

		Salt Plant Facility Manual		Ogden Site	
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FACILITY MANUAL

Salt Plant



Revision History

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1. Plant Process Description:

1.1 Process Systems Overview:

The purpose of the salt plant is to produce blocks, bags, and loose salt, with and without added minerals.

1.1.1 SALT WASH:

- a) Salt is washed before it enters the salt plant. Trucks dump drained salt from the evaporation ponds directly into H905 Road Salt Hopper or H903 Salt Wash Hopper. Road Salt bypasses the wash and is conveyed to a stockpile. The salt from H903 is sent through a rinse in order to rid it of microscopic algae. In the first step of the wash, salt is dumped into a tub of saturated brine. It is then dredged from the tub and deposited onto a steel mesh belt where a series of culinary water sprays rinse it. The washed salt is stacked in six stockpiles where it drains before it is processed further.

1.1.2 SALT RECLAIM:

- a) The salt reclaim operator manages the six washed salt stockpiles and the single road salt stockpile. Driving a front end loader, the operator takes salt from the stockpiles and places it on conveyors to feed both road salt loadout and the salt plant.
 - The operator places road salt directly onto C571 Road Salt Feed Belt, which transfers the salt to H904 Road Salt Feed Hopper. Once the salt reaches this hopper, the road salt operator manages it.
 - The salt reclaim operator places washed salt on C910 Stacking System Conveyor, which moves the salt to H900 Plant Feed Hopper. Once the salt reaches this hopper, the processing operator manages it.
- b) In addition to feeding salt onto the two conveyors, the salt reclaim operator manages the cleanliness of the stockpiles. These piles are exposed to weather and the debris that accumulates over time must be removed. When a stockpile becomes contaminated with debris, the reclaim operator moves the debris and contaminated salt to the west salt dump pond.

1.1.3 ROAD SALT:

- a) C500 Road Salt Collection Conveyor runs under H904 to move the salt to H901 EKA Rail Loadout Hopper. The road salt operator then uses the salt to load EKA railcars.

1.1.4 SALT PROCESSING:

- a) From H900, washed salt moves to the salt plant on C501 Plant Feed Conveyor. It moves through a dryer and then a cooler before it reaches a series of three sets of screens that separate the salt into sizes. The processing operator monitors the salt entering the plant and opens or closes gates to control the flow of the screened salt into bins for storage.
- Extra coarse salt is stored in B500, B503, or B520.
 - Coarse salt is stored in B521 or B533.
 - Medium salt is stored in B501 or B502.
 - Milled salt is stored in B504.
 - Mixing salt is stored in B505.

The bins store salt until it is needed for crushing, rail loadout, truck loadout, or packaging.

Most of the salt that enters the plant is has a medium grain or larger, so the processing operator crushes medium salt to create milled and mixing salt. Newly crushed salt returns to the last (finest) set of screens to be divided into the appropriate bins.

- b) The processing operator manages rail loadout in addition to controlling the flow of salt into the plant. The operator can move salt from any of the bins by running it onto either C582 or C583 South and North Rail Collector Conveyors. The salt falls into waiting railcars and then the processing operator closes and secures the loaded cars with cable seals.

1.1.5 TRUCK LOADOUT AND COMPACTION:

- a) The truck loadout and compaction operator diverts a small amount of medium and/or coarse salt from the screens (after it is sorted but before it reaches the bin) to feed the compaction system. Once salt is in compaction, the operator uses it to create pellets and cubes.
- To create pellets, the compaction feed runs past F508, which meters citric acid into the salt, before it falls into SP501 and SP502 Pellet Presses. The presses compress salt into round pellet and the completed product is conveyed to B531 Pellet Bin.
 - To create cubes, the feed runs past F514, which meters citric acid into the salt, and then into K501 Compactor. The compactor presses salt into sheets and then releases the sheets to CR590N and CR590S, crushers which break the sheets into irregular cube shapes. The completed product is conveyed to either B530 or B532 Cube Bins according to where it is needed for packaging.

- b) The operator feeds truck loadout by moving salt from the bins onto C584 or C585 South and North Truck Collector Conveyors. The conveyors move salt to one of four destinations: B582 (mixing salt), B583 (medium salt), B584 (milled salt), or the bypass spout.
- Each of the three bins hold the salt they receive until it is needed for loadout. The salt drops directly from the bins into waiting trucks.
 - The operator generally uses the bypass spout only for coarse and extra coarse salt since the two grains do not have loadout bins, but any grain of salt may be sent to the bypass spout. From the spout, salt falls directly into trucks.

1.1.6 PACKAGING:

- a) The packaging area begins at the bins of sorted salt. On the mineral floor, located above the belt floor, minerals are mixed with some of the milled salt and stored in surge bins.

Lines 1, 3, 5, 6, 7, and the block presses are the lines most often used.

- Line 1 can run cubed, extra coarse, coarse, medium, milled, or mixing salt. When running milled salt, the line operator can add citric acid via a mobile hopper in order to create pool salt. The BA501 bagger is manual.
- Line 3 can run extra coarse, pellet, or cubed salt. The BA503 bagger is semi-automated.
- Line 5 can run extra coarse or milled salt. When running milled salt, the line operator can add citric acid via a hopper attached to the line in order to create pool salt. The BA505 bagger is automated.
- Line 6 runs milled salt. The line requires two operators. One operator adds premix minerals and mineral oil to the milled salt before it reaches the BA506 bagger. The second operator runs the bagger, which is manual.
- Line 7 can run extra coarse, coarse, medium, milled, or mixing salt. When running coarse salt, the line operator can add MAG flakes and DSP in order to create aspen salt. The BA507 super sacker fills one-ton totes.
- SP500 creates mineral blocks out of milled salt. The operator adds mineral premix to the salt before it runs into the block press.
- SP503 creates iodized and white salt blocks out of milled salt. For iodized blocks, the operator adds iodized mineral premix is to the salt before it reaches the block press. White salt has no additives.

Lines 2 and 4 are used less frequently than the other lines.

- Line 2 can run extra coarse or coarse salt. When running coarse salt, the line operator can add MAG flakes and DSP in order to create aspen salt. The BA502 bagger is manual.

- Line 4 can run extra coarse, milled, or mixing salt. When running mixing salt, the line operator can add citric acid via a mobile hopper in order to create pool salt. The BA504 bagger is manual.
- b) Pallets of bags travel to the warehouse on the pallet conveyor. The totes and pallets of blocks are taken to the warehouse by forklift.

1.1.7 WAREHOUSE:

- a) The warehouse manages inventory storage and ships packaged products for rail and truck orders.
- The front end operator supplies all lines on the packaging floor with the raw materials they need to package product. The operator then picks up totes from Line 7, pallets of blocks from the block presses, and any other completed products that do not move into the warehouse on the pallet conveyor.
 - The storage operator retrieves pallets from the pallet conveyor, tags the pallets with the current lot code, and stores them in the appropriate bays.
 - The truck loading operator retrieves stored pallets from their bays and loads them in trucks for shipping.
 - The rail loading operator retrieves stored pallets from their bays and loads them in railcars for shipping.

1.2 Utility Systems:

1.2.1 COMPRESSED AIR:

- a) The salt plant uses two air compressors, which run the majority of the salt processing and packaging equipment.
- Both air compressors are located at the south end of maintenance.

1.2.2 CULINARY WATER:

- a) The facility uses Ogden City culinary water. It is supplied at approximately 65psi/60°F by an underground pipeline. Drinking fountains, sinks, eyewash stations, and restrooms use this water. Isolation and shutoff valve vaults are located throughout the site; the vault for the salt plant is FT106, located on the south side of the administration parking lot.

