

Permit to Construct Application
Department of Business and Industry
Division of Industrial Relations
Occupational Safety & Health Administration
Instructions

Revision 2, 9/26/2024



A complete application consists of the following sections: *(Refer to NRS 618.898, NAC 618.5105, and 29 CFR 1910.119)*

Please note: In addition to enforcing 29 CFR 1910.109, Explosives and Blasting Agents, the Nevada Occupational Safety & Health Administration has adopted, by reference, additional standards for explosives manufacturing. Please check the boxes indicating a thorough understanding of the following standards:

- 29 CFR 1910.119: Process Safety Management of Highly Hazardous Chemicals *(refer to NAC 618.5115)*
- 27 CFR 555.201 Storage of Explosives *(refer to NAC 618.5116)*

In addition, if the construction of the facility meets the definition of a Construction Project defined in NAC 618.494, the general contractor or owner (if no general contractor) shall, before commencing construction on the project, give written notice to the Chief which sets forth the height, square footage, type of construction, total cost of construction and location of the project. *(refer to NAC 618.505)*

To obtain a permit for the construction or alteration of an explosives manufacturing plant, a person must submit this application form to the Enforcement Section and make the following information available for review by the Administrator or a representative of the Administrator:

1. Registration Information

- a. Facility Information
- b. Contact Information
- c. Process Information

2. Written Safety Program *(Refer to NRS 618.383 and NAC 618.540)*

- a. A statement explaining that the managers, supervisors and employees are responsible for carrying out the program;
- b. An explanation of the methods used to identify, analyze and control new and existing hazardous conditions;
- c. An explanation of the methods used to ensure that employees receive the appropriate safety and health training before performing their work duties;
- d. The procedures that must be followed to investigate an accident which has occurred and the corrective actions that are to be initiated; and
- e. A method for ensuring that employees comply with the safety rules and work practices.
- f. Establishment of a Safety Committee

3. Hazard Assessments

- a. Worst-case Scenario Summary
- b. Alternative Release Scenario Summary

4. Project Information

- a. Submitting Organization
- b. Project Overview

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- c. Construction Inspector Information
- 5. **Emergency Action Plan-Attach Copy** (refer to 29 CFR 1910.38 and 29 CFR 1910.119(n))
 - a. Responding Agencies
 - b. Coordinated Emergency Response Plan Document and Control
 - c. Employee Alarm System
 - d. Employee Training
- 6. **Stamped Site Plan**
- 7. **A map of a 1-mile radius surrounding the area of the explosives manufacturing plant, which identifies all:**
 - a. Inhabited buildings;
 - b. Roadways;
 - c. Railways; and
 - d. Other buildings and areas where there may be people, including, without limitation, ranching operations
- 8. **A plot plan of the explosives manufacturing plant that includes:**
 - a. A general layout of the explosives manufacturing plant;
 - b. The location of each explosives manufacturing building within the explosives manufacturing plant with a description of:
 - i. The types of explosives present in the building;
 - ii. The maximum quantity of each identified type of explosive; and
 - iii. The maximum number of employees who are present during the manufacturing operations
 - c. The location of each magazine in the explosives manufacturing plant Responding Agencies
 - d. The location of all buildings, other than explosives manufacturing buildings, within the explosives manufacturing plant and a description of the uses of each such building; and
 - e. The location and dimensions of all barricades within the explosives manufacturing plant
- 9. **A copy of the building plans for each explosives manufacturing building within the explosives manufacturing plant, which include:**
 - i. Details and diagrams describing the materials used to construct the floors, walls, ceilings and roofs of each building, including the location and setup of revetment and blast walls;
 - ii. Electrical installations and fixtures, and diagrams describing locations, type and code designations of those installations and fixtures;
 - iii. Diagrams of the plumbing, including water supply, drains and grey water;
 - iv. Plans and diagrams of the ventilation of each building, including heating, ventilation and air-conditioning systems and local exhaust systems;
 - v. Fire suppression systems, if installed;
 - vi. Lightning protection systems, if installed;
 - vii. Steam plant and steam distribution systems, if installed; and
 - viii. Detailed diagrams of the electrostatic discharge system, if installed; and

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10. A copy of the building plans for all buildings, other than explosives manufacturing buildings.

Provide a copy of the program for process safety management of highly hazardous chemicals with the following elements:

11. Process Safety Information

- a. Hazard Information (*refer to 29 CFR 1910.119(d)(1)*)
 - b. Information pertaining to the technology of the process
 - i. Block Flow Diagram or Simplified Process Flow Diagram
 - ii. Process Chemistry
 - iii. Maximum Intended Inventory
 - iv. Safe upper and lower limits for such items as temperatures, pressures, flows or compositions; and,
 - v. An evaluation of the consequences of deviations, including those affecting the safety and health of employees.
 - c. Information pertaining to the equipment in the process.
 - i. Materials of Construction
 - ii. Piping and Instrumentation Diagrams (P&IDs)
 - iii. Electrical Classification
 - iv. Relief System Design and Design Basis
 - v. Ventilation System Design
 - vi. Design Codes and Standards Employed
 - vii. Material and Energy Balance
 - viii. Safety Systems (e.g. interlocks, detection or suppression systems)
 - ix. The employer shall document that equipment complies with recognized and generally accepted good engineering practices (RAGAGEP).
 - d. Vessels and Rotating Equipment
 - e. Stamped Drawings
 - f. Stamped Calculations
12. **Process Hazard Analysis** (Check which methodologies were used and attach a copy of the PHA) (*refer to 29 CFR 1910.119(e)*)
- a. What-If
 - b. Checklist
 - c. What-If/Checklist
 - d. Hazard and Operability Study (HAZOP)
 - e. Failure Mode and Effects Analysis (FMEA)
 - f. Fault Tree Analysis; or
 - g. An Appropriate Equivalent Methodology
 - h. List of previous incidents considered
 - i. PHA worksheets
 - j. Human factors analysis
 - k. Facility siting analysis

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- l. External forces analysis
 - m. Recommendation tracking log
 - n. Management plan and document control
13. **Conditional Use Permit**

A complete application (hard copy) and two copies (preferably in a searchable electronic format) must be submitted to the following address:

Southern District Office

State of Nevada

Department of Business and Industry

Division of Industrial Relations

Occupational Safety & Health Administration

2300 W. Sahara Avenue, Suite 300

Las Vegas, NV 89102

Phone: (702) 486-9020

Fax: (702) 990-0360

Northern District Office

State of Nevada

Department of Business and Industry

Division of Industrial Relations

Occupational Safety & Health Administration

4600 Kietzke Lane, Building F, Suite 153

Reno, NV 89502

Phone: (775) 688-3730

Fax: (775) 688-1378

Should you have any questions completing the application, please contact the Division at the applicable location above.

Note: This form must be updated and resubmitted to the Division with the changes highlighted whenever an alteration of the manufacturing plant or major process used to protect lives, safety, and health of employees is made; per NAC 618.898.

Protection of confidentiality of certain information: (Refer to NRS 618.365, NAC 618.6449, and 29 CFR 1910.119(p))

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Reviews following a complete application:

After the application is determined to be administratively complete, technical reviews of the following program elements will commence and the applicant will be notified of any deficiencies per NAC 618.5105.

100% compliance with the above checklists is required prior to issuance of the Permit to Construct.

The pages that follow can be filled out, or the information requested can be sent as an attachment. Any of the required elements for PSM documentation should be sent as an attachment. If you need additional space for multiple processes, please send as an attachment. Please be sure that all attachments are labeled to be readily identified.

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FACILITY INFORMATION

Name of Facility:

Physical Address:

County:

Facility phone #:
(incl Area Code)

Mailing Address:

Facility Latitude (degrees/minutes/seconds):

Facility Longitude (degrees/minutes/seconds):

Method used to determine Lat/Long:

Description of location:

FEIN Number:

Dun & Bradstreet number for facility:

Dun & Bradstreet number of any parent corporation:

Name of parent corporation:

Number of full-time employees at facility:

Date of last safety inspection:

Safety inspection conducted by: Federal State Local Government agency

Name of inspecting entity: _____

OWNER OR OPERATOR

Contact name:

Title:

Company name:

Mailing address:

Phone # (incl Area Code):

Email address:

Cell (optional):

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PERSON RESPONSIBLE FOR PSM IMPLEMENTATION *(Main contact for Nevada OSHA staff)*

Contact name:

Title:

Company name:

Mailing address:

(if different than owner/operator)

Phone # (incl Area Code):

Email address:

Cell (optional):

EMERGENCY CONTACT *(Available 24 per day)*

Contact name:

Title:

Company name:

(if different than owner/operator)

Phone number:

24-hour emergency

phone number:

WHERE TO SEND INVOICE FOR PERMITTING FEES *(NRS 618.898(4))*

Name:

Title:

Company:

Mailing address:

Phone # (incl Area

Code):

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PROCESS INFORMATION (Complete this section for each process on site)

Process Description:

NAICS Code: (Reference: <http://www.census.gov/epcd/www/naics.html>)

Maximum quantity of each Highly Hazardous Substance (HHS) or Explosive that is expected to be on site between submission of this application and 12 months:

HHS or Explosive Name	Weight %	CAS Number	*Quantity in lbs.

