e: 4520-43-P

DEPARTMENT OF LABOR

Mine Safety and Health Administration

Petition for Modification of Application of Existing Mandatory Safety Standards

AGENCY: Mine Safety and Health Administration, Labor.

ACTION: Notice.

SUMMARY: This notice is a summary of a petition for modification submitted to the Mine Safety and Health Administration (MSHA) by Genesis Alkali, LLC.

DATES: All comments on the petition must be received by MSHA's Office of Standards, Regulations, and Variances on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may submit comments identified by Docket No. MSHA-2022-0071 by any of the following methods:

1. *Federal eRulemaking Portal: https://www.regulations.gov.* Follow the instructions for submitting comments for MSHA-2022-0071.

2. *Fax:* 202-693-9441.

3. *Email*: petitioncomments@dol.gov

4. *Regular Mail or Hand Delivery:* MSHA, Office of Standards, Regulations, and Variances, 201 12th Street South, Suite 4E401, Arlington, Virginia 22202-5452.

Attention: S. Aromie Noe, Director, Office of Standards, Regulations, and Variances. Persons delivering documents are required to check in at the receptionist's desk in Suite 4E401. Individuals may inspect copies of the petition and comments during normal business hours at the address listed above. Before visiting MSHA in person, call 202-693-9455 to make an appointment, in keeping with the Department of Labor's COVID-19 policy. Special health precautions may be required.

FOR FURTHER INFORMATION CONTACT: S. Aromie Noe, Office of Standards, Regulations, and Variances at 202-693-9440 (voice), Petitionsformodification@dol.gov (email), or 202-693-9441 (fax). These are not toll-free numbers.

SUPPLEMENTARY INFORMATION: Section 101(c) of the Federal Mine Safety and Health Act of 1977 and Title 30 of the Code of Federal Regulations (CFR) part 44 govern the application, processing, and disposition of petitions for modification.

I. Background

Section 101(c) of the Federal Mine Safety and Health Act of 1977 (Mine Act) allows the mine operator or representative of miners to file a petition to modify the application of any mandatory safety standard to a coal or other mine if the Secretary of Labor determines that:

1. An alternative method of achieving the result of such standard exists which will at all times guarantee no less than the same measure of protection afforded the miners of such mine by such standard; or
2. The application of such standard to such mine will result in a diminution of safety to the miners in such mine.

In addition, sections 44.10 and 44.11 of 30 CFR establish the requirements for filing petitions for modification.

II. Petition for Modification

Docket Number: M-2022-013-M

Petitioner: Genesis Alkali, LLC., 580 Westvaco Road, Green River, Wyoming 82935

Mine: Westvaco Mine, MSHA ID No. 48-00152, located in Sweetwater County, Wyoming.

Regulation Affected: 30 CFR 57.22305, Approved equipment (III mines).

Modification Request: The petitioner requests a modification of 30 CFR 57.22305 to allow non-permissible extraction submersible pumps (ESPs) through well-bores drilled and installed from the surface to access the trona-bearing solution contained in abandoned areas of the mine.

The petitioner states that:

(a) The Westvaco mine is an underground trona mine in south central Wyoming.

(b) Since 1988, underground tailings disposal and secondary resource recovery have been part of the mining operation. These are areas of the mine that have no further production plans and have been abandoned and flooded with water through in mine pumping and from slurry tailings generated by the mineral preparation process that are injected into the mine through surface injection holes. There is no access to these abandoned areas because they have been left to deteriorate. They have been barricaded with wooden blocks in some cases. They are not ventilated, and they are not accessible for travel. They are not considered active areas of the mine.

(c) The petitioner plans to install ESPs through well-bores drilled and installed from the surface to access the trona-bearing solution contained in abandoned areas of the mine. The pumps will be located strategically in the mine based on the mining process and topography to ensure a large pool of water can be gathered in an abandoned area of the mine. The well-bores will be drilled so that the pump intake and electrical motor always remain below the mine floor and under water. The ESP design ensures that electrical components will always be submerged below the low water level or contained in a solid inner casing that is submerged below the low water level, preventing their exposure to air currents or the mine atmosphere.

(d) The permanently abandoned area is not beyond the last open crosscut and not ventilated with any air currents.

(e) The petitioner operates non-permissible, submersible pumps in outby areas of the mine which are inspected weekly and which cannot be operated in atmospheres containing 1.0 percent or more methane.

(f) The ESPs will be in locations that are inaccessible by miners. The pumps operate autonomously and are controlled remotely from the surface.

(g) Autonomous extraction enables the petitioner to have miners involved in processing activities on the surface instead of in extraction activities underground. The use of one or more

ESPs allows the petitioner to avoid exposing miners to hazards associated with underground mining.