1.2.3 ELECTRICITY:

a) *Transformers:*

- Electricity from Rocky Mountain Power feeds into the four plant transformers, which reduce the 138 kV power to 12.5 kV and then distribute it to the facility. The transformer locations are marked in ***2001A1.xx Salt Plant Exterior Safety Plot Plan***.
 - o TR031 is located on the northwest side of the salt plant.
 - o TR032 is located on the northwest side of the salt plant.
 - o TR033 is located on the northwest side of the salt plant.
 - o TR901 is located outside the fence north of truck loadout.

b) *Motor Control Centers:*

- All of the electrical breakers for the salt plant equipment are located inside of MCC017, MCC018, MCC900, MCC901, MCC902. The MCC floorplans are depicted in ***2001A16.xx Salt Plant Motor Control Center Floor Plans***.
 - o **MCC017** is located on the top floor of the salt plant.
 - o **MCC018** is located on the northeast side of the salt plant.
 - o **MCC900** is located on the North East side of the salt wash area.
 - o **MCC901** is located on the southwest side of C571 in the road salt area.
 - o **MCC902** is located on the east side of H904 in the road salt area.

2. **6S Plant Requirements:**

2.1 **6S Standards:**

2.1.1 6S Standards are a cornerstone of our business and a major focus in our continuous improvement strategy. These standards minimize waste and increase process efficiency while improving employee ownership and engagement.

6S has a resounding impact on every support in the organization, improving our culture in various areas such as:

- Safety
- Housekeeping
- Quality
- Production
- Reliability

- Overall standards

A member of the 6S audit team audits each of the salt plant areas every month. Each area's 6S tracking board tracks the audit scores.

2.2 The 6Ss and Their Meanings:

2.2.1 Safety:

- a) Ensure that safety is built into every aspect of the company culture.

2.2.2 Simplify/Sort:

- a) Distinguish between necessary and unnecessary work supplies and then move out those that are unnecessary.

2.2.3 Straighten/Shine:

- a) Keep the work area tidy.

2.2.4 Scrub/Set In Order:

- a) Maintain a continuously-clean working environment.

2.2.5 Standardize/Stabilize:

- a) Follow the established guidelines to monitor and maintain the area.

2.2.6 Sustain:

- a) Maintain your efforts. Every individual is expected to participate in 6S.

2.3 Area Requirements:

- 2.3.1 See each area's 6S checklist(s) and procedure(s).

3. Safety:

3.1 Process Safety:

- 3.1.1 Process safety is of utmost concern for Compass Minerals. Your wellbeing while at the facility works in conjunction with process safety.

- a) **LIGHTING:**

- Compass Minerals strives to always maintain proper lighting throughout the salt plant in order to keep operators safe. Improper lighting can contribute to trips and falls, eye strain, and mistakes.
- Lighting is a part of the monthly safety inspection performed at the plant. Information regarding the lighting is to be entered in *2000D.xx Salt Plant Facility Monthly Safety Inspection Form*.

- b) NATURAL GAS:
 - Watch for leaks/unusual smells. Immediately evacuate the building if there is reason to suspect a leak and communicate the problem with a supervisor.

- c) AREA-SPECIFIC PROCESS SAFETY:
 - See each of the individual area manuals.

3.2 Environmental Safety:

- 3.2.1 The Ogden site is governed by a spill prevention control and countermeasures (SPCC) plan. Spills other than product feed have the following requirements:
- a) Keep the spill contained and away from the trenching and drain systems.
 - b) Notify EHS&S.
 - c) Clean up the spill in accordance to the safety data sheet (SDS) and applicable procedures.
 - d) Dispose of the waste only after speaking with EHS&S in order to ensure you follow SPCC guidelines.

3.3 Equipment Safety:

- 3.3.1 Ogden site mobile equipment policy requires that operators fill out **7263A.xx Moving Vehicle Pre-Operation Inspection Form** before operating any mobile equipment.
- 3.3.2 EQUIPMENT REQUIRING A PRE-OPERATION INSPECTION:
- a) Dozer
 - **7263F.xx Dozer Inspection Procedure**
 - **7263F1.xx Dozer Inspection SWI**
 - b) Forklift
 - **7263B.xx Forklift Inspection Procedure**
 - **7263B1.xx Forklift Inspection SWI**
 - c) Front Loader
 - **7263G.xx Front Loader Inspection Procedure**
 - **7263G1.xx Front Loader Inspection SWI**

- d) Skid Steer
 - *7263H.xx Skid Steer Inspection Procedure*
 - *7263H1.xx Skid Steer Inspection SWI*
- e) Standing Forklift
 - 7263D.xx Standing Forklift Inspection Procedure*
 - 7263D1.xx Standing Forklift Inspection SWI*
- f) Sweeper
 - 7263C.xx Sweeper Inspection Procedure*
 - 7263C1.xx Sweeper Inspection SWI*
- g) Walking Forklift
 - 7263E.xx Walking Forklift Inspection Procedure*
 - 7263E1.xx Walking Forklift Inspection SWI*

3.3.3 AREA-SPECIFIC EQUIPMENT SAFETY:

- a) See each of the individual area manuals.

3.4 Chemical Safety:

- 3.4.1 Chemicals, whether produced onsite or brought in, are required by law to be scrutinized for compatibility with other chemicals used throughout the facility. EHS&S oversees all chemical evaluations. When incompatibility occurs, EHS&S develops procedures to eliminate the inadvertent mixing of the chemicals or materials.

Employees can find the safety data sheet (SDS) for each chemical found onsite in 3E SDS Database.

3.4.2 CHEMICAL HAZARDS:

- a) When working with an unfamiliar chemical, always consult the SDS. Become familiar with the hazards associated with the chemicals in the area and the preventative measures required.

3.4.3 *Area-Specific Chemical Safety:*

- a) See each of the individual area manuals.

3.5 Safety Equipment:

3.5.1 Safety equipment is required for all jobs and Compass Minerals provides the necessary safety equipment to perform each job safely.

3.5.2 EYEWASH STATIONS:

a) Eyewash stations are available throughout the salt plant for emergency use. There are several eyewash stations located throughout the facility. Managers check all stations monthly in the site safety inspection. The safety plot plan for each area indicates the location(s) of eyewash stations.

- See *section 4* for the safety plot plans.

3.5.3 LOCKOUT/TAGOUT (LOTO) STATIONS:

a) LOTO stations contain LOTO supplies such as locks, keys, and tags. These stations are essential for employee safety because they allow operators to isolate all power sources for equipment before removing guards or working on machines. The safety plot plan for each area indicates the location(s) of LOTO stations.

- See *section 4* for the safety plot plans.

3.5.4 FIRST AID KITS AND AED UNITS:

a) First aid kits and AED units are available throughout the plant. First aid kits contain gloves, bandages, ointments, and other medications. The kits are designed to provide first responder care to serious injuries until trained emergency personnel arrive as well as to address cuts, scrapes, and other minor injuries. All injuries must be reported, regardless of how minor they may be.

Digital AED units provide an electrical shock to a victim whose heart has stopped beating in an attempt to revive the victim. These units walk bystanders through the necessary steps until trained emergency personnel arrive.

The safety plot plan for each area indicates the location(s) of first aid kits and AED units.

- See *section 4* for the safety plot plans.

3.5.5 COMMUNICATION EQUIPMENT:

a) **Telephones:**

- Telephones are located throughout the facility in offices, control rooms, and various pertinent locations. A four-digit direct dial number is assigned to each telephone.

The Ogden site administration operator may be reached by dialing '0' Monday through Friday from 8am to 4pm.

Outside calls may be made for company business by dialing '9' and then the desired phone number.

The site emergency number is '3333' and it can be dialed from any telephone at any time.

o In the event of an emergency, first call '9 911' and then call '3333.'

Cell phones may be used with proper authorization.

b) ***Two-Way Radios:***

- Two-way radios are provided for some positions within the salt plant. They are to be used to communicate with supervisors, other operators, the EHS&S department, etc.

Professional protocol should be followed at all times while using the radio. Approved channels and additional information is furnished in ***1007.xx Radio Communication Policy.***

3.5.6 STANDARD PERSONAL PROTECTIVE EQUIPMENT (PPE):

- a) Standard PPE shall be worn at all times (unless otherwise posted) by anyone in or near any of the salt operations areas.
- See ***7237.xx Personal Protective Equipment Policy.***

3.5.7 ARC FLASH EQUIPMENT:

- a) Compass Minerals provides leather gloves and flame resistant (FR) clothing approved by the National Fire Protection Agency (NFPA) for all employees who require the protective clothing to perform their duties. All employees who enter an MCC or perform LOTO on electrical equipment are required to wear the approved FR clothing.

3.5.8 FALL PROTECTION:

- a) Fall protection harnesses are provided for employee use when required. Belts and any fall protection device other than a full body harness are not authorized for use. Fall protection harness requirements are described in ***7241.xx Working From Heights Policy.***
- b) Employees are encouraged to retrieve fall protection, when needed, from the nearest available location.
- Salt wash lab

- Rail loadout
- Salt screen floor

3.5.9 HAZMAT EQUIPMENT:

- a) If a spill were to occur that required containment, cleanup, and/or hazmat equipment, EHS&S is equipped to guide salt plant operators through the necessary process.

3.6 Fire Safety Equipment:

3.6.1 Fire safety equipment is designated for use in an emergency. The equipment may be used for infrequent non-safety use with EHS&S authorization.

a) FIRE EXTINGUISHERS:

Fire extinguishers are positioned at critical areas throughout the facility. A third party performs annual inspection services.

Supervisors perform a monthly fire extinguisher inspection and log the results for each of the fire extinguishers in the plant.

The safety plot plan for each area indicates fire extinguisher locations.

- See *section 4* for the safety plot plans.

b) FIRE HYDRANTS:

Four fire hydrants are located within the salt plant grounds.

Fire hydrants are fed with potable city water.

- *2001A1.xx Salt Plant Exterior Safety Plot Plan* depicts the fire hydrants located around the salt plant.

4. Drawings/Digital Photos:

4.1.1 2001A.xx SALT PLANT GENERAL DIAGRAMS

- a) *2001A1.xx Salt Plant Exterior Safety Plot Plan*
- b) *2001A2.xx Salt Wash Safety Plot Plan*
- c) *2001A3.xx Salt Reclaim Safety Plot Plan*
- d) *2001A4.xx Road Salt Safety Plot Plan*
- e) *2001A5.xx Salt Screen Floor Safety Plot Plan*
- f) *2001A6.xx Salt Belt Floor Safety Plot Plan*

- g) **2001A7.xx** ***Salt Rail Loadout Safety Plot Plan***
- h) **2001A8.xx** ***Salt Truck Loadout Safety Plot Plan***
- i) **2001A9.xx** ***Salt Compaction Floors 1 and 2 Safety Plot Plan***
- j) **2001A10.xx** ***Salt Compaction Floors 3 and 4 Safety Plot Plan***
- k) **2001A11.xx** ***Salt Packaging Floor Safety Plot Plan***
- l) **2001A12.xx** ***Salt Production Office Safety Plot Plan***
- m) **2001A13.xx** ***Salt Mixing and Mineral Floors Safety Plot Plan***
- n) **2001A14.xx** ***Salt Warehouse Safety Plot Plan***
- o) **2001A15.xx** ***Salt Administration Safety Plot Plan***
- p) **2001A16.xx** ***Salt Plant Motor Control Center Floor Plans***