* Quantity = (Total Quantity of Mixture) x (Weight % of HHS / 100)

Additional Process (input as necessary)

PROCESS INFORMATION (Complete this section for each process on site)

Process Description:

NAICS Code: (Reference: <http://www.census.gov/epcd/www/naics.html>)

Maximum quantity of each Highly Hazardous Chemicals (HHC) or Explosive that is expected to be on site between submission of this application and 12 months:

HHC or Explosive Name	Weight %	CAS Number	*Quantity in lbs.

* Quantity = (Total Quantity of Mixture) x (Weight % of HHC / 100)

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WORST-CASE SCENARIO SUMMARY

For Toxic Substances

Complete this form for each toxic substance above threshold quantity

Chemical

Name _____

Percent weight of chemical (if in a mixture) _____ . _____ %

Physical state (select one)

a. Gas

b. Liquid

c. Gas liquefied by pressure

d. Gas liquefied by refrigeration

Model Used (select one or enter another model name in other below)

a. EPA's OCA Guidance Reference Tables or Equations

b. EPA's RMP* Comp

c. Aerial locations of Hazardous Atmospheres (ALOHA®)

d. Other model (specify) (max. 255 characters)

Scenario (select one) a. Gas Release

b. Liquid Spill and Vaporization

Quantity released (lbs.) _____ . _____

Release rate (lbs./minute) _____ . _____

Topography (select one) a. Urban

b. Rural

Distance to endpoint (miles) _____ . _____

Estimated residential population within distance to endpoint (numeric)

Public receptors within distance to endpoint (select all that apply)

a. Schools

b. Residences

c. Hospitals

d. Prison/Correctional
Facilities

e. Recreation Areas

f. Major commercial, office, or industrial areas

g. Other (specify)

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Environmental receptors within distance to endpoint (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> a. National or State Parks, Forests, or Monuments | <input type="checkbox"/> c. Federal Wilderness Area |
| <input type="checkbox"/> b. Officially Designated Wildlife Sanctuaries, Preserves, or Refuges | <input type="checkbox"/> d. Other (specify) |

Passive mitigation considered (select all that apply)

- | | |
|--|---|
| <input type="checkbox"/> a. Dikes | <input type="checkbox"/> e. Sumps |
| <input type="checkbox"/> b. Enclosures | <input type="checkbox"/> f. Other (specify) |
| <input type="checkbox"/> c. Berms | |
| <input type="checkbox"/> d. Drains | |

For Flammable or Explosive Substances

Complete this form for each flammable or explosive substance above threshold quantity

Chemical

Name

Model Used (select one or enter another model name in other below)

- | |
|--|
| <input type="checkbox"/> a. EPA's OCA Guidance Reference Tables or Equations |
| <input type="checkbox"/> b. EPA's RMP* Comp |
| <input type="checkbox"/> c. Aerial locations of Hazardous Atmospheres (ALOHA®) |
| <input type="checkbox"/> d. Other model (specify) (max. 255 characters) |

Scenario

- Flammable Explosive Reactive

Indicate scenario: *(If flammable is indicated, use Vapor Cloud Explosion as scenario)*

Quantity released (lbs.)

Distance to endpoint (miles)

Estimated residential population within distance to endpoint (numeric)

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Public receptors within distance to endpoint (select all that apply)

- | | |
|--|---|
| <input type="checkbox"/> a. Schools | <input type="checkbox"/> e. Recreation Areas |
| <input type="checkbox"/> b. Residences | <input type="checkbox"/> f. Major commercial, office, or industrial areas |
| <input type="checkbox"/> c. Hospitals | <input type="checkbox"/> g. Other (specify) |
| <input type="checkbox"/> d. Prison/Correctional Facilities | |

Environmental receptors within distance to endpoint (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> a. National or State Parks, Forests, or Monuments | <input type="checkbox"/> c. Federal Wilderness Area |
| <input type="checkbox"/> b. Officially Designated Wildlife Sanctuaries, Preserves, or Refuges | <input type="checkbox"/> d. Other (specify) |

