CalARP Prevention Program Elements

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Purpose of CalARP is to:

- Prevent accidental releases of substances that can cause serious harm to the public and the environment;
- Minimize the damage if releases do occur; and
- Satisfy community right-to-know laws.

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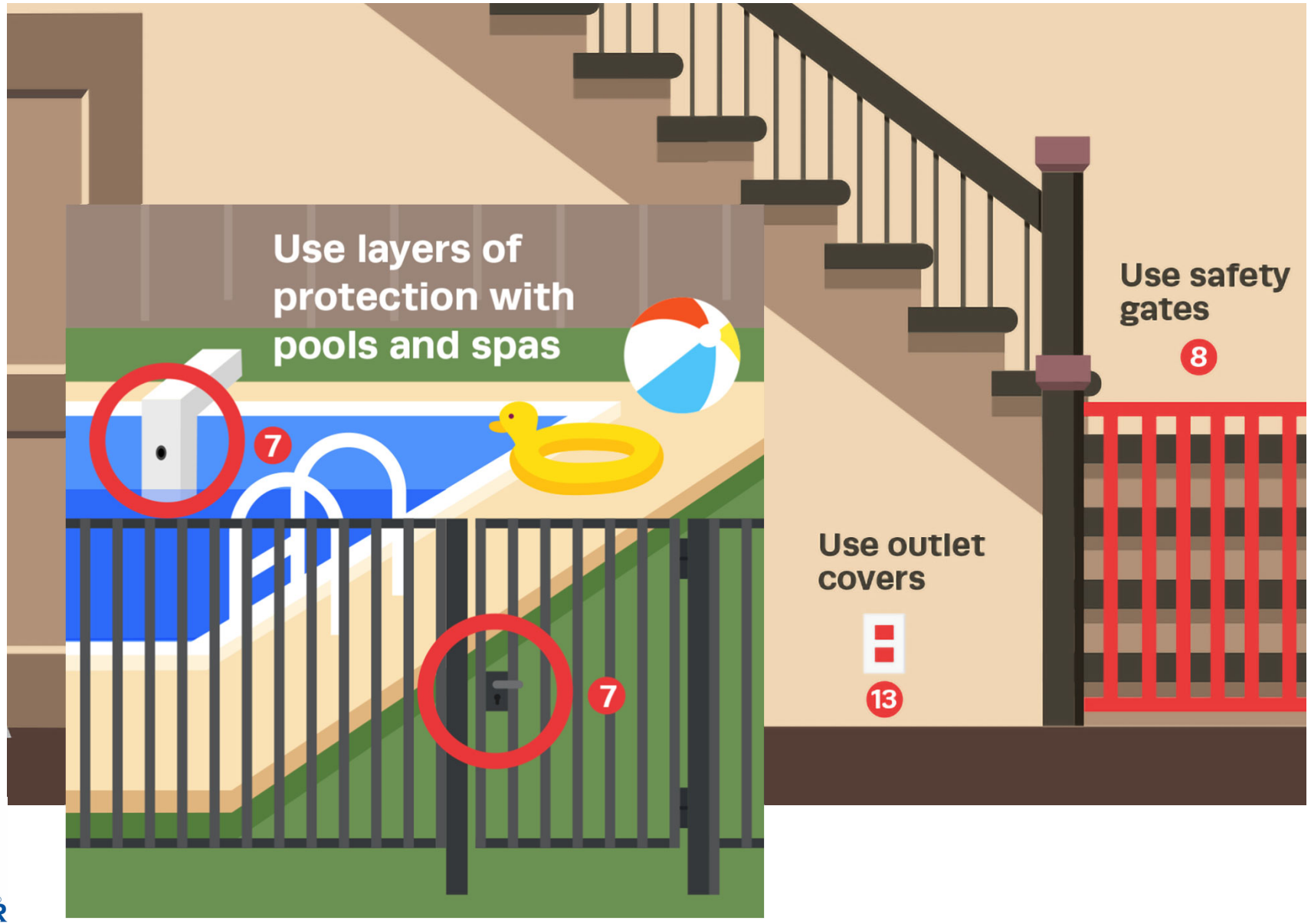
Prevention Program Elements?