The petitioner proposes the following alternative method:

(a) The electrical equipment shall be isolated from the mine atmosphere by deploying a dual threaded, unperforated, solid metal inner casing extending below the low water level in the well-bore and thus providing a water seal to isolate the pump, pump motor, and power cable, including the pigtail from the power cable to the motor connection. The larger outer casing shall contain perforations to allow the water to flow from the mine into the well bore sump and into the pump intake for pumping out of the mine. The low water level shall be the mine floor.

(b) To ensure the inner casing remains below the low water level at the mine floor level, a water level monitoring system shall be installed consisting of two redundant fiber optic pressure sensors with a low-level alarm and interlock system. The monitoring system shall shut down the pump motor in the event of low water level inside the well. These fiber optic sensors, which are intrinsically safe and designed to withstand harsh environments, measure the pressure of the water column, convert it to an elevation, and determine the low water level, which is above the pump before the pump motor is started. The low water level interlock system in each identical/redundant sensor shall be set to the mine floor elevation (above the pump) and shall trigger an alarm and automatically shut down the pump if the water level drops to that level, or if the discrepancy between the readings for each sensor is greater than 1 foot. The sensors shall be located at least 10 feet below the low water level and above the pump. If either water level sensor starts to drift or fail, exceeding preestablished thresholds, an alarm shall be triggered and power to the ESP shall automatically shut off.

(c) If the sensors need to be removed, a workplace exam shall be conducted, and the sensors shall be slowly extracted from the conduit in the well-bore and stored on a reel. The water level sensors shall be calibrated or replaced and reinstalled. A final water level shall

be determined upon installation and an "as built" well-profile shall be created noting the location of the sensors.

(d) All motor terminations and cable splices shall be underwater and isolated from the mine atmosphere. To verify after installation that the inner casing is sealed/isolated from the mine atmosphere by water, this testing procedure shall be followed:

(1) Measure initial static water level in inner casing with wireline.

(2) Set a retrievable packer or other drillable plug at the bottom of inner casing.

(3) Add water to the inner casing to approximately 10 feet above the static water level or 10 feet above the base of the casing grout, whichever is higher. Since the casing is grouted to the surface, test the portion of the casing below the grout line; there is no need to test the entire length of the casing.

(4) Wait for water to degas to ensure no air entrapment.

(5) Confirm and measure water level with wireline.

(6) Wait 30 minutes and measure water level again.

(7) If the water level change is less than 0.02 feet, isolation is in place (the wireline precision is 0.01 feet).

(8) If the water level change is greater than or equal to 0.02 feet, further testing of well shall be performed to locate the leak off point. The testing procedure shall be repeated until isolation is demonstrated.

(e) The ESP electrical system design is an industry standard design and encompasses the process from the first transformer on the mine property with incoming utility power to the pump motor connection. The incoming power from the utility provider (35KV) is stepped down to 480V. The 480V feeds a variable frequency drive (VFD) assembly connected to a step-up transformer to increase the voltage to 4160V. This is fed to the extraction well

pump motor approximately 1,700 feet underground via a power cable adequate in design to power the ESP.

(f) The pump motors are paired in series and have a distinct connection point that does not require a ground wire since the pump motors are continuously submerged under water during operation. The power cable used in this application shall be spliced to a pigtail that uses a connector designed for this pump.

(g) The following is a summary of the specifications for each of the major components of the ESP:

(1) Baker Hughes CentriLift VFD specially designed for ESP applications. The VFD does not have an automatic restart and requires an operator to push the start/stop button if the VFD is shut down for any reason. The motor protection shall be the overload protection set to 120 percent of the motor full load amps.

(2) Southwest Electric 480V/4160V Transformer with Multi Tap Switch.

(3) High Resistance Grounding System which consists of a 15A, 160-ohm Neutral Grounding Resistor connected to the Step-up Transformer (480V/4160V) Neutral.

(4) Baker Hughes ESP Pump and Motor Assembly rated at 350 HP, 125A@3450V.

(5) Baker Hughes Centriline CPS76932 power cable - 5KV Rated Cable #1 AWG (American Wire Gauge) with an ampacity of 183A, approximately 1,700 ft cable length from VFD to motor. The initial installation of the power cable shall be a continuous run. The power cable shall have current carrying capacity of not less than 125 percent of the full-load-amperage of the submersible pump motor and an outer jacket suitable for "harsh locations" and high voltage. The power cable shall be banded to the discharge casing at intervals of 9 feet per the manufacturer.

(6) Opsens Solutions OPP-C, MEMS-based fiber optic pressure sensor water level monitoring system consisting of two redundant fiber optic pressure sensors with

a low-level alarm and interlock system. This system shall be fail-safe in that it will always trip the pump motor circuit in the event of loss-of-signal, loss-of-power, or a pre-established discrepancy between the sensors and not allow the circuit to reclose. The light source used is a white light, not a laser. These fiber optic pressure sensors along with their amplifiers have a typical output of between 10 mW (megawatt) to 100 mW.

(7) SEL-710-5 Motor Protection Relay with a 50P/51P Phase Overcurrent Protection Function, 27 Undervoltage Protection function, and a 50G/51G Residual Ground Overcurrent protection function. This relay has a shunt trip to the VFD Main Breaker.

(8) Bender RC48 C ground fault ground and ground continuity monitoring system which monitors the residual ground current and monitors the grounding conductor for low resistance, high resistance, and a short circuit. The relay monitor shall be installed in a non-hazardous area and is a typical setup used in high resistance grounded systems at mines that operate with high voltage. The relay monitor shall conform to the applicable National Electric Code requirements and provide safeguards equivalent to pertinent MSHA standards and this application.

(9) Baker Hughes Cable Splice, Regional Power Cable and MLE Splice and Baker Hughes Connector**.** The pigtail is necessary to take the incoming 1 AWG power conductors and downsize them to a 4 AWG power conductor that fits the connector used to connect to the pump motor. The pigtail is typically less than 15 feet in length and can carry the necessary amperage for this short distance.

(h) All equipment associated with this ESP and located on the mine's surface shall be protected from dust, rain, and rodents by suitable enclosures.

(i) A grounding circuit, originating at the grounded side of the grounding resistor, shall extend along with the power cable (conductors) to the pigtail and serve as the grounding conductor for the ESP. No other electrical equipment shall be supplied power from this

circuit. This relay takes a zero-sequence current transformer input for ground fault protection and uses termination devices at the motor to monitor the continuity of the ground wire and to check for low resistance, high resistance, and shorted faults. This ground check circuit shall cause the circuit breaker to open when either a ground fault is present or a ground wire is broken.

(j) The grounding circuit shall include the pigtail splice through the termination device which shall be installed on the surface since the Baker Hughes pump does not provide for termination devices for grounds and ground checks. The pigtail splice armor shall provide the ground continuity connection to the motor/pump casing to prevent a shock hazard. Additionally, the pump/motor casing is inaccessible to personnel, mitigating the shock hazard.

(k) The grounding resistor shall limit the ground-fault current to not more than 15 amperes. The grounding resistor shall be rated for the maximum fault current available and shall be insulated from ground for a voltage equal to the phase-to-phase voltage of the system.

(l) A lightning arrestor shall be provided and shall be grounded to a low resistance grounding medium and separated from the pump power neutral grounding circuit by not less than 25 feet.

(m) The circuit breaker shall be of adequate interrupting capacity with auxiliary relay protection to provide protection against under-voltage, grounded phase, short-circuit, and overload.

(n) The grounded phase protection device must be set not to exceed 40 percent of the current rating of the neutral ground resistor.

(o) The high voltage pump shall be provided with instantaneous ground fault protection set at no more than 0.125 amperes; the time delay setting must not exceed 0.25

seconds or the minimum setting to allow the pump to start without nuisance tripping.

(p) The short circuit protection device shall be set not to exceed the required short circuit protection for the power cable or 75 percent of the minimum available phase-to-phase short circuit current, whichever is less. The trip point will be set at 1140 amps. The overload protection or the motor will be set at 125 percent of the full load amps.

(q) The undervoltage connection device shall operate on a loss of voltage to prevent automatic restarting of the equipment.

(r) The disconnect device installed in conjunction with the circuit breaker shall provide a visible disconnect.

(s) All surface installed electrical equipment associated with the pump shall be accessible for inspection.

(t) A functional test shall be conducted for the motor ground conductor prior to any energization of the pump/motor system. A record that such tests were conducted shall be kept by the operator for a period of 1 year and shall be made available for review by the Secretary or his/her authorized representative.

(w) A look-ahead circuit shall be provided to detect ground-fault condition and prevent the circuit interrupting device from closing while the ground-fault condition exists.

(x) The surface pump control and power circuit shall be examined at least every 6 months. The examination shall include a test that simulates the functional test of all protective devices (ground fault, short circuit, overload, ground monitor, grounded phase, and under voltage) to determine proper operation. A record of these tests shall be recorded. The record shall be made in a secure book or in a computer system that is not susceptible to alteration. Records shall be retained by the operator for at least 1 year and shall be made available for review by the Secretary or his/her authorized representative.

(y) Every 12 months, the operator shall conduct an examination that shall include a full functional test of all protective devices (ground fault, short circuit, overload, ground monitor,

grounded phase, and under voltage) to determine proper operation. A record of these tests shall be recorded. The record shall be made in a secure book or in a computer system that is not susceptible to alteration. Records shall be retained by the operator for at least 1 year and shall be made available for review by the Secretary or his/her authorized representative.

The petitioner asserts that the alternative method proposed will at all times guarantee no less than the same measure of protection afforded the miners under the mandatory standard.

Patricia W. Silvey,

Deputy Assistant Secretary for Operations,

Mine Safety and Health Administration.

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