Passive mitigation considered (select all that were considered in defining the release quantity or rate for the worst-case scenario)

- | | |
|---|---|
| <input type="checkbox"/> a. Blast walls | <input type="checkbox"/> b. Other (specify) |
|---|---|

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ALTERNATIVE RELEASE SCENARIO SUMMARY

For Toxic Substances

Complete this form for each toxic substance above threshold quantity

Chemical

Name _____

Percent weight of chemical (if in a mixture) ____ . ____ %

Physical state (select one)

- a. Gas c. Gas liquefied by pressure
 b. Liquid d. Gas liquefied by refrigeration

Model Used (select one or enter another model name in other below)

- a. EPA's OCA Guidance Reference Tables or Equations
 b. EPA's RMP* Comp
 c. Aerial locations of Hazardous Atmospheres (ALOHA®)
 d. Other model (specify) (max. 255 characters)

Scenario (select one)

- a. Transfer hose failure e. Rupture disk/relief valve failure
 b. Pipe leak f. Excess flow device failure
 c. Vessel leak g. Other (specify) (max. 35 characters)
 d. Overfilling

Quantity released (lbs.) ____ . ____

Release rate (lbs./minute) ____ . ____

Topography (select one) a. Urban b. Rural

Distance to endpoint (miles) ____ . ____

Estimated residential population within distance to endpoint (numeric)

Public receptors within distance to endpoint (select all that apply)

- a. Schools e. Recreation Areas
 b. Residences f. Major commercial, office, or industrial areas
 c. Hospitals g. Other (specify)
 d. Prison/Correctional Facilities

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Environmental receptors within distance to endpoint (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> a. National or State Parks, Forests, or Monuments | <input type="checkbox"/> c. Federal Wilderness Area |
| <input type="checkbox"/> b. Officially Designated Wildlife Sanctuaries, Preserves, or Refuges | <input type="checkbox"/> d. Other (specify) |

Passive mitigation considered (select all that apply)

- | | |
|--|---|
| <input type="checkbox"/> a. Dikes | <input type="checkbox"/> e. Sumps |
| <input type="checkbox"/> b. Enclosures | <input type="checkbox"/> f. Other (specify) |
| <input type="checkbox"/> c. Berms | |
| <input type="checkbox"/> d. Drains | |

Active mitigation considered (select all that apply)

- | | |
|---|--|
| <input type="checkbox"/> a. Sprinkler systems | <input type="checkbox"/> f. Flares |
| <input type="checkbox"/> b. Deluge systems | <input type="checkbox"/> g. Scrubbers |
| <input type="checkbox"/> c. Water curtain | <input type="checkbox"/> h. Emergency shutdown systems |
| <input type="checkbox"/> d. Neutralization | <input type="checkbox"/> i. Other (specify) |
| <input type="checkbox"/> e. Excess flow valve | |

For Flammable or Explosive Substances

Chemical

Name

Model Used (select one or enter another model name in other below)

- | |
|--|
| <input type="checkbox"/> a. EPA's OCA Guidance Reference Tables or Equations |
| <input type="checkbox"/> b. EPA's RMP* Comp |
| <input type="checkbox"/> c. Aerial locations of Hazardous Atmospheres (ALOHA®) |
| <input type="checkbox"/> d. Other model (specify) (max. 255 characters) |

Scenario (select one)

- | | |
|---|---|
| <input type="checkbox"/> a. Vapor Cloud explosion | <input type="checkbox"/> e. Jet fire |
| <input type="checkbox"/> b. Fireball | <input type="checkbox"/> f. Vapor cloud fire |
| <input type="checkbox"/> c. BLEVE | <input type="checkbox"/> g. Liquid Spill and Vaporization |
| <input type="checkbox"/> d. Pool fire | |

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Quantity released (lbs.) .	Distance to endpoint (miles) .
-----------------------------------	---------------------------------------

Estimated residential population within distance to endpoint (numeric)

Public receptors within distance to endpoint (select all that apply)

<input type="checkbox"/> a. Schools	<input type="checkbox"/> e. Recreation Areas
<input type="checkbox"/> b. Residences	<input type="checkbox"/> f. Major commercial, office, or industrial areas
<input type="checkbox"/> c. Hospitals	<input type="checkbox"/> g. Other (specify)
<input type="checkbox"/> d. Prison/Correctional Facilities	

Environmental receptors within distance to endpoint (select all that apply)

<input type="checkbox"/> a. National or State Parks, Forests, or Monuments	<input type="checkbox"/> c. Federal Wilderness Area
<input type="checkbox"/> b. Officially Designated Wildlife Sanctuaries, Preserves, or Refuges	<input type="checkbox"/> d. Other (specify)

Passive mitigation considered (select all that apply)

<input type="checkbox"/> a. Dikes	<input type="checkbox"/> d. Enclosures
<input type="checkbox"/> b. Fire walls	<input type="checkbox"/> e. Other (specify) (max. 200 characters)
<input type="checkbox"/> c. Blast walls	

Active mitigation considered (select all that apply)

<input type="checkbox"/> a. Sprinkler systems	<input type="checkbox"/> d. Excess flow valve
<input type="checkbox"/> b. Deluge systems	<input type="checkbox"/> e. Other (specify) (max. 200 characters)
<input type="checkbox"/> c. Water curtain	

HAZARD ASSESSMENT DOCUMENTATION

Provide the title(s) of all hazard assessment documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

Title of Document	Rev. #	Date	# Pgs.

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Attach additional Hazard Assessments as needed

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SUBMITTING ORGANIZATION

Organization Name:

Address:

Contact Name:

Phone Number:

Email Address:

PROJECT OVERVIEW

Describe (approximate where necessary) the following:

The process (include substances; how they are handled, reacted and stored)

The hours of operation

The number of personnel per shift including operations, maintenance, contract, office staff and other personnel

The modes of transport for incoming and outgoing raw materials and products

The frequency and hours of transport of incoming and outgoing raw materials and products

The scope of the construction project (what is being built: process equipment & piping, tankage, control room buildings, etc.)

The construction schedule including anticipated startup date

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CONSTRUCTION INSPECTOR INFORMATION

Construction inspectors shall not be employed by or under contract with any entity that will be performing the construction activity subject to the permit to construct unless that entity is the owner or operator.

For each construction inspector providing services related to the PSM process, provide the following details.

Process Pipes

Inspection company:

Inspector's names:

Inspector's company is under contract to:

Scope of inspection services:

Types of observations and tests to be used:

Inspector qualifications:

(include a copy of the required certifications or credentials for each inspector)

Additional Inspector (input as necessary)

Process Pipes

Inspection company:

Inspector's names:

Inspector's company is under contract to:

Scope of inspection services:

Types of observations and tests to be used:

Inspector qualifications:

(include a copy of the required certifications or credentials for each inspector)

Additional Inspector (input as necessary)

Process Pipes

Inspection company:

Inspector's names:

Inspector's company is under contract to:

Scope of inspection services:

Types of observations and tests to be used:

Inspector qualifications:

(include a copy of the required certifications or credentials for each inspector)

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Concrete Foundations

Inspection company:

Complete the following only if the inspections are not subject to review and approval by the local building official.

Inspector's names:

Inspector's company is under contract to:

Scope of inspection services:

Types of observations and tests to be used:

Inspector qualifications:

(include a copy of the required certifications or credentials for each inspector)

Structural Steel

Inspection company:

Complete the following only if the inspections are not subject to review and approval by the local building official.

Inspector's names:

Inspector's company is under contract to:

Scope of inspection services:

Types of observations and tests to be used:

Inspector qualifications:

(include a copy of the required certifications or credentials for each inspector)

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EMERGENCY RESPONSE PLAN DOCUMENT

Will your employees respond to an accidental release? Yes No

Provide the title(s) of all emergency response documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

Title of Document	Rev. #	Date	# Pgs.

RESPONDING AGENCIES

List all agencies with which this plan has been coordinated.

Local Responding Fire Department

Organization:

Address:

Contact:

Phone number:

Email address:

Is this organization in concurrence with the plan? Yes No In Progress
 (include documentation showing review with responders)

Is full time response capability available? Yes No

HAZMAT Responder

Organization:

Is this organization a volunteer fire department? Yes No

Address:

Contact:

Phone number:

Email address:

Is this organization in concurrence with the plan? Yes No In Progress
 (include documentation showing review with responders)

Is response capability available 24 hours a day? Yes No

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Local Emergency Medical Facility

Organization:

Address:

Contact:

Phone number:

Email address:

Is this organization in concurrence with the plan? Yes No In Progress

Local Law Enforcement

Organization:

Address:

Contact:

Phone number:

Email address:

Is this organization in concurrence with the plan? Yes No In Progress

Local Emergency Planning Committee

Organization:

Address:

Contact:

Phone number:

Email address:

Is this organization in concurrence with the plan? Yes No In Progress

Other Committees, Agencies, or Companies

Organization:

Address:

Contact:

Phone number:

Email address:

Is this organization in concurrence with the plan? Yes No In Progress

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Site Plan

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Site plans must be drawn to scale, locating the facility containing the new process or new explosives manufacturing operation on a map. The site plan shall show at a minimum:

- The city and county roads in the area of the facility of the new process
- The area encompassing the endpoint of the worst-case release scenarios developed or the area encompassing an area extending 1 mile radially from the facility, whichever is larger.
- A graphical delineation of the endpoints of each worst-case release scenario and alternative release scenario developed.
- All major roads and transportation corridors.
- Routes for incoming and outgoing raw materials and products.
- The location of the first responding fire station and the hazardous materials response station. If the first responding fire station or hazardous materials response station is located outside the plan area, the site plan must include the address of the station and indicate the distance and direction that the station is from the facility.
 - The locations of the emergency responders as shown on the site plan must be consistent with the locations of the emergency responders identified in the emergency response program.
- The location of schools, hospitals and other public receptors within the plan area.

Site plans must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all site plan documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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Conditional Use Permit

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A copy of the conditional use permit issued by the local governing body of the city or county in which the facility is to be located pursuant to NRS 278.147 shall be submitted with this application.

Local Governing Body:

Terms and conditions for the operation of the facility specific by the local governing body:

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HAZARD INFORMATION

The hazards of the highly hazardous substances or explosives must include, without limitation:

- **Toxicity information**
- **Permissible exposure limits**
- **Physical data**
- **Reactivity data**
- **Corrosivity data**
- **Thermal and chemical stability data**
- **The foreseeable hazardous effects of inadvertent mixing of different materials**

Information about the substances must be gathered to evaluate the potential hazards posed by its use in the regulated process. Some of this information will be available in the manufacturer's Safety Data Sheets (SDS). Much of the information will be available in other sources; such as the NIOSH Pocket Guide to Chemical Hazards; Genium's Handbook of Safety, Health, and Environmental Data for Common Hazardous Substances; Chemical Engineers' Handbook; etc.

While these data are required to be compiled for the highly hazardous substances as defined by regulation, compiling the same information for other substances that may potentially impact the process would be recommended under this effort as well. Generally, if the impact of a non-regulated substance may need to be considered during the PHA evaluation, the data should be compiled.

Provide the title(s) of all SDS applicable to the process, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

Title of Document	Rev. #	Date	# Pgs.

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PROCESS CHEMISTRY

For any process that involves chemical reactions, a thorough process chemistry description must be developed. This description not only includes the normal reactions, but also must thoroughly address any potential abnormal situations. The description must include primary, secondary, side and intermediate reactions. It is particularly important to define any undesired reactions that may adversely impact process safety. If catalysts are used, the composition and properties of the catalyst should be known. The potential to form hot spots in a reactor should be identified as should the potential for runaway reactions. Kinetic data may also be important as this may impact process safety systems, including pressure relief requirements.

If the only changes occurring in the process are thermodynamic, such as is the case of an anhydrous ammonia refrigeration system, this section would not be applicable.

Describe the process chemistry including, without limitation, a description of the potential side reactions, regardless of whether the reactions would create hazardous consequences:

CONTROL LOGIC

Documentation concerning the control logic shall explain the function of the process controllers, switches and interlocks. Such documentation must be as concise as possible to allow the Division to review and use the information efficiently.

Is the control logic readily apparent from the piping and instrument diagrams? Yes No

If not, **provide the title(s) of all control logic documents**, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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MATERIAL AND ENERGY BALANCE

Material quantities, as they pass through processing operations, can be described by material balances. Such balances are statements of the conservation of mass. Similarly, energy quantities can be described by energy balances, which are statements of the conservation of energy. If there is no accumulation, what goes into a process must come out. This is true for batch operations. It is equally true for continuous operation over any chosen time interval. Balances are fundamental to process control.

Provide the title(s) of all material and energy balance documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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SAFETY SYSTEMS

The safety system description should provide a brief description and overview of the function of all safety systems that are present at the facility.