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PSM / RMP / CalARP Components

- Registration.....*(RMP/CalARP)*
- Executive Summary.....(*RMP/CalARP*)
- Management System.....*(RMP/CalARP)*
- Prevention Program Elements.....*(PSM/RMP/CalARP)*
- Hazard Assessment.....*(RMP/CalARP)*
- Emergency Response Program....*(PSM/RMP/CalARP)*
- Documentation.....*(PSM/RMP/CalARP)*

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CalARP Level 2 and Level 3 Prevention Programs

Level 2 Requirements

Safety Information
Operating Procedures
Training
Maintenance
Incident Investigation
Hazard Review
Compliance Audits

Level 3 / PSM Requirements

Process Safety Information
Operating Procedures
Training
Mechanical Integrity
Incident Investigation
Process Hazard Analysis
Compliance Audits
Employee Participation
Contractors
Hot Work Permit
Management of Change
Pre-startup Safety Review

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CalARP Program 3 Overlap

Section	US EPA RMP (40 CFR)	OSHA (29 CFR)	CalARP (19 CCR)	Cal/OSHA PSM (8 CCR)
Process Safety Information	68.65	1910.119 (d)	2760.1	5189 (d)
Process Hazard Analysis	68.67	1910.119 (e)	2760.2	5189 (e)
Operating Procedures	68.69	1910.119 (f)	2760.3	5189 (f)
Training	68.71	1910.119 (g)	2760.4	5189 (g)
Mechanical Integrity	68.73	1910.119 (j)	2760.5	5189 (j)
Management of Change	68.75	1910.119 (l)	2760.6	5189 (l)
Pre-Startup Safety Review	68.77	1910.119 (i)	2760.7	5189 (i)
Compliance Audit	68.79	1910.119 (o)	2760.8	
Incident Investigation	68.81	1910.119 (m)	2760.9	5189 (m)
Employee Participation	68.83	1910.119 (c)	2760.10	5189 (p)
Hot Work Permit	68.85	1910.119 (k)	2760.11	5189 (k)
Contractors	68.87	1910.119 (h)	2760.12	5189 (h)
Emergency Planning & Response	68.95	1910.119 (n)	Article 7	5189 (n)

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Process Safety Information

Information pertaining to the technology of the process:

- Safety Data Sheet (SDS) for regulated substance;
- Block flow/process flow diagram (PFD);
- Process chemistry;
- Maximum intended inventory;
- Safe upper and lower limits; and
- An evaluation of consequence of deviation.

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Process Safety Information

Information pertaining to the equipment in the process:

- Materials of construction;
- Process and information diagrams;
- Electrical classification;
- Relief system design and design basis;
- Ventilation system design;
- Design codes and standards;
- Material and energy balances;
- Safety Systems; and
- Document process complies with recognized and generally accepted good engineering practices (RAGAGEP).

