



FEGL Taribani Fracing Operations

Job Hazard Analysis (JHA)

March 21, 2016

Project Description

Frontera Eastern Georgia Limited (FEGL) is planning to conduct fracing operations in Taribani wells # 33, 36 and Niko 1. The fracturing operation will be carried out by FEGL pumping equipment and Frac Tanks. Additional equipment, as Blender will be rented from “SaqGeoservice”. For the set up of 2500 HP a team of three persons will arrive from the company “Freemyer Industrial Pressure L.P.” (FIP). FIP representatives will provide assistance in operating the unit and training FEGL and its contractor company “Uniserve” personnel. The wells planned for fracing will be ready for the task, with packer set and annulus tested. The wellhead is ready to be connected with pumping unit. An inspection check up list prepared and assured that everything is in accordance with the plan. Frac tanks will be set up on location in advance. The quantity of oil necessary for the frac, in range of 125 m³ (786 bls) will be stored on each location. Firefighting equipment with a team of firefighters will be available on the area and set on strategic points. . 300 KW electrical generator will be available on location to supply necessary power. CA-320 “Saqgeoservice” pumping unit will be connected to annulus. After job unit’s clean shall be made in waste pit special area.

JHA Process

Frontera developed its Health safety and Environment Management System (HSEMS) in 2006; it is the foundation of all of Frontera HSE programs. Risk management is one of the key elements of the HSEMS. FEGL has published its internal Guidelines on risk management procedures. A JHA is to be conducted on significant projects. Since this is a first fracing operation for Frontera which is conducted by FEGL and its contractors under guidance of Freemyer Industrial Pressure, L.P. representatives it was decided that a JHA should be performed.

A good project work plan is critical to the development of a JHA. FEGL personnel and its contractors developed project descriptions for the fracing operations. These work plans were used to prepare a draft JHA template. The JHA review was divided into two parts...the *mobilization* phase and the *operations* phase. Logical sub-categories of activities were identified. The potential hazards and resulting consequences were described for each of these sub-categories. The pre-population of a JHA template was believed to be necessary in order to maximize the effectiveness and efficiency of the JHA meeting. This JHA template was provided to key members of the team in advance of the JHA meeting for review and comment.

The JHA meeting was held in Taribani Camp Office on March 21, 2016. 14 persons attended (see Appendix B for list of attendees) among them FEGL, Uniserve and FIP representatives. The



meeting began with introductions, a description of the purpose and expected outcomes of the meeting, and a discussion of the JHA process. The meeting was broken into two parts, i.e. mobilization and operations. FEGL operations manager provided comprehensive description of the work program involved in each of these two phases of Taribani fracing project.

Equipped with an understanding of the project and an understanding of the JHA process the team began its work. The first work item was to ensure that 1) we had developed an accurate description of the sub-categories and 2) we had identified all potential hazards. Discussions in the meeting led to revisions of the draft JHA template. Next the team carried out the risk ranking process which consisted of 1) risk rank the hazards considering no mitigation measures in place, 2) identify the mitigation measures designed and planned for the project, 3) rank the residual risk after mitigation, and 4) evaluate if additional mitigation measures are needed. A path forward and action items were captured.

JHA Results

The JHA process identified potential 59 HSE hazards- 10 in mobilization phase (including well location preparation and material handling) and 49 in operations phase. (see Appendix D for the full listing of all operations sub-categories and the 59 potential hazards). As described above these potential hazards were risk ranked considering no mitigation measures provided. The Frontera risk ranking matrix (see appendix D) was used. It is the traditional “severity and probability” 5 sided matrix. Definitions of severity and probability were discussed and are contained on the matrix (Appendix D). The risk ranking process identifies a risk as either *red* (have to provide additional mitigation), *yellow* (have to consider additional mitigation), or *green* (the ALARP principle is achieved). The results of risk ranking without mitigation were as follows.....

Mobilization.....0 red.... 9 yellow..... 1 green
 Operations.....0 red....34 yellow.... 15 .green

Following the risk ranking considering no mitigation measures in place the team then discussed the mitigation measures that are designed into the project and/or planned for the project execution. These mitigation measures are described in the Appendix C JHA worksheet. The team then ranked the residual risk after mitigation, again using the risk matrix. The results of this residual risk ranking were as follows....

Mobilization.....0 red....0 yellow.....10. green
 Operations.....0 red....0 yellow..... 49 green

If there had been any potential hazards remaining as yellows, an action register would have been created with a responsibility for closing that action assigned to a member of the JHA team. In this case there were no follow up actions identified. The only remaining actions are 1) to ensure that the mitigation measures discussed in the JHA meeting are fully implemented. 2) JHA results and report are broadly communicated among FEGL and its contractors.



Action Items and Conclusions

There were no action items identified to define additional mitigation measures.

This JHA process was the second for Frontera/FEGL. The First JHA meeting was held in July 2012 prior commencement of Mtsarekhevi Gas pipeline construction. The Mtsarekhevi Gas Pipeline JHA meeting and report served as a model and template for Taribani Fracing Operation JHA process. Consensus of attendees was that 1) it was an important piece of work to perform, 2) it aided in clarifying aspects and planning of the project, 3) it was helpful in identifying key hazards, consequences, and mitigation measures needed, and 4) it was a “relatively painless” process to go through. It was recognized that by participation of all members of the fracing project the “knowledge was in the room” and that a proper JHA could be performed.

This JHA report is meant to document the process and results of Taribani Fracing operation.