Check all that apply:

- | | |
|--|--|
| <input type="checkbox"/> Emergency Shutdown System | <input type="checkbox"/> Emergency Generator System |
| <input type="checkbox"/> Toxic Gas Sensors | <input type="checkbox"/> Ventilation System |
| <input type="checkbox"/> Combustible Gas Sensors | <input type="checkbox"/> Flare System |
| <input type="checkbox"/> Flame Detectors | <input type="checkbox"/> Audible and Visual Alarms |
| <input type="checkbox"/> Firewater System | <input type="checkbox"/> Uninterruptable Power Supply System |

Describe the safety systems, such as interlocks, detection or suppression systems:

VESSELS AND ROTATING EQUIPMENT

Provide a list of vessels and rotating equipment information on the following tables.

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Pressure Vessels (MAWP > 15 psi)

Tag	Description	Serial No.		Design		Design & Construction Code	Materials of Construction	P&ID No.
		Mfg.	Nat'l Board	MAWP (psi)	Temp (°F)			

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Process Vessels (MAWP ≤ 15 psi)

Tag	Description	Serial No.	Design		Design & Construction Code	Materials of Construction	P&ID No.
		Manufacturer	MAWP (psi or inches H ₂ O)	Temp (°F)			

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Storage Tanks (non-pressure vessels)

Tag	Description	Serial No.	Design		Design & Construction Code	Materials of Construction	P&ID No.
		Manufacturer	MAWP (psi or inches H ₂ O)	Temp (°F)			

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Liquid Pumps

Tag	Description	Pump Type	Design			Design & Construction Code	Materials of Construction	P&ID No.
		centrifugal screw diaphragm piston, etc.	max suct pres (psi)	max diff head (psi)	Temp (°F)			

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Tag	Description	Pump Type	Design			Design & Construction Code	Materials of Construction	P&ID No.
		centrifugal screw diaphragm piston, etc.	max suct pres (psi)	max diff head (psi)	Temp (°F)			

Vapor Compressors

Tag	Description	Compressor Type	Design			Design & Construction Code	Materials of Construction	P&ID No.
		centrifugal screw diaphragm piston, etc.	max suct pres (psi)	max diff head (psi)	Temp (°F)			

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Tag	Description	Compressor Type	Design			Design & Construction Code	Materials of Construction	P&ID No.
		centrifugal screw diaphragm piston, etc.	max suct pres (psi)	max diff head (psi)	Temp (°F)			

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Other Equipment

OTHER EQUIPMENT (Not Previously Listed)	Documentation Reference that contains equipment design information	Design Information (i.e. safe limits)		Design codes to which the equipment was constructed and installed	Materials of Construction	Is the Material of Construction Determined to be Compatible w/Process
		MAWP	Temperature			
	Revision / Date	(psi)	(°F)	Revision / Date		Reference

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STAMPED DRAWINGS

Plot Plans

Plot plans of the project area, shown on separate drawings, drawn to scale, must show:

1. Safety systems, including without limitation:

- Firewater and other suppression system tankage locations
- System pump locations and distribution piping routing
- Hydrant, monitor and other fire suppression equipment locations
- Toxic and combustible gas and flame detector locations
- Personal protective equipment locations
- Major process equipment
- Manufacturer, model number and quantities for items a through d

2. Electrical hazardous area locations must:

- Provide necessary elevations and include detailed drawings to distinguish between electrically unclassified and electrically classified areas, as those terms are defined in Article 500 of the N.F.P.A. 70, the National Electrical Code
- Denote the nationally recognized code or standard upon which the drawing is based to determine the extent of the electrically classified areas

Plot plans must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all plot plan documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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Process Flow Diagrams

Process flow or block flow diagrams, shown on as many drawings as necessary, **must correspond to the material and energy balance.**

- A block flow diagram is used to show the major process equipment and interconnecting process flow lines.
- Process flow diagrams are more complex and will show main flow streams, including valves, to enhance the understanding of the process, as well as points of pressure and temperature control. Also, major components of control loops and key utilities may be shown.
- PFDs and BFDs include:
 - All major equipment
 - Equipment names and identification numbers (*traceable to the equipment list provided*)
 - Major bypass and recirculation lines
 - Control valves
 - Valves required demonstrating routing for all modes of operation

PFDs must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all PFD documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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Piping and Instruments Diagrams

The P&ID provides a schematic representation of the piping and control / instrumentation; which depicts the functional relationships among the system components. It accomplishes this by showing all the piping, equipment, principal instruments, instrument loops, and control interlocks; and follows the general layout of the simpler block / process flow diagram.

