



## Searching For H<sub>2</sub>S Data: Do You Search For The 10 Closest Tests, Or Consider All With 3x3 Townships?

**Andrew Newsome, XI Technologies Inc.**  
**CADE eNews**  
**April 2007**

Alberta's oil and gas industry maintains a reputation for its high standards for H<sub>2</sub>S safety and awareness. The Alberta Energy and Utilities Board (EUB) has expectations for the level of attention given to the assessment of H<sub>2</sub>S release rate potential. Historical information from offsetting wells is necessary to make these assessments.

There appears to be two schools of thought on the question of what data should be used to determine an H<sub>2</sub>S release rate: search and evaluate the ten closest tests; or, search and evaluate a 3x3 township area.

In most cases, searching for the ten closest sample points will provide a representative sampling of data for a given horizon. In some cases it may be necessary to search further distances to establish a firm geological assessment. This is what the EUB would define as a three township, by three range area.

Two documents: EUB Directive 56 — Energy Development Application and Schedules, and the Canadian Association of Petroleum Producers' (CAPP) H<sub>2</sub>S Release Rate Assessment Guidelines govern the way an H<sub>2</sub>S release rate assessment is to be determined. Both documents allow room for interpretation. Driven by a desire for EUB compliance, questions are being raised by the industry regarding the right way to do it.

### **10 Closest Sample Points**

XI Technologies' H<sub>2</sub>S Search—Gold gives clients all of the necessary data and tools to begin an H<sub>2</sub>S release rate assessment for a prospective well. The H<sub>2</sub>S Search—Gold is designed around the guidelines in the previously mentioned documents.

The key benefit of this product is the way data is retrieved. The data included gives users a starting point for assessing the H<sub>2</sub>S release rate. EUB regulations require that five wells with gas analyses are examined for each formation that may be encountered. XI's report searches further and provides ten wells from at least five unique wells. The same search will apply for flow rates. The format of this report has stayed consistent for the last seven years.

For the majority of wells drilled, this approach has been an adequate sampling of data. The exception to this is when the EUB feels that the geologic trends for the area have not been fully addressed.

### **3x3 Township Search**

In Section 7.9.15.2 — Geological Mapping of Directive 56, the EUB recommends that the applicant begin its geological assessment using a three-township by three-range map plot to examine the well penetration data appropriate for each zone that it has identified or will identify on Schedule 4: Well Purpose as its primary and secondary zones that may contain H<sub>2</sub>S gas.

Apart from the primary and secondary zones, other formations may require the applicant to address a larger area as well.

The three by three area is mentioned in the Geological Mapping portion of the H<sub>2</sub>S Release Rate

Assessments section, but the EUB has recently determined that the Tabulated Data portion should adopt the same area boundaries. Therefore, in some instances, it is necessary to consider the highest gas analysis and highest flow rate among all wells within a 3x3 township area.

### **Use Your Judgment**

It is necessary to involve geological expertise in this process. There is never a black-and-white rule to state which method is correct. For each formation, a judgment call is necessary to establish which approach is correct.

When determining the potential H<sub>2</sub>S release rate, the 3x3 township area is a more thorough approach; however it may be overly conservative. If every formation were to be considered in this regard, the H<sub>2</sub>S release rates of nearly every well drilled in W5 and W6 would be considered more sour than what is accurate. In many cases sour samples which are not geologically analogous will be picked up in the search and will dramatically affect H<sub>2</sub>S release rates.

In other situations, the ten closest samples do not provide a sufficient geological representation.

A few examples of situations where a 3x3 search may be appropriate:

- The formation in question is the primary or secondary zone.
- All ten samples are found within 2 km.
- Only one pool has been addressed when others are known nearby.
- Though data has been found, few are considered valid or analogous.
- No identifiable trend can be established among the ten samples.

### **Resources Available**

While XI has opted for the methodology to search for the ten closest samples to avoid unnecessarily amplified H<sub>2</sub>S release rates, recognizing that there are many cases that require more intensive measures. Soon a new feature will be included. Retrieve 3x3 This is an extension to an existing feature, Retrieve More Records, which allows users to retrieve up to fifty more records for a given formation. With this, users can now download the EUB's specific request of 3x3 townships worth of data.

For more information regarding this issue or the feature mentioned above, please contact XI Technologies' Support at (403)296-0077 or support@xitechnologies.com.

[« back to CADE April 2007 eNews](#)

2006 © CADE | Suite 800, 540 - 5th Avenue SW, Calgary, Alberta T2P 0M2 Canada | (403) 264-4311