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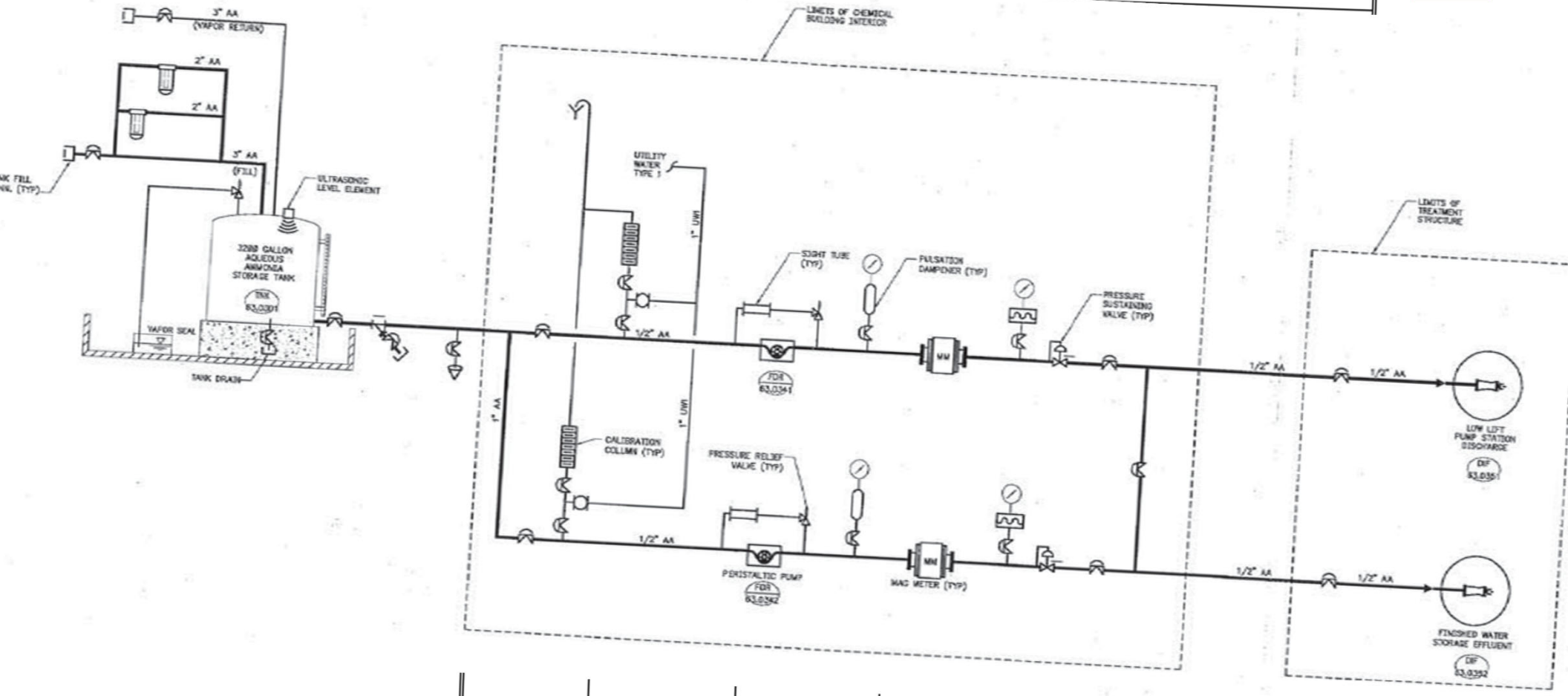
1.1 NORMAL OPERATING RANGE

Equipment	Parameter	Operating Range	Consequence of Deviation
Storage Tank	Pressure	0 – 25 psi	Potential damage to tank and release of ammonia liquid or vapor.



					tank • If low level, arrange for tank fill
Sump	LSH-63.0302	High Level	6" from the bottom of the sump	2	• Acknowledge the alarm • Stop ammonia unloading • Visually check secondary containment sump • If an emergency situation is present, initiate emergency action plan
Pump	FAH-63.0341	High Flow	2 gpm	1	

Process Hazard Analysis (PHA)

- Required to be updated every 5 years or when major change occurs;
- PHA conducted by a team with expertise in engineering and process operations;
- PHA team member knowledgeable in PHA methodology; and
- Consult the CUPA on the choice of methodology and invite to the PHA study session.

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Process Hazard Analysis (PHA)

PHA shall address:

- Hazards of the process;
- Previous incidents;
- Detection methods, control instrumentation and alarms;
- Failure of administrative and engineering controls;
- Qualitative evaluation of safety and health effects from control failures; and
- External events.