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This is a vital document for those constructing the process; those responsible for preparing flushing, testing, and blowout procedures; the process hazard analysis team; by the plant operators who operate the process system; and other program elements of the process safety management program.

The first P&ID in the set should contain a legend defining all symbols used.

P&IDs, shown on as many drawings as necessary, must:

- Be submitted on paper that is 11 inches by 17 inches
- Be on an easily legible scale
- Cover the new process
- Indicate all piping, equipment, instruments and controls
- Correspond to the process flow diagrams
- Correspond to the documentation concerning the control logic and the process hazard analysis
 - The Division may request that the diagrams include any associated systems, including, without limitation, air, water, nitrogen and process drain systems, if the Division determines that the inclusion of the additional information is necessary to assist with the review of the process hazard analysis.
- Correspond to the specifications

P&IDs must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all P&ID documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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Concrete Foundations

For equipment and structures related to the new process or explosives manufacturing operation **that are NOT subject to review and approval by the local building official.** The drawings shall include:

- Base and subbase preparation, including compaction requirements
- Forms, reinforcing bar and appurtenance requirements
- Concrete and grout specifications
- Testing and inspection requirements
- Applicable codes, standards or industry recommended practices governing the design and construction

Structural Steel

For equipment and piping supports related to the new process **that are NOT subject to review and approval by the local building official.** The drawings shall include;

- Steel and bolting specifications
- Welding, testing and inspection requirements
- Applicable codes, standards or industry recommended practices governing the design and construction

Concrete foundation and structural steel drawings must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all concrete foundations and structural steel documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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Attach additional as needed.

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STAMPED SPECIFICATIONS

1. The specifications must define the following:

- The applicable codes, standards or industry recommended practices to be followed for the design, construction and inspection of the new process or a new explosives manufacturing operation
- The design conditions, including maximum allowable working pressures, design temperatures and seismic criteria, where applicable
- The required materials of construction
- The qualification requirements for installation methods used and for the personnel performing the construction and inspection activities
- Inspection and testing requirements

2. Specifications must be provided for process piping, fittings, valves and instruments.

Requirements for inspection, examination and testing related to piping construction must be appropriate for the application, and must, without limitation:

- Meet the requirements defined in Chapter VI of ASME B31.3 - 1999 Process Piping with Addenda.
- Require examination of:
 - Not less than 5 percent of all circumferential butt and miter groove welds by random radiography and require that the welds meet the acceptable criteria for normal fluid service specified in Chapter VI of ASME B31.3
 - Not less than 5 percent of socket welds and other fillet welds by magnetic particle, liquid penetrant or ultrasonic testing and require that the welds meet the acceptance criteria for normal fluid service specified in Chapter VI of ASME B31.3

Specifications must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all specification documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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STAMPED CALCULATIONS

Each set of calculations **must include a cite to the applicable code, standard or industry recommended practice governing the design and construction that was used** in making the calculation.

1. Capacity of Pressure Relief Devices and Pressure Relief Systems

Supporting calculations for all pressure relief devices and relief header systems, including ventilation systems, flares and end of line scrubber systems, shall be provided.

2. Concrete Foundations

Supporting calculations, only for foundations **that are NOT subject to review and approval by the local building official**, shall be provided. Soils reports shall also be submitted to support design calculations.

3. Structural Steel

Supporting calculations, only for structural steel **that is NOT subject to review and approval by the local building official**, shall be provided.

If the calculations are computer-generated, the calculations must include:

- A complete description of the mathematical model used in the design
- Design program identification, input data required, program application limitations and final results

The Division may request that supporting information for the calculations be provided in the application, including, without limitation, data generated by vendors.

Calculations must also be stamped or sealed in accordance with chapter 625 of NRS, and any regulations adopted pursuant thereto, by the engineer who has responsible charge of the document and include a table of contents or cover sheet that complies with the requirements of chapter 625 of NRS and any regulations adopted pursuant thereto.

Provide the title(s) of all calculation documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

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Has methodology approval been obtained from the Division? Yes No

PHA methodology selected:

- A “what if” analysis
- A checklist
- A “what if” analysis combined with a checklist
- A hazard and operability study
- A failure mode and effects analysis
- A fault tree analysis
- An appropriate equivalent methodology. Specify:

Was process safety information compiled before conducting the PHA? Yes No

Provide the title(s) of all process hazard analysis documents, including revision number, revision date, and number of pages. Any listed documents shall be submitted with this application.

Title of Document	Rev. #	Date	# Pgs.