

Westinghouse Proprietary Class 3

Estimated Blast Effects from Fort St. Vrain Well #11

Analysis Methods Summary

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Analysis Methods Summary

This report summarizes the scoping analysis of the potential effects from the release of natural gas from the number 11 well. The analysis includes the following scenarios:

- o  $1 \times 10^6$  cubic feet per day, no wind
- o  $1 \times 10^6$  cubic feet per day, 5 mph wind
- o  $1 \times 10^6$  cubic feet per day, 1 mph wind.

In addition, the confined explosion of a small metering shed was modeled. Finally, since it was assumed that the release gas was 100% methane, an evaluation was made of the potential effects that might be associated with the 10% ethane in the stream, due to its higher density and lower flammability. The results of this evaluation indicated that assumption of a neutrally buoyant, 100% methane release encompassed all the consequences of the ethane.

For the analysis of the unconfined vapor explosion the following assumptions apply:

- o the gas is assumed to be 100% methane,
- o the gas is assumed to be neutrally buoyant,
- o the atmospheric stability is a Pasquill "F" Class,
- o the terrain is level and the wind is blowing toward the reactor building, wind velocities of 5 and 1 MPH,
- o The wellhead is 1150 feet from the Reactor Building, and the metering station is 950 feet from the Reactor Building.

The evaluation of the unconfined vapor explosion provided an estimated maximum "worst case" over-pressure of 0.6 psig at the reactor building for the analysis which assumed no gas dispersion, assuming a release rate of 1 million standard cubic feet per day for a duration of one hour. Also, over-pressures of 0.3 and 0.1 psig were estimated for scenarios which accounted for the downwind dispersion of this release, using 1 MPH and 5 MPH windspeed, respectively.

The results for the confined explosion indicated over-pressures of less than 0.03 psig at the reactor building, assuming that the shed will fail at internal pressures below 5 psig. This is consistent with the assumed building construction type, i.e. frameless steel.