility in Water	Insoluble
Odor	Paraffinic
Form	Liquid
Specific Gravity	0.81

Color : Undyed (clear or straw-colored)
Low sulfur diesel may be dyed red.

STABILITY AND REACTIVITY

Chemical Stability
Stable at normal temperatures and storage conditions.

Conditions to Avoid
Avoid heat, sparks, and flame.

Incompatibility with Other Materials
Incompatible with oxidizing materials.

Decomposition
Incomplete combustion may produce carbon monoxide.

Polymerization
Polymerization will not occur.

(Continued)

TOXICOLOGICAL INFORMATION

Animal Data

Animal studies have shown that prolonged or repeated inhalation exposures to high concentrations of some petroleum distillates have caused liver tumors in mice and kidney damage and tumors in male rats. However, kidney effects were not seen in similar studies involving female rats, guinea pigs, dogs, or monkeys. Present studies indicate the kidney effects will only occur in male rats. Also, human studies do not indicate this peculiar sensitivity for kidney damage and studies reported in 1992 showed that this particular type of rat kidney damage is not useful in predicting a human health hazard. The significance of liver tumors in mice exposed to high doses of chemicals is highly speculative and probably not a good indicator for predicting a potential human carcinogenic hazard.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range 100-700 F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils. Other laboratory studies indicate that middle distillates caused the skin tumors by promoting, rather than initiating, the formation of tumors, so the effect is probably dose-related and low level exposure should not be carcinogenic.

Studies in mice and rats have shown that chronic exposure (8 hours/day, 7 days/week, 24 months) to unfiltered diesel exhaust produced tumors of the lungs and also lymphomas. On the basis of these studies, NIOSH recommends that whole diesel exhaust be regarded as a potential carcinogen.

DIESEL FUEL -
Skin : Extremely irritating; no mortality at 5 ml/kg, rabbit
Oral : LD50: 9 ml/kg, rat

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

By itself, the liquid is expected to be a RCRA ignitable hazardous waste, when disposed.

(Continued)

TRANSPORTATION INFORMATION

Shipping Information

INTERNATIONAL HM-181

Proper Shipping Name	Gas Oil
Hazard Class	3
UN/NA Number	UN 1202
Packing Group	III
Label	Flammable liquid
Placard	Flammable

DOMESTIC HM-181

Proper Shipping Name	Fuel oil (or) Diesel fuel
Hazard Class	Combustible liquid
UN/NA Number	NA 1993
Packing Group	III
Label	None
Placard	Combustible

Special Information:
Material must be shipped as a flammable liquid in accordance with the international description if shipped by vessel or air.

REGULATORY INFORMATION

U.S. Federal Regulations

OSHA HAZARD DETERMINATION
This material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA/SUPERFUND
Not applicable; this material is covered by the CERCLA petroleum exclusion. Releases are not reportable.

SARA, TITLE III, 302/304
This material is not known to contain extremely hazardous substances.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute	: Yes
Chronic	: Yes
Fire	: Yes
Reactivity	: No
Pressure	: No

SARA, TITLE III, 313
This material is not known to contain any chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to release reporting requirements.

TSCA

(Continued)

REGULATORY INFORMATION(Continued)

Material and/or components are listed in the TSCA Inventory of Chemical Substances (40 CFR 710).

RCRA
This material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable, or reactive according to U.S. definitions (40 CFR 261). This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If it is a hazardous waste, regulations 40 CFR 262-266 and 268 may apply.

CLEAN WATER ACT
The material contains the following ingredient(s) which is considered hazardous if spilled into navigable waters and therefore reportable to the National Response Center (1-800-424-8802).

Ingredient(s)	Petroleum Hydrocarbons
Reportable Quantity	Film or sheen upon, or discoloration of, any water surface

State Regulations (U.S.)

CALIFORNIA "PROP 65"
This material is not known to contain any ingredient(s) subject to the Act.

PENNSYLVANIA WORKER & COMMUNITY RIGHT TO KNOW ACT
This material may contain the following ingredient(s) subject to the Pennsylvania and Community Right to Know Hazardous Substances List.

Ingredient	Kerosene (Petroleum)
Category	Hazardous Substance

Canadian Regulations

CLASS B Division 3 - Combustible Liquid.

CLASS D Division 2 Subdivision B - Toxic Material. Chronic Toxic Effects.

Transport/Medical Emergency Phone Number: 1-613-348-3616

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating

Health	0
Flammability	2
Reactivity	0

NPCA-HMIS Rating

(Continued)

OTHER INFORMATION (Continued)

Health	1
Flammability	2
Reactivity	0

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS	MSDS Administrator
Address	Conoco Inc. PO Box 2197 Houston, TX 77252
Telephone	713/293-5550

# Indicates updated section.

End of MSDS

Alliant Ammunition and Powder Co.
Regular Telephone No.: (540) 639-8143
Emergency Telephone No.: (540) 639-7323
CHEMTREC Emergency No.: (800) 424-9300
DATE: October 21, 1999 Revised July 20, 2005

SECTION 1: PRODUCT IDENTIFICATION

PRODUCT NAME: Smokeless Powder HES 8666.1

APPEARANCE: solid

COLOR: Gray to Black in color

ODOR: odorless

CASRN: proprietary mixture

HMIS RATINGS

HEALTH HAZARD: 2 moderate

FLAMMABILITY HAZARD: 4 severe

REACTIVITY HAZARD: 4 severe

CHEMICAL DESCRIPTION: Double base smokeless propellant

SECTION 2: HAZARDOUS COMPONENT INFORMATION

HAZARDOUS INGREDIENTS	PEL/TLV
nitrocellulose	not established
nitroglycerin	0.2 ppm C (Skin*) 0.05 ppm TLV (Skin*)
2-Nitrodiphenylamine (2-NDPA)	not established
Oxamide	not established
Cyclotetramethylene-tetranitramine (HMX)	1.5 mg/m^3
graphite	2 mg/m^3

Note: Air level for Alliant Techsystems recommends HMX by analogy with cyclonite

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER!

Extremely flammable
Accidental firing or explosion is likely to cause severe injury or death.
Electrostatic charges generated by emptying package in or near flammable vapor may cause flash fire. May form flammable dust-air mixtures.
May cause skin irritation.
Ingestion may cause headache, insomnia, fatigue, nausea, vomiting, seizure, convulsions, and loss of consciousness.

SECTION 4: FIRST AID PROCEDURES

EYE: Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low pressure water for at least 15 minutes. Get immediate medical attention.

SKIN: Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Render unusable and discard contaminated shoes and leather articles.

INHALATION: Remove to fresh air. Give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

INGESTION: If conscious, drink large quantities of water. Induce vomiting. Call a physician or poison control center immediately. NEVER give anything by mouth to an unconscious person. NEVER induce vomiting in an unconscious person.

SECTION 5: FIRE HAZARD:

FIRE FIGHTING PROCEDURES: EVACUATE AREA IMMEDIATELY. DO NOT fight fire.

EXTINGUISHING MEDIA: Deluge with large quantities of water as quickly as possible by automatic sprinklers or fire hose from a protected location. Product is self-oxidizing.

CONDITIONS TO AVOID: Avoid impact, friction, heat, sparks, or flame.
Avoid conditions that generate dust. This product may form flammable dust-air mixtures.
Avoid emptying package in or near flammable vapors. Static charges may cause flash fire.

HAZARDOUS COMBUSTION PRODUCTS:

Combustion products include: carbon dioxide, nitrogen oxides, aldehydes, carboxylic acids, methane and hydrogen cyanide.

SECTION 6: ACCIDENTAL RELEASE MEASURES:

Clean up spills immediately using soft natural bristle brush and conductive rubber or conductive plastic shovel. Use caution; material is sensitive to initiation from sources such as heat, flame, shock, friction or sparks.
In case of accidental spill or release, refer to Section 8, Personal Protective Equipment and General Hygiene Practices.

SECTION 7: HANDLING AND STORAGE:

GENERAL MEASURES:

Electrically ground all equipment.
Blanket vessel with inert gas when emptying bags where flammable vapors may be present.
Electrically ground operator and pour material slowly into conductive, grounded chute.
DO NOT PRESSURIZE OR EXPOSE CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION
Follow appropriate D.O.D., N.F.P.A. and B.A.T.F. explosive safety measures. Local ordinances may apply.
For handling and storage requirement see 29 CFR 1910.109.
Store in cool, dry place: approximately 68°F (20°C)
Store only in Department of Transportation approved containers.
Check old product for deterioration regularly.
Keep container closed when not in use.

MATERIALS OR CONDITIONS TO AVOID:

Avoid storing product near incompatible materials. See MSDS Section 10
Do not store near flammable materials.
Do not keep deteriorated or salvaged product.
Keep away from heat, flame sparks and other ignition sources.
Do not store in direct sunlight or expose to UV radiation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL HYGIENIC PRACTICES:

Avoid contact with eyes, skin and clothing.
Avoid breathing dust, vapor, or mist.
Handle in areas with adequate ventilation.
Wash thoroughly after handling, and before eating, drinking, or smoking
Avoid contamination of food, beverages, or smoking materials.
Remove contaminated clothing promptly and clean thoroughly before reuse.

PERSONAL PROTECTIVE EQUIPMENT:

Safety glasses
Impervious gloves
Appropriate respiratory protection is required to reduce airborne contaminants that may exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations.

Flame-retardant clothing.
Static-free clothing.
Wear conductive safety shoes.

WORK PRACTICES AND ENGINEERING CONTROLS:

Material is shock sensitive. Use care in handling.
Friction can cause ignition. Keep away from ignition sources.
Prevent build-up of static electric charges.
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Discharge from the ventilation system should comply with applicable air pollution control regulations.
DO NOT smoke in areas where powder is stored or used.
Eyewash fountains and safety showers should be easily accessible.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE:

Completely remove product from area, and thoroughly clean all equipment, piping, or vessel before beginning maintenance or repairs.
Eliminate ignition sources and prevent build-up of static electrical charges.
Use spark-proof tools and explosion-proof equipment.
A work permit system is recommended for any preparation and clean up.
Wetting work area with water will greatly reduce hazards.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES:

Volatile (Wt.)%:	N/A
Solubility in Water:	Negligible
Specific Gravity:	(H_20 = 1) 1.71
Vapor Pressure:	Negligible
Evaporation Rate:	(Butyl Acetate = 1) N/A
PH:	N/A

SECTION 10: STABILITY AND REACTIVITY:

GENERAL STABILITY CONSIDERATIONS:

Stable under recommended handling and storage conditions.
Material is sensitive to friction, shock, impact, and electrostatic discharge.

INCOMPATIBLE MATERIALS:

Incompatible with: acids, oxidizing agents, alkalies and amines, and strong sunlight or ultraviolet light.

HAZARDOUS DECOMPOSITION PRODUCTS:

None anticipated under normal or recommended handling and storage conditions.

HAZARDOUS POLYMERIZATION:

Not anticipated under normal or recommended handling and storage conditions

SECTION 11: TOXICOLOGICAL INFORMATION

REPORTED HUMAN EFFECTS: CARCINOGENICITY/TERATOGENICITY INFORMATION:

Cyclotetramethylenetetranitramine (HMX) None known, but may also aggravate severe untreated anemia.

Oxamide None known. Ingestion probably would aggravate any pre-existing kidney or urinary bladder irritation.

REPORTED HUMAN EFFECTS: CARCINOGENICITY/TERATOGENICITY INFORMATION:

Nitroglycerin: WARNING! Inhalation may cause severe headache. Ingestion may cause severe headache and blood pressure lowering. Absorption through skin may cause severe headache. Repeated skin contact may cause allergic skin reaction (skin sensitization).

Signs and Symptoms of Overexposure in the Workplace:

Skin - Severe headache, nausea, vomiting, fatigue
Inhalation - Severe headache, nausea, vomiting, fatigue
Ingestion - Severe headache, nausea, vomiting, fatigue

Medical conditions generally recognized as being aggravated by exposure:

Severe untreated anemia and glaucoma may be aggravated by extreme overexposure to nitroglycerin in the workplace. Aggravation of these conditions has never been reported as a consequence of workplace exposure but has been reported following protracted medicinal over dosage of nitroglycerin. Alcohol has been reported to intensify any adverse reaction to nitroglycerin.

Not listed as a carcinogen by National Toxicity Program (NTP); not regulated as a carcinogen by Occupational Safety and Health Administration (OSHA); not evaluated by International Agency for Research on Cancer (IRAC). Rats dosed for a lifetime showed a decrease in the number of mammary and pituitary tumors that usually occur.

Reported Human Effects: The effects reported above are only ones that have been reported following workplace exposure. The following additional effects have been reported following medicinal usage or overusage: faintness, skin flush, palpitation, rapid heart beat, dizziness, abdominal pain, retrosternal discomfort, muscle twitches, Heinz bodies (black spheres in red blood cells), methemoglobinemia, depression, confusion, skin irritation, and allergic skin reaction (sensitization).

Reported Animal Effects: Nitroglycerin not teratogenic in rats or rabbits. Inactive in dominant lethal mutagenicity test. No effect on fertility in reproduction test. At many times the dose that would be received following exposure at the TLV, methemoglobinemia and fibrous tissue formation in the bile ducts were seen. Testicular effects were seen in rats dosed for 3 months at over 20,000 times the dose a worker would receive working in the TLV. In lethal dose determination in rats, rapid breathing, poor muscle tone, raised hair and excessive activity were seen.

Other: Mutagenic in the Ames test.
96 hr. LD_{50} - Rainbow trout: 1mg/1
- Fathead minnow: 4.2mg/1
8 day LD_{50} (Dietary) - Bobwhite quail: >>5,600 ppm

Reported Animal Effects: HMX only poorly absorbed through skin of rabbits and dogs from solutions in transdermal solvents such as DMSO and acetone. No effects were seen which maximum concentrations were applied to the skin of dogs daily for four days. Maximum concentrations applied to the backs of rabbits caused a small percentage of deaths preceded by convulsions. Intravenous administration to dogs at sublethal doses caused hyperactivity, tremors, hyperflexia, convulsions, and lowering of blood pressure. The onset of these effects occurred 1 to 2 hours after dosing. No methemoglobinemia was seen. Similar effects would be expected from overexposure by inhalation; however, no inhalation studies have been reported. Not skin sensitizer or irritant.

Reported Animal Effects: 2-NDPA No conventional toxicological tests have been published for this chemical. Health hazard information in this MSDS is based on the known structure/biochemistry/toxicology relationships for this class of compounds.

SECTION 12: ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION: NA

SECTION 13: DISPOSAL CONSIDERATIONS:

Disposal (if explosive) should be carried out under the direct supervision of a qualified person. Call Alliant Techsystems for assistance if needed.

For industrial disposal, federal hazardous waste regulations allow open burning of explosive wastes in permitted facilities. Burn in the open in an isolated location in small, shallow piles not over one inch deep.

Quantity burned at any one time should not exceed one pound. Use an ignition train of slow-burning combustible material to permit retreat to a safe distance.

SECTION 14: TRANSPORTATION INFORMATION

U.S. DOT:

For information regarding transportation of this product, please contact Alliant Techsystems at 540-639-8743

U.S. DOT Proper Shipping Name:	Powder Smokeless Class B Propellant
UN ID No.:	UN0161
Class & Division:	1.3C
Packing Group.:	Packing Group II

SECTION 15: REGULATORY INFORMATION:

The following environmental and regulatory data are provided to assist users of this product in defining their regulatory environmental compliance.

SARA SEC. 313 Chemicals

	Sec. 302 (EHS) TPQ	Section 304 EHS RQ	CERCLA RQ	Sec. 313	RCRA Code
Product or Components					
nitroglycerin			10	313	P081

Section 313:

This product does contain a chemical subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40CFR375.

CERCLA

This product does contain a chemical subject to reporting as a CERCLA Hazardous Substances under 40CFR302.4.

RCRA

This product exhibits the following characteristics listed in 40CFR261, Subpart C: ignitability and reactivity (D003).

SECTION 16: OTHER INFORMATION

LIST OF ACRONYMS:

ACHIH:	American Conference of Governmental Industrial Hygienist
AICS:	Australian Inventory of Chemical Substances
AIHA WEEL:	American Industrial Hygienists Association - Workplace Environmental Exposure Level
ANSI:	American National Safety Institute
C:	Ceiling
CASRN:	Chemical Abstracts Service Registry Number
CERCLA:	Comprehensive Emergency Response, Compensation and Liability Act
DSL:	Domestic Substances List (Canadian)
EIECCS:	European Inventory of Existing Commercial Chemical Substances
HMIS:	Hazardous Materials Identification System
IARC:	International Agency for Research on Cancer
MITI:	Ministry of International Trade and Industry (Japanese)
N/A:	Not Applicable
NDSL:	Non-domestic Substances List (Canadian)
NFPA:	National Fire Prevention Association
NOR:	Not Otherwise Regulated
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit
RCRA:	Resource Conservation and Recovery Act

RQ:	Reportable Quantity
SARA:	Superfund Amendment Reauthorization Act
STEL:	Short Term Exposure Limit
TLV:	Threshold Limit Value (ACGIH)
TPQ:	Threshold Planning Quantity
TSCA:	Toxic Substances Control Act
TWA:	Time Weighted Average

The information and recommendations contained in this Material Safety Data Sheet have been compiled form sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

MSDS REVIEW

Health	4
Flammability	3
Reactivity	1
Specific Hazard	9

Reference Number (part or stock number)	WS18450
	WS27815-001

Respirator

✓ Half mask air purifying respirator with a
__ Full face air purifying respirator with a
- __ black organic vapor cartridge
- __ purple HEPA filtered cartridge
- __ yellow organic vapor/acid gas cartridge
- __ green ammonia cartridge
- ✓ black organic vapor-purple HEPA filtered cartridge
- __ yellow organic vapor/acid gas-purple HEPA filtered cartridge
- __ green ammonia-purple HEPA filtered cartridge
- __ Defender drab green multi purpose cartridge
- __ Defender drab green multi purpose cartridge with HEPA filter

__ Half mask airline respirator
__ Full face airline respirator
__ Abrasive blast helmet
__ Self Contained Breathing Apparatus (SCBA)
__ Not normally required

Hand

✓ Foil laminate	__ Polyethylene	__ NBR	__ Abrasion Resistant
__ PVA	__ PVC	✓ Nitrile	__ Cotton
__ Latex	__ Polyurethane	__ Thermal	__ Non-Porous
__ Natural rubber	__ Viton	__ Cryogenic	__ Dust Resistant
__ Butyl	__ Neoprene	__ Leather	__ Not normally required

Eye

✓ Safety glasses with side shields	__ Face Shield
__ Chemical monogoggles	__ Welders goggles

Body

✓ Flame retardant coveralls or smock	__ Foil Laminate Apron
__ Welder's protective clothing	__ Foil Laminate Sleeves
__ Tyvek suit	__ Foil Laminate Shoe Covers
__ Rubber Apron	

5.0 PROCEDURES TO PREVENT HAZARDS [R315-264-30 through 37]

The Bacchus Facility is a collection of hazardous waste management units that are all operated by ATK. The Bacchus Facility consists of the contiguous Plant 1, Bacchus West and NIROP facilities. The Plant 1 regulated unit~~s~~ is ~~include:~~ HS-1~~, ES-1, Segment Storage and RH-1~~. NIROP regulated units include: ES-2, ES-3, NIROP Burning Grounds and Ash Storage Pad. All of these units are designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or the release of hazardous waste or hazardous waste constituents into the air, soil, or surface water that could threaten human health or the environment. This plan covers the safe handling procedures employed at the waste management units at both the Plant 1 and NIROP facilities.

5.1 SECURITY

5.1.1 Security Procedures and Equipment

ATK provides 24-hour security of the Bacchus Facility through the use of fences, by limiting access at entrance gates, having armed security force that patrols the Bacchus Facility, and by staffing a private fire department. The NIROP Facility is located within the Bacchus Facility boundary fence.

5.1.2 Surveillance System

Entrance into the Bacchus Facility is controlled by security guards that are stationed at the main entrance gates and under the direct supervision of the facility's Security Department or through the use of ATK issued identification card that allows access through card-operated gates equipped with digital surveillance cameras.

Access to the Bacchus Facility is limited to authorized personnel who have a valid Bacchus Facility identification badge on their person that is clearly displayed. Features of the security and surveillance system include:

- All Bacchus Facility employees are issued an identification badge;
- All visitors to the Bacchus Facility are required to obtain visitor passes, a temporary identification badge from the facility's Security Department;
- Escorted visitors will be accompanied by a Bacchus facility employee while they are on-site;
- Unescorted visitors, e.g., contractors, must successfully complete the Bacchus Facility's Security and Safety training before they can enter the Bacchus Facility alone;
- All employees and visitors on the Bacchus Facility are required to always clearly display their Bacchus Facility identification badge while on the site;
- All visitors entering the Bacchus Facility will go through one of the access gates;
- Contractor and commercial vehicles may enter contractor gates after proper clearance has been secured; and
- All gates to the site are closed and locked during non-operating hours.

5.1.3 Barriers and Means to Control Entry

An eight foot tall perimeter security fence surrounds the entire Bacchus Facility with access available only through controlled gates. The perimeter fence is monitored daily by armed security personnel. Repairs to the fence are made when they are identified. The location of the boundary fence and gates are shown on Figure 5-1.1.

Hazardous Waste Management Facility Barriers

All of the hazardous waste management facilities are located inside the secured perimeter for the Bacchus Facility.

NIROP waste management units - the ES-2 and ES-3 buildings are locked when unoccupied. Ash Storage Pad is an open air storage pad that is immediately adjacent to the NIROP Burning Grounds and has no secondary fencing. The NIROP Burning Grounds is a fenced compound that is located inside the perimeter fence for the Bacchus Facility. The fence surrounding the NIROP Burning Grounds is kept locked when the unit is unoccupied.

Plant 1 waste management unit~~s~~ - ~~the ES-1 and RH-1 buildings are locked when unoccupied. Segment Storage is an open air pad that has no secondary fencing.~~ The HS-1 facility is composed of a number of storage buildings that are located inside the perimeter fence for the ATK-Bacchus facility. This unit has no secondary fencing, but the doors to the liquid storage areas are locked at the end of each working day.

5.1.4 Warning Signs

Warning signs are posted at approximate 500-ft intervals, at fence corners, and at each gate along the fence. In addition each hazardous waste storage and treatment unit is posted with a sign that reads “Danger, Unauthorized Personnel Keep Out” or similar wording. The signs are written in English and are legible at a distance of at least 25 feet. The signs are posted at each entrance and at normal approach routes to the active portion of each hazardous waste management unit.

5.2 SITE FACILITY INSPECTIONS

5.2.1 General Inspection Requirements

Routine inspections are conducted at all hazardous waste management units located at the Bacchus facility. The inspections are designed to detect equipment deterioration and malfunctions, operator errors, and accidental leaks or spills that could lead to the release of hazardous waste or hazardous waste constituents to the environment and/or threaten human health.

The inspection forms for the hazardous waste management units are presented in Figures 4-6.12, 4-6.17, 5-2.2, 5-2.3, 5-2.4, and 5-2-5. The common non-emergency problems that may be encountered during an inspection are listed on the inspection forms. All inspectors will be trained in what constitutes acceptable and unacceptable conditions for both emergency and non-emergency situations. A log of this training is maintained in the Bacchus Facility’s employee training record. The inspector is required to check each item on the form and indicate whether its condition is acceptable or unacceptable. If the status of a particular item is unacceptable, the inspector will detail the problem and describe what type of corrective action will be taken to correct the problem. This information is recorded on the applicable inspection form.

All non-emergency items will be corrected within 90 days of the date of discovery. A non-emergency item is anything that does not have the potential to escalate into an imminent endangerment to human health or the environment, create hazards to Bacchus Facility personnel or visitors, or would not evolve into a situation that would immediately affect Bacchus Facility production or waste handling activities. All corrective action activities will be identified on the inspection record. The date the problem is corrected will also be documented. Problems requiring an extended period to correct may be addressed using a temporary work around solution until a permanent solution can be implemented as long as the temporary solution does not present a risk to human health or the environment.

All temporary solutions will be documented on the inspection form in the operating record. Whenever a temporary solution is implemented, ATK will provide justification upon request to any authorized representative of the Director detailing the need for the temporary solution and explaining why the non-emergency item could not be corrected within 90 days. If ATK cannot correct the problem that required a temporary solution within 180 days of the date of discovery of the problem, then ATK will submit a request to modify the permit so that the problem can be corrected.

An emergency situation is defined as any situation that could escalate into imminent endangerment to human health or the environment, create hazards to Bacchus Facility personnel or visitors, or involve situations that could affect the Bacchus Facility's production or waste management activities. Emergency situations include, but are not limited to the following: (1) spill or leak of a reportable quantity any hazardous waste, material or substance; (2) incompatible storage of wastes, materials or substances; (3) storage of wastes, materials or substances in unlabeled or unknown containers; and (4) storage containers in poor condition (e.g. the container cannot be closed properly or has damage that may compromise the integrity of the container) The inspectors will clearly document and detail all emergency situations discovered during an inspection. All emergency situations will be corrected, contained or stabilized within 72 hours from the time of discovery. All operations at a facility with an emergency situation will be halted until the emergency situation is resolved.

In the event that an emergency involves the release of hazardous waste or hazardous waste or hazardous waste constituents to the environment, efforts will be directed towards containing, removing, and cleaning up or decontaminating the affected area. Chapter 6 of this permit application, the Hazardous Waste Contingency Plan, details the processes for reporting and managing corrective action of a release to the environment.

All inspection records will be maintained for a minimum period of 3 years from the date of the inspection. Each inspection record will identify the name of the inspector, and the date and time the inspection was performed.

5.2.2 Inspection Criteria

The inspector checks the status and condition of each item and records the finding. If the condition of a particular item is unacceptable, the inspection will record appropriate and complete information on the issue, including the date of discovery, the nature of the repair needed, and date when corrective action took place. When deterioration or malfunctions of facility equipment, errors, or accidental leaks and spills are noted, the inspector takes prompt action to correct the problem. If the inspector is unable to correct the problem immediately, the facility supervisor will be informed. If the problem cannot be corrected within 24 hours, the facility supervisor will notify Bacchus Facility Environmental Services. All corrective actions or repairs are recorded on the appropriate inspection record form.

The following tables identify inspection items and criteria for each hazardous waste management unit identified in this permit application.

Table 5.1
Burning Grounds Pre-burn Inspection
(see Figure 4-6.12)

Inspection Items	Inspection Criteria
Radio	Verify the radio works properly
Telephone	Verify the telephone works properly.
Fire Extinguisher	Verify that at least one (1) fire extinguisher is present, and access is not blocked. If the extinguisher has a pressure gage, verify it is in the normal range; if not, verify the plastic seal is in place.
Fire Blankets	Verify the fire blankets are in the designated locations.
Diesel Storage	Verify the condition of the container – no signs of leaks.
Siren & Flashing Light	Verify the siren and flashing light is operational.
Warning Sign	Verify that warning sign is intact and in good repair.
Unburned Slums	Check previous Post Burn Inspection for location of unburned slums and residue
Ejected Material	Visually inspect the area around the pans burned on previous date for unburned material. Collect any unburned material.
Pan Water Leakage	Visually inspect the pan for leaking pan water.
Pan Water Level	Visually inspect the pan for water on the pan surface. Pump the pan if water is observed.
Residue Cleaning	Visually inspect the pans burned previously for residue. Collect and dispose of any residue if present.
Resistance Check	Acceptable value is an open circuit (no short circuit)

Table 5.2
Burning Grounds Post Burn Inspection
(see Figure 4-6.17)

Inspection Item	Inspection Criteria
Radio	Verify the radio works properly.
Telephone	Verify the telephone works properly.
Fire Extinguisher	Verify that at least one (1) fire extinguisher is present, and access is not blocked. If the extinguisher has a pressure gage, verify it is in the normal range; if not, verify the plastic seal is in place.

Table 5.2 continued

Inspection Item	Inspection Criteria
Fire Blankets	Verify the fire blankets are in the designated locations.
Diesel Storage	Verify the condition of the container – no signs of leaks.
Open Flame or Hot Spots	Verify that no open flame or hot spots are present from previous burn.
Pan and Cage Cleaning	Clean pan and cage surface according to procedure.
Unburned Residue Collected	Unburned residue collected on pans, cages or separate container if present.
Ejected Material	Visually inspect the area around the pans or cages burned on previous date for unburned material. Collect any unburned material and place it on the pan or cage.
Asphalt surface around pans and cage	Asphalt surface around pans and cages swept to collect ash, weather permitting
Ash Storage	Containerize ash and burned residue according to procedure.
Ash Storage Housekeeping	Verify the ash storage pad is clean of ash. Sweep and or collect any material; weather permitting.
Unburned Waste	Cover unburned waste if not burned by 6 PM on the calendar day following the burn, temperature permitting

Table 5.3
Monthly Burning Grounds Perimeter Inspection Record
(see Figure 5-2.2)

Inspection Items	Inspection Criteria
Description and location of explosive material found around NIROP Burning Grounds perimeter	Identify by type and location any explosive or explosive contaminated materials visible on the South, West, and North areas outside the perimeter fence.
Disposition of explosive material found around NIROP Burning Grounds perimeter	Identify handling, storage, and disposal methods for any material identified during the inspection
Catch basins for NIROP Burning Grounds storm water collection	Assure catch basins are clear of debris including catch basin by Cage 19 and catch basin by Pan 8.

Table 5.4
HS-1, ~~ES-1,~~ ES-2, ES-3~~, Segment Storage, Resthouse #1~~ and BG Ash Storage Pad
Daily Inspection Criteria
(see Figure 5-2.4)

Inspection Items	Inspection Criteria
Containers	Inspect containers for leaks and spills.

~~Table 5.5~~ ~~ES-1~~ ~~Weekly Inspection Criteria~~ ~~(see Figure 5-2.3)~~	
~~Inspection Items~~	~~Inspection Criteria~~
~~Telephone~~	~~Verify the telephone works properly.~~
~~Danger sign~~	~~Verify the danger sign posted on the main entrance is visible.~~
~~Building security~~	~~Verify the doors are locked.~~
~~Fire extinguisher~~	~~Verify that at least one (1) fire extinguisher is present, and access is not blocked. If the extinguisher has a pressure gauge, verify it is in the normal range; if not verify the plastic seal is in place.~~
~~Aisle space~~	~~Verify that a 24-inch aisle space is provided for all 19-inch or less diameter containers, and a 30-inch minimum aisle space for larger containers.~~
~~Container labeling~~	~~Verify all containers are marked with a tracking number and or labels are clearly visible~~
~~Storage Compatibility~~	~~Verify 1.1 and 1.3 materials are separated by a 30-inch minimum aisle space.~~
~~Containers~~	~~Visually inspect all containers in storage to ensure all containers are closed, in good condition and that no containers are leaking.~~

Table 5.~~6~~5 ES-2 Weekly Inspection Criteria (see Figure 5-2.3)	
Inspection Items	Inspection Criteria
Telephone	Verify the telephone works properly.
Danger sign	Verify the danger sign posted on the main entrance is visible.
Building security	Verify the doors are locked.
Fire extinguisher	Verify that at least one (1) fire extinguisher is present, and access is not blocked. If the extinguisher has a pressure gauge, verify it is in the normal range; if not verify the plastic seal is in place.
Aisle space	Verify a 30-inch minimum aisle space is maintained.
Container labeling	Verify all containers are marked with a tracking number and or labels are clearly visible
Storage Compatibility	Verify 1.1 and 1.3 materials are separated by a 30-inch minimum aisle space.
Containers	Visually inspect all containers in storage to ensure all containers are closed, in good condition and that no containers are leaking.

~~Table 5.7~~ ~~Resthouse -1~~ ~~Weekly Inspection Criteria~~ ~~(see Figure 5-2.3)~~	
~~Inspection Items~~	~~Inspection Criteria~~
~~Telephone~~	~~Verify the telephone works properly.~~
~~Danger sign~~	~~Verify the danger sign posted on the main entrance is visible.~~
~~Building security~~	~~Verify the doors are locked.~~
~~Fire extinguisher~~	~~Verify that at least one (1) fire extinguisher is present, and access is not blocked. If the extinguisher has a pressure gauge, verify it is in the normal range; if not verify the plastic seal is in place.~~
~~Aisle space~~	~~Verify a 30-inch minimum aisle space is maintained.~~
~~Container labeling~~	~~Verify all containers are marked with a tracking number and or labels are clearly visible~~
~~Storage Compatibility~~	~~Verify 1.1 and 1.3 materials are separated by a 30-inch minimum aisle space.~~
~~Containers~~	~~Visually inspect all containers in storage to ensure all containers are closed, in good condition and that no containers are leaking.~~
~~Grounding~~	~~Verify grounding wires are in good condition. Verify that rocket motors are properly grounded.~~

~~Table 5.8~~ ~~Segment Storage~~ ~~Weekly Inspection Criteria~~ ~~(see Figure 5-2.3)~~	
~~Inspection Items~~	~~Inspection Criteria~~
~~Danger sign~~	~~Verify the danger sign posted on the main entrance is visible.~~
~~Aisle space~~	~~Verify that a 24-inch aisle space is provided for all 19-inch or less diameter containers, and a 30-inch minimum aisle space for larger containers.~~
~~Container labeling~~	~~Verify all containers are marked with a tracking number and or labels are clearly visible~~
~~Storage Compatibility~~	~~Verify 1.1 and 1.3 materials are separated by a 30-inch minimum aisle space.~~
~~Containers~~	~~Visually inspect all containers in storage to ensure all containers are closed, in good condition and that no containers are leaking.~~
~~Grounding~~	~~Verify grounding wires are in good condition. Verify that rocket motors are properly grounded.~~
~~Placards~~	~~Verify trailers are properly placarded.~~

Table 5.6~~9~~ Ash Storage Pad Weekly Inspection Criteria (see Figure 5-2.3)	
Inspection Items	Inspection Criteria
Danger sign	Verify the danger sign posted on the main entrance is visible.
Aisle space	Verify a 30-inch minimum aisle space is provided.
Container labeling	Verify the container is marked with a tracking number and or the label is clearly visible
Containers	Visually inspect container(s) to ensure all containers are closed, in good condition and that no containers are leaking. . If a gondola is in use, assure the gondola is not leaking, is not excessively dented and that the lid is securely in place.
Pad	Visually inspect the pad for cracks in need of repair.
Note: The Ash Storage Pad shares a fire extinguisher and danger sign with the NIROP Burning Grounds.	

Table 5.7~~10~~ HS-1 Weekly Hazardous Waste Storage Inspection Criteria (see Figure 5-2.5)	
Inspection Items	Inspection Criteria
Lights	Verify building lights are working properly & provide adequate lighting.
Telephone	Verify the telephone works properly.
Danger sign	Verify the danger sign posted on the main entrance is visible.
Building security	Verify the doors function properly (e.g. will close to maintain building temperature and keep animals out).
Fire extinguisher	Verify three (3) fire extinguishers are present in: (1) Bldg. 8562 chemical transfer room, (2) Bldg. 8567 and (3) Bldg. 8568, and access is not blocked. If the extinguisher has a pressure gauge, verify it is in the normal range; if not verify the plastic seal is in place.
Emergency Equipment	Verify the following items are present and in good condition: • Absorbent material (5 bags) • Barricade tape (1 roll) • Boots- disposable (10 pair) • Drum repair kit (1 kit) • Coveralls – disposable (10 each) • Face shield (3 each) • Goggles (3 pair) • Gloves (10 pair) • Mercury spill kit (1 each) • Neutralizing media for acids (1 gallon) • Neutralizing media for bases (1 gallon)

	• pH paper (1 packet) • Shovel non-sparking (1 each)

Table 5.10 continued

Inspection Items	Inspection Criteria
Container marking	Verify all containers are marked with a tracking number and or have labels clearly visible.
Aisle space	Verify that a 30-inch minimum aisle space is provided for all containers. Small containers in cabinets are exempt from this requirement.
Chemical compatibility	Verify acids, flammables and oxidizers are stored in separate containments and/or cabinets. Verify all other segregation per 49 CFR 177.848 or 173.12(e) as applicable.
Containers	Visually inspect all containers in storage to ensure no containers are leaking. Visually check inside of each small container storage cabinet for signs of spills.
Sump	Visually inspect the sumps for evidence of liquids. If liquid is found identify the source, and take corrective action as necessary to eliminate the source. Collect and properly containerize any liquids collected.

Table 5.~~8~~11 ES-3 Weekly Inspection Criteria (see Figure 5-2.3)	
Inspection Items	Inspection Criteria
Telephone	Verify the telephone works properly.
Danger sign	Verify the danger sign posted on the main entrance is visible.
Building security	Verify the doors are locked.
Fire extinguisher	Verify that at least one (1) fire extinguisher is present, and access is not blocked. If the extinguisher has a pressure gauge, verify it is in the normal range; if not verify the plastic seal is in place.
Aisle space	Verify a 30-inch minimum aisle space is maintained.
Container labeling	Verify all containers are marked with a tracking number and or labels are clearly visible
Storage Compatibility	Verify 1.1 and 1.3 materials are separated by a 30-inch minimum aisle space.
Containers	Visually inspect all containers in storage to ensure all containers are closed, in good condition and that no containers are leaking.

5.2.3 Frequency of Inspection

Inspections of the Bacchus Facility's equipment are conducted at a frequency sufficient to identify problems before they harm human health or the environment.

~~ES-1,~~ ES-2, ES-3, ~~Segment Storage, Resthouse #1,~~ HS-1 and the Ash Storage Pad are inspected every day, using the Hazardous Waste Daily Inspection Record (Figure 5-2.4), when the units are in active use (e.g. when wastes are being loaded or unloaded at the unit). These hazardous waste management units will, at a minimum, be inspected weekly using the Explosive Storage Building/Pad/Treatment Inspection Record (Figure 5-2.3) or the HS-1 Weekly Hazardous Storage Inspection Record (Figure 5-2.5), regardless of activity.

Every burn at the NIROP Burning Grounds will have a pre and post burn inspection. The pre-burn inspection will be conducted at least monthly if there is an extended period between burns and no pre-burn inspection has been conducted during the calendar month. The perimeter of the NIROP Burning Grounds will be inspected each calendar month. The NIROP Burning Grounds will also be inspected weekly using the Explosive Building/Pad/Treatment Inspection Record (Figure 5-2.3) to document the condition of ordnance (between first and second burns), untreated residue and unburned waste.

5.3 EMERGENCY PREPAREDNESS

5.3.1 Equipment Requirements

All hazardous waste management units and operations are equipped to prevent and minimize the potential impact of a release of hazardous waste or hazardous waste constituents which may be harmful to human health or the environment. The equipment used includes internal and external communication devices, personal protective clothing and equipment, fire fighting equipment, hand tools, spill control equipment, decontamination equipment, and other emergency equipment and materials. Emergency equipment requirements for the hazardous waste management units and the Bacchus Facility are identified and discussed in the Contingency Plan, Attachment 6 of this Permit.

5.3.2 Internal Communication

The hazardous waste management units are linked with the internal telephone system for the Bacchus Facility. All emergencies, including hazardous waste releases or spills, are reported by dialing the plant emergency phone number (extension 2222). If employees are using an external phone line then they would dial 801-251-2222 to report an emergency.

The emergency notification will include the following information:

- Callers name
- Callers location (building number and telephone number)
- Type of emergency (explosion, fire, hazardous waste release, etc)
- Extent of emergency

Phones are installed at the following locations:

- ~~ES-1 – inside the building.~~
- ES-2 – inside the building.
- ES-3 – inside the building and/or inside adjacent building CD6B.
- NIROP Burning Grounds – phones on the telephone pole by main gate and in the control bunker.
- Ash Storage Pad – shares the phones available to the NIROP Burning Grounds
- ~~Resthouse #1 – inside the building~~
- HS-1 – inside the building

5.3.4.1 External Communication

The Bacchus Facility internal telephone system described above can also be used to summon emergency assistance from local law enforcement, fire departments, and state and local emergency response teams. Telephones are available for use at or near each waste management unit as described in 5.3.2. In addition employees responding to spills and/or release of hazardous waste or hazardous waste constituents carry two-way radios or cell phones which may be used to summon emergency assistance.

ATK has agreements for fire fighting assistance at the Bacchus Facility with West Valley City and the Unified Fire Authority in the event that the Bacchus Fire Department cannot control a fire. However, due to the nature of manufacturing operations conducted at the Bacchus Facility, it is understood by the outside fire departments that the Bacchus Fire Department will escort, direct, and take charge of the overall fire fighting operation. In addition, the National Fire Protection Association (NFPA) protocol dictates that the first agency on the scene coordinates all fire fighting activities.

A good mutual working arrangement is maintained between the Bacchus Facility Security personnel both the West Valley City Police Department and the Salt Lake County Sheriff's Department. In the event additional law enforcement personnel are required, other outside police departments located within the county may be contacted. Site personnel will escort outside law enforcement personnel at all times while on the site to avoid possible dangers.

ATK staffs a clinic at the Bacchus Facility with a nurse who is capable of treating minor injuries. No specific arrangements have been made with any of the area hospitals, because it has not been deemed a necessary requirement due to the nature of the hazardous waste materials managed at the Bacchus Facility. Should it be needed, Pioneer Valley Hospital, located in West Valley City (approximately 9 minutes traveling time from the Bacchus Facility) can provide professional medical support for employees. The Bacchus Facility also has sufficient open space for a helicopter to evacuate injured personnel.

5.3.5 Emergency Equipment

All fire extinguishers on the Bacchus Facility are visually inspected for pressure, functionality and existence by the Bacchus Fire Department quarterly, and by individual building supervisors monthly. Fire extinguishers at the hazardous waste storage units are inspected at least weekly and documented on the weekly inspection form. Fire extinguishers and fire fighting equipment at the NIROP Burning Grounds is inspected prior to every burn and at least monthly if the NIROP Burning Grounds are inactive for an extended period of time. The monthly inspections conducted by building supervisors are documented on a tag attached to the fire extinguisher. Records of quarterly inspections conducted by the Bacchus Fire Department are maintained by the Bacchus Fire Department. The inspections of the hazardous management units are maintained by Bacchus Facility Environment Services.

The emergency communication system for the Bacchus Facility is tested weekly by the Bacchus Fire Department who also documents the test. The communication devices used at the hazardous waste storage units are inspected and tested weekly. The communication devices used at the NIROP Burning Grounds are inspected prior to every burn and at least monthly if the NIROP Burning Grounds are inactive for an extended period on time. The inspections of the hazardous management units are maintained by Bacchus Facility Environment Services.

5.3.6 Water for Fire Control

The location of fire hydrants at the hazardous waste facilities is described below. All fire hydrants are subject to an annual flow check by the Bacchus Fire Department.

Bacchus Facility safety procedures limit fighting fires when explosive materials are involved. The fire fighting activities at any of the hazardous waste storage or treatment facilities will involve containment only, to keep the fire from spreading to other facilities.

Water for fire control/containment is available as follows:

- ES-2 is equipped with a deluge fire suppression system. The fire hydrant/hose combination can deliver 2430 gpm @ 20 psi.
- ES-3 is equipped with a deluge fire suppression system. The fire hydrant/hose combination can deliver 2430 gpm @ 20 psi.
- NIROP Burning Grounds - the NFPA 13 calculation requires 178 gpm. The fire hydrant/hose combination can deliver 2430 gpm @ 20 psi.
- Ash Storage Pad - shares the fire control and containment resources described for the NIROP Burning Grounds.
- HS-1- NFPA 13 water supply requires at least 772 gpm at HS-1. The nearest hydrant (800 yards away) can provide 1081 gpm at a residual pressure of 60 psi at the hydrant, but friction losses from a long hose will lower the actual flow rate. The pressure losses will be made up through the use of two pumper trucks in series should they be needed. The nature of the operations at HS-1 make fighting a fire there unlikely (for Safety reasons), but the hydrant should provide enough water to keep a fire from spreading beyond the facilities boundary.
- ~~ES-1- NFPA 13 requires 710 gpm for fire protection. The deluge system in ES-1 provides 790 gpm @ 95 psi and a hydrant/hose can provide an additional 2430 gpm @ 20 psi.~~
- ~~RH-1 and Segment Storage do not have sprinkler systems. However, fire hydrants are located in close proximity to RH-1. In case of a fire at Segment Storage, the ATK-Bacchus Fire Department will respond to the area with a 1,250 gallon engine and two 200 gallon brush units.~~

5.3.7 Protection of Water Supplies

Water supplies are protected by procedures and facilities utilized at the Bacchus Facility. Spills and leaks are promptly cleaned up, potential releases are minimized by our container management practices, the design of the hazardous waste management units, run-on/run-off controls that prevent stormwater from being contaminated, and frequent inspection of all waste and hazardous material storage and handling areas.

5.3.8 Power Failure

Most hazardous waste management operations at the Bacchus Facility are not dependent upon power for continuing operations. In the event of a power failure, operations will stop until power is restored. The loss of heating in explosives waste storage areas could create a hazard where nitroglycerine-containing materials are stored or handled. In the event that heating is lost, the materials will be burned immediately or moved to another heated location.

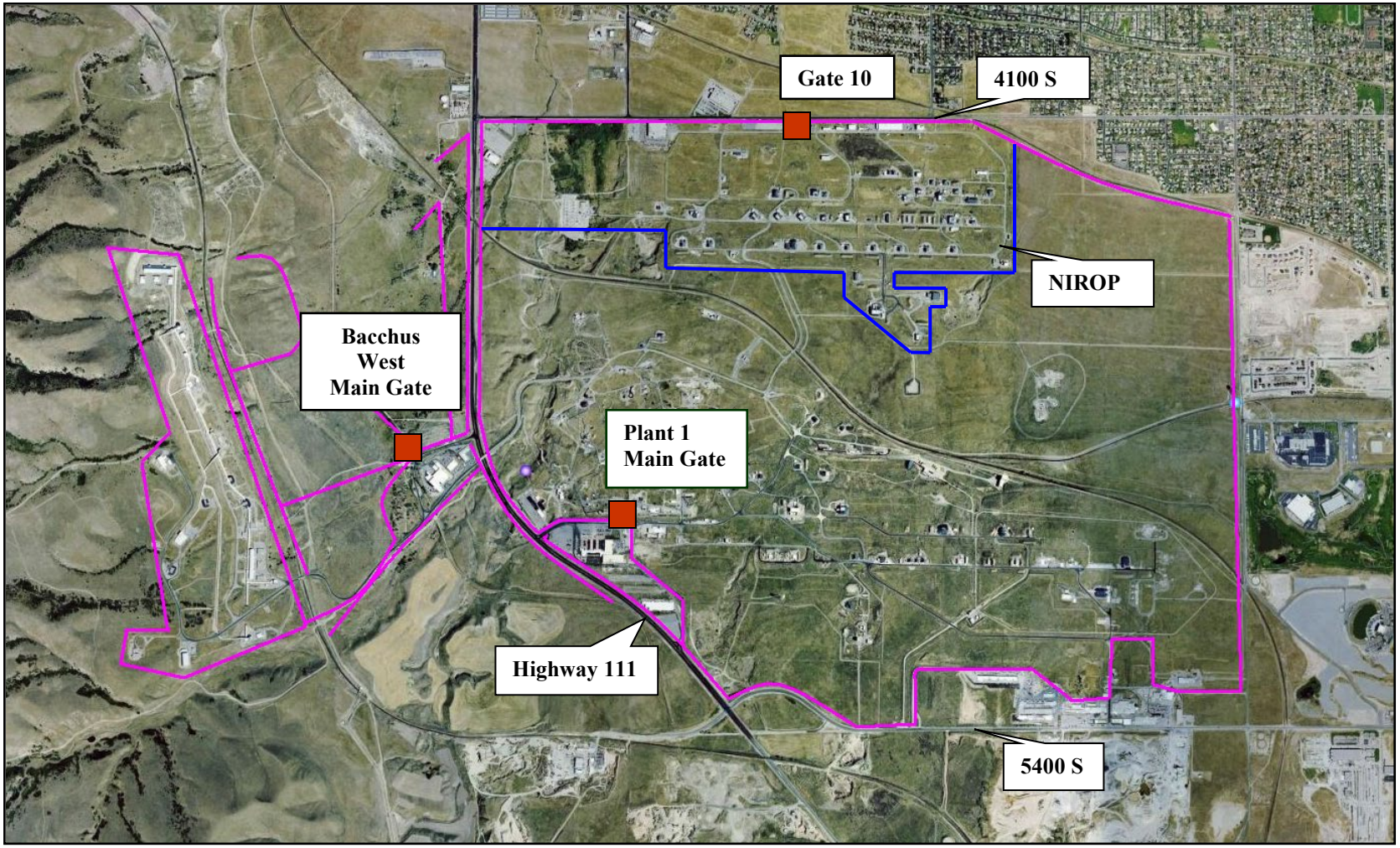


Figure 5-1.1
ATK - Bacchus Security Fence

Figure 5-2.2

MONTHLY BURNING GROUNDS PERIMETER INSPECTION RECORD

Inspector:_____
Date:_____
Time:_____

Description and Location of PEP Material Found Around Burning Grounds Perimeter:

Disposition of PEP Material Found Around Burning Grounds Perimeter:

Note condition of Storm water catch basins by Pan 8 and Cage 19:
Contact Burning Grounds Supervision if catch basins require cleaning.

Note: Inspection is to be done once each calendar month

FORM FQA-0328

Figure 5-2.3

EXPLOSIVE STORAGE BUILDING/PAD/TREATMENT INSPECTION RECORD
(LONG TERM STORAGE AND NIROP BURNING GROUNDS)

INSPECTOR DATE		ES-~~31~~ (CD6A~~2105~~)	ES-2 (8A)	~~RESTHOUSE #1~~	~~Segment Storage~~	B.G. Ash Gondola	Burning Grounds
Building Operation	Time of Inspection						
	Telephone dial tone				~~N/A~~	Share with BG	
	Security signs at entrance					Share with BG	
	Building secure				~~N/A~~	N/A	
Fire Extinguisher	In position				~~N/A~~	Share with BG	
	Pressure gauge checked				~~N/A~~	Share with BG	
	Seal in place				~~N/A~~	Share with BG	
	Access available				~~N/A~~	Share with BG	
Storage Conditions	Aisle space allows for unobstructed movement						
	Waste properly labeled						
	Incompatible wastes are separated						
~~Resthouse 1 grounding~~	~~Rocket motor(s) grounded~~	~~N/A~~	~~N/A~~		~~N/A~~	~~N/A~~	~~N/A~~
	~~Grounds in good condition~~	~~N/A~~	~~N/A~~		~~N/A~~	~~N/A~~	~~N/A~~
B.G. Ash Gondola Items	Gondola leaks and dents	N/A	N/A	~~N/A~~	~~N/A~~		N/A
	Lid to gondola secure	N/A	N/A	~~N/A~~	~~N/A~~		N/A
	Accumulation date present	N/A	N/A	~~N/A~~	~~N/A~~		N/A
	Label clearly visible	N/A	N/A	~~N/A~~	~~N/A~~		N/A
	Pad Inspected for Cracks	N/A	N/A	~~N/A~~	~~N/A~~		N/A
~~Segment Storage Items~~	~~Rocket motor/trailer(s) grounded~~	~~N/A~~	~~N/A~~	~~N/A~~		~~N/A~~	~~N/A~~
	~~Grounds in good condition~~	~~N/A~~	~~N/A~~	~~N/A~~		~~N/A~~	~~N/A~~
	~~Shipping trailer properly placarded~~	~~N/A~~	~~N/A~~	~~N/A~~		~~N/A~~	~~N/A~~
Burning Ground Items	Ordnance collected and containerized	N/A	N/A	~~N/A~~	~~N/A~~	N/A	
	Unburned waste covered	N/A	N/A	~~N/A~~	~~N/A~~	N/A	
	Untreated residue collected on pan, cage or separate container	N/A	N/A	~~N/A~~	~~N/A~~	N/A	
	Untreated residue properly labeled	N/A	N/A	~~N/A~~	~~N/A~~	N/A	

✓ **if okay; X if action is needed**

Comments/ Corrective Action:

Figure 5-2.4
HAZARDOUS STORAGE DAILY INSPECTION RECORD
(Inspection Required – Daily, When in Use)

Location (Circle)		HS-1 ~~ES-1 (2105)~~ ES-2 (8A) ~~SEGMENT STORAGE~~ ES-3 (CD6A) ~~RESTHOUSE #1~~ BG ASH STORAGE PAD		
Date	**Time**	**Inspector**	**Inspection**	
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
			Inspect containers for leaks, spills. Visually check the HS-1 sump/trench for liquids	☐
✓ if OK; ☐ if action is needed				
Comments:				
Corrective Action:				

FORM FQA-0303

Figure 5-2.5

WEEKLY HAZARDOUS STORAGE INSPECTION RECORD
HS-1

		Inspector Signature:									
		Time:									
		Date:									
Building Operation	Lights	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Telephone dial tone	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Security signs at entrance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Building secure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Emergency/Fire Equipment	HS-1 Chemical Transfer (8562)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	HS-1 Bldg 8567	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extinguisher #1 Extinguisher #2 Extinguisher #3	HS-1 Bldg 8568	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	In position	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Pressure gauge checked	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Seal in place	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Access available	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Emergency Equipment	Absorbent Material (5 bags)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Barricade Tape (1 roll)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Boots (10 pair)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Drum Repair kit (1)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Coveralls – Disposable (10 pair)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Face Shield (3)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Goggles (3 pair)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Gloves (10 pair)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Mercury Spill Kit (1)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Neutralizing Media – Acids (1 gal)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Neutralizing Media – Bases (1 gal)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	pH Paper (1)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Shovel - Non-Sparking (1)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Storage Conditions	Aisle space allows for unobstructed movement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Incompatible wastes are separated	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Labels clearly visible	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Inspect containers for leaks or deterioration	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Inspect small container cabinets for leaks	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Inspect sumps for liquid	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

✓ IF OKAY ☒ IF ACTION IS NEEDED

FORM FQA-0257 (REV 3-07)

6.0 HAZARDOUS WASTE CONTINGENCY PLAN

The Hazardous Waste Contingency Plan (HWCP) adopts the ATK Launch Systems Management Policy SC-E, "Emergency Action Planning (EAP)," which directs emergency response actions at the Bacchus Facility. The HWCP adopts those portions of the EAP that deal with general responses to fires, explosions, or releases of hazardous waste, constituents or substances as defined by R315-261 of the Utah Administrative Code (Utah Admin. Code) or 40 CFR 303.3 in all areas of the Bacchus Facility. These general responses will be referred to as "environmental emergencies." The HWCP also contains emergency equipment lists and evacuation plans for hazardous waste management units.

6.1 GENERAL INFORMATION

The HWCP is designed to minimize the hazards to human health and the environment in the event of an uncontrolled, unplanned, sudden, or non-sudden fire, explosion, release of hazardous materials or hazardous waste to the air, soil, or surface water.

6.1.1 Site Location

The Bacchus Facility occupies approximately 10,000 acres in West Valley City and unincorporated Salt Lake County. The main gate entrance is located at approximately 5000 South on Highway 111 (8400 West). The Bacchus Facility site includes the contiguous locations commonly referred to as: Plant 1, Bacchus West, and NIROP. This plan also applies to off-site groundwater monitoring wells classified as large quantity generators.

6.1.2 Ownership

The Bacchus Plant 1 facility is owned and operated by ATK Launch Systems, Inc., which is owned by Northrop Grumman Innovation Systems, Inc. located in Virginia. NIROP is owned by the United States Navy and operated by ATK. A large portion of Bacchus West is leased from Kennecott Utah Copper Corporation and operated by ATK. The telephone contact for the Northrop Grumman Innovation Systems, Inc. Corporate Environmental Offices is: (763) 744-5182. The telephone contact for the local office of ATK Launch Systems is (801) 251-2166.

6.1.3 Operations

Operations at Bacchus Facility include, but are not limited to the following:

- Production of nitroglycerin;
- Manufacture of rocket motor propellant;
- Assembly of rocket motors;
- Static testing of propellants;
- Production of composite products;
- Support, administration, and maintenance of facilities; and
- Storage of chemical and explosive hazardous wastes incidental to the manufacture of rocket motors.

Explosive and chemical hazardous wastes are generated during the manufacturing process and are treated or stored at one of the Bacchus Facility's generator storage areas or hazardous waste management units. The hazardous waste management unit~~s~~ located on the Plant 1 facility is~~are:~~

HS-1~~, ES-1, Segment Storage and RH-1~~. The hazardous waste management units located on the NIROP Facility includes the NIROP Burning Grounds, ES-2, ES-3 and the Ash Storage Pad.

In order to provide a complete description of emergency procedures for the Bacchus Facility, the treatment and storage facilities located on both the NIROP and Plant 1 facilities will be included in this application.

Hazardous waste chemicals and explosives generated and/or stored at the Bacchus Facility are managed on site at one of the hazardous waste storage areas. All hazardous waste not treated at the NIROP Burning Grounds will be shipped off-site to an approved TSDF for treatment and/or disposal, or treated on-site in accordance with R315 of the Utah Admin. Code.

6.1.4 Site Plan

The topographic map (Figure 2-5.14) shows the plant site layout, and the location of the regulated hazardous waste management units.

6.2 EMERGENCY COORDINATOR

The Emergency Coordinator is the ATK Fire Department's Emergency Manager. The alternate Emergency Coordinators are the ATK Fire Department Shift Supervisors. A primary or alternate Emergency Coordinator is on plant or on call at all times. In this plan, the Emergency Coordinator will be referred to as the Incident Commander (IC). The primary and alternate Emergency Coordinators or ICs are identified in the Operating Record, and can be contacted 24/7 at (801)251-2222. The information in the Operating Record will list the names of all primary and alternate ICs, addresses, and their office, home and cell phone numbers.

6.2.1 Duties and Responsibilities

The IC and the alternate IC are professional fire fighters certified by the State of Utah to no less than a Fire Fighter II level, and are trained to OSHA 29 CFR 1910.120 requirements. They have also received extensive training in responding to emergencies that could occur at the Bacchus Facility. The ATK Fire Department is a full-time professional fire service organization on the Bacchus Facility 24-hours a day 365-days per year.

The ATK Fire Department has the responsibility for initial response, site assessment, site direction and control, communications, emergency medical treatment, rescue and evacuation, and site stabilization for all emergencies at the Bacchus Facility. In an emergency, the IC is responsible for managing the emergency in accordance with established Fire Service procedures, and notifying the appropriate management personnel.

The IC and alternate ICs are trained in all aspects of the HWCP, are familiar with the operations and activities at the Bacchus Facility, the location and characteristics of all waste handling activities, the layout of the facility and have access to all applicable emergency response records at the Bacchus Facility.

6.2.2 Authorization

The IC and all of the alternate ICs are authorized to commit the equipment and all other resources

necessary to implement the provisions of the HWCP.

6.3 IMPLEMENTATION

The HWCP will be implemented whenever any of the following events occur:

- A reportable release of a hazardous waste, a material which when spilled becomes a hazardous waste, constituents or substances per R315-263-30 of the Utah Admin. Code or 40 CFR Table 302.4 List of Hazardous Substances, or is listed in the NIROP Facility Permit, Module 1, Condition 1.T.2 and 1.T.3;
- An unplanned fire or explosion in any manufacturing, maintenance, storage, or hazardous waste management facility;
- Accidental or unplanned ignition at the NIROP Burning Grounds;
- Accidental or unplanned grass fire associated with production, manufacturing or disposal operations or a grass fire that threatens explosive or chemical storage facilities; or
- Waste propelled or ejected out of the NIROP Burning Grounds during open burning operations.

Whenever the HWCP is implemented, ATK will submit an implementation report in accordance with Section 6.8 of this plan. Controlled fires, such as routine open burning of waste propellant at the NIROP Burning Grounds and propellant burn-rate tests conducted incidental to the manufacturing operations are not subject to the reporting requirements of Section 6.8. Operations associated with testing of propellant~~, routine Pit 38 operations,~~ and process equipment decontamination will also be excluded from reporting requirements.

6.4 EMERGENCY ACTIONS

6.4.1 Emergency Reporting Procedure

Any employee who witnesses a fire, explosion, or other significant release of hazardous materials or hazardous waste to the environment will report the event by dialing extension 2222 or dialing 801-251-2222 on an external phone line, and supply the following information:

- Caller's name;
- Caller's location; and
- Type of emergency

If possible, the caller will stay by the telephone to supply additional information as needed; if safety considerations require a move to another location, the caller will move and repeat the above steps.

An emergency reported using the above procedures will result in the notification of the employees listed below:

- IC (Fire Station);
- Plant medical staff;
- Radio Dispatcher;

- Industrial Safety Manager;
- Security Manager; and
- Plant Manager

During normal working hours the employees identified above are automatically notified of an environmental emergency or contacted by the Radio Dispatcher. During off-shifts, these individuals are contacted by the IC or his/her designee.

Notification of Federal, State, and Local Authorities

If the IC determines that assistance is required from the West Valley City or Salt Lake County Unified Fire Authority, Emergency Services (911) will be contacted immediately. The Emergency Services number automatically notifies the Local Emergency Planning Committee for both West Valley City and Salt Lake County

When an environmental emergency results in the release of a reportable quantity of hazardous waste, constituents or substances, as specified in Section 6.3, the appropriate Federal and State authorities will be notified immediately. The IC may delegate the responsibility of notifying Federal and State authorities to ATK Environmental Services. The IC cannot notify ATK Environmental Services in a timely manner, the IC is responsible for making the necessary notification.

ATK Environmental Services or the IC will notify the proper authority according to the following conditions:

- For releases per R315-263-30 of the Utah Admin. Code, contact the Utah State Department of Environmental Quality's 24-hour answering service number at 801-536-4123 and during normal business hours the Utah Division of Waste Management and Radiation Control at 801-536-0200;
- For releases per 40 CFR Table 302.4 List of Hazardous Substances and Reportable Quantities or 49 CFR 172.101 Table 1- Hazardous Substances Other Than Radionuclides, contact the National Response Center at 1-800-424-8802 and the State agencies listed above; and
- For releases identified in Module 1, Condition 1.T.2 and 1.T.3 of this permit, contact the Utah Division of Waste Management and Radiation Control environmental incident reporting number 801-536-4123.

The following information will be provided when reporting releases:

- Name, phone number, and address of responsible party or company;
- Name, title, and phone number of person reporting;
- Time and date of spill/release;
- Location of spill/release, as specific as possible;
- Kind and amount of material;
- Cause of spill/release;

- The extent of injuries, if any;
- An assessment of the actual or potential hazard to human health or the environment, when applicable;
- Waterways involved or proximity to waterways;
- Emergency action taken for containment and clean-up; and
- Other agencies contacted.

6.4.2 Identification of Hazardous Waste, Constituents or Substances

The IC will identify the hazardous wastes, constituents or substances involved, and provide an approximation of the amount of material that was released. This will be done using observation, discussing the issue with knowledgeable individuals, reviewing of records for the operation or facility, and if necessary, by chemical analysis. The IC may call upon the on-site Industrial Safety and Hygiene or Environmental Services employees to assist with identification.

If a material cannot be immediately identified by a container label, operator knowledge or another convenient method, field characteristic tests may be conducted, as needed, to identify the immediate hazards, and may include:

- pH test;
- Water reactivity;
- Ignitability;
- Oxidizer test; and
- Organic vapors.

The field characteristic testing is designed to permit safe handling of the waste, residues or spill site while samples are collected and analyzed. Samples will be collected and analyzed as required in the Waste Analysis Plan to assure proper management and disposal of the waste, residues or spill site.

6.4.3 Assessment Criteria

The IC will assess all possible threats to human health or the environment as soon as possible after an environmental emergency is reported. The purpose of the assessment is to evaluate actual and potential hazards to the employees responding to the environmental emergency, and the actual and potential hazards to off-site populations. To conduct the assessment, the IC may call upon the on-site Industrial Safety and Hygiene or Environmental Services employees to assist.

In the event of an environmental emergency, the human health and environmental assessment criteria will include the following:

- Fire or explosion hazards;
- Corrosive material hazards;
- Toxic substance hazards;
- Potential for off-site releases;
- Containment of spill;

- Water contamination;
- Air contamination; and
- Hazard isolation requirements.

6.4.4 Control Procedure Guidelines

Upon arriving at the scene the IC will identify the nature of the emergency. Standard Fire Service protocol will be followed for each type of emergency. Assistance from West Valley City or the Salt Lake County Unified Fire Authority may be requested by the IC depending on the scope of the emergency. Injured personnel will be immediately evacuated for medical care and non-injured personnel will be removed from immediate hazard exposure at the scene of the incident. Managers of the affected area along with the General Management Team (GMT), and support personnel (e.g. health, safety, environmental, public relations, etc.) will be notified. The management of the affected area and the GMT will gather in the Emergency Operations Center to provide support and direction during the emergency. The ATK Fire Department will then secure a perimeter at a sufficient distance from the source to prevent further injury to Bacchus Facility personnel.

The ATK Fire Department will initiate containment, control or suppression activities as directed by internal procedures or standard Fire Service protocol. Because of varied and highly sensitive materials and processes within the Bacchus Facility boundaries, the IC or other designated employees will escort outside emergency response units or individuals during all on-site operations.

6.4.4.1 Fires/Explosions

In the event of a fire or explosion the ATK Fire Department will apply appropriate fire fighting procedures to prevent the spread of fire to adjoining buildings and property.

6.4.4.2 Release of Hazardous Wastes, Constituents or Substances

If an emergency involves a release of a hazardous wastes, constituents or substances, the ATK Fire Department will provide the initial response, and conduct containment activities. Environmental Services is responsible for managing the clean-up of releases of hazardous wastes, constituents or substances after they have been contained by the ATK Fire Department.

Spills involving explosive and non-explosive hazardous wastes, constituents or substances will generally be cleaned up by production employees who work in the area where the spill occurs as long as they have adequate training and protective equipment to meet the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements.

Spills of non-explosive hazardous wastes, constituents or substances that can-not be cleaned up by production employees will be referred to a contractor with adequate training and equipment to safely complete the job.

Spills of explosive hazardous wastes, constituents or substances will be cleaned up by Bacchus Facility employees unless a contractor has documented experience working with explosives.

6.4.4.3 Natural Disaster

The ATK Fire Department will respond to natural disasters such as earthquakes and severe weather conditions in the same manner as fires, explosions, and releases of hazardous waste, constituents or substances. Injured personnel will be treated, damaged facilities will be evaluated, releases, if applicable, will be evaluated and actions taken to minimize the scope of the emergency.

6.4.5 Prevention of Recurrence or Spread of Fires, Explosions or Releases

During an environmental emergency, the IC will take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, reoccur, or spread to other facilities.

6.4.6 Storage and Treatment of Released Material

Following an environmental emergency, the recovered waste, contaminated soil, surface water, decontamination water and all other contaminated medium may be stored on site at one of the permitted facilities. All recovered material or waste will be handled and managed as a hazardous waste unless it is determined to be non-hazardous.

6.4.7 Incompatible Waste

Incompatible wastes generated during any implementation of the HWCP will be transported to and stored at the HS-1 hazardous waste storage facility in accordance with the requirements described in the Plant 1 Hazardous Waste Storage Permit.

6.4.8 Post-Emergency Equipment Maintenance

Equipment used in an emergency response will be disposed as required by regulation, or decontaminated, visually inspected and returned to its storage location. Due to the nature of the materials used during decontamination, decontamination wastes will be managed as hazardous waste until they are characterized in accordance with Attachment 3. All supplies, listed in Tables 6.1~~,~~ and 6.2 ~~and 6.3~~, used during an emergency response event will be replaced within 5 working days of the completing the emergency response event. The equipment listed in Table 6.3~~4~~ will be replaced before operations at the NIROP Burning Grounds resume. Prior to resuming operations in the affected area, the facility owner or operator will notify the Director or his designee at 801-536-0200 and other appropriate State and local authorities that the facility is in compliance with R315-264-56(h) of the Utah Admin. Code.

6.4.9 Container Spills and Leakage

Container spills and leaks will be responded to as described in Section 6.4.4.2,"Release of Hazardous Wastes, Constituents, or Substances." The protocol for responding to container spills and leaks may include:

(1) Identify the contents of the container;
(2) Move the container so the leak is above the liquid level;
(3) Apply a temporary seal to the leak using putty or a wooden plug; and
(4) Overpack the drum or pump the contents to a new container.

Spilled materials will be absorbed, neutralized or pumped as required and the area impacted by

the spill will be decontaminated. Absorbent and cleanup materials, including disposable equipment, will be collected for disposal in accordance with the applicable waste management rules.

6.4.10 Open Burning/Open Detonation Emergency

An emergency involving an open burn or detonation at an explosive manufacturing, product or waste handling facility, or at an explosive waste treatment facility requires an immediate response from the operator of the unit or facility. Safety of personnel is always the primary concern. Potential emergency circumstances include, but are not limited to the following: (a) the unplanned initiation of wastes on a burn pan; (b) explosions; (c) fire in or near one of these facilities; or (d) a natural disaster.

The operator of the unit or facility will immediately report unplanned initiation or other fire through the plant emergency phone number. Immediate actions will be taken to remove injured personnel from the area, but only when it is safe to enter the area. Fire blankets, chemical fire extinguishers, or water supplied by hydrants or hoses are available for extinguishing burning clothing. First-aid should be administered to any injured persons prior to the arrival of the ATK Fire Department. In no instance will attempts be made to extinguish burning materials on a burn pan or at any of the other explosive facilities.

The NIROP Burning Grounds are located outside the 100-year flood plain of Coon Creek. ATK has installed diversion ditches and berms around the perimeter of the NIROP Burning Grounds to manage and divert floodwater away from the NIROP Burning Grounds. If the Bacchus Facility should become immersed in floodwater, operations will cease until floodwaters have receded, the area is cleared and cleaned, and the IC has released the site for use.

6.4.11 Review and Revision of Plan

ATK will review the HWCP for the Bacchus Facility annually and, if necessary, amend the HWCP. The HWCP will also be amended whenever any of the following conditions exist:

- The HWCP fails in an emergency;
- The permit is revised;
- There is a significant changes in the facility's design, operations, construction, and maintenance;
- Changes in emergency equipment are made; and
- Hazardous Waste Management regulations are amended with regard to contingency planning.

6.5 EMERGENCY EQUIPMENT

Each of the hazardous waste management units has emergency response equipment, which is described in Tables 6.1 through 6.34. Where appropriate, the equipment capabilities are detailed. The emergency response equipment is stored at the location indicated on the Tables. All of this emergency equipment can be transported and used at any location as required. Emergency response equipment located at the Fire Department (Building 8228) will be identified in the Operating Record. A physical description and outline of capabilities will be provided upon request.

Emergency equipment inspection frequency and requirements are described in Attachment 5, "Procedures to Prevent Hazards." The Maintenance Department conducts preventative maintenance inspections, quarterly on sprinkler and deluge systems in hazardous waste management areas. Fire hydrants are located strategically throughout the plant. The ATK Fire Department personnel tests fire hydrants annually to ensure they are in proper working order.

TABLE 6.1

EMERGENCY RESPONSE EQUIPMENT LOCATED AT HS-1

Physical Description	Outline of Capabilities
Absorbent material	Material for absorbing liquids
Barricade tape	Barricade marker for designating exclusion zone
Boots (disposable)	Chemical resistant over boots
Drum repair kit	Assorted devices including plugs, screws, dowels and tape for temporary repairs to leaking drums
Coveralls (disposable)	All purpose coveralls that repel most liquids and particulates from incidental contact; for level C and level D response
Face shield	Provides face protection against incidental contact from chemical splashes (2)
Fire extinguisher	3 Hand-held, ABC-class extinguishing agent
Goggles	Eye protection complying with ANSI Z87.1-19898 requirements
Gloves (chemical protective)	Gloves manufactured from various types of chemical resistant material which may include neoprene, viton, nitrile, leather, kevlar mesh, PVC or equivalent
Mercury spill kit	Contains various devices to absorb or aspirate mercury
Neutralizing media (for acids)	Commercial neutralizing and absorbing media
Neutralizing media (for bases)	Commercial neutralizing absorbing media
pH paper	Provides a quick and accurate determination of acid/base; measure pH from 0-14
Shovel (non-sparking)	Non-sparking shovel for cleaning up flammable materials
Telephone	Explosion-proof telephone with a push button dial.

TABLE 6.2

EMERGENCY RESPONSE EQUIPMENT LOCATED AT ~~ES-1~~ ES-2, AND ES-3

Physical Description	Outline of Capabilities
Telephone	Explosion-proof telephone with a push button dial.
Fire extinguisher	1 Hand-held, ABC-class extinguisher

Decontamination and cleanup equipment from Table 6.1 will be transported to ~~ES-1,~~ ES-2, or ES-3 as required.

~~TABLE 6.3~~ ~~EMERGENCY RESPONSE EQUIPMENT LOCATED AT RH-1~~	
~~Physical Description~~	~~Outline of Capabilities~~
~~Telephone~~	~~Explosion-proof telephone with a push button dial~~
~~Fire Extinguisher~~	~~1 Hand-held, ABC-class extinguisher~~

~~Decontamination and cleanup equipment from Table 6.1 will be transported to RH-1 as required.~~

TABLE 6.34 EMERGENCY RESPONSE EQUIPMENT LOCATED AT THE NIROP BURNING GROUNDS	
Physical Description	**Outline of Capabilities**
Fire blankets	MSA, 62 in. x 82 in. flame retardant wool blanket stored in a metal case or equivalent (3)
Fire extinguisher	1 Hand-held, ABC-class extinguisher
Telephone	Explosion-proof telephone with a push button dial
Stretcher	MSA, basket type litter with wire netting reinforced with iron braces or equivalent (1)

Decontamination and cleanup equipment from Table 6.1 will be transported to the NIROP Burning Grounds, as required.

6.6 COORDINATION AGREEMENTS

Agreements for fire fighting assistance are maintained with West Valley City, the Salt Lake County Unified Fire Authority and the ATK Fire Department. The Battalion Chiefs from the assisting fire departments will act as liaisons between the IC and the assisting fire departments. The assisting fire departments will report to the appropriate security gate and will wait for an escort to the emergency scene.

ATK maintains a good working arrangement between its Security Management personnel, West Valley City Police, and the Salt Lake County Sheriff's Departments. If additional law enforcement personnel are required, their assistance will be requested. Bacchus Facility

personnel will escort outside law enforcement personnel at all times to avoid possible dangers due to the nature of our operations.

A copy of the HWCP will be submitted to the Salt Lake County Local Emergency Planning Commission (LEPC), West Valley City LEPC, West Valley City Fire Department, Salt Lake County Unified Fire Authority and Pioneer Valley Hospital. The Salt Lake County Sheriff's Department and West Valley City Police Department have both requested that emergency information be communicated and coordinated through their respective LEPC.

Salt Lake County LEPC has jurisdiction for an off-site release from the Bacchus West portion of Bacchus Facility, and West Valley City LEPC has jurisdiction for an off-site release from the remainder of the Bacchus Facility. The Bacchus Facility will notify the 911 operator if the off-site release requires LEPC response. If LEPC response is requested, the appropriate fire department will then become the IC for off-site operations, and will direct city or county personnel.

6.7 EVACUATION PLAN

The emergency evacuation plan is implemented for each hazardous waste management unit in the event of an emergency. ATK has an evacuation plan for each hazardous waste management unit. Employees evacuate a building if the fire alarm sounds or if they are verbally instructed to do so. Once outside, employees assemble at a predetermined meeting area away from the affected building and account for all employees assigned to the affected building. The evacuation routes and assembly areas for HS-1, NIROP Burning Grounds and the Ash Storage Pad, ~~ES-1,~~ ES-2~~,~~ and ES-3~~, Segment Storage, and RH-1~~ are shown on Figures 6.7-1 through 6.7-~~4~~7, respectively.

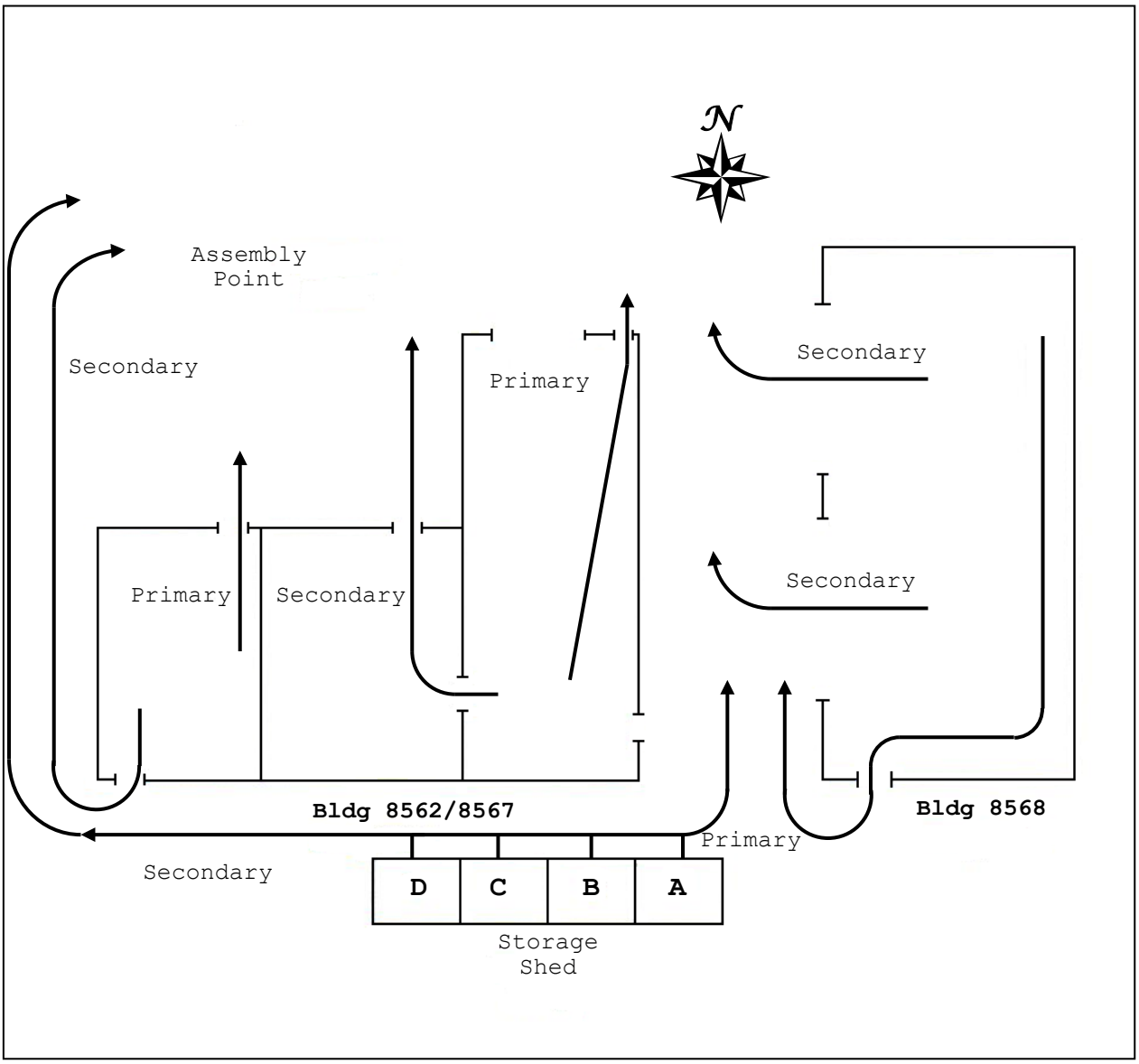


Figure 6.7-1 HS-1 Evacuation Plan

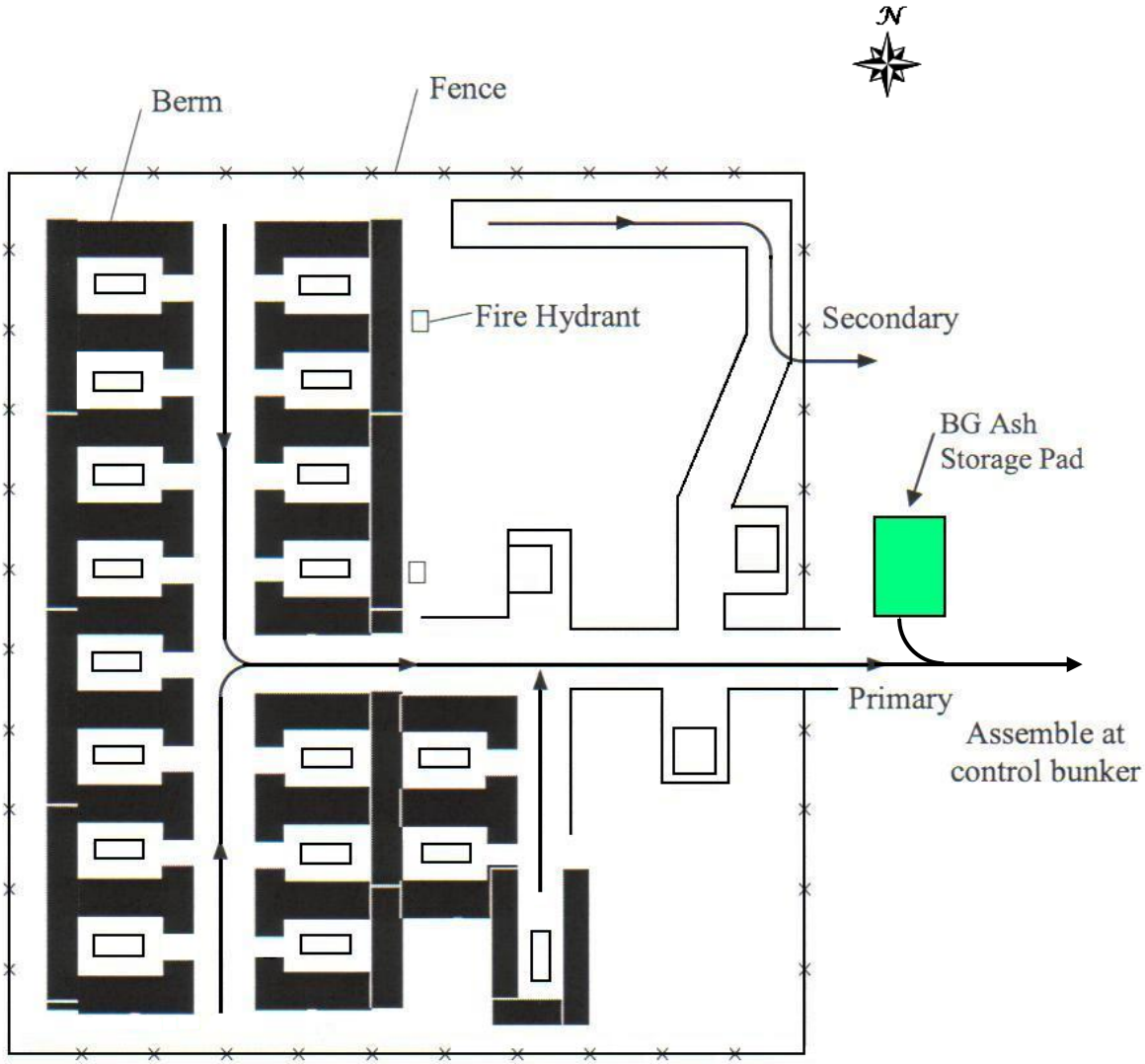
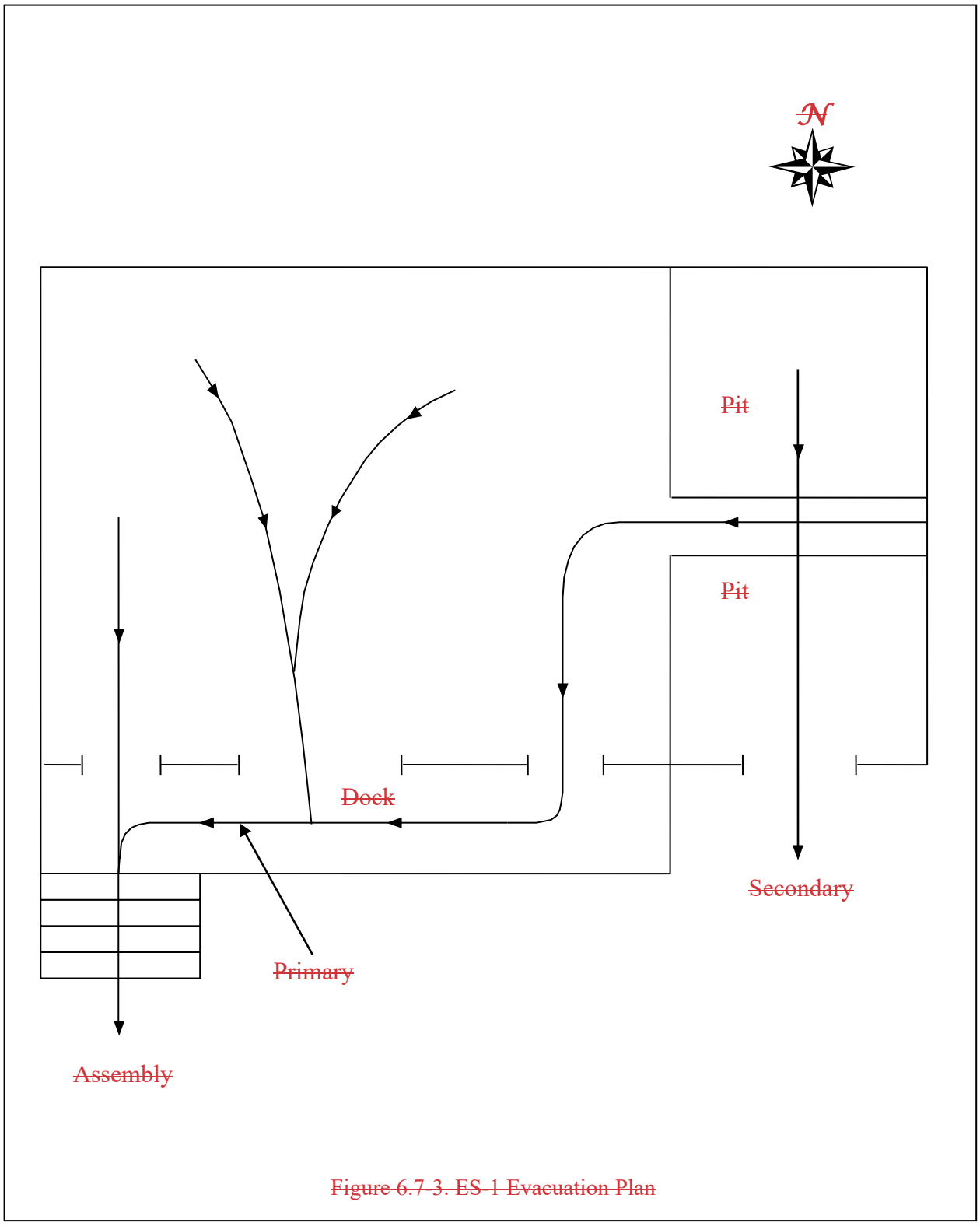


Figure 6.7-2. NIROP Burning Grounds and Ash Storage Pad Evacuation Plan



~~Figure 6.7-3. ES-1 Evacuation Plan~~

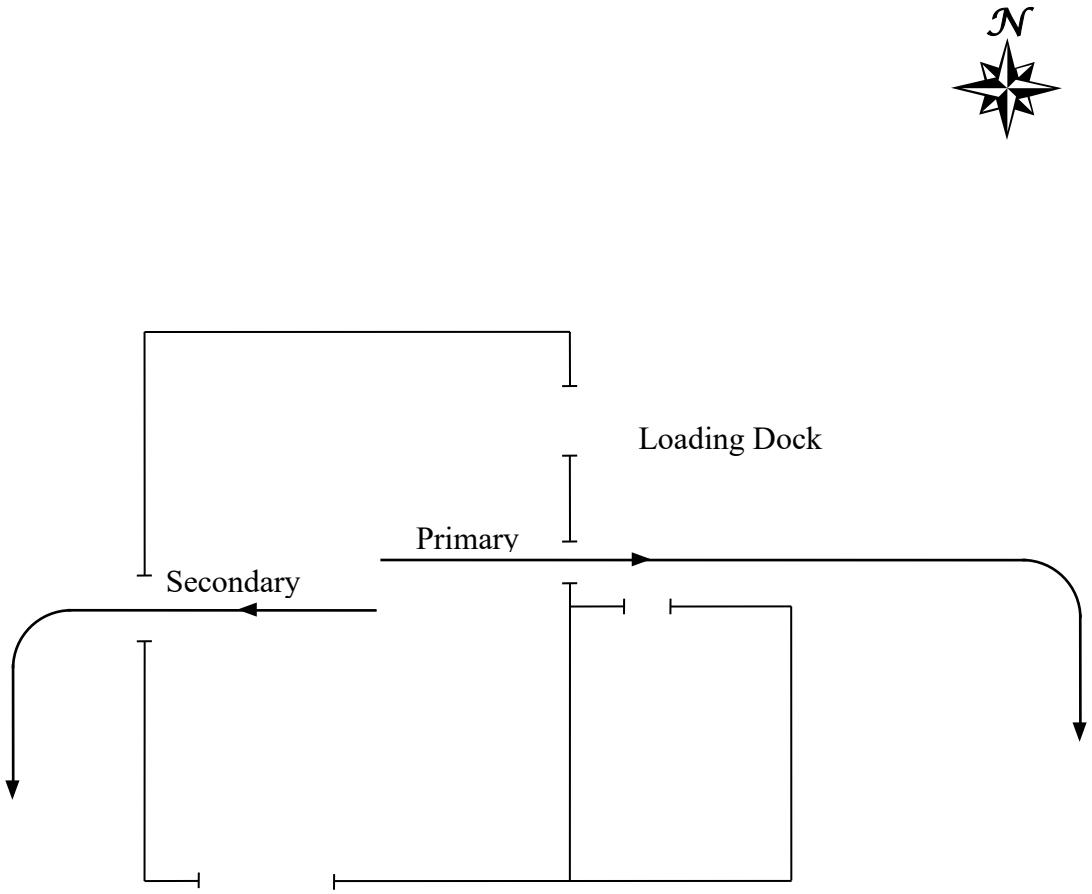


Figure 6.7-34. ES-2 Evacuation Plan

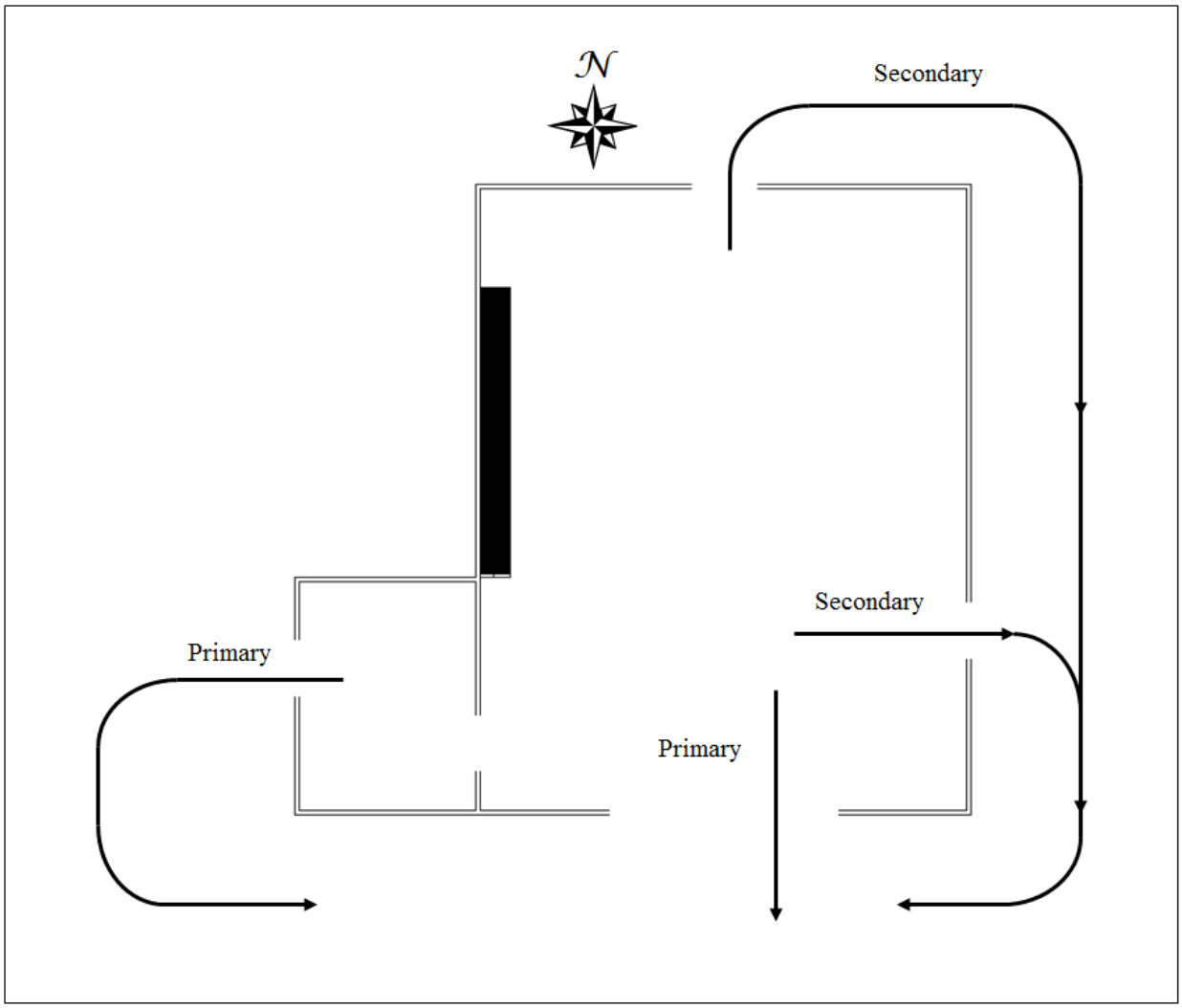


Figure 6.7-4~~5~~. ES-3 Evacuation Plan

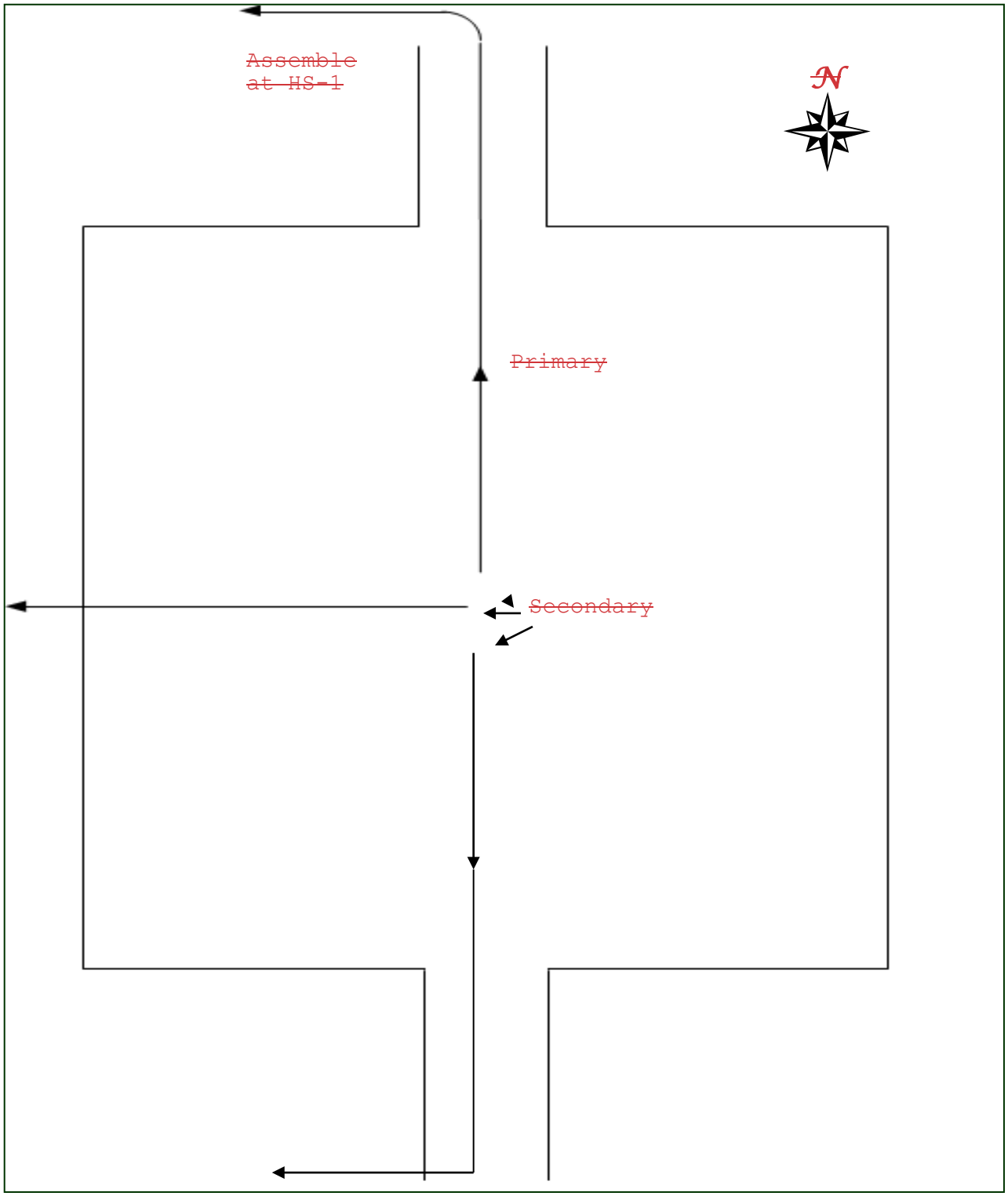
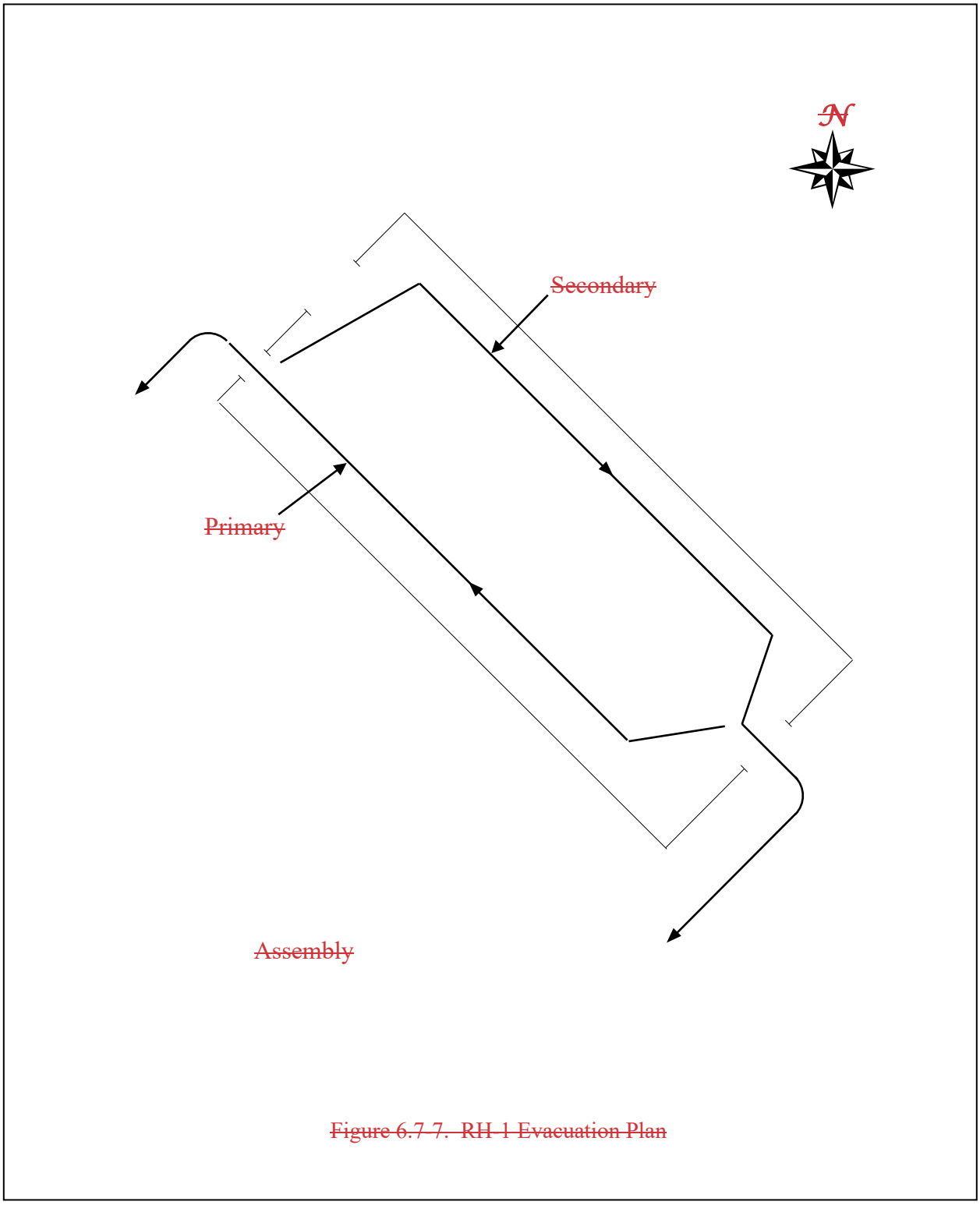


Figure 6.7-6. Segment Storage Pad Evacuation Plan



~~Figure 6.7-7. RH-1 Evacuation Plan~~

6.8 REQUIRED REPORTS

All implementation of the HWCP will be recorded in the operating record, for the Bacchus Facility and a written report will be submitted as required in Section 6.3 within 15 days of an occurrence of an environmental emergency that requires reporting. The report will contain the following information:

- Name, address, and telephone number of the owner, operator, and facility;
- Date of incident;
- Time of incident;
- Type of incident;
- Name of all materials involved;
- Quantity of materials involved;
- Extent of injuries (if any);
- Assessment of actual or potential hazards to human health or the environment;
- Estimated quantity of recovered material; and
- Arrangements for disposition of recovered material.

A copy of the report will always be sent to the Director of the Utah Division of Waste Management and Radiation Control, in addition to other agencies requiring the report.

7.0 PERSONNEL TRAINING

This training program has been developed for employees who generate or manage hazardous wastes. The hazardous waste training program includes both classroom instruction, and individual study of operating procedures and on-the-job training designed to ensure that employees and operators are trained in how to properly manage hazardous waste and respond to environmental emergencies at the Bacchus Facility. The training program includes introductory training programs, continuing training programs, and a computerized system that documents training completed by each employee.

7.1 Training Program Outline

The purpose of the program is to train Bacchus Facility employees to perform their duties in a way that ensures compliance with all applicable regulations. There are five groups of employees defined in Section 7.1.2 included in this training program. All required training will be documented. This program described in this chapter identifies the introductory and annual refresher training that will be provided to the respective groups.

7.1.1 Training Director

The Training Director for the Bacchus Facility is the Manager of Environmental Services. ATK will assure that the Training Director has the necessary knowledge, training and experience to oversee training program for the Bacchus Facility. It is the Training Director's responsibility to audit training records and ensure compliance with the training plan. The Training Director will review and update the training program to ensure that it meets all requirements of R315-264-16 of the Utah Admin. Code and 29 CFR 1910.120.

7.1.2 Training Requirements

Employees included in the hazardous waste training program have been placed into five main groups which are identified in Table 7-1. ATK will maintain a list that identifies all of the employees in groups 2, 3A, 3B and 4 in accordance with the requirements of Section 7.3. Group 1 employees will be identified using a list or organizational charts. These lists or organizational charts will include sufficient detail so that a third party can determine if the employee belongs in Group 1, 2, 3A, 3B or 4 job title and description. See the Bacchus Facility organization charts for details, which are available upon request at the Bacchus Facility. Table 7.1 identifies the job title and job description for each of the groups.

Group 1 employees generate hazardous waste. This group includes the majority of the manufacturing, maintenance and support personnel at the facility. Their training is titled "Waste Generator Training" and is specific to the basic rules that apply to hazardous waste generation.

Group 2 employees include the following job titles:

- "Environmental Operator." Their primary function is to transport hazardous waste from the generation areas to hazardous waste storage areas. They also provide the manual labor at hazardous waste storage facilities, and the NIROP Burning Grounds.
- "Operations Team Supervisors" or "Operations Team Managers". Their primary function is to provide either first or second line supervision for Environmental Operators.

Group 3 employees include the following job titles:

- Group 3A employees include the following job title: "Environmental Engineer & OB Support" personnel. Their primary function is to provide technical, regulatory and management support for hazardous waste management activities at the Bacchus Facility Plant 1and NIROP facilities, and the treatment activities at the NIROP Burning Grounds.
- Group 3B employees include the following job titles: "Environmental Engineers" and "Environmental Managers." Their primary function of the environmental engineers is to provide technical and regulatory support for all on-site environmental activities associated with the Bacchus Facility Plant 1 and NIROP operations. The environmental managers are tasked with supervising the environmental programs at the Bacchus Facility Plant 1 and NIROP operations and supervising the Group 3 and 3A employees assigned to those operations.

Group 4 employees are on scene incident commanders and members of the ATK Fire Department. Their primary function is to provide the initial response for fires and chemical releases. No Group 4 employee will be the primary initial responder to a fire or chemical release, or act as the Incident Commander during an emergency situation until ATK confirms that they are a certified professional fire fighter and before the employee has completed his initial training.

The training program has been designed to meet the personnel training requirements of R315-264-16 of the Utah Admin. Code. The Waste Generator Training will be provided to Group 1, 2, 3A and 3B employees. In addition, Group 2, 3A and 3B employees will successfully complete Hazardous Waste Operations and Emergency Response (HAZWOPER) training, which at a minimum will be in accordance with 29 CFR 1910.120, that addresses general safety and health requirements and hazardous material emergency response procedures. The specifics regarding the Group 4 training requirement are described in Section 7.1.7.

Group 1, 2, 3A and 3B employees will complete their initial training requirements within 6 months of starting employment in any of the work groups identified above and in Table 7.1. Group 4 employees must complete initial training requirement before they assume the responsibilities of that group. Whenever an employee moves to a different group, the employee will complete the required initial training within 6 months of starting in new position. All Group 1, 2, 3A, 3B and 4 employees will receive refresher training annually. The annual training will be completed within 12-months of when the employee completed their initial training.

Table 7.1
Training Groups

Group	Job Title	Job Description
1	Operator	Employees within manufacturing, maintenance & test areas who generate hazardous waste incidental to their normal work activities.

Table 7.1 continued

Group	Job Title	Job Description
2	Environmental Operator	Transports waste from generation areas to hazardous waste storage areas. Provides labor at all hazardous waste management facilities including storage areas and open burning.
2	Operations Team Supervisor	Provides first line supervision for Environmental Operators during all activities.
2	Operations Team Manager	Provides second line supervisor for Environmental Operators and Operation Team Supervisors during all activities.
3A	Environmental Engineer & OB support	Provides technical and regulatory support for all on-site environmental activities and treatment activities at the NIROP Burning Ground
3B	Environmental Engineer	Provides technical and regulatory support for all on-site environmental activities.
3B	Environmental Manager	Supervises environmental programs and the engineers assigned to them.
4	On Scene Incident Commander	ATK Fire Department employees who assume control of the incident scene during a Hazardous Waste Contingency Plan emergency.

7.1.3 Training Methods

ATK has a formal training program. Courses are taught in a formal classroom setting, online or by reviewing a written document. Courses are conducted by an ATK instructor, an outside instructor, by someone who has special expertise in the subject being taught or by independent study. The Training Director will review and assess the qualification of all trainers before they train any employees. ATK will maintain a record of all trainers and their qualifications in the facility's operation record.

ATK provides employees with on-the-job training and independent study by reviewing procedures or written materials specific to the work being done. Due to the safety hazards associated with the work at the Bacchus Facility all employees will complete their initial training before being permitted to work unsupervised in an explosive production area or a hazardous waste management area. All training is documented using a computerized tracking system. Successful completion of training is monitored by the Training Director.

Group 2 and 3A employees are trained in accordance with the procedures described in ATK procedure document 21000GV0001 "Burning Propellant at NIROP Burning Grounds", an internal confidential document. This document is managed by the Bacchus Facility Production Control group in accordance with internal procedure OP-43 "Bacchus Manufacturing Documentation Control" and revisions require written authorization from the Environmental, Operations and Safety departments. Group 2 and 3A employees are trained to new revisions of this procedure within 30 days of issuance using the training system described in Section 7.

7.1.4 Waste Generator Training

Waste Generator Training is required for all Group 1and Group 2 employees, and is provided using Bacchus Facility specific operating procedures. Group 1 employees do not participate in emergency response efforts as defined in 29 CFR 1910.120(a)(3), nor do they work in operations defined in 29 CFR 1910.120(a) and are not required to have HAZWOPER training. Annual training is provided using area-specific waste management procedures. The initial training and annual refresher training are identical, and require approximately one hour to complete. The course contents and a description of each course are provided in Table 7.2 and in addition all employees receive Emergency Action Awareness training.

Table 7.2
Hazardous Waste Generator Training

Title/Training Documentation	Content	Applicable Employees
LS BA Waste, Explosive	Establishes procedures for packaging and labeling explosive waste in manufacturing areas	Employees who generate propellant and explosive waste and their supervisors
LS BA Waste, Non-Explosive	Establishes procedures for packaging and labeling non-explosive waste in manufacturing areas	Employees and their supervisors who generate chemical waste
LS BA Facilities & Maintenance Environmental Requirements	Establishes environmental requirements for Facilities & Maintenance employees	Facilities & Maintenance employees and their supervisors who generate hazardous waste

7.1.5 RCRA Training

The RCRA training program has been designed to meet the Personnel Training requirements of R315-264-16 of the Utah Admin. Code for all Group 2, 3A and 3B employees. The purpose of the training is to ensure that the employees who manage hazardous waste are trained to perform their duties in a manner that ensures compliance with the operating conditions of the permit. The RCRA Training will teach Group 2, 3A and 3B employees the appropriate and applicable hazardous waste management and treatment procedures, including instruction in the implementation of emergency procedures that ensure that these employees will be able to respond effectively to emergencies. In addition, this training will include, at a minimum, procedures for the inspection, use, repair and replacement of the Bacchus Facility's emergency response and monitoring equipment, the proper response to fires or explosions, response to groundwater contamination incidents, and shutdown or evacuation of operations. The RCRA Training is administered through a combination of classroom and on-the-job training. The course content and description of each subject is provided in Table 7.3 and Table 7.4.

Table 7.3 describes the initial and annual RCRA Training that Group 2 employees will receive, and Table 7.4 describes the initial and annual RCRA Training that Group 3A and 3B employees

will receive. Group 2, 3A and 3B employees will receive their initial and annual update training in accordance with the schedule described in Section 7.1.2.

Table 7.3
RCRA Training – Group 2 Employees
Training Documentation: RCRA Training

Title	Content
Permit Requirements for Storage of Hazardous Waste	Provides a description of the permit and inspection requirements for the hazardous waste storage and treatment facilities to operate in accordance with regulatory requirements.
Emergency Action Training	Provides the requirements for emergency communication, reporting and responding to emergencies that could occur at the facility.
Hazardous Waste Contingency Plan	Reviews the current content of the Hazardous Waste Contingency Plan.
Department of Transportation Requirements for Transporting Hazardous Waste	Provides a review of Department of Transportation requirements associated with hazardous waste shipments.
Requirements for Generators of Explosive Waste	Identifies requirements for generators of explosive waste.
Requirements for Generators of Non-Explosive Waste	Identifies requirements for generators of non-explosive waste.
Environmental Requirements for Facility and Maintenance Operations	Identifies environmental requirements specific to Bacchus Facility operations and maintenance.
Storing Chemical Wastes	Identifies requirements for storing chemical wastes at HS-1 and the Ash Storage Pad.
Inspection Requirements	Identifies inspection requirements for permitted storage facilities.
Hazard Communication	Provides OSHA required hazard communication information specific for employees working at hazardous waste storage and treatment facilities.
Responding to Chemical/Hazardous Waste Spills	Identifies the procedures to safely clean up a spill at HS-1 and the Ash Storage Pad including contamination control, personal protective equipment requirements and decontamination requirements.
Hazardous Waste Sampling	Teaches techniques for sampling hazardous waste.
Preparing Drums of Waste for Shipment Off-Site	Identifies requirements for shipping hazardous waste off-site.

Table 7.3 continued

Title	Content
Storing Explosive Waste	Identifies requirements for storing waste explosives at: ~~ES-1,~~ ES-2, ES-3, ~~Resthouse 1, Segment Storage,~~ the NG Remover Shed, and Buildings 32E, 31 and 45A.
Portable Fire Extinguisher Training	Teaches fire safety principles and demonstrates the inspection, use and care of portable fire extinguishers.
Picking Up Chemical Waste Material	Operating instructions for collecting and transporting chemical waste on-site.
Picking Up Chemical Waste Material	On-the-Job training – observe and perform the task.
Slum Pick-Up By Environmental Operation	Operating instructions for collecting and transporting explosive waste on-site.
Slum Pick-Up By Environmental Operations	On-the-Job training for Group 2 operations employees only.
Crushing Empty Drums	Operating instructions for crushing drums.
Crushing Empty Drums	On-the-Job training – observe and perform the task.
Operating a Wastewater Truck	Operating instructions for collecting and transporting wastewater on-site
Operating a Wastewater Truck	On-the-Job training – observe and perform the task.
Preparing Explosive Waste for Off-Site Shipment	Operating instructions for preparing explosive waste for off-site shipments.
Preparing Explosive Waste for Off-Site Shipment	On-the-Job training – observe and perform the task.

Table 7.4 **Group 3A and 3B** **RCRA Training - Group 3A and 3B Employees** **Training Documentation: RCRA Training**	
Title	**Content**
Permit Requirements for Storage of Hazardous Waste	Provides a description of the permit and inspection requirements for the hazardous waste storage and treatment facilities to operate in accordance with regulatory requirements.
Emergency Action Training	Provides the requirements for emergency communication, reporting and responding to emergencies that could occur at the facility.
Hazardous Waste Contingency Plan	Reviews the current content of the Hazardous Waste Contingency Plan.

Table 7.4 continued

Title	Content
Department of Transportation Requirements for Transporting Hazardous Waste	Provides a review of Department of Transportation requirements associated with hazardous waste shipments.
Requirements for Generators of Explosive Waste	Identifies requirements for generators of explosive waste.
Requirements for Generators of Non-Explosive Waste	Identifies requirements for generators of non-explosive waste.
Environmental Requirements for Facility and Maintenance Operations	Identifies environmental requirements specific to facility and maintenance operations.
Storing Chemical Wastes	Identifies requirements for storing chemical wastes at HS-1 and the Ash Storage Pad.
Inspection Requirements	Identifies inspection requirements for permitted storage facilities.
Hazard Communication	Provides OSHA required hazard communication information specific for employees working at hazardous waste storage and treatment facilities.
Responding to Chemical/Hazardous Waste Spills	Identifies the procedures to safely clean up a spill at HS-1 and the Ash Storage Pad including contamination control, personal protective equipment requirements and decontamination requirements.
Hazardous Waste Sampling	Teaches techniques for sampling hazardous waste.
Preparing Drums of Waste for Shipment Off-Site	Identifies requirements for shipping waste off-site.
Picking Up chemical Waste Material	Operating instructions for collecting and transporting chemical waste on-site.
Storing Explosive Waste	Operating instructions for storing waste explosives at: ~~ES-1,~~ ES-2, ES-3, ~~Resthouse 1, Segment Storage,~~ the NG Remover Shed, and Buildings 32E, 31 and 45A.
Slum Pick-Up By Environmental Operations	Operating instructions for collecting and transporting explosive waste on-site.
Preparing Explosive Waste for Off-Site Shipment	Operating instruction for preparing explosive waste for off-site shipment.
Portable Fire Extinguisher Training	Teaches fire safety principles and demonstrates the inspection, use and care of portable fire extinguishers.

7.1.6 HAZWOPER Training

Group 2 employees are defined in 29 CFR 1910.120(a)(iv) as operators involving hazardous waste operations that are conducted at treatment, storage and disposal facilities. This group will complete a 24-hour HAZWOPER training course as part of their initial training requirements as identified in 1910.120(p). All Group 3A and 3B employees will complete, at a minimum, a 40-hour HAZWOPER Training course as part of their initial training requirements in accordance with 29 CFR 1910.120(e). The 40-hour course will be provided using a commercial course provider. Equivalent training as defined in 29 CFR 1910.120(e)(9) for Group 2, 3A and 3B employees may be used where it can be documented that work experience and/or training has resulted in training equivalent to the training required in 1910.120(e)(1) through (e)(4). The information in Table 7.5 describes 8-hour HAZWOPER refresher course that will all Group 2, 3A and 3B employees will complete annually. The annual 8-hour HAZWOPER refresher course for Group 2, 3A and 3B employees will be provided on-site by the Training Director or a qualified designee. The course content and a description of each subject is provided in Table 7.5.

Table 7.5
Group 2, 3A & 3B
8-Hour HAZWOPER/RCRA Annual Refresher Course
Training Documentation: HAZWOPER Annual
RCRA Annual

Title	Content
Permit requirements for Storage of Hazardous Waste	Review the hazardous waste permit requirements to operate in accordance with regulatory requirements.
Emergency Action Training	Review the requirements for emergency communication, reporting and responding to emergencies that could occur at the facility.
Hazardous Waste Contingency Plan	Review the current content of the Hazardous Waste Contingency Plan
Department of Transportation Requirements for Transporting Hazardous Waste	Review the Department of Transportation requirements associated with hazardous waste shipments.
Hazard Communication	Review the hazard communicate program.
Chemical Waste Storage Requirements	Review the requirements for storing non-explosive wastes at HS-1 and the Ash Storage Pad.
Explosive Waste Generator Requirements	Review the requirements for generators of explosive wastes.
Non-Explosive Waste Generator Requirements	Review the requirements for generators of non-explosive wastes.
Environmental Requirements for Facilities and Maintenance Operations	Review the requirements specific to facility and maintenance activities.
Cleaning up Chemical /Hazardous Waste Spills	Review the protocol for cleaning up chemical spills.

Portable Fire Extinguisher Training	Teaches fire safety principles and demonstrates the inspection, use and care of portable fire extinguishers.

7.1.7 On Scene Incident Commander

All Group 4 employees are on scene incident commanders and members of the ATK Fire Department. The employee must be a current professional fire fighter certified by the Utah Fire & Rescue Academy to no less than a Fire Fighter II level which satisfies the 29 CFR 1910.120(q)(6)(v) initial training requirements. In addition, Group 4 employees will all receive site specific training regarding the hazard communication system, the Contingency Plan and site specific dangers.

Group 4 will receive their annual training on-site by completing the material outlined in Table 7.6 This training includes specific information on storage and disposal facility requirements, the Hazardous Waste Contingency Plan, the emergency response notification system, response to fire, explosive and medical emergencies, and response to chemical spills which includes ground water contamination incidents.

Table 7.6
Group 4
On Scene Incident Commander Training
Training Documentation: On Scene Incident Commander Training

Title	Content
Treatment and Storage Facility Summary	Provides a summary of capabilities and requirements for treatment and storage facilities
Hazardous Waste Contingency Plan	The emergency plan for hazardous waste storage and treatment areas
Response to Emergency Calls	Provides instructions on responding to emergency calls.
Response to Fire and Explosive Emergencies	Provides instruction on responding to fire and explosive emergencies
Emergency Response and Victim Transport	Provides instructions for emergency response and victim transportation.
Emergency Response to Hazardous Material Spills or Leaks	Provides instructions for emergency response to hazardous material spills or leaks including mitigation of impacts to human health or the environment.
Requesting Assistance From Outside Agencies	Provides instruction on requesting assistance from outside agencies

7.2 PROCEDURES FOR EMERGENCY EQUIPMENT

The RCRA and HAZWOPER training program instruct employees in the correct use of hazardous waste emergency and monitoring equipment. This equipment includes spill response hardware and personal protective equipment. Group 2, 3A, 3B and 4 employees are responsible for the inspection, use, repair and replacement of the facility's emergency response and monitoring equipment,

7.2.1 Emergency Communication Procedures and Alarm System

The RCRA training program prescribes (see Chapters 5 and 6) the methods for the use and maintenance of external and internal communication equipment and the correct procedures for controlling communications with other agencies, departments, and individuals. Employee orientation, notices, and other procedures detail the use of the Emergency Reporting System which is activated when an employee dials the Emergency/Disaster extension number 2222 on the Bacchus Facility phone system or 801-251-2222 to initiate emergency actions. The system immediately notifies internal company organizations.

7.2.2 Response to Fires and Explosions

The ATK Fire Department is trained to respond to situations involving explosives or highly flammable materials. The Contingency Plan details emergency response actions for fire and other emergencies that involve hazardous wastes, constituents or substances that could contaminate the environment.

7.2.3 Response to Potential Groundwater Contamination, Incidents and Procedures for Containing, Controlling, and Investigating Spills

The ATK Fire Department is trained to respond to all releases to the environment. Each release is immediately contained and managed. These actions minimize the potential for groundwater contamination. Records are maintained to document all releases to the environment.

7.3 ASSURANCE OF TRAINING

All completed training, including on-the-job training, classroom instructions, independent study, and training courses provided by off-site and commercial providers from off-site courses and commercial courses will be documented at the department level, and entered into the training documentation system for all Group 1, 2, 3A, 3B and 4 employees at the Bacchus Facility. The Training Director will review the records in the Training Documentation System on a monthly basis to ensure each Group 1, 2, 3A, 3B and 4 employee is up-to-date on all of their required training.

Training records for all current employees will be maintained until closure of the Bacchus Facility. Training records for former employees will be maintained for at least three years from the date the employee last worked at the Bacchus Facility.

8.0 CLOSURE PLAN

The closure plans described in this section of the permit identifies how ATK will close the regulated units on the NIROP. The NIROP is owned by the Navy and is operated by ATK Launch Systems Inc., as an integral part of the Bacchus Facility. Based on 40 CFR 265.140(c), and since the facility is owned by the Navy, it is exempt from financial assurance requirements. The closure plans have been developed for the following hazardous waste storage and treatment areas: ES-2, Burning Grounds Ash Storage Pad, NIROP Burning Grounds, and ES-3.

8.1 CLOSURE PLANS AND CLOSURE COST ESTIMATES

In developing the clean closure plans for the aforementioned hazardous waste management units, ATK used the requirements of R315-264-110 through 120 and R315-264.178 of the Utah Admin. Code. R315-264-110 through 120 of the Utah Admin Code incorporates by reference the requirements of 40 CFR 264 Subpart G. The closure cost estimates are to be submitted to the Director for review and approval as required by the Permit and shall be made in accordance with R315-264-140 through 151 of the Utah Admin. Code. The closure cost estimates shall be maintained in the operating record.

ATK assumed, for the purposes of estimating the closure costs, that the hazardous waste management units were filled to their respective maximum waste storage capacities as identified in the RCRA Part A Permit Application for NIROP. If storage capacities change, the Permit will be modified and a revised cost estimate will submitted to the Director for review and approval.

8.2 CLEAN-UP APPROACH

With the exception of the NIROP Burning Grounds, the other hazardous waste management units listed in the Part A only store explosive/hazardous waste. The source of any contamination occurring in these units would be limited to spill or releases of hazardous waste or constituents onto concrete or asphalt surfaces. The units will be cleaned using steam and/or high-pressure water until surfaces are decontaminated. This method has been routinely used at Bacchus Facility to clean various areas as a part of normal plant maintenance. Wash water from ES-2, ES-3 and the Ash Storage Pad will be collected using temporary or permanent berms and sumps to prevent contaminating the surroundings. Wash water from the NIROP Burning Grounds pad will be collected using the current collection/conveyance system and treated at the NIROP Burning Grounds storm water treatment plant. Past experience indicates that contamination in the cleanup wash water will be minimal, and after characterization the water will meet discharge limits for a POTW or UPDES discharge permit. Therefore, it is not anticipated that the wash water generated during the closure will require special handling. The wash water will be collected according to Bacchus Facility practices. It will then be stored, tested, and disposed. If it is determined that the wash water cannot meet discharge limits, it will be characterized and disposed according to applicable rules and regulations.

Because of the hazardous nature of the explosive materials on site and complex plant safety procedures, Bacchus Facility personnel will be involved in closure activities more than would be the case at other types of hazardous waste management facilities. For cost-estimating purposes, it was assumed that a third-party consulting firm will be employed to clean buildings and grounds after explosive materials have been removed, conduct verification sampling, and write the final closure reports.

Once hazardous/explosive waste storage buildings and treatment units have been decontaminated and verified clean, ATK will submit a written report to the Director requesting concurrence on the closure certification. Before any unit can be clean closed, ATK must have concurrence from the Director of the Utah Division of Waste Management and Radiation Control. The final disposition of

any unit listed in this permit that has been clean closed will be the prerogative of the NIROP Facility owner. If a unit cannot be clean closed ATK will develop an appropriate and applicable post-closure care mechanism.

The NIROP Burning Grounds treats reactive wastes. A due diligence investigation, conducted in 1994 by ATK, did not detect significant soil contamination surrounding the NIROP Burning Grounds. Soils at the NIROP Burning Grounds will be cleaned closed in accordance with R313-264-110 through 120 and R315-101 of the Utah Admin. Code. Groundwater is currently being monitored and will continue to be monitored post-closure. A post-closure plan for the groundwater will be developed according to R315-264-110 through 120 and R315-101 of the Utah Admin. Code.

It is assumed that the RCRA Facility Investigation will be completed before closure occurs, and that the nature and extent of any contamination will have been defined. That data will be used to develop the final work plans for cleanup of the facilities named here. For that reason, the emphasis in closure will be on verification sampling to ensure that the decontaminated facility meets closure criteria.

8.3 CLEAN CLOSURE CRITERIA

For the purposes of estimating closure costs, it is assumed that all of the regulated units will be clean closed. Clean closure can be achieved by meeting the clean closure equivalency as defined in R315-101-6(c)(1) of the Utah Admin. Code. All closures will assess real and potential impacts to human and ecological exposures.

The Regional Screening Levels (RSLs) for Contaminants of Concern, ~~at Superfund Sites, September~~~~May~~ ~~2018,~~ May 2020, or the most current edition~~(RSLs) is now used by USEPA Region 9 and,~~ will be used to screen the data under a residential land-use scenario. RSL goals will be established prior to implementing any of the closure plans in this section. ATK will use the most current screening levels published by USEPA ~~Region 9~~, or establish site-specific risk-based clean closure goals in accordance with R315-101-5.2 of the Utah Admin. Code.

8.4 VERIFICATION SAMPLING APPROACH

To determine whether each hazardous waste management unit has been successfully decontaminated and cleaned, ATK will use the following techniques:

- Core samples or subsurface soil samples will be collected from floors where liquid hazardous wastes were stored, and from locations where porous flooring materials are present. Sample locations will be biased toward visible staining or other indication of potential contamination, such as the source of the material, coloration, or floor integrity. Cores obtained from the floors will have the top 1-inch (unless staining or discoloration indicates contamination below that depth) sawed off and pulverized in the laboratory before being analyzed for the contaminants of concern. Material used for samples will not exceed 1-inch maximum in depth. If additional material is needed for analysis, additional cores will be collected by co-locating additional cores near the original sample point. In-situ samples will always be discrete samples without compositing.
- Wipe samples will be collected from the wall surfaces in the buildings when applicable. The sample will be collected by wiping the surface of a designated area using a template with a piece of solvent moistened gauze to remove any remaining contaminants. The wipe will be placed into a glass vial for storage and transport. Samples will be handled according to applicable sample preservation and chain-of-custody requirements.
- Final rinse water samples will be collected in buildings where non-liquid hazardous wastes were stored and from all non-porous surfaces. The rinse water samples will be

analyzed and evaluated to determine whether the exposed surfaces of the buildings have been adequately decontaminated.

- Soil samples will be collected where the potential existed for hazardous waste materials to be transposed to soil areas surrounding the designated building area and where building wash water will be drained or collected from low spots of the floor. [HZ1]Samples will be collected in areas with the greatest potential to have received waste materials, visible staining of soil, or other indication of contamination. Each sample collected for volatile organic compound analysis will be a discrete sample. However, the samples collected for non-volatile compounds may be a composited within the sample interval. Analytical results will be compared with the closure performance standard presented for the specific hazardous waste management unit.
- Prior to implementing the closure plans described in this section of the application, ATK will develop Data Quality Objectives (DQOs) for all verification samples. The DQOs will be submitted to the Director for approval prior to implementing any of the closure plans.
- The unit will be considered clean if the verification samples show that all contaminant concentration levels meet a risk-based clean closure equivalency as defined in R315-101-6(c)(1) of the Utah Admin. Code.
- Sampling and handling will be conducted according to the requirement and protocols established by the USEPA and the UDEQ.
- All samples will be processed and analyzed by a Utah Certified Laboratory in accordance with R444-14-3(2) of the Utah Admin. Code. Analytical and extraction methods to be used are shown in Table 8-1. The most current analytical methods will be used for closure of the hazardous waste management units.~~.~~

8.5 NIROP EXPLOSIVE WASTE CONTAINER STORAGE FACILITY (ES-2)

ES-2 is an explosive waste storage unit that ATK uses for the storage of propellant and explosive wastes.

8.5.1 Site Description

ES-2 is a totally enclosed structure constructed of concrete and steel. The building was originally constructed for storing and weighing dry propellant ingredients. The floor is electrically-conductive for the continuous grounding of personnel. ES-2 has the capacity to store 40,000 pounds of explosive or flammable solids. Explosives are generally stored in "SLIDs," sections of cardboard cylinders used for casting pilings that are mounted on a plywood base, and in anti-static bags. Figure 8-1 provides a floor plan and a typical storage configuration of the building. The building is protected by a grounded deluge sprinkler system. Fire symbols appropriate for the greatest explosive waste hazard are clearly posted on the exterior of the building. The building is shown in Figure 8-2.

8.5.2 ES-2 Closure Plan

The closure plan detailed in this section was developed with the assumption that ES-2 will be clean closed. The plan describes the procedures that will be used to clean, decontaminate, and verify closure of all applicable structures and equipment at ES-2, and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-264-110 through 120 of the Utah Admin. Code and 40 CFR 364.112(c).

8.5.3 Closure Performance Standard

This unit will be clean closed by cleaning the unit until it meets the clean closure equivalency as defined in R315-101-6(c)(1) of the Utah Admin. Code. After closure, ES-2 may be used for other purposes, or may be demolished. Post-closure care for ES-2 is not anticipated

8.5.4 Operational History of Spills or Releases at ES-2

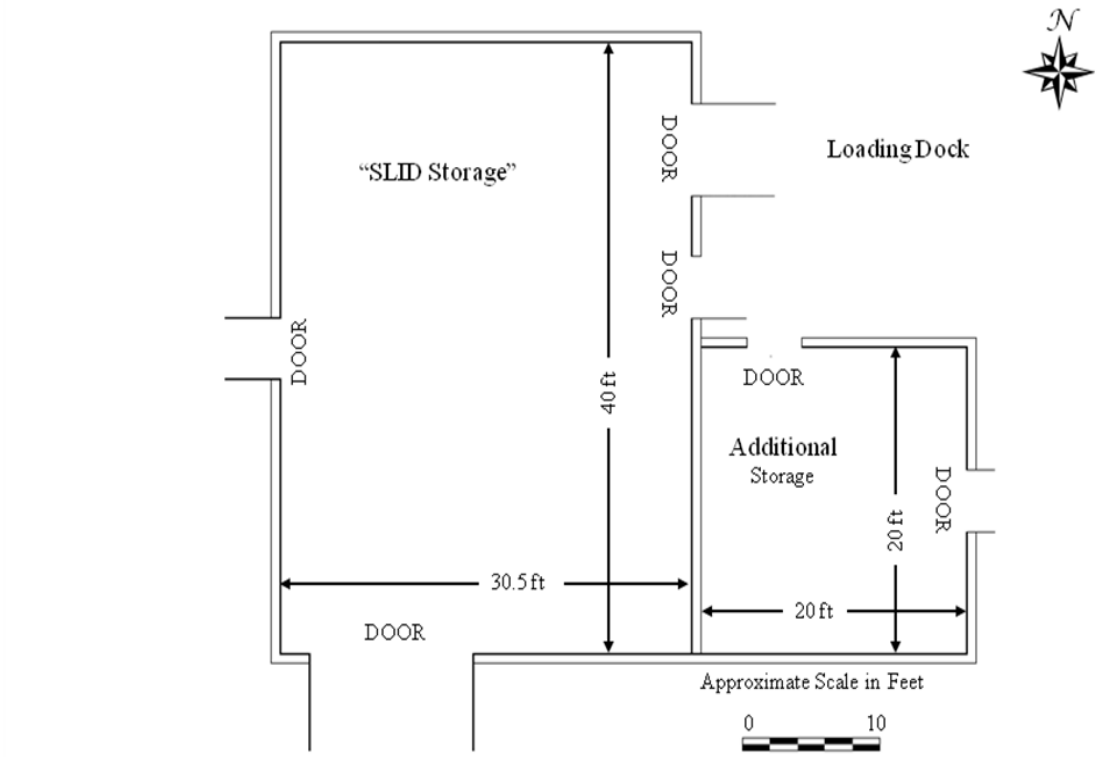
At the time this plan was written there was no history of any major spills occurring at ES-2. Whenever a minor spill occurred, it was immediately cleaned up. Prior to closure the operational history of ES-2 will be reviewed to determine when and where spills have occurred. Prior to implementation of the closure plan, the floor in ES-2 will be evaluated for cracks and gaps. If cracks or gaps exist, the closure plan will be amended to assess the potential migration of contaminants through the floor of ES-2.

8.5.5 Maximum Waste Inventory at ES-2

Based on our operating history, the maximum inventory of hazardous waste documented on-site was equal to approximately 20,000 pounds; the permitted storage capacity of ES-2 is 40,000 pounds. The principal waste stored at ES-2 has been Class 1.1 explosive waste. The majority of the wastes stored at ES-2 are treated at the NIROP Burning Grounds since these wastes do not have DOT authorization for offsite shipment. Prior to implementing the closure plan, the operational history will be reviewed to determine what reactive hazardous waste or constituents ATK stored at the ES-2 during its operational life.

8.5.6 Inventory Removal, Disposal, and Decontamination of Structure/Equipment

Any bulk explosives remaining at the time of closure will be taken to the NIROP Burning Grounds for disposal. The storage areas, equipment, structure, etc., will be decontaminated by steam cleaning and/or washing with high pressure water and scrub brushes. A temporary berm will be constructed using plastic and railroad ties, or a similar structure, to contain wash water. Wash water will be collected and transferred into a 55-gallon drum or similar vessel. An environmentally safe detergent, if necessary, may be used. The decontamination process is expected to generate approximately 500 gallons of wash water and residue.



ES-2 Floor Plan

Figure 8-1

Explosive Storage (ES-2)

Figure 8-2

The building may be subdivided into more than one area for cleaning purposes. Structures and equipment requiring decontamination include, but are not limited to, the following:

- Concrete floor in the building;
- Walls that may have been exposed to contamination; and,
- Miscellaneous equipment permanently attached to the facility.

All material used to construct the temporary berm will be collected, characterized, and discarded according to applicable and appropriate waste management rules.

8.5.7 Verification and QA/QC Samples

Decontamination and verification samples will be collected from storage areas at ES-2. From experience, contaminants in the decontamination wash water are expected to be very low. This wash water will be sent to a local POTW following approval or verification that discharge limits can be met.

To demonstrate adequate decontamination, verification samples will be collected from the storage area. Final rinse samples of the floors and walls will be collected. Wipe samples will be collected from two walls in each storage area. Samples will be collected according to the procedure described in Section 8.4.

Table 8-2 identifies the number of verification and QA/QC samples that ATK expects to collect during the closure of ES-2. In addition to the clean closure verification samples identified in Table 8-2, the following QA/QC samples will be collected during each day of verification sampling:

- A field blank filled with de-ionized water will be exposed during sampling, and then analyzed to detect accidental or incidental contamination, during each day of sampling.
- A trip blank sample will be collected by filling the bottle with de-ionized water and carried with the decontamination/sampling crew to ES-2. The trip blank bottles shall be handled identically to the handling methods used for sample-of-record collection, transported within the same cooler, and subjected to the same analyses.
- One (1) blind duplicate sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on or in the structures and equipment following the decontamination process. Structures and permanent fixtures may be kept for future use. There is no intention to break up and dispose of the building as part of the closure.

8.5.8 Closure Report and Certification

Upon completion of the closure, a report will be provided to the Director certifying that the closure was completed in accordance with the plan. The report will include a summary of the operational history of ES-2, copies of the analytical results, copies of the QA/QC data, data validation report(s), copies of manifests that accompanied off-site shipments of wastes, characterization of decontamination water/residue, documentation that the closure of ES-2 met the performance standard identified in Section 8.5.3, and a closure certification. A certification of closure according to 40 CFR 264.115 will be submitted by registered mail to the Director within 60 days of the completion of the final closure.

8.5.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK will submit a request to the Director. All hazardous wastes will be removed or treated within 90 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever occurs last. Final closure activities will be completed within 180 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever is later.

8.5.10 Post-Closure Care

The closure plan described above anticipates that ES-2 will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that ES-2 cannot be clean closed, ATK will develop an appropriate and applicable post-closure care plan for all areas of this unit that cannot be clean closed. Any proposal for post-closure care will be developed in accordance with R315-264-110 through 120 and 140 through 151 of the Utah Admin. Code, and submitted to the Director for approval.

8.5.11 Closure Cost Estimate

The cost estimate for the closure of ES-2 will be maintained in the operating record.

8.6 BURNING GROUNDS ASH STORAGE PAD

The Burning Grounds Ash Storage Pad is a hazardous waste storage unit constructed for the storage of ash generated from the treatment of energetic wastes. The residual ash is no longer a reactive waste, but is considered an F-listed waste based on the presence of organic solvents.

8.6.1 Site Description

The Burning Grounds Ash Storage Pad is a 45 ft x 45 ft concrete pad located outside of the NIROP Burning Grounds fence. The pad is designed to contain two ash storage containers (Figure 8-3). The containers are covered except when waste is being added. The pad may also be used to accumulate scrap metal generated at the NIROP Burning Grounds; the scrap metal dumpster will not need to be covered. This storage unit has a maximum capacity of 50 cubic yards.

8.6.2 Ash Storage Closure Plan

The closure plan detailed in this section was developed with the assumption that the Ash Storage area will be clean closed. The plan describes the procedures that will be used to clean, decontaminate, and verify closure of all applicable structures at the Ash Storage area, and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-264-112of the Utah Admin. Code.

8.6.3 Closure Performance Standard

The closure criteria for the pad and surrounding soil will be to clean close by cleaning the unit and surrounding soil until they meet the clean closure equivalency as defined in R315-101-6(c)(1) of the Utah Admin. Code. If the pad can be clean closed, the pad may be used for other purposes, or may be demolished. No specific Ash Storage post-closure monitoring is planned.

Ash Storage Pad
Figure 8-3

8.6.4 Operational History of Spills or Releases at Ash Storage Pad

At the time this plan was written there was no history of any major spills occurring at Ash Storage Pad. Prior to closure the operational history of Ash Storage Pad will be reviewed to determine when and where any spills have occurred. Contaminated soil is not expected; however, limited sampling will be conducted to verify that it does not exist.

8.6.5 Maximum Waste Inventory ~~at Segment Storage~~

Ash Storage Pad has a storage capacity of 50 cubic yards of ash. The pad has been used to stage a single gondola for NIROP Burning Grounds ash. Prior to implementing the closure plan the operational history will be reviewed to determine what other hazardous wastes or constituents, if any, ATK stored at the Ash Storage Pad during its operational life.

8.6.6 Inventory Removal and Decontamination of Pad

All hazardous wastes in storage at the time of closure will be taken to an approved TSDF for treatment and disposal. The pad will be cleaned to remove any visible dirt or debris present during closure. The pad will be swept, and then pressure washed. Wash water will be collected and, if possible, sent to a local POTW following approval or verification that discharge limits have been met. It is assumed that the pad will be removed after closure. Soil contamination is not expected; however, if it is identified, the soil will be excavated, stabilized, and sent to an approved waste landfill for disposal. If soils contamination is identified, ATK will submit a supplemental closure plan to the Director designed to assess magnitude and extent of the contamination. This supplemental plan will be submitted within 60 days of determining that soil contamination has occurred.

8.6.7 Verification and QA/QC Samples

To demonstrate adequate decontamination, verification samples will be collected from the storage pad and specific soil locations.

Table 8-3 identifies the number of verification and QA/QC samples ATK will collect during the closure of Ash Storage. One rinsate sample of the pad wash water will be collected. A total of two soil samples will be collected from the soils adjacent to the pad from 0 to 6-inch depth, in the general direction of water runoff, i.e., to the north and east. In addition to the verification samples, QA/QC samples will be collected during each day of verification sampling. During closure activities field blanks will be collected daily and duplicate samples will be collected according to the bullets below:

- A field blank filled with de-ionized water will be exposed during sampling and analyzed for accidental or incidental contamination.
- A trip blank sample will be collected by filling the bottle with de-ionized water and carried with the decontamination/sampling crew to Ash Storage Pad. The trip blank bottles shall be handled identically to the handling methods used for sample-of-record collection, transported within the same cooler, and subjected to the same analyses.
- One (1) blind duplicate verification sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on the pad or any of the equipment associated with Ash Storage Pad after the cleaning process is complete, therefore, the pad may be kept for future use.

8.6.8 Closure Report and Certification

Upon completion of the closure a report will be submitted to the Director certifying that the closure was accomplished in accordance with the approved plan. The report will include a summary of the operational history of the Ash Storage Pad, copies of the analytical results, copies of the QA/QC data, data validation report(s), copies of any manifests that accompanied off-site shipments of wastes, characterization of all cleanup waste or residues, documentation that the closure of Ash Storage Pad met the performance standard identified in Section 8.6.3, and a closure certification. A certification of closure according to R315-264-115 will be submitted by registered mail to the Director within 60 days of the completion of the final closure.

8.6.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK-Bacchus will make a request to the Director. All hazardous wastes will be removed or treated within 90 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes latest. Final closure activities will be completed within 180 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes later.

8.6.10 Post-Closure Care

The closure plan described above anticipates that Ash Storage Pad will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that Ash Storage Pad cannot be clean closed, ATK will develop an appropriate and applicable post-closure care plan for this unit. Any proposal for post-closure care will be developed in accordance with R315-264-110 through 120 and 140 through 151 of the Utah Admin. Code, and submitted to the Director for approval.

8.6.11 Closure Cost Estimate

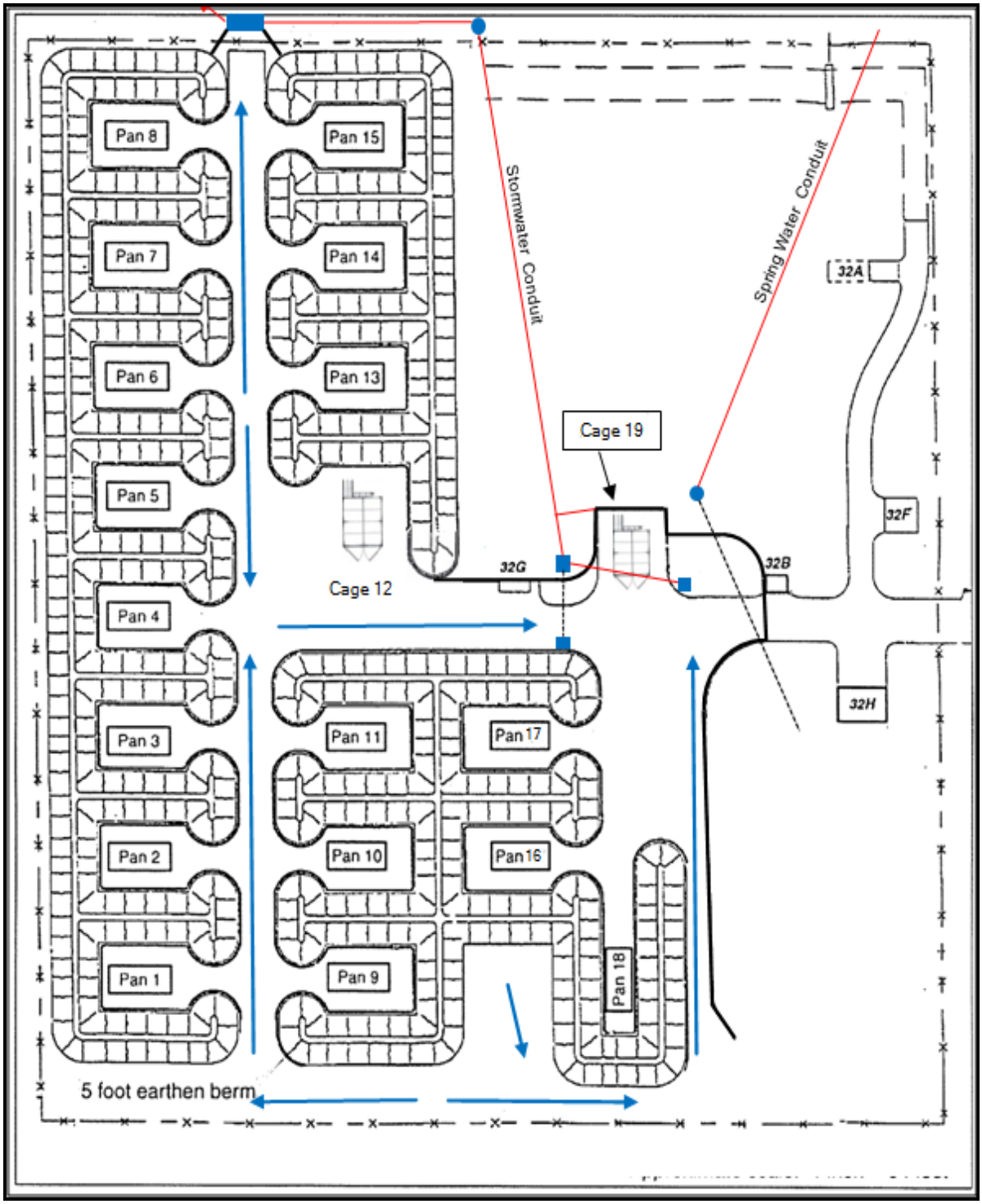
The cost estimate for the closure of Ash Storage Pad will be submitted to the Director for review and approval as required by the Permit and maintained in the operating record

8.7 NIROP BURNING GROUNDS

The NIROP Burning Grounds are located on the Naval Industrial Reserve Ordnance Plant (NIROP) and are used by ATK to treat waste explosives and propellants generated on both NIROP and Plant 1 facilities. This unit was constructed in 1991 to replace the old Burning Grounds that was remediated as an interim corrective measure under RCRA guidance.

8.7.1 Site Description

The NIROP Burning Grounds is located approximately 1,650 ft west of State Hwy 111 and 1,450 ft south of 4100 South. These two roads are the west and north plant boundaries respectively. The NIROP Burning Grounds consists of about five acres and is enclosed by a chain-link fence (Figures 8-4 and 8-5). Approximately 1.5 acres of the Burning Grounds is covered by asphalt. The NIROP Burning Grounds consists of 17 burning pans, two burning cages, and service roadways. One burning pan is surrounded by a cage. The pans are approximately 50 ft apart and are separated by elevated 5-ft earthen berms to prevent an explosive event from propagating to another pan. The pans have a semi-circular bottom, a length of 25 ft and a width of 5 ft. The surface area of each pan is 125 square feet, with a

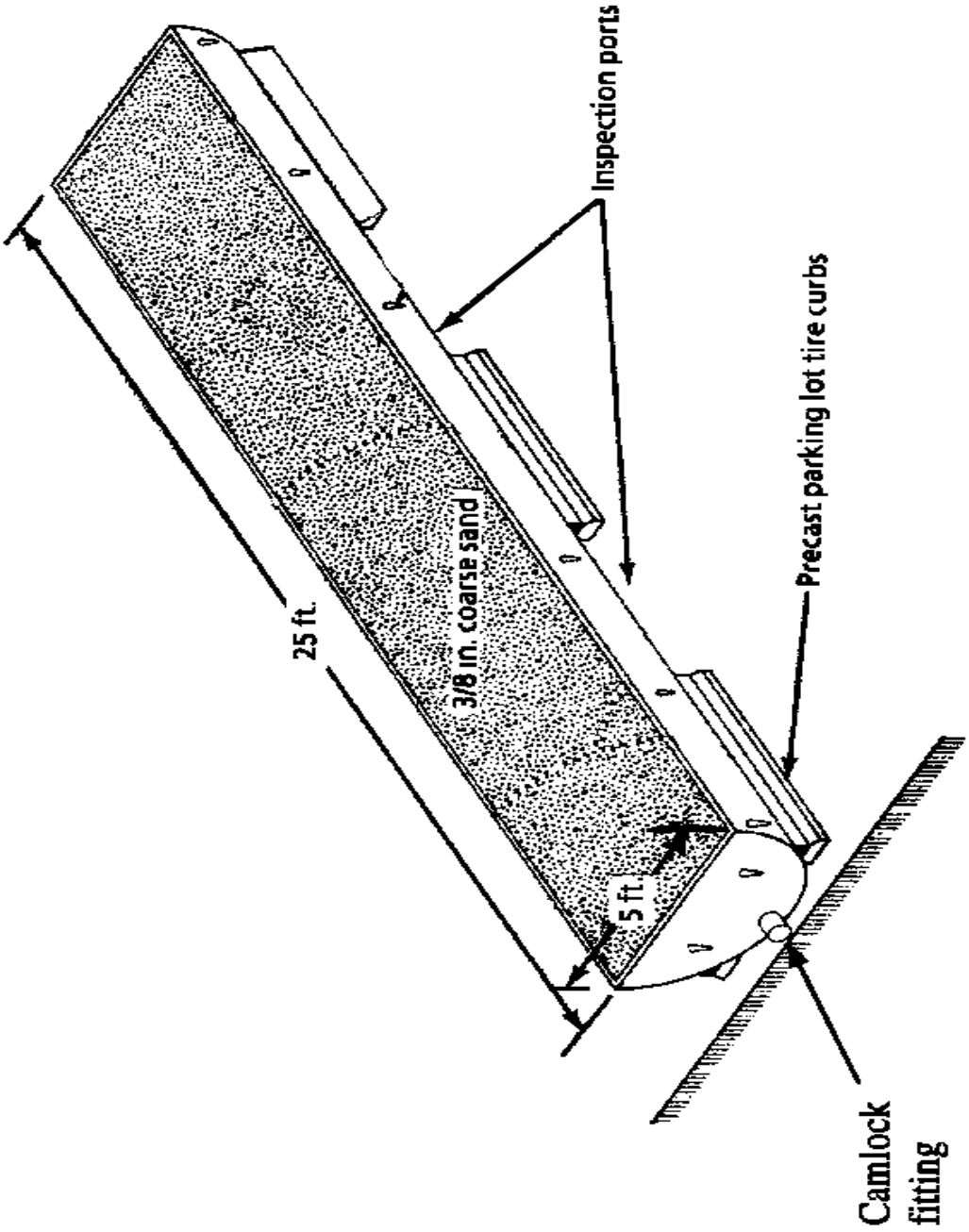


NIROP Burning Grounds Layout

Figure 8-4

NIROP Burning Grounds

Figure 8-5



Burn Pan

Figure 8-6

volume of 245 cubic feet (9 cubic yards) per pan, or a total of 4,410 cubic feet (163 cubic yards) for all 18 pans (see Figure 8-6). The burning pans are filled with sand and contain no debris capable of producing fragments in the event of a detonation.

Each pan area is uniformly constructed with an asphalt surface approximately 30 ft by 40 ft. An asphalt curb approximately 8 inches high outlines each pan area. The asphalt is 3 inches thick overlying about 9 inches of road base. Within the fenced area of the NIROP Burning Grounds are several small material storage sheds that store the firing system relay panel, cleaning equipment, diesel, extra slum pots, and other necessary tools. The control room is located outside the chain-link fence to the east. Water lines are available in the NIROP Burning Grounds area for wetting the burning pans, if required, to ensure that no "hot spots" remain from the previous day's burn.

The explosive wastes burned at the site include: bulk propellants, slummed nitroglycerine (NG) wastes, and laboratory and other explosive wastes associated with testing and manufacturing operations at the facility. No complete rocket motors are burned or treated at the site.

According to a 1990 evaluation by the Navy to determine the quantity/distance requirements for the NIROP Burning Grounds, the Navy placed a maximum explosive limit of 4,500 pounds per burn. The maximum per-day treatment capacity is 4,500 pounds of explosives.

Stormwater from the asphalt area of the NIROP Burning Grounds is collected and treated at a facility (Building 22A) about 750 feet north of the NIROP Burning Grounds. The stormwater is conveyed and stored in a concrete vault, where it is treated using an ion exchange resin, then discharged through an outfall regulated by the Division of Water Quality under a Permit-by-Rule. The treatment system is designed to control, treat, and discharge stormwater runoff from the NIROP Burning Grounds during a 25-year 24-hour storm event.

8.7.2 Closure Plan

The closure plan detailed in this section was developed with the assumption that the NIROP Burning Grounds will be clean closed. The plan describes the procedures that will be used to clean, decontaminate, and verify closure of all applicable structures and equipment at the NIROP Burning Grounds, including the stormwater treatment system and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-264-115 of the Utah Admin. Code.

8.7.3 Closure Performance Standard

The closure criteria for the pad and surrounding soil will be to clean close by cleaning the unit and surrounding soil until they meet the clean closure equivalency as defined in R315-101-6(c)(1) of the Utah Admin. Code. If the pad can be clean closed, the pad may be used for other purposes, or may be demolished. No specific NIROP Burning Grounds post-closure monitoring is planned.

8.7.4 Operational History of Spills or Releases at the NIROP Burning Grounds

A series of nine (9) small explosions involving mixtures of aluminum and ammonium perchlorate had occurred at the NIROP Burning Grounds between 2004 and 2006. Perchlorate contaminated soils were removed following these four events; the removed soils were confined to the top 8-inches. Soils with a perchlorate concentration of greater than 100 mg/kg were disposed of at an off-site location.

Five of the explosions did not require remediation of the dirt berms. In two of these events confirmation samples were collected. The perchlorate concentrations in these samples were less

than 40 mg/kg, with most results less than 10 mg/kg. Such concentrations are believed to be representative for routine operations at the NIROP Burning Grounds.

At the time of this writing, no explosions or spills have occurred at the facility since 2006.

Burn pans replaced periodically in the last decade indicates that contamination in the burning pan sand will be at low levels and confined to the upper few inches. All pan sand will be sent to a secure landfill as a conservative measure.

In March 1995, as part of the acquisition of the Hercules Aerospace, Bacchus Works Facility by ATK a due diligence investigation, performed by Conestoga-Rovers, was performed for the entire Bacchus Works facility. The NIROP Burning Grounds was extensively sampled for organics, metals, and explosives. No contamination above the presumed actionable levels was identified. The RDX concentration in composite samples from each of the 18 pan areas was below 0.25 mg/kg in every case.

8.7.5 Burning Pan Removal, Disposal, and Decontamination of Structure/Equipment

A decontamination area (decon area) will be designated or constructed to decontaminate large items such as the burning pans, as well as heavy equipment, such as loaders, backhoes, and dump trucks. The decon area will include a collection system and sump to collect decontamination water for treatment at the ATK wastewater treatment facility. All equipment will be decontaminated before exiting the NIROP Burning Grounds area.

Any physical debris along with the gravel in the pans will be collected for disposal. Leachate will be drained from the pans in the usual manner. Currently, leachate from the pans contains very low levels of explosives and is disposed offsite at an approved TSDF.

Pans, burn cages, and other metallic equipment will be dismantled and cleaned by repetitively steam cleaning and/or washing with high pressure water and scrub brushes. When the metal is visibly clean, it will be cut into appropriate sized pieces and treated in the ATK decontamination oven prior to being scrapped. Scrap metal will be considered "decontaminated" once it has been heat-treated in the decontamination oven, and will be sent to a metals recycler with no further testing. Asphalt, concrete curbs, and drains will be removed and sent to an industrial landfill for disposal. Authorized transporters and approved off-site disposal facilities will be used.

8.7.6 Soil Removal

As stated in Section 8.7.4, the soil at the NIROP Burning Grounds was extensively sampled for organics, metals, and explosives as part of a due diligence investigation in 1995. Additional sampling for perchlorate occurred in 2004 through 2006. Based on these results it is assumed that no soil will be contaminated above presumed action levels; therefore, it is anticipated that no significant soil removal will be required. However, small pockets of soil may be present that may require removal. For purposes of cost estimation, it was assumed that 20 cubic yards of soil will be removed.

In the event that a small amount of soil does require removal, removal will occur using appropriate equipment such as backhoes and scrapers, and sent to a special waste landfill for stabilization and disposal. Non-contaminated soil will be used as clean fill. Authorized transporters and approved off-site TSD facilities will be used.

8.7.7 Site Restoration

After closure, the original contour and vegetation of the site will be restored. Clean fill will be used, if required, to achieve the necessary contour. The area will be re-seeded with indigenous grasses.

Post-closure monitoring may be required if the groundwater has contaminants of concern above action levels. Existing monitoring wells currently monitor the NIROP Burning Grounds; however, there is no indication at this time that additional post-closure monitoring will be required.

8.7.8 Stormwater Treatment System

The stormwater treatment facility will be cleaned along with the NIROP Burning Grounds closure. Stormwater from the Burning Grounds passes through two "water quality units." The first unit removes gravel and debris associated with runoff from the asphalt, the second unit is designed as an oil-water separator, as well as an additional particle trap. At closure, the water quality units will be emptied and the water hauled to the system treatment vault. The two units will be decontaminated with a high pressure wash. All sediment will be collected and stored for characterization and subsequent disposal. Stormwater in the treatment vault will be processed through the existing system. The vault will be high pressure washed, with all rinse waters and sediment being stored for subsequent characterization and disposal. After all contaminated rinse waters have been run through the treatment system, the ion exchange resin will be removed from the vessels, characterized, and disposed in accordance with the applicable regulations at an approved landfill. The inside of the treatment building will be high pressure washed and all vessels and piping will be rinsed. Rinse waters generated during this operation will be collected, characterized, and disposed in accordance with the applicable regulations

8.7.9 Verification and QA/QC Samples

To demonstrate adequate decontamination, verification samples will be collected from the asphalt pad and specific soil locations. Table 8-4 identifies the number of verification and QA/QC samples ATK will collect during the closure of the NIROP Burning Grounds. Core samples of the asphalt will be collected at four locations. Locations for the cores will be decided based on the procedures described in Section 8.4. A total of 24 soil samples will be collected; 20 from the berms surrounding the burning pans based on criteria such as the general wind direction when burns were conducted, and 4 at the soil contact of the asphalt at the core locations. In addition to the verification samples, QA/QC samples will be collected during each day of verification sampling. During closure activities blanks will be collected daily and duplicate samples will be collected according to the bullet below:

- A field blank filled with de-ionized water will be exposed during sampling and analyzed for accidental or incidental contamination.
- A trip blank sample will be collected by filling the bottle with de-ionized water and carried with the decontamination/sampling crew to the Burning Grounds. The trip blank bottles shall be handled identically to the handling methods used for sample-of-record collection, transported within the same cooler, and subjected to the same analyses.
- One (1) blind duplicate verification sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols.

8.7.10 Closure Report and Certification

Upon completion of the closure a report will be submitted to the Director certifying that the closure was accomplished in accordance with the approved plan. The report will include a summary of the operational history of the NIROP Burning Grounds, copies of the analytical results, copies of the QA/QC data, data validation report(s), copies of any manifests that

accompanied off-site shipments of wastes, characterization of all cleanup waste or residues, documentation that the closure of the NIROP Burning Grounds met the performance standard identified in Section 8.7.3, and a closure certification. A certification of closure according to R315-264-115 of Utah Admin. Code will be submitted by registered mail to the Director within 60 days of the completion of the final closure.

8.7.11 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK will make a request to the Director. All hazardous wastes will be removed or treated within 90 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes latest. Final closure activities will be completed within 180 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes later.

8.7.12 Post Closure Care

Soil remaining at the NIROP Burning Grounds will meet EPA Region 9 RSL action levels and will not require post-closure care. Groundwater under the NIROP Burning Grounds will probably continue to be contaminated following closure. Since most of the expected groundwater contamination will be from sources other than the NIROP Burning Grounds, monitoring will be conducted according Module V of the ATK Launch Systems Inc., Bacchus Facility – Plant 1 Permit.

8.7.13 Closure Cost Estimate

The estimated cost for the closure of the NIROP Burning Grounds will be submitted to the Director for review and approval and maintained in the operating record.

8.8 NIROP EXPLOSIVE WASTE CONTAINER STORAGE FACILITY (ES-3)

ES-3 is an explosive waste storage unit that ATK uses for the storage of propellant and explosive wastes.

8.8.1 Site Description

ES-3 is a totally enclosed structure constructed of concrete and steel. The building was originally constructed for manufacture of Minuteman rocket motors. ES-3 has the capacity to store 25,000 pounds of explosive or flammable solids. Explosives are generally stored in "SLIDs," sections of cardboard cylinders used for casting pilings that are mounted on a plywood base, and in anti-static bags. Figure 8-7 provides a floor plan and a typical storage configuration of the building. The building is protected by a grounded deluge sprinkler system. Fire symbols appropriate for the greatest explosive waste hazard are clearly posted on the exterior of the building. The building is shown in Figure 8-8.

8.8.2 ES-3 Closure Plan

The closure plan detailed in this section was developed with the assumption that ES-3 will be clean closed. The plan describes the procedures that will be used to clean, decontaminate, and verify closure of all applicable structures and equipment at ES-3, and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-264-110 through 120 of the Utah Admin. Code.

8.8.3 Closure Performance Standard

This unit will be clean closed by cleaning the unit until it meets the clean closure equivalency as defined in R315-101-6(c)(1) of the Utah Admin. Code. After closure, ES-3 may be used for other purposes, or may be demolished. Post-closure care for ES-3 is not anticipated

8.8.4 Operational History of Spills or Releases at ES-3

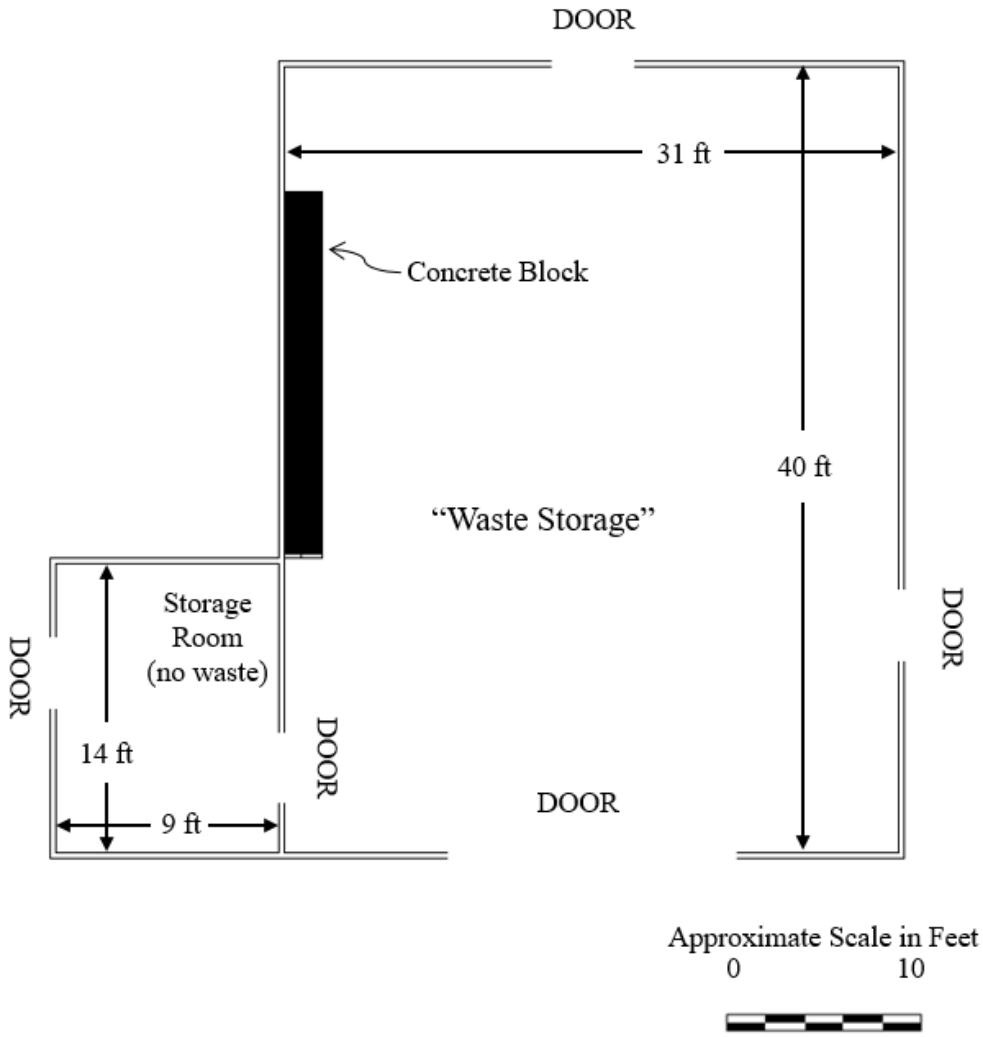
~~At the time of this writing,~~ ES-3 was~~is being~~ added to the NIROP Part B permit in calendar year 2018. ~~Therefore~~ T~~t~~here is no history of any major spills occurring at ES-3 since being added to the permit. Prior to closure the operational history of ES-3 will be reviewed to determine when and where spills have occurred. Prior to implementation of the closure plan, the floor in ES-3 will be evaluated for cracks and gaps. If cracks or gaps exist, the closure plan will be amended to assess the potential migration of contaminants through the floor of ES-3.

8.8.5 Maximum Waste Inventory at ES-3

~~At the time of this writing, ES-3 is being added to the NIROP Part B permit.~~ The permitted storage capacity of ES-3 is 25,000 pounds. It is expected that this permit limit will be reached during the life of the permit. The principal waste that will be stored at ES-3 will be Class 1.1 explosive waste. Some of this waste will be stored for treatment at the NIROP Burning Grounds while other waste will be packaged at this building for offsite shipment to an approved TSDF such as the ATK Promontory location. Prior to implementing the closure plan, the operational history will be reviewed to determine what reactive hazardous waste or constituents ATK stored at the ES-3 during its operational life.

8.8.6 Inventory Removal, Disposal, and Decontamination of Structure/Equipment

Any bulk explosives remaining at the time of closure will be taken for disposal to the NIROP Burning Grounds or to an approved TSDF. The storage areas, equipment, structure, etc., will be decontaminated by steam cleaning and/or washing with high pressure water and scrub brushes. A temporary berm will be constructed using plastic and railroad ties, or a similar structure, to contain wash water. Wash water will be collected and transferred into a 55-gallon drum or similar vessel. An environmentally safe detergent, if necessary, may be used. The decontamination process is expected to generate approximately 400 gallons of wash water and residue.



Explosive Storage 3 (ES-3) Floor Plan

Figure 8-7

ES-3 Exterior

Figure 8-8

The building may be subdivided into more than one area for cleaning purposes. Structures and equipment requiring decontamination include, but are not limited to, the following:

- Concrete floor in the building;
- Walls that may have been exposed to contamination; and,
- Miscellaneous equipment permanently attached to the facility.

All material used to construct the temporary berm will be collected, characterized, and discarded according to applicable and appropriate waste management rules.

8.8.7 Verification and QA/QC Samples

Decontamination and verification samples will be collected from storage areas at ES-3. From experience, contaminants in the decontamination wash water are expected to be very low. This wash water will be sent to a local POTW following approval or verification that discharge limits can be met.

To demonstrate adequate decontamination, verification samples will be collected from the storage area. Final rinse samples of the floors and walls will be collected. Wipe samples will be collected from two walls in each storage area. Samples will be collected according to the procedure described in Section 8.4.

Table 8-5 identifies the number of verification and QA/QC samples that ATK expects to collect during the closure of ES-3. In addition to the clean closure verification samples identified in Table 8-5, the following QA/QC samples will be collected during each day of verification sampling:

- A field blank filled with de-ionized water will be exposed during sampling, and then analyzed to detect accidental or incidental contamination, during each day of sampling.
- A trip blank sample will be collected by filling the bottle with de-ionized water and carried with the decontamination/sampling crew to ES-3. The trip blank bottles shall be handled identically to the handling methods used for sample-of-record collection, transported within the same cooler, and subjected to the same analyses.
- One (1) blind duplicate sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on or in the structures and equipment following the decontamination process. Structures and permanent fixtures may be kept for future use. There is no intention to break up and dispose of the building as part of the closure.

8.8.8 Closure Report and Certification

Upon completion of the closure, a report will be provided to the Director certifying that the closure was completed in accordance with the plan. The report will include a summary of the operational history of ES-3, copies of the analytical results, copies of the QA/QC data, data validation report(s), copies of manifests that accompanied off-site shipments of wastes, characterization of decontamination water/residue, documentation that the closure of ES-3 met the performance standard identified in Section 8.8.3, and a closure certification. A certification of closure according to R315-264-11 of Utah Admin. Code will be submitted by registered mail to the Director within 60 days of the completion of the final closure.

8.8.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK will submit a request to the Director. All hazardous wastes will be removed or treated within 90 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever occurs last. Final closure activities will be completed within 180 days of: (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever is later.

8.8.10 Post-Closure Care

The closure plan described above anticipates that ES-3 will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that ES-3 cannot be clean closed, ATK will develop an appropriate and applicable post-closure care plan for all areas of this unit that cannot be clean closed. Any proposal for post-closure care will be developed in accordance with R315-264-110 through 120 and 140 through 151 of the Utah Admin. Code, and submitted to the Director for approval.

8.8.11 Closure Cost Estimate

The cost estimate for the closure of ES-3 will be maintained in the operating record.

8.9 STORAGE CAPACITY SUMMARY

Table 8-6 summarizes the Part A storage capacities of the facilities described in this document and lists the capacities that were used to estimate closure costs.

8.10 CHANGES TO CLOSURE PLAN

8.10.1 Changes in Closure Plans

If it becomes necessary to change, amend, or modify the closure plans for any of the regulated units, a written request submitted to the Director for a permit modification in accordance with R315-264-110 through 120 of the Utah Admin. Code.

8.10.2 Closure Cost Updates

Closure costs will be updated annually by July 30th. The cost estimate shall be adjusted using the Implicit price Deflator for the Gross Domestic Product typically found on the Utah Division of Waste Management and Radiation Control website.

Other necessary adjustments to the closure cost estimates resulting from changes in storage capacity, early closure of certain units, or other factors, will be made through a new engineering cost estimate for the applicable items and inflation updates for other items and explained in the annual cost update.

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Phase 5, Hazardous Waste Study No. 37-26-0593-86, Summary of AMC Open-Burning/Open-Detonation Grounds Evaluations, March 1981- March 1985, United States Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD.

RCRA Corrective Action Plan - OSWER Directive 9902.3-2A

TABLES

TABLE 8-1 ANALYTICAL AND EXTRACTION METHODS		
Parameter	**Analytical Procedure***	**Extraction Procedure**
Volatiles	SW-846; 8260D~~B~~	SW-846; 5030B(W), 5035A(S)
Semi-Volatiles	SW-846; 8270E~~D~~	SW-846; 3510C(W), 3550C(S)
RCRA Metals	SW-846; 6010C, ~~or 6020B~~	SW-846; 3005A(W), 3010A(S)
Mercury	SW-846; 7470A (W) /7471B(S)	SW-846; 7470A(W), 7471A(S)
Explosives	SW-846; 8330 Modified	SW-846; 8330 Modified (W) 3535 (S)
Perchlorate	EPA 314.2~~0~~ (W), 6850 (S)	EPA 314.0

* THE MOST CURRENT EPA ANALYTICAL METHOD WILL BE USED.
(W) - WATER, (S) - SOLID

TABLE 8-2 ES-2 SAMPLE VERIFICATION		
Area	**Analytical Parameters**	
	Volatile Organics	**Explosives/Perchlorate**
ES-2, Floor	2	2
ES-2, Walls	4	4
Field Blank	1	1
Trip Blank	1	--
Blind Duplicate	1	1

TABLE 8-3 ASH STORAGE PAD SAMPLE VERIFICATION		
Area	**Analytical Parameters**	
	Volatile Organics	**Explosives/Perchlorate**
Ash Storage Pad Soil	2	2
Ash Storage Pad Rinsate	1	1
Trip Blank	1	--
Field Blank	1	1
Blind Duplicate	1	1

TABLE 8-4
NIROP BURNING GROUNDS SAMPLE VERIFICATION

Area	Analytical Procedure			
	Volatiles	**Semi-Volatiles**	**Explosives/Perchlorate**	**Metals/Hg**
Soil Samples	24	24	24	24
Asphalt (Core)	--	--	4	4
Field Blank	3	3	3	3
Trip Blank	3	--	--	--
Blind Duplicate	3	3	3	3

TABLE 8-5 ES-3 SAMPLE VERIFICATION		
Area	**Analytical Parameters**	
	Volatile Organics	**Explosives/Perchlorate**
ES-3, Floor	2	2
ES-3, Walls	4	4
Field Blank	1	1
Trip Blank	1	--
Blind Duplicate	1	1

TABLE 8-6 SUMMARY OF STORAGE CAPACITIES	
Description of Unit	**Part A Capacity**
ES-2 - Explosive/Hazardous Waste Storage Facility	40,000 lbs.
ES-3	25,000 lbs.
Ash Storage Pad	50 cubic yards
NIROP Burning Grounds	4500 lbs/day 160,000 lbs/year

SOIL MONITORING PLAN
NIROP Hazardous Waste Storage and Subpart X Treatment Permit

Prepared for:
Utah Department of Environmental Quality
Division of Waste Management and Radiation Control

Prepared by:
ATK Launch Systems Inc.
June 2010
Modified September 2018

TABLE OF CONTENTS

TABLES

FIGURES

1.0 INTRODUCTION

This Soil Monitoring Plan (SMP) has been developed to comply with Module IV.K.1 of the Hazardous Waste Storage and Subpart X Permit ("the Permit") issued to ATK Launch Systems, Inc. (a subsidiary of Northrop Grumman Corporation hereafter referred to as ATK) and the United States Navy ("the Navy"). The Permit is issued for hazardous waste operations conducted on the Naval Industrial Reserve Ordnance Plant (NIROP). NIROP is owned by the Navy and operated by ATK. The NIROP facility has a Subpart X thermal treatment unit that is operated as an open burn facility (OB).

This SMP will address the potential impact operation of the NIROP Burning Grounds may have on soils within the treatment zone, as identified by the air dispersion and deposition model of the Human Health Risk Assessment. Risks to human health and the environment will be evaluated using the data collected during implementation of this SMP.

1.1 GENERAL DESCRIPTION

The Burning Grounds is located in the northwestern portion of the NIROP facility. It consists of 17 burning pans and two burn cages. The burning pans are spaced approximately 50 ft apart; each pan is surrounded on three sides by an earthen berm. All open burning occurs on these pans and cages. Each pan and cage is designed to collect leachate from precipitation.

ATK burns both Class 1.1 and Class 1.3 propellant waste. A maximum of 500 pounds of reactive hazardous waste may be burned on each pan, with a maximum daily burn of 4500 pounds. Reactive hazardous wastes exceeding 500 pounds (large blocks of cured propellant) can be treated on an individual pan under Condition IV.C.1.d of the permit. Diesel fuel is used on the waste material to ensure initiation and a complete burn. Following a burn the remaining ash is collected and stored in a dedicated gondola pending off-site disposal. Emissions from OB activities can include volatile organic compounds, semi-volatile organic compounds, metals, and acid gases.

Under the permit, OB operations are constrained to burn primarily when the wind direction is from the north with small burns of certain materials permitted with winds from the south. Permissible wind speeds for open burning must be 15 miles per hour or less. These restrictions help ensure that significant emissions from the burning grounds are not directed toward the community of Magna.

1.2 HUMAN RISK ASSESSMENT

A Human Health Risk Assessment (HHRA) is typically conducted using a three tiered approach: 1) Tier 1 – a conservative initial screening evaluation, 2) Tier 2 – a more refined screening analysis, and 3) Tier 3 – a more extensive site-specific risk assessment. The HHRA conducted in support of the NIROP Subpart X permit describes a Tier 1 analysis for residential receptors and a Tier 2 analysis for a subsistence farmer. All known chemicals that may be emitted by Class 1.1 and 1.3 propellant wastes during operations at the OB were considered in the HHRA. The risk evaluated was for chronic (long-term) exposure.

The exposure routes included in the HHRA were inhalation; ingestion of soil, produce, beef, and milk; and human milk ingestion by infants. The residential receptors were assumed to reside at the location of maximum off-site impact for the Tier 1 analysis, which is currently in a manufacturing zone. The subsistence farmer scenario was evaluated over areas zoned for agricultural use where the Tier 2 impact is located. Of the exposure scenarios for the subsistence farmer, only the ingestion of dioxins through milk is associated with a carcinogenic risk greater than $1x10^{-6}$. The agricultural zone evaluated to the north (where the greatest Tier 2 impact is located) does not currently include the grazing of dairy cows. Non-cancer risk for all receptors at both the Tier 1 and Tier 2 locations was well less than the target hazard index of 1.0.

The constituents exhibiting a combination of the highest bioaccumulative potential and the highest toxicity were those that resulted in the highest risk, namely dioxins and polynuclear aromatic hydrocarbons (PAHs). Based on the assigned risk of the constituents, dibenzodioxins/dibenzofurans and dibenzo(a,h)anthracene were established as the contaminants of potential concern (COPC) that would drive the HHRA. In addition to these constituents, perchlorate is also considered a contaminant of concern. Perchlorate is not completely consumed by the thermal treatment and may therefore be present in the deposition zone from activities at the NIROP Burning Grounds.

The original HHRA only considered off-site receptors. An HHRA focusing on the ATK Bacchus worker was recently completed with no unacceptable risks identified for either cancer or non-cancer effects. While the Bacchus worker HHRA did not identify any new COPCs, it did determine the location of maximum on-site deposition from open burning which is the open field

north of the ATK Bacchus Waste Water Treatment Plant (WWTP). This location has been identified for soil monitoring as further described in this plan.

2.0 SOIL MONITORING PLAN OBJECTIVES

The SMP will be used to support the results of the Tier 1, Tier 2 and Bacchus Worker findings in the HHRA's, provide data to be used in the upcoming screening level ecological risk assessment (SLERA) for the NIROP Burning Grounds, and institute a method of evaluating the surrounding receptor points identified by the HHRA. This will be accomplished by the collection of surface soil samples in the area of particle deposition predicted by the HHRA model and periodic inspection of the land use.[1] [*Superscripts correspond to the steps associated with the EPA Data Quality Objectives. These steps are summarized in Section 5.0*].

The collection of surface soil samples will be based on aerial deposition that would occur over a specified area at the Tier 1 and 2, and Bacchus worker locations, and not for a discrete release or hot spot which may, or may not, be present. It is assumed that fallout from the NIROP Burning Grounds will create a relatively uniform deposition pattern.

2.1 HHRA SUPPORT

The actions and methodologies in this SMP will be used to lend support and confirmation to the results of the HHRA's. The off-site HHRA identified two potential areas of risk to offsite receptors based on the model objectives. The Bacchus Worker HHRA identified a potential area of risk to on-site Bacchus workers. Soil samples from these three areas of risk will be analyzed for the COPCs that are attributed to the risk calculations. The results will lend additional information using hard data in an effort to establish an acceptable risk to human health.[2]

2.2 ECOLOGICAL SUPPORT

A SLERA will be conducted in accordance with the Permit to satisfy the requirements of Module IV.L. The SMP includes additional COPCs required to assist in the risk determination of possible ecological receptors that could be potentially impacted by OB activities. The additional COPCs include: benzo(a)pyrene, hexachlorobenzene, pentachlorophenol, and perchlorate. These analytes have been added because of their persistency in the environment, bioaccumulation potential, and toxicity. Soil samples will be collected from a defined area where maximum potential deposition of particulates and ecological diversity would occur.

2.3 BACKGROUND DATA

The COPCs presented in Section 1.2 and Section 2.2, were not necessarily detected at concentrations greater than the method detection limit (MDL), e.g. dibenzo(a,h)anthracene. Non-detected constituents such as these were used in the risk model at half the MDL. Soil samples will be collected and analyzed to support the potentially conservative nature of the HHRA's and establish a baseline at the Tier 1, Tier 2, and Bacchus worker locations

ATK has completed a background study for metals and dibenzodioxins/furans at the Bacchus facility. This statistically significant dioxin/furan background value will be available to compare to soil monitoring results. Comparison of data collected for this SMP will be evaluated as discussed in Section 4.0.

2.4 RISK AREA EVALUATION

As stated in the HHRA, neither the Tier 1 nor Tier 2 areas are being used under the conservative conditions that establish risk. No residents are located in the Tier 1 area, nor are there any cows grazing north of the OB operations that would contribute to subsistence farmer milk consumption in the Tier 2 area. Since it is possible for conditions to change over time, the monitoring and management of the HHRA will include an evaluation of land use conditions in accordance with Permit Condition II.G.2.

3.0 TECHNICAL APPROACH

The purpose of this SMP is to present the sampling protocols, analytes, and the data quality objectives for the soil monitoring program.[3]

3.1 SAMPLING LOCATIONS[4]

Surface soil samples will be collected to provide a current characterization at the Tier 1, Tier 2 and Bacchus worker locations, as established in the off site and Bacchus worker HHRA's and in support of the SLERA. The area of maximum exposure for the Tier 1 and Tier 2 locations occurs at the property boundary, shown on Figure 1. The area of maximum exposure for the Bacchus worker occurs in the empty field north of the WWTP also shown in Figure 1. Samples will be collected according to the protocol presented in Sections 3.2 through 3.7.

The Tier 1 location is based on a residential scenario. For the purpose of this monitoring program it will be assumed that the residence would be built on a 1-acre lot, for the monitored sampling area. The area will be measured uniformly on all four sides, with the front-center located approximately at the HHRA designation. A total of four discreet soil samples will be collected in this area.

The Tier 2 location is based on a subsistence farmer scenario. The greatest risk presented in the HHRA is at the closest location zoned for agricultural use which is located north of the NIROP Burning Grounds, on land owned by the LDS church. Since the associated risk is milk ingestion from a grazing cow, an area of approximately 10 acres will be established as the monitored sampling area. The area will be measured located based on the HHRA location and the outline shown on Figure 1. A total of 4 discreet soil samples will be collected in this area.

The closest potential Bacchus Facility receptors are located at the WWTP, about 1500 feet south of the OB facility. The Bacchus worker HHRA determined that the empty field between the WWTP and OB facility is the area of maximum exposure and has been selected as a sampling location. This area does not receive any traffic, nor is it used for any plant operations. It will however give an indication of particle deposition at the closest possible location to Bacchus workers. A total of four discreet soil samples will be collected over an approximate 10 acre area.

Surface soil samples in support of the SLERA will be collected within the remaining area shown on Figure 1. At total of 20 discreet soil samples will be collected. The remaining area comprises about 55 acres; of that acreage, about 15 acres includes the burning grounds and the springs which will not be sampled; leaving an average of 2.5 acres per sample.

3.2 SOIL SAMPLING

The intent of the sampling program is to collect actual field data based on, and in support of, the completed HHRA and pending SLERA. The sample results are expected to assist in evaluating the accuracy of the HHRA modeling. Surface soil samples will be collected in the areas presented in Section 3.1. Samples will be collected using a pre-cleaned stainless steel spoon. Soil will be removed to a depth of about six inches and placed into a pre-cleaned stainless steel bowl. Plant material, roots, and rocks will be manually removed. The soil will be lightly mixed before being placed into 4-oz wide-mouth glass jars with Teflon© lined lids. The number of jars will depend on the analytes of concern and quality control/quality assurance requirements.

3.3 SAMPLE HANDLING

The jars will be labeled, logged into the field log book, placed in a sealed plastic bag, and placed into an iced cooler. A chain-of-custody form will be completed as soon as possible to trace sample possession from the time of collection through laboratory analysis. One chain-of-custody form will accompany each shipping container of samples. While the samples are in the custody of the collector, they will not be left unattended at locations where the samples may be tampered with. The analyses to be performed will be indicated on the chain-of-custody, including the quantity and types of containers that comprise each sample. The completed chain-of-custody will be sealed in a resealable plastic bag and placed inside the shipping container. The shipping container will then be securely closed and delivered to the analytical laboratory.

All field data will be recorded in a log book. Information to be recorded in the log book will include, at a minimum, the date, time, location and depth of each sample collected, descriptions of the soils encountered at each sampling location, recording of field decisions concerning sample locations, and the basis for departures from prior plans and general observations.

3.4 EQUIPMENT DECONTAMINATION

Prior to the collection of each sample, any non-dedicated sampling equipment coming in contact with the soil will be cleaned with a non-phosphate detergent (e.g., Liquinox®), rinsed with tap water, and a final rinse using distilled water. Wastewaters generated during field decontamination will be collected and properly disposed.

Only decontaminated stainless-steel or Teflon sampling equipment and clean, disposable gloves will contact the samples during placement in the container. Disposable gloves will be worn at all times during sample handling to prevent cross contamination between samples and skin contact with potential contaminants. Gloves will be changed between each sample.

3.5 ANALYTICAL METHODS AND PROCEDURES[3]

Samples will be analyzed for dibenzodioxins/furans and the analytes specified in Sections 1.2 and 2.2. The dioxin/furan samples will be analyzed using EPA Method 8290, by high-resolution GC/MS. Method 8290 is normally used in conjunction with RCRA regulatory action in support of remediation activities, and is able to report lower method detection limits than Method 8280. Analyses are expected to be conducted by ALS/Columbia Laboratories, in Houston Texas, a Utah-certified laboratory for dioxins and furans; or an equivalent Utah-certified laboratory.

The semi-volatile analytes will be analyzed using EPA 8270-SIM (Selective Ion Monitoring). SIM has been selected over the Standard Method 8270 because it provides an order of magnitude better quantitation results. This is important since none of the semi-volatile analytes were quantified in the HHRA model. Perchlorate will be analyzed using EPA Method 314.0. As an early "warning," the samples will also be tested for the indicator parameter pH. Semi-volatile and perchlorate samples will be analyzed by the ATK Promontory laboratory, a Utah-certified laboratory, or an equivalent Utah-certified laboratory.

3.6 QUALITY CONTROL/QUALITY ASSURANCE SAMPLES

Quality assurance/quality control (QA/QC) samples will be analyzed for the analytes discussed above. QA/QC samples will consist of equipment blanks, field blanks, blind duplicates, and temperature blanks.

3.6.1 Field Quality Control Samples

Blind duplicates are used to evaluate the laboratory accuracy where analytical results of two samples collected from the same location are compared. A minimum number of blind duplicates will be collected to represent at least 10% of the total samples sent for analysis. The duplicate samples will be given a unique designation that will differentiate the duplicate from the original sample-of-record. All blind duplicate samples will be delivered to the laboratory under chain-of-custody as outlined previously.

Equipment blanks are designed to verify the effectiveness of procedures for cleaning the sampling equipment between individual samples. Equipment blank will be collected at a frequency of 5% of the total samples sent for analysis. Equipment blanks will be prepared as discussed in Section C.3.7.1.1.3 of the RFI Amended Work Plan (ATK, 2010). These blanks will be analyzed for the same constituents as the soil samples-of-record. Equipment blanks will not be collected if dedicated sampling equipment is used during collection operations.

Field Blanks are used to evaluate potential contamination that may arise from normal field and/or off-site activities; such as volatilization or dust and air-borne contaminates. Field blanks consist of empty, clean sample containers to be opened in the field and filled with reagent grade water. The water may be poured into the container and sealed, or remain open in a designated area during the duration of the sampling event. Field blank will collected at a frequency of 5% of the total samples sent for analysis. The field blanks will be analyzed for the same constituents as the samples-of-record.

Temperature Blanks are used to evaluate whether the coolers holding and transporting the samples to the laboratory are in compliance with sample temperatures arriving between 4ºC and 6ºC. To accomplish this a temperature blank and/or at thermometer will be included with each cooler of samples.

3.6.2 Laboratory Quality Control

Internal laboratory quality control checks will be performed according to Section C.3.7.2 of the Amended RFI Work Plan (ATK, 2010).

3.7 DATA REVIEW, VERIFICATION, AND VALIDATION

Data review, verification, and validation will occur as outlined in Section C.5.1 of the Amended RFI Amended Work Plan (ATK, 2010).

4.0 DECISION STATEMENT[5]

In accordance with Module IV.K of the Permit, the decision rule for this program will involve evaluating actual soil data based on the modeling conducted during the HHRA's. The HHRA model is inherently conservative based on potential risks to human health, even in the absence of hard analytical data. The data collected during this SMP will be evaluated and compared to the predicted results of the HHRA's.

Either a 95% upper confidence limit (95UCL) or maximum concentration will be provided for each COPC and compared to the HHRA concentrations associated with the Tier 1, Tier 2 and Bacchus worker risks. With only four samples per sample location, there is insufficient data to calculate a 95UCL for dibenzo (a, h) anthracene and perchlorate. For these two COPCs, the maximum concentration from among each of the four samples per sample location will be used to compare to HHRA concentrations. No maximum concentration will be reported for sample sets without any detects. For dibenzodioxins/furans, the ProUCL model will be used to calculate the 95UCL as long as at least 5 dibenzodioxin or furan congeners are detected in each of the four samples per sampling location. Nondetects will be considered as described in ProUCL guidance.

The respective 95UCL or maximum concentrations will also be compared to Regional Soil Screening Levels (RSLs) as presented in the current version of the "Regional Screening Levels for Chemical Contaminants at Superfund Sites." Whereas the HHRA model assumes a complete pathway from particle deposition to ingestion/bioaccumulation in an adult, comparison to the RSLs will indicate whether the soil concentrations have accumulated to levels that would warrant additional investigation. The additive effects of multiple COPCs will be evaluated in accordance with USEPA risk assessment guidance documents in situations where 95UCLs or maximum concentrations of multiple compounds exceed the RSLs.

The resulting data will be used to support the HHRA model or show that it has presented an overly conservative conclusion. Future actions taken will depend on these results, which may require additional sampling to define the extent of contamination. Frequency of sampling will be controlled by the NIROP Part B permit.

5.0 DATA QUALITY OBJECTIVE DESCRIPTIONS

Throughout the SMP, superscripts are placed to associate certain portions with the EPA Data Quality Objective Process, EPA QA/G4, 2006. There are seven steps in the DQO process, of which five are generally applicable to the SMP at this time.

1. **Define the problem** that necessitates the study. Describe the problem, develop a conceptual model of the environmental hazard to be investigated, and identify the general type of data needed
2. **Identify the goals of the study;** identify the key questions that the study attempts to address, along with alternative actions or outcomes that may result to develop a decision statement.
3. **Identify the information inputs** to determine the types and sources of information needed to resolve the decision statement or produce the desired estimates; whether new data collection is necessary; and whether appropriate sampling and analysis methodology exists to properly measure environmental characteristics for addressing the problem.
4. **Define the boundaries of the study** by defining the sampling unit as some area, volume, or mass that may be selected from the target population. When defining sampling units, you should ensure that the sampling units are mutually exclusive (i.e., they do not overlap), and are collectively exhaustive (i.e., the sum of all sampling units covers the entire target population). Practical constraints that could interfere with sampling should also be identified in this step. A practical constraint is any hindrance or obstacle (such as fences, property access, water bodies) that may interfere with collecting a complete data set.
5. **Develop an approach** to guide how to analyze the study results, draw conclusions from the data, and develop a decision rule.

TABLES

TABLE 1 REGIONAL SCREENING LEVELS (RESIDENTIAL SCENARIO)		
Analyte	**RSL[1]**	**Units**
Dioxins	4.8E-06	mg/kg
Furans	73	mg/kg
Dibenzo(a,h)anthracene	0.11	mg/kg
Pentachlorophenol	1.0	mg/kg
Hexachlorobenzene	0.21	mg/kg
Benzo(a)pyrene	0.11	mg/kg
Perchlorate	55	mg/kg

1) RSL = Regional Screening Levels, values shown are from November~~May~~ 2018 edition of EPA RSL tables. Most recent edition of RSLs applies.

TABLE 2 SMP ANALYTICAL LIST		
	Soil	**Water**
	MRL[1]	**MRL[1]**
Dioxins/Furans (EPA 8290)	**(ng/kg)**	**(ng/L)**
Tetra	1	0.010
Penta, Hepta, Hexa	5	0.050
Octa	10	0.100
SVOC/PAH (EPA 8270-SIM)	**(ug/kg)**	**(ug/L)**
Dibenzo(a,h)anthracene	7	0.2
Pentachlorophenol	7	0.2
Hexachlorobenzene	7	0.2
Benzo(a)pyrene	7	0.2
Energetics (EPA 314.0)	**(mg/kg)**	**(ug/L)**
Perchlorate	0.4	4
pH (SW – 846, 9040B)	1 – 14 s.u.	NA

1) MRL = Minimum Reporting Limit

FIGURES

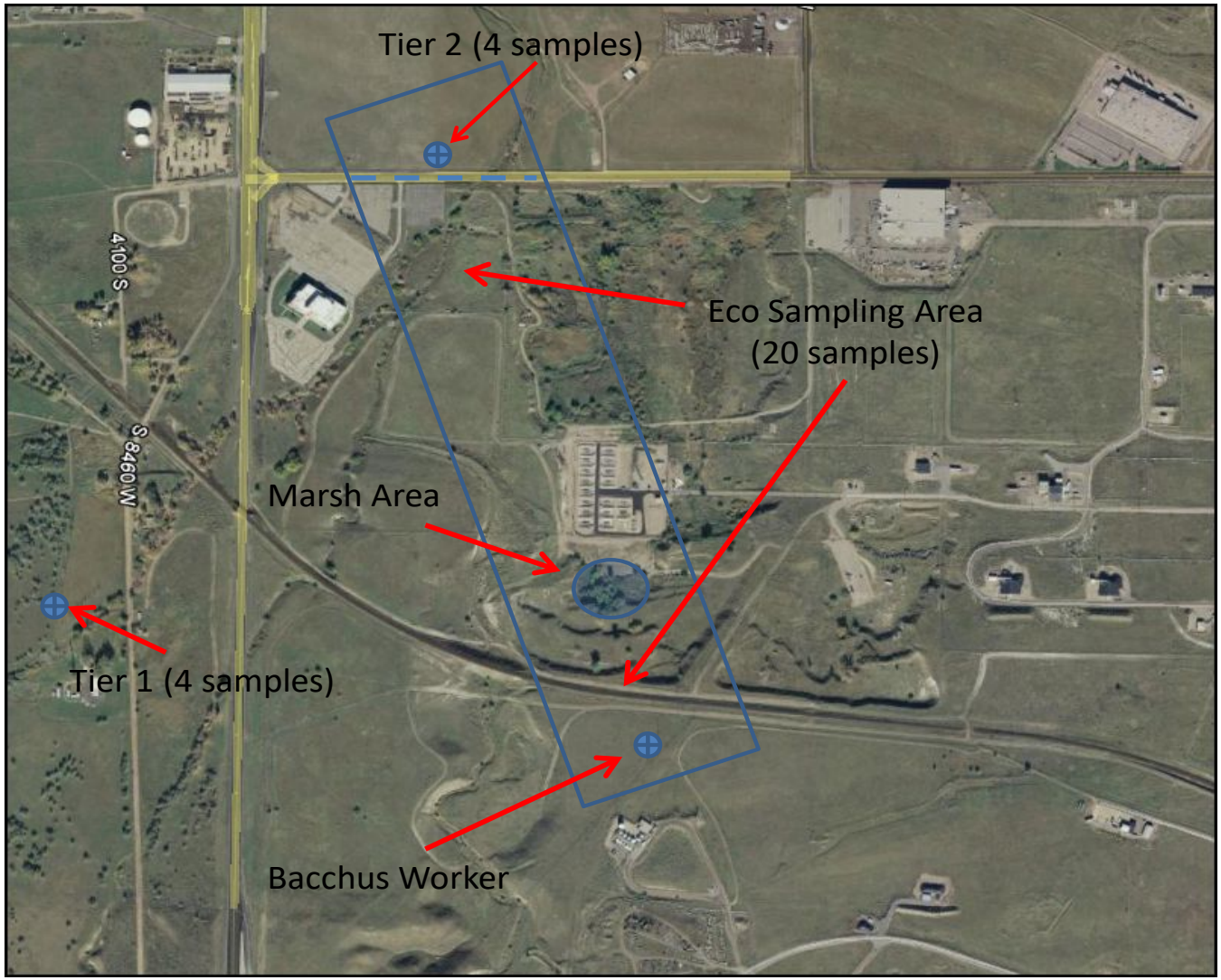

Figure 1
Sampling Locations