

**U.S. DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
Special Permit Analysis and Findings**

Special Permit Information:

Docket Number: PHMSA-2017-0155
Requested By: Hawaiian Electric Power Company, Inc.
Operator ID#: 31057
Date Requested: November 13, 2017
Original Issuance Date: October 2, 2018
Effective Dates: October 2, 2018 to October 2, 2028
Code Section(s): 49 CFR 195.571 and 195.573

Purpose:

The Pipeline and Hazardous Materials Safety Administration (PHMSA) provides this information to describe the facts of the subject special permit application submitted by Hawaiian Electric Power Company, Inc., (HECO), to discuss any relevant public comments received with respect to the application, to present the engineering, operational, and safety analysis of the special permit application, and to make findings regarding whether the requested special permit should be granted and, if so, under what operational conditions. HECO requested that PHMSA waive compliance from 49 Code of Federal Regulations (CFR) 195.571 and 195.573 for the 12.7 mile, 8.625-inch diameter, Waiau Pipeline.

Pipeline System Affected:

The special permit request by HECO applies to the Waiau Pipeline and asks for a waiver of the cathodic protection (CP) and CP monitoring requirements in 49 CFR 195.571 and 195.573 for 12.7 miles of 8.625-inch diameter pipeline that transports low sulfur fuel oil from Barbers Point Tank Farm (BPTF) to the Waiau Power Plant in Pearl City, Honolulu County, Hawaii. The special permit requires HECO to perform more frequent in-line inspection (ILI)¹ assessments to monitor corrosion of the Waiau Pipeline. The special permit also includes a lower threshold on

¹ The special permit requires ILI and assessment of the *special permit segment* on an annual basis. Section 195.452 requires that pipelines located in a high consequence area be assessed on a five (5) year interval unless threats require a more frequent assessment interval.

what ILI reported anomalies must be remediated. In the interest of public safety and environmental protection, PHMSA has previously placed HECO under a Consent Agreement (Agreement), CPF No. 5-2018-6001S, dated May 18, 2018, that provides an increased level of protection similar to the special permit conditions.

Special Permit Request:

On November 13, 2017, HECO applied for a special permit seeking relief from the Federal pipeline safety regulations in 49 CFR 195.571 and 195.573 for 12.7 miles of *special permit segment* as described as follows:

- The Waiau Pipeline *special permit segment* is defined as 12.7 miles of 8.625-inch diameter pipeline located from the Barbers Point Tank Farm (BPTF) to the Waiau Power Plant in Pearl City, Honolulu County, Hawaii. The *special permit segment* runs alongside the Hawaii Highway 1 in two (2) short sections and crosses the light rail system at various points along the 12.7 miles of in-service pipeline mileage.

The special permit allows HECO to operate the 12.7 miles of *special permit segment* without effective CP and CP monitoring, but must operate the *special permit segment* in accordance with the additional safety requirements required in the special permit conditions.

Public Notice:

On May 25, 2018, PHMSA published the special permit request in the Federal Register and the public comment period ended on June 25, 2018. The special permit application from HECO, pipeline route maps, public comments, environmental assessment, and special permit conditions are available for public review in Docket No. PHMSA-2017-0155 at: www.regulations.gov.

PHMSA received one (1) comment on the proposed HECO pipeline special permit. The private citizen that sent the comment stated that no Federal safety regulations exist and did not say whether they thought PHMSA should deny or support the special permit request.

PHMSA's Overall Response and Considerations of Public Safety Concerns:

PHMSA has reviewed the public stakeholder comment on the docket received through August 31, 2018, concerning the HECO pipeline. For the *special permit segment*, the increased in-line

inspection frequency, repair thresholds, and operational procedures as outlined in the special permit conditions will maintain equivalent safety as compared to effective CP and CP monitoring of this segment.

Analysis:

PHMSA developed the special conditions to achieve an equivalent or higher level of safety by increasing the frequency of ILI inspections in the *special permit segment*. A summary of the special permit conditions that HECO must implement on the *special permit segment* are summarized in the **Operational Integrity Compliance** section of this document.

HECO requested that CP effectiveness and monitoring requirements be waived for the following reasons:

- 1) The Waiau Pipeline has insulation and polyethylene jacket around the 8.625-inch pipe to allow the pipeline to more efficiently transport hot fuel oil;
- 2) The insulation and polyethylene jacket prevents cathodic protection from reaching significant portions of the pipeline when the jacket becomes compromised and allows moisture (electrolyte) to enter the insulation;
- 3) The jacket and insulation also prevents the accurate monitoring of the cathodic protection currents due to a phenomenon called “shielding;” and
- 4) Ineffective CP and CP monitoring due to the pipe being insulated allow undetected and rapid corrosion to occur without other safety measures being put into place.

