OEHI Responses to AIR Data Requests Set 3

Amended Application for Certification
for
HYDROGEN ENERGY CALIFORNIA
(08-AFC-8A)
Kern County, California

January 2013

AIR Data Request (Set 3)

#13 – At the workshop in September AIR attempted to question Occidental Petroleum representatives about a potential water supply to the HECA project. AIR's question was rudely interrupted by both the applicant and Robert Worl of the CEC. Because of this interruption, AIR decided to treat the applicant and the CEC as the small child they were imitating and refused to participate in the meeting any further. AIR will now ask the question again for Occidental Petroleum representatives to answer.

Is there enough produced water in the area where Occidental will operate with the CO2 injection project to supply HECA with their process water needs? This question is asked without regard to the quality of this water. What would be the best quality of produced water available to the HECA project in terms of TDS. HECA has said they wish to use water that is marginally brackish in the 1000 to 2000 TDS range. Is there sufficient produced water available from Occidental that would be in the 2000 to 20,000 TDS range? This question is asked because clearly there is technology available that would clean water, for example, from 10 or 20,000 TDS down to 2,000 TDS for a cost that may not be unreasonable given all the circumstances.

HECA's AFC indicates that the plant needs approximately 8.8mm gallons per day (gpd) peak rate, and Occidental's operations at Elk Hills unit do not produce enough excess water to meet that requirement long term. Water produced in any significant quantity contains 27,000-30,000 mg/L TDS.

#16 – What is the estimated space currently available in the Elk Hills reservoir?

As documented in the Oxy Elk Hills CO2 EOR Project Monitoring, Reporting and Verification Plan (CO2 EOR MRV Plan) dated June, 5, 2012 (Section 3.1.3 page 39), there is greater than 1.3 Billion reservoir barrels of space currently available for CO2 injection.

#19 – Can the injection of CO2 pose a higher risk of seismic activity? How close is the San Andreas Fault? How near is the closest known fault line or area of recorded seismic activity?

The potential for induced seismicity is discussed in OEHI's CO2 EOR MRV Plan (Section 3.3.4 page 47). The reservoir management plan is to keep the reservoir pressure consistent with the existing waterflood operations. The OEHI CO2 EOR Project Supplemental Environmental Information (SEI) (Section 4.6 Geology and Soils pages 4.6-10 through 4.6-12) describes the faults in the area of the project, including the San Andreas Fault, and the history of seismic activity in the area.

#20 – What are the potential routes for groundwater contamination from the HECA project? What are the potential routes for groundwater contamination from the CO2 injection just up the hill? What are the odds of groundwater contamination from each possible source?

No underground source of drinking water (USDW) is located within the boundary of the Elk Hills Unit. The CO2 project target injection zone is located approximately 6000 feet below the surface. The only potential route for groundwater contamination from Oxy's operations is from major surface facilities leaks or wellbore surface leaks.

The produced water would then have to find a pathway to either surface water sources or leach into the groundwater zone located somewhere outside Elk Hills Unit, a distance of several miles. In either case the volume required to reach a potable water source outside the Unit would be significant such that the leak would be discovered and resolved before the required volume was released making the potential for groundwater contamination from operations at the Elk Hills oil field remote.

#21 – Have high pressure injection wells in Kern County developed leaks which ended up polluting local aquifers? If this has happened elsewhere what is different about HECA? Is this a valid concern?

Oxy is not aware of any cases of deep high pressure injection wells contaminating aquifers in the history of Elk Hills. The proposed injectors in the Oxy CO2 EOR Injection Project are deep, 6000 feet on average below the surface. There are no incidents of major leaks during deep water injection operations since inception and the lack of an underground source of drinking water (USDW) located in the Elk Hills Unit makes the possibility of contamination remote.

#29 – Where has a project of this scale been done before where there is a situation of critical agricultural ground water above the injected CO2 such as exists in Kern County and near the Elk Hills? How experimental is this project in the sense of technology and operations that have never been tried before at this large of a scale?

Projects of this scale and larger have been safely and successfully executed in many US states and Canada, and Oxy operates more of these projects than any other company. Many of Oxy's CO2 EOR projects in the Permian Basin in western Texas and eastern New Mexico underlie aquifers used for drinking water and large-scale agriculture (cattle, cotton, peanuts, etc.). No underground source of drinking water (USDW) is located within the boundary of the Elk Hills Unit.

#41 – This is a different excuse than what was provided earlier when the applicant said the produced water was too brackish. Why will this produced water not be used first (as available) and well water used as a backup?

See response to Data Request 13.

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AMENDED APPLICATION FOR CERTIFICATION FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT

Docket No. 08-AFC-08A
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(Revised 12/24/12)

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DECLARATION OF SERVICE

I, Dale Shileikis, declare that on January 4, 2013, I served and filed copies of the attached OