

Appendix 9I

Results of Risk Assessment of the Resumption-of-Crude-Oil-Shipments Alternative

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1.0 Introduction

A possible alternative to the proposed project is the use of the Longhorn pipeline system to transport crude oil into Houston refineries. Under this scenario, Longhorn would presumably not be under any obligation to perform the mitigation measures specified in the LMP. This would probably result in a different risk situation, as compared to the mitigated pipeline under the LMP. A risk assessment has been performed on this hypothetical resumption-of-crude-oil-shipments scenario. Many assumptions are required to complete such an assessment. Appendix 3A shows a memo from Longhorn indicating mitigation measures that would apply to such a scenario. Additional assumptions are described herein.

2.0 Approach

The EA relative risk model was applied to this scenario so that relative probability-of-failure (POF) results would be comparable to other risk assessments performed on the System. It is assumed that full compliance with regulations would occur under this scenario. Additional assumptions required to complete the assessment were based on the aforementioned Longhorn memo in Appendix 3A and on two general premises:

- A. Give credit for things completed as of October 2000. Examples include hydrostatic pressure testing, new components already installed, type and degree of safety systems, prevention of atmospheric and internal corrosion, recommendations provided by earth movement studies completed, etc. These are based on a judgment of whether most prudent operators would take these steps, given the knowledge gained in the EA process.
- B. Assume diminished (compared to the LMP) level of non-mandated activities such as pipe replacements, leak detection, CIS, test lead readings, public education, etc. This is based on the Appendix 3A memo stating that DOT regulations and common industry practices will set the level of many activities. This concept is phrased in the Appendix 3A memo as "... will be conducted in accordance with DOT regulations and good operating practices" for many LMP commitments.

It was assumed that the tier categories would not be used directly to set activity levels as is required in the LMP. Proposed regulations regarding pipeline operators' identification and reaction to 'high consequence areas' might eventually move operators towards reacting directly to sensitive areas, but such reactions are not thought to be common practice at this time.

These overall assumptions lead to the following more specific assumptions:

Risk Factor or Issue	Assumed Level of Mitigation Compared to System Under LMP
ILI schedule	Reduced
CIS schedule	Reduced
Internal corrosion prevention actions	Same
Public education actions	Reduced
Test lead readings	Reduced
Spans analyses and correction	Reduced
Atmospheric corrosion prevention	Same
Earth movement recommendations	Same
Pipe replacements with 5' cover, concrete cap, etc	None
Safety systems	Same
Hydrostatic pressure tests	Same
Patrol	Reduced
Shorted casings	Same
MOP	Same
Fatigue	Roughly the same; fixed value used
Surge limitations in sensitive areas	Reduced (testing has re-established some MOP's)
Leak detection sensor cable	None
SCADA based transient leak detection model	Reduced
Secondary containment	Reduced

A hydraulic profile for this scenario was not developed. Therefore, calculated normal operating pressures and surge pressures were not used in this assessment. Instead, a mid-range score was assigned to surge potential all along the line and MOP was assumed to be the same as the System under the LMP.

This approach to the risk assessment is thought to fairly represent the risk situation of the resumption-of-crude-oil shipments scenario. Some bias was introduced towards assuming that the operator will take more rather than less actions when presented with alternatives. This might tend to understate the differences between this scenario and the System under the LMP since the operator can easily choose to diminish some activities and still be in compliance with all regulatory requirements. An understatement of differences was preferable to an overstatement so that it can be more confidently stated that there is really a difference, even with a slight bias against that conclusion.

3.0 Results

As is shown in the table, POF is projected to be relatively higher for the crude oil scenario as compared to the System under the LMP. As described in Appendix 9B, the relationship between the Index Sum points and the leak frequency is not linear. Small

differences in these two scenarios may represent significant leak probability differences. The more sensitive Tier 2 and

Location	Average Index Sum		Minimum Index Sum	
	System Under LMP	Hypothetical Crude Oil Transport Scenario	System Under LMP	Hypothetical Crude Oil Transport Scenario
Tier 1	287.1	271.7	237.7	224.9
Tier 2	298.2	259.0	260.3	223.1
Tier 3	313.1	270.2	280.2	223.6
Overall	289.4	270.0		

Tier 3 areas derive the greatest mitigation benefits from the LMP and hence would have the largest increases in POF under the crude oil scenario.

A consequence analyses comparison between transportation of crude oil versus refined products is presented in Chapter 6. The differences in chronic and acute hazards for the two types of products makes it unclear which product presents the greater total consequence to potential receptors. Some receptors appear to be more sensitive to a crude oil spill while others are more vulnerable to the more acute hazards of a refined products spill. Additional consequence considerations involve flowrates, leak detection capabilities, and secondary containment. A flowrate comparison has not been done. However, since drain volumes are the largest component of potential spill sizes, this aspect of the consequence comparison would show few differences. Leak detection and secondary containment are both more comprehensive under the LMP specifications as compared to the hypothetical crude oil scenario. These would reduce the consequences, and hence the risk, independent of the reduced POF for the System under the LMP.

4.0 Conclusion

The EA relative risk model shows that the POF would be lower in the System under the LMP. A qualitative assessment of specific consequence factors shows that consequences would probably also be less for the System under the LMP. Since indications are that both POF and consequences are less for the System under the LMP, the conclusion is that the System under the LMP poses less risk as compared to the hypothetical resumption-of-crude-oil-shipments scenario.