

Protection Survey

Fire Protection Solutions

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Laguna Beach, CA 92651

(866) 777-FIRE



Location Surveyed

Alliance Mining Corporation

Location 1

State Route 3

Hedley, GA 30320

Survey By:

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Conferred With

William Walker, Operations Manager

Lucas Brzynski, Maintenance Director

Frank Lowell, Systems Technician

Survey:

May 6, 2003

SAMPLE REPORT TO SHOW TYPICAL FORMAT

New Recommendations Resulting From This Survey

03.01 - Hydrostatic test fire hoses

Recommendations Observed Completed This Survey

02.02b (ERT training) Done.

Human Element Recommendations

03.01 Hydrostatic Test Fire Hoses

Management Programs

Hydrostatically test each fire hose for soundness once every three years. An alternative to testing the hoses would be to replace the hoses with new ones. This recommendation was previously presented as a maintenance list item under M02.10. (Mr. Harter stated that he will obtain quotes for both testing and for new hoses.)

02.01 Fire Equipment Inspections

Management Programs

Improve the frequency of tests as follows, in accordance with the corporate property conservation manual: (Mr. Harter said these would all be done)

a. Weekly

- Fire pump starting and inspection, assuring all elements discussed in the sample form of the Property Conservation Manual are addressed. (Previously, noted as maintenance item M02.02).
- Visual valve inspection (verifying that all valves in the fire system are in their normal position).

b. Monthly

- Visual check each plant fire extinguisher, fire hose, and fire door.
- Plant housekeeping check.

Note: There are numerous handheld fire extinguishers in need of their 5 year hydrostatic test certification. This should be done by a licensed extinguisher contractor with documentation kept for future review. (Previously addressed as maintenance item M02.03)

c. Quarterly

- Drain test at each sprinkler riser.

d. Annually

- Conduct functional trip test of all dry pipe systems (Previously noted as maintenance item M02.05).
- Conduct visual survey of sprinklers to check all bracing and hangers, no fittings are leaking, etc.
- Flush each fire hydrant and check condition of valves, drainage, caps, and monitor nozzles.

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FPSID: 002-0501

Physical Recommendations

01.03 Alarm Supervision

Alarm Service

Extend alarm supervision on both the electric and diesel fire pumps to the constantly attended Power House Control Room for "power failure" and "controller in off position", respectively.

<u>Recommendation Loss Expectancies</u>			
	Loss Expectancy Before Completion	Estimated Cost to Complete	Loss Expectancy After Completed
02.01 a	\$500,000	\$1,000	\$0
b	\$500,000	\$1,000	\$0
c	\$500,000	\$1,000	\$0
d	\$500,000	\$1,000	\$0
01.03	\$30,000	\$5,000	\$2,000
03.01	\$0	\$2,500	\$0

Items are blank where no predictable loss expectancy event can be formulated, such as with a human element recommendation. Blank loss expectancy does not imply low loss potential--it can be just the opposite.

Recent Changes and Comments

A new computer monitoring system is being installed in the mill control room.

Maintenance Items

1. Improve housekeeping at the motors in the screening room.

Construction

Total Building Area: 327,000 ft²

Percentage Sprinklered: 100%

Percent Needing Sprinklers: 0%

The plant is located on 3500 acres some 45 minutes south of the nearest urban area. The operations are broken into underground and above ground. There are several building areas aboveground, each a separate fire area due to detachment.

- Mill: this consists of multiple buildings all interconnected without any fire partitions. This is also connected to Shaft 2, the loading building, and the product storage building via conveyors. There are no partitions within the conveyors, thereby making all of these a single fire area.
- Warehouse and shops: these are several buildings, all interconnected without any fire partitions.
- Shaft 1: This stands alone over the personnel & equipment shaft and consists of several buildings and elevated enclosures.
- The Dry: this is the employee building, a standalone building.
- Main Office and Lab: these two buildings are connected by a hallway. There are 2-hour rated doors at the end of the hall, separating these two buildings into two separate fire areas.
- Small outbuildings: these are scattered across the property, each its own fire area.

The breakdown of construction is:

Light non-combustible: 95%

Masonry joist: 3%

Wood frame: 1%

Occupancy

MINING OPERATIONS

Miners and equipment are sent down Shaft 1 in a cage. At the base of the shaft are several large rooms, used for mine operations, such as equipment maintenance, shops, minor storage, break area, etc. Tunnels, called drifts, are dug out from the central core along the ore vein, as needed to follow the ore. These drifts can be miles long and in multiple, well planned directions, forming a three-dimensional grid of hundreds of drifts. Travel to and from the face, where the ore is being cut, is usually done in four-wheeled drive vehicles. There are a series of conveyors from the working face back to Shaft 2, where ore is crushed to make it manageable, then placed in skips to be hauled to the surface. The underground environment in which potash is found is very stable, making minimal shoring of the tunnels necessary. The rooms are shored by the use of heavy steel beams or selected steel rods.

The mill uses a long room-and-pillar method of mining. Ore is mined from rooms in three passes, separated by pillars supporting the overlying strata. The three passes allow travel in and out of the drift in one, a conveyor to remove ore in the second, and air flow in the third. Five automated Marietta continuous miners are used, two- and four-rotor (tungsten bit). Each is capable of extracting 650t/h of ore, from the production fleet. The ore is loaded on to extensible conveyors attached to the continuous miners. These connect to the main haulage conveyors, which move the ore to Shaft 2.

ORE PROCESSING

The ore is crushed to free the KCl (potash), and is scrubbed and deslimed to remove any clay. After conditioning with reagents, the potash minerals are floated off with the products then being de-brined, dried and screened before shipment.

Occupancy

The mill has a central control system which monitors the ore throughout the refining process. Run-of-mine ore is dry-crushed and screened in a two-stage circuit before being slurried in a saline solution together with the fines prior to pumping to a sizing screen distributor. Mill feed is then de-slimed in a circuit of three scrubbing tanks for stationary screening, hydroseparating and thickening. Carnallite is decomposed in a cool leach stage. Feed for reagent addition is collected from the stationary screens and cyclone underflows and is treated in vertical conditioners before being combined in a bulk flotation process. In the coarse flotation circuit, the ore treated with reagents is fed into a series of rougher, cleaner and recleaner flotation cells.

Final mill tailings are drawn off at the rougher stage and final product at the recleaner stage. Cleaner-cell tailings are recycled to the rougher feed and recleaner tailings thickened in a scavenger cell and used as crystallizer feed. The product is dewatered in centrifuges before drying in gravity-fed, direct-fired driers and classified according to size (granular, coarse, standard and suspension). Rocanville produces 750t/d of granular, 3,400t/d of coarse and 3,000t/d of standard agricultural-grade potash and industrial grades as required.

WAREHOUSING AND TRANSPORTATION

Finished potash is sent via conveyor to the product storage building, where it is stored in bulk. Product is distributed into the warehouse via an overhead conveyor system.

Potash is sent back out via conveyor for loading. Most potash is sent out railways for domestic sales and transfer to ports. Overseas sales are exported by the potash-producers' marketing company, Canpotex, from the West Coast, Great Lakes and Gulf of Mexico. Road transport is used for local and upper Midwest US deliveries.

UTILITIES

Both electricity and gas is purchased directly from Consolidated Gas and Electric. Each is fed to the plant via single lines, the electrical lines running overhead. There is an additional electrical line running to the plant, for some new construction added in 1985, but this cannot supplement other portions of the plant.

Water is via underground wells. These are pumped with electrical pumps.

Wastewater and tailings are kept on property in a designated area. Wastewater is treated and re-used as possible.

SUPPORT

The operations are supported by an analytical laboratory where product is analyzed at each step along the way. There is an aboveground maintenance area for equipment and vehicles, as well as some trade shops. In this area is a parts storage warehouse, with rack storage to 12', housing all parts and equipment used in the maintenance operations, both above and underground. The main office is located on the west side of the property and it contains the computer connection to the home office, a cafeteria, and administrative offices. The "dry" is the employee building, with lockers and shower facilities, where miners can change before and after their shifts, and don their protective equipment. There is also a break room and a small stockroom for PPE.

Protection

Private

Only the main office, the lab, the dry, and the maintenance warehouse are sprinklered. These are sprinklered by individual risers feeding dry pipe systems. The main office, lab and the dry are all ordinary hazard pipe schedule, while the warehouse is extra hazard pipe schedule. There is a 10" underground fire main from the main pump house, but it is not a looped main. The main feeds two way fire hydrants located at critical points within the plant complex.

There are 1-1/2 inch hoses in the maintenance shop and in the mill. There are adequate fire extinguishers throughout. Underground there are water hoses which could be used for incipient fires, portable extinguishers, and fixed extinguishers on all diesel motors, including the personnel vehicles.

Public

The town of Hedley fire department is volunteer, with a response time of 15 minutes or more. Many of the

Protection

volunteers work at the plant. There is no public water supply, but one of the units available at the fire department is a tanker. The nearest paid department is approximately 45 minutes away in Synton.

Exposure

None.

Surveillance

Surveillance: Proprietary

Surveillance Adequate? No

The facility has a full time security station that receives signals for sprinkler system water flow, low air pressure supervision, and fire pump running. Signals are recorded and the security staff has a direct line to the public fire department.

Testing

The fire pump was full-flow tested through the pump house flow meter, with good results. Each fire system valve was visually checked for condition and all of the post indicators were turned to check operability. A drain test was done for each sprinkler system. Water flow signals were initiated for all of the systems and signals transmitted successfully to the security post.

Management Programs

The site maintains written programs for emergency response, hot work, smoking, and equipment maintenance and testing. Responsibilities are assigned and records are checked by different personnel. Fire protection equipment is inspected in-house by the maintenance staff on the following frequencies:

- Water flow signals are tested every month.
- Control valves are visually checked every month, and the valves are spring-tested. Every 3 months the valves are exercised and lubricated and the valve tamper alarms checked for operation.
- Pump is started monthly by drop in pressure and all significant parameters are recorded.

The site has a predictive maintenance schedule for major electrical equipment including checking all rated electricals for integrity, and an annual thermographic scan of the major panels.

There is an established fire brigade, and all employees going underground receive required MSHA incipient fire training. Training sessions for the fire brigade are held twice per year and are adequate.

Special Hazards

Conveyors

Location: Above ground

Description: There are a total of 7 conveyors, transfer houses, and conveyor galleries, from Shaft 2 to the product storage building. These are fully enclosed conveyors, each 48 inch in length. Conveyors are "U" shaped rubber belts. Drives are electric motor. Conveyors are elevated steel frame with metal covers and are generally inaccessible by ground hose stream reach.

- #1: 394' length, lift of 52.5', 170' high
- #2: 952.5' length, lift of 125', 141' high
- #3: 387' length, lift of 48', 46' high
- #4: 143' length, lift of 26', 16 ft. high
- #5: 146' length, lift 40', 56' high
- #6: 115' length, lift 19', 30' high
- #7: 98' length, lift 25', 56' high

Protection:

- Conveyors have slow-speed shutdown interlocks; this is provided by a light monitoring a device attached to the shaft of the motor.
- Dry standpipes have been provided for selected high transfer structure transfer points, with connection for 1½" hose.
- There are fire hydrants throughout the majority of the yard.

Deficiencies: Sprinklers in the conveyors would be advantageous. However, by agreement with corporate, recommendations are not being made.

SAMPLE REPORT TO SHOW TYPICAL FORMAT

Sprinkler System Design

SysNo	Building	Calculated Density				Available Density			
		Density/Area (gpm/sq.ft.)	(sq.ft.)	BOR Demand (gpm)	(psi)	EndHd - Avg	BOR Demand		
1	Parts Warehouse	0.18	3000	880.0	85.0	0.19	0.32	946	96
	Type: <u>Dry</u>	BOR elevation: <u>0</u>	Line Slope: <u>0.00</u>						
	PipeSchedule: <u>Tree/hydraulic</u>	Head Height: <u>28.0</u>	Head-to-head: <u>10.0</u> ft.						
	SprinklerType: <u>Standard Spray</u>	Sprinkler K: <u>5.6</u>	Line-to-Line: <u>10.0</u> ft.						
	Temperature: <u>165</u>	Area Spacing: <u>100.0</u> sq.ft.							
	Flow Date: <u>5/6/03</u>								
	Static PSI: <u>128</u>								
	Flow GPM: <u>1000</u>								
	Resid PSI: <u>92</u>								

Column Region:

Building Region: Central core shops

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Water Supply Description

Hedley, GA , Location 1

Supply has backflow preventer? No

One 100,000 gallon tank, filled by electric well pumps, supply an electric fire pump, rated at 1000 gpm at 100 psi.

<u>Description of flow</u>	<u>Gage Location</u>	<u>Static/Res PSI</u>	<u>GPM</u>	<u>Flow Location</u>	<u>Date/Observer</u>
Main supply	H-5	128 95	1,007	H-6	5/6/03 PGP

Fire Pump Information

Pump Number: **1** **Propane** Rated GPM: **1000** Rated PSI: **100** Rated RPM **1800**

Pump Suction From: Two 1,000,000 tanks via a common 18" header

<u>Flow Tests</u>					<u>RPM corrected PerCent Rated</u>		<u>Cond'n</u>	<u>Date</u>	<u>Observer</u>
<u>GPM</u>	<u>Disc.</u>	<u>Suct.</u>	<u>Net</u>	<u>RPM</u>	<u>GPM</u>	<u>PSI</u>			
0	128	8	120	1790	0%	121%	G	5/6/03	PGP
750	122	8	114	1788	76%	116%			
1000	115	8	107	1785	101%	109%			
1250	85	8	77	1782	126%	79%			
1500	69	8	61	1780	152%	62%			

SAMPLE REPORT TO SHOW TYPICAL FORMAT

Recommendation History

List of all recommendations that have been submitted since 1995 and removed either due to the recommendation having been completed, or made non-applicable due to changed conditions, or removed at direction of corporate Risk Management ("abeyance"). Date indicates survey at which the item was removed.

	Category and summary	Date done	Status
01.04	HE Effective overseeing of loss control management programs and general fire protection equipment. Presently done by 3 departments with inadequate documentation and follow-up. Previously maintenance item M01.08	1/8/02	D
01.05	HP Extend sprinkler protection over all hydraulic equipment with oil holdup of greater than 100 gallons. 01/02: Corporate agreement to put this in abeyance until 2004.	1/15/02	A
02.02a	HE Provide annual training for designated members of the emergency response team on the operation of external monitor nozzles and internal 1½ inch hose streams.	2/5/03	D
02.02b	HE Additional training for the facility's first response team to include routine inspections specifically acquainting them with sprinkler system control valve locations and overall underground fire main layout.	2/5/03	D

Recommendation Category Codes				Status Abbreviations	
AS	Automatic Sprinklers	HE	Human Element	ML	Maintenance List
CC	Combustion Controls	HP	Hazard Protection	MS	Miscellaneous
CT	Construction	IM	Impairment	SU	Supervision
FP	Fire Pump	MF	Manual Firefighting	WS	Water Supply
				D	Done
				R	Removed
				A	Abeyance