Operational Integrity Compliance:

PHMSA has reviewed this special permit request to ensure that integrity threats to the pipeline in the *special permit segment* are addressed in the operator’s design, material, construction, operations and management procedures (O&M Procedures and specifications). PHMSA carefully designed a comprehensive set of conditions that HECO is required to meet in order for the special permit to be granted for the 12.7 miles of 8.625-inch diameter pipeline. Among other things, the conditions include:

- 1) Conducting ILI surveys with appropriate tools to assess known threats and supplement the ILI data with field assessments or ILI methodologies for identifying and measuring any cracking associated with corrosion anomalies;

- 2) ILI surveys must be conducted at least once every calendar year, at intervals not exceeding 15 months;
- 3) ILI evaluations must utilize “6t x 6t”² interaction criteria for determining the failure pressure ratio (FPR) for general corrosion anomalies and must conduct an ILI analyses to assess for the presence of deep, isolated pitting;
- 4) ILI surveys must be calibrated through a minimum of three (3) direct field examinations and measurement of ILI-detected anomalies that represent corrosion features of different sizes and geometry;
- 5) ILI survey results (draft and final reports) must be sent to PHMSA Western Region Director;
- 6) Third party experts must review of ILI reports, verification dig data integration, development of unity plots, and measured field findings;
- 7) All metal loss anomalies that have a FPR below 1.39 or exceed 40% of the nominal wall thickness must be excavated and remediated within 60 days of discovery;
- 8) A coating repair procedure, that will not foster corrosion under the insulation (CUI), must be developed for any excavated or remediated corrosion anomalies;
- 9) The right of way must be patrolled weekly, not to exceed 10-days, and with methods specified by 49 CFR 195.412(a) to detect product releases;
- 10) Evaluate and remediate any alternating current (AC) or direct current (DC) interference or shorting is occurring that could contribute to external corrosion;
- 11) Submit an annual report to PHMSA of threats and assessment findings;
- 12) Maintain all records required by 49 CFR Part 195, as well as records required in the special permit conditions for *special permit segment*; and
- 13) A HECO senior executive officer, vice president or higher must certify in writing the following:
 - a. HECO Waiau pipeline *special permit segment* meet the conditions described in the special permit;
 - b. HECO has implemented all conditions as required by the special permit.

² “6t” means pipe wall thickness times six.

The special permit contains conditions to ensure HECO meets or exceeds the threshold requirements with equivalent safety and to ensure that granting the special permit will not be inconsistent with safety.

Past Enforcement History – January 1, 2008 through August 31, 2018

Since the beginning of January 1, 2008 through August 31, 2018, HECO was cited in seven (7) enforcement cases with a total of \$0 in assessed civil penalties. PHMSA initiated three (3) Notices of Amendment, one (1) Safety Order, and three (3) Warning Letters to HECO.

Below is a table of PHMSA enforcement matters of all types for HECO (OPID # 31057) from January 1, 2008 through August 31, 2018:

Status	Corrective Action Order	Notice of Amendment	Notice of Probable Violation	Safety Order	Warning Letter	Total
CLOSED	0	3	0	0	3	6
OPEN	0	0	0	1	0	1
Total	0	3	0	1	3	7

On January 9, 2018, PHMSA issued HECO a Notice of Proposed Safety Order (NOPSO) mandating that HECO adopt certain corrective measures for the Waiau Pipeline while the special permit request was being reviewed. Coincidentally, immediately following issuance of the NOPSO, the pipeline leaked for over six (6) hours. The cause appears to have been external corrosion due to ineffective cathodic protection, which was identified and described in the NOPSO as a potentially uncontrolled risk that could rapidly degrade the integrity of the pipeline. HECO submitted an accident report (PHMSA F 7000.1) to PHMSA on February 12, 2018. The spill was 74 barrels (3,108 US gallons) of low sulfur fuel oil. The cause of the leak was external corrosion near the girth weld due to ineffective cathodic protection under a field applied insulation joint, as described in the NOPSO. Furthermore, the spill was not detected by HECO's leak detection system and was discovered by a landowner.

PHMSA believes that close monitoring, conservative data analysis, and anomaly remediation requirements of the special permit conditions will greatly reduce the risk of failure caused by corrosion or cracking. Close monitoring of the Waiau Pipeline is required under the special permit to ensure that any areas of corrosion can be detected before they result in a pipeline

failure. Remediation requirements for wall loss greater than 40% and cracking greater than 30% will require that areas of corrosion are addressed more quickly than required by 49 CFR Part 195 due to the speed with which corrosion anomalies can grow in the absence of cathodic protection.

The limitations section of the special permit requires a reapplication and review of the HECO special permit on a periodic basis. PHMSA may revoke, suspend or modify the HECO special permit based on any finding pursuant to 49 CFR 190.341 and require HECO to comply with the regulatory requirements in 49 CFR 195.571 and 195.573. As provided in 49 U.S.C. Chapter 601 and 49 CFR Part 190, PHMSA may also issue an enforcement action for failure to comply with the special permit. Any work plans and associated schedules must be automatically incorporated into the HECO special permit and are enforceable in the same manner.

PHMSA has determined that imposing the conditions as summarized in this document will ensure that granting the special permit for ineffective CP and CP monitoring of the *special permit segment* will be consistent with safety.

Findings:

PHMSA has evaluated the Waiau Pipeline *special permit segment's* lack of effective CP and CP monitoring. The Waiau Pipeline *special permit segment* is located in Honolulu County, Hawaii. Based on the information submitted by HECO and PHMSA's analysis of engineering, operational, and safety issues, PHMSA finds that granting this special permit to HECO to operate the Waiau Pipeline *special permit segment* without effective CP and CP monitoring will not be inconsistent with pipeline safety.

OCT 2 2018

Completed in Washington DC on: _____

Prepared By: PHMSA – Engineering and Research Division