

66. Narrative outlining geohazard program. Include staff structure, activities Marathon has taken in this area, procedures, etc.

MPL's geohazard program was developed around the **Guidelines for Management of Landslip Hazards for Pipelines** – a joint industry project developed in collaboration with INGAA and its sponsors, including MPL. This document was developed to assist operators with establishing a Geohazard Management program. Learnings from this document (attached) are currently being incorporated into **API 1187** – a recommended practice for managing pipeline geohazards, which is under development.

Based on the framework of the document, MPL's geohazard program is led by the Geohazard Integrity Engineer. This position is responsible for initiating projects and overall management of the program. The governing standards that outline the program are:

- **MPL-Geohazard Management Process (MPL-MNT-01422-PRS)**
- **MPL-Responding to Strain Features (MPL-MNT-01568-PRS)**
- **Geohazard Desktop Review Specification (MPL-MNT-01422-PRS)**

As a foundation to geohazard assessments, MPL uses Inertial Measurement Unit data to complete bending strain assessments. Following the recommendations in the 'Guidelines for Management of Landslip Hazards for Pipelines, strain features are analyzed for meeting 0.35% total strain, 0.15% horizontal strain. In addition to this criterion, the Geohazard Integrity Engineer (GIE) analyzes the bending strain data per MPL-MNT-01568-PRS 'Responding to Strain Features'. The analysis is centered upon the 'Strain Feature Prioritization Flow Chart' (attached). The output of the analysis is a prioritization of the bending strain calls.

- **Priority 1 Feature:** Feature that is likely affected by geohazards. A desktop study and site assessment must be completed to confirm if the geohazard is active and affecting the pipeline.
- **Priority 2 Feature:** Feature may be affected by geohazards but lacks confirmation. A desktop study and site assessment should be completed.
- **Priority 3 Feature:** Likely not a geohazard. Location should be provided to IAS to be used for data integration.

Field investigations are led by a surveying or geological consultant who gather pipe depths, alignment, topographic, and soil information effort to identify whether a geohazard is present at the location. The information is compiled into a report and submitted to the GIE. The GIE reviews field reports and determines whether the site should be flagged for monitoring or mitigation.

Systems which are determined to be susceptible to geohazards will be assessed via ILI tool with GPS every five years at a minimum. Pipe movement between ILI tool runs is analyzed and strain changes greater than 0.04% are flagged for prioritization & investigation. MPL also conducts LiDAR on lines which are determined to be susceptible to geohazard threats. All potential geohazard locations are stored in MPL's Maui database including strain, inspection, and geohazard mitigation info. All ILI tool data, including strain information, is stored in MPL's iDig database.