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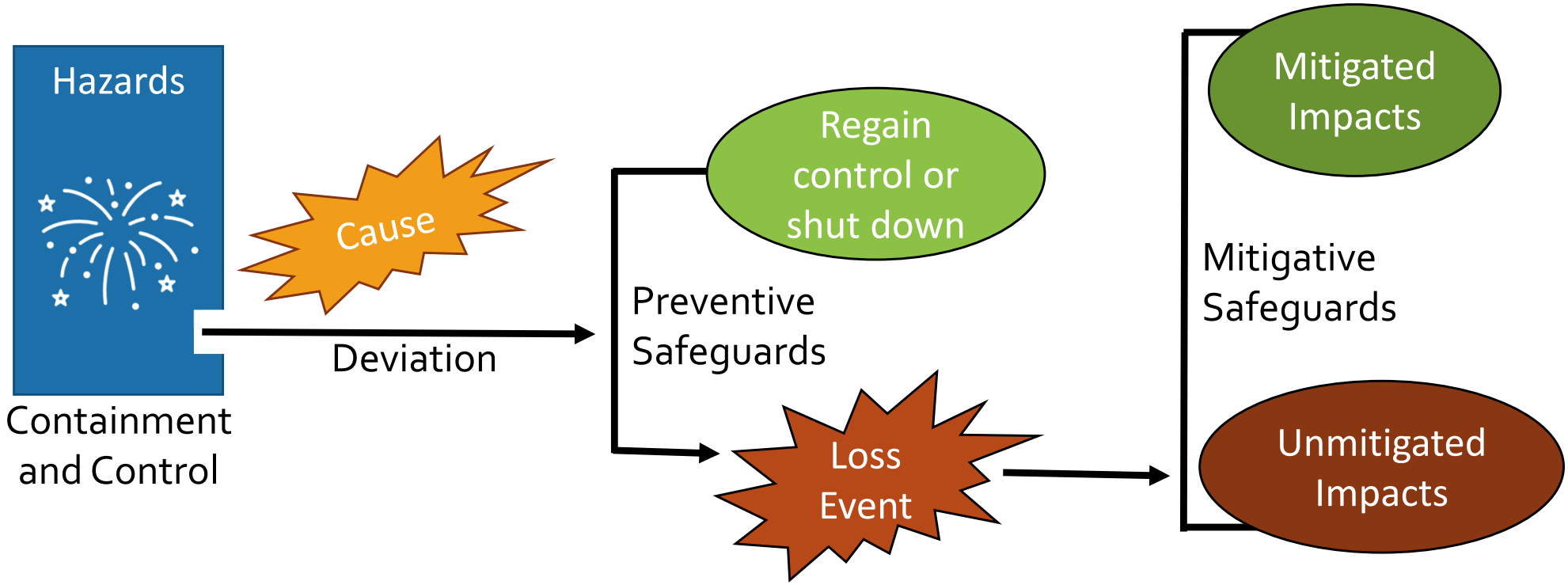
PHA Scenario Anatomy



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Process Hazard Analysis

- Recommendations must be completed within 2.5 years or a timetable agreeable by the CUPA.
- Document closure of recommendations and include:
  - Action taken to address/resolve recommendation;
  - Estimated date of completion;
  - Actual date of completion; and
  - Communicate with employees that may be affected by recommendations or actions taken.

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Operating Procedures

Written operating procedures that provide clear instructions for safely conducting activities consistent with the process safety information.

Operating procedures must include steps for each operating phase:

- Initial startup;
- Normal operations;
- Temporary operations;
- Emergency shutdown ;
- Emergency operations;
- Normal shutdown; and
- Startup following a turnaround or emergency shutdown.

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Operating Procedures

Operating procedures must include operating limits:

- Consequences of deviation (references to other documents are generally not acceptable);
- Steps to correct or avoid deviation;
- Health and safety considerations (hazards, precautions, PPE, engineering and administrative controls);
- Quality control for raw materials and inventory levels;
- Safety considerations for unique hazards; and
- Safety systems and their functions.

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Operating Procedures

Operating procedures must be:

- Readily accessible;
- Reviewed often enough to reflect current practice, changes to the process and changes to the facility; and
- Certified current and accurate annually.

Also, develop safe work practices for employees and contractors:

- Lockout/tagout;
- Confided space entry;
- Opening process equipment/piping; and
- Control entry into the stationary source by support personnel.

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Operating Procedures

Procedure	
Steps	**Details**
1. Operator: Check tank level	Check tank level to determine appropriate amount to be delivered. Tank should not be filled over the high-level alarm (8') Consequence of Deviation (COD): High level in the tank can cause a release of ammonia vapor to the J tube vapor seal.
2. Operator: Record tank level	Record level on the Daily Log. COD: Unable to properly monitor ammonia feed rates.
3. Operator: Check shipping manifest	Check shipping manifest prior to unloading to determine it is the 19-percent aqua ammonia. Ensure the current tank level plus amount on the manifest would not exceed the high level of 8'. COD: Unintended mixing of aqueous ammonia and other chemicals can cause hazardous reactions. High level can release ammonia vapor to the J tube vapor seal.
4. Operator: Confirm delivery to aqua ammonia tank	Direct and accompany the chemical carrier to the aqueous ammonia fill station. COD: Unintended mixing of aqueous ammonia and other chemicals can cause hazardous reactions.
5. Operator: Monitor transfer	Monitor transfer from the control room on SCADA and observing the carrier from the control room window. COD: Unable to detect or delay in detecting an issue when carrier is filling aqueous ammonia tank.
6. Carrier: Don PPE	Don PPE required to be worn for aqueous ammonia transfer. COD: Failure to wear personal protective equipment can result in critical or life-threatening injury from an aqueous ammonia exposure.
7. Carrier: Remove fill cap	Remove the fill cap of the aqueous ammonia tank. COD: Fill cap must be removed to make hose connection to fill port.
8. Carrier: Remove vapor return cap	Remove the vapor return cap of the aqueous ammonia tank. COD: Fill cap must be removed to make hose connection to fill port.
9. Carrier: Confirm secure connection tank fill quick	Carrier connects fill piping to quick connect coupler. Secure connections must be confirmed prior to unloading. COD: A poor connection could result in ammonia release to the

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Training

Employees who operate a process must be trained.

Initial training:

- Overview of the process;
- Operating procedures; and
- Emphasize hazards, emergency operations, and safe work practices in initial training.

Refresher training (every 3 years or when necessary):

- Assure understanding and adherence to operating procedures; and
- Consult with employees on refresher training frequency.

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Training

Training documentation must include:

- Identity of the employee;
- Date of training; and
- Means used to verify that the employee understood the training.
  - Observation; Written test; Demonstration; or Other method.

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Mechanical Integrity

Written procedures to maintain the ongoing mechanical integrity of process equipment (in house or contractor)

- Inspection, testing and maintenance must be performed to industry standards.
- Documentation on inspections and test must include:
  - Date;
  - Name of person;
  - Equipment ID;
  - Description of inspection or test; and
  - Results of the inspection or test.

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Mechanical Integrity

Equipment deficiencies (outside process safety information limits)

- Must be addressed before further use or taken out of service when safe to do so; and
- Document actions taken to correct deficiencies before further use of equipment.

Quality assurance of equipment process application:

- Assure new equipment is suitable for process application;
- Perform checks and inspections to assure equipment is installed properly and consistent with manufacturer's instructions; and
- Assure spare parts and equipment are suitable for process application.

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Management of Change (MOC)

Written procedures to manage changes other than "replacements in kind" that affect the process.

MOCs must address the following prior to any change:

- Technical basis;
- Impact on health and safety;
- Modifications to and/or development of new operating and maintenance procedures;
- Necessary time period for change; and
- Authorization requirements for the proposed change.

Update prior to start-up:

- Operating and maintenance procedures;
- Employee training; and
- Process safety information.

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Management of Change (MOC)

CalARP Major Change Definition:

- Introduction of a new process,
- New process equipment or new regulated substance that results in any operational change outside of established safe operating limits, or
- Any alteration in a process, process equipment, or process chemistry that introduces a new hazard or increases an existing hazard.

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Safety Device	Size / Capacity	Setpoint	Purpose	Corrective Action
Pump Pressure Relief Valve	NA	25 psi	Relieves excess pressure from ammonia pump discharge to pump suction piping.	PRV releases pressure to pump suction piping.
Tank Pressure Relief Valve	202 gpm	25 psi	Relieves excess pressure from ammonia tank and discharges to vapor seal.	PRV releases pressure to vapor seal.

Procedure		
Steps		**Details**
1.	Place pumps into **AUTO**	At **FDR-63.0341** and **FDR-63.0342**, place the AUTO-MANUAL switch in **AUTO** position. Consequence of Deviation (COD): Potential operational issue for one or both application points.
2.	At SCADA, select **MODE CONTROL**	At SCADA, on the AA system screen: select **MODE CONTROL** COD: Potential operational issue for one or both application points.
3.	Select **NORMAL** control	At SCADA select **NORMAL** control COD: Potential operational issue for one or both application points.
4.	Select **RATIO, FLOW PACED OR CLOSED LOOP**, as desired	**RATIO, FLOW PACED OR CLOSED LOOP**, as desired. Flow Paced is normally used. COD: Potential operational issue for one or both application points.
5.	Select **SETPOINT**	Select **SETPOINT** COD: Potential operational issue for one or both application points.
6.	Input the setpoints	Input the setpoints at the **FEEDER SETPOINT** popup screen. COD: Potential operational issue for one or both application points.
7.	Select pump number 1 (FDR-63.0341)	Select pump number 1 (FDR-63.0341) COD: Potential operational issue for one or both application points.
8.	Select **AUTO** control	Select AUTO control on the HAND-OFF-AUTO (H-O-A) *Chemical Feed Control Screen*. The operation of the feed pump used to meter aqua ammonia to the LLPS discharge is controlled by the operator-selected control mode. COD: Potential operational issue for one or both application points.

exposure. May cause second-degree burns on long exposure.

Pre-Startup Safety Review (PSSR)

PSSR is required when modification or change is significant and process safety information changes. Prior to introduction of substance or startup of process verify:

- Construction and equipment meets design specifications;
- Safety, operating, maintenance, emergency procedures are in place and adequate; and
- Training for each employee operating the process has been completed.

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Compliance Audit

- Owner/operators are required to evaluate compliance at least every 3 years to verify procedures and practices are adequate and followed;
- Audit must be conducted by at least one person knowledgeable in the process;
- Develop a report of the scope, methods, results and findings of the audit; and
- Recommendations are required to be completed within 1.5 years.

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Compliance Audit

Document response to compliance audit recommendations:

- Actions taken to address recommendations; and
- Actual completion dates.

Retain the two most recent audits.

Compliance Audit

Recommendations	Management Response	Assigned To	Date Complete
Update the alternative release scenario to a scenario that meets the requirements and the current process. Include any offsite consequences with the selected alterative release.	The alternative release scenario has been updated based on the site specific conditions and follow the alternative release parameters under CalARP. The offsite consequence analysis and air modeling documentation will be included in the 2019 RMP update. There are no public or environmental offsite consequences identified in the alternative release as they are defined by CalARP.	Jack Becker	2/8/2019
Update the alternative release scenario to a scenario that meets the requirements and the current process. Include any offsite consequences with the selected alterative release.	The alternative release scenario has been updated based on the site specific conditions and follow the alternative release parameters under CalARP. The offsite consequence analysis and air modeling documentation will be included in the 2019 RMP update. There are no public or environmental offsite consequences identified in the alternative release as they are defined by CalARP.	Jack Becker	2/8/2019
Include external events in the	External events were considered in the Hazard Review	Jack	2/8/2019

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Incident Investigation

An incident investigation must be initiated within 48 hours of a release or potential catastrophic release.

- Requires a team knowledgeable in the process and with experience to analyze the incident. Include contractor in the investigation, if involved.
- Investigation report must include:
  - The date the investigation began;
  - Detailed description of the incident including five-year accident history data from §2750.9(b); and
  - List of recommendations or findings.

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Incident Investigation

- Recommendations must be completed within 1.5 years of the investigation report or 2 years from incident;
- Document the actual completion dates of recommendations; and
- Retain incident investigation reports for five years.

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Employee Participation

Developed a written plan of action regarding the implementation of employee participation of CalARP elements.

The written plan must include:

- Obtaining employee input;
- Reviewing employee input; and
- Dissemination of information back to employees.

- Consult with employees on the development of PHA and other CalARP elements; and
- Provide employees access to PHAs and other information required to be developed under CalARP.

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Hot Work Permit

- Hot work permit must be issued for hot work conducted on or near a covered process.
- Permit should document the following prior to beginning hot work:
  - Fire prevention and protection requirements of
  - CalOSHA Title 8, §5189, §4848 and §6777;
  - Date of work authorized;
  - The object on which hot work is performed;
  - LOTO;
  - Line Break Permit; and
  - PPE.
- Permit must be kept on file until completion of work or longer if specified in the company policy.

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Contractors

- Applies to work conducted by contractors on or adjacent to a covered process;
- This does not apply to contractors that provide incidental services that do not influence process safety; and
- Owner/operator and contractors both have responsibilities to fulfill.

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Contractors

Owner/operator responsibilities:

- Evaluate contractor's safety performance and programs when selecting a contractor;
- Inform the contractor of known potential hazards related to the contractor's work and the process (fire, explosion or toxic release);
- Implement safe work practices to control the entrance, presence and exit of contract employees; and
- Periodically document the evaluation of the performance of the contractor in fulfilling their responsibilities.

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Contractors

Contractor responsibilities for contract employees:

- Assure they are trained in work practice to perform their job safely;
- Assure they are instructed in the known potential hazards related to the work and the process (fire, explosion or toxic release) and the Emergency Action Plan;
- Document the identity, date of training, and means used to verify contract employees understand training;
- Assure contract employees follow the safe work practices and procedures of the owner/operator; and
- Advise the owner/operator of any hazards found or unique hazards presented by the contractor's work.

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CalARP Level 2 and Level 3 Prevention Programs

Level 2 Requirements

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Level 3 / PSM Requirements

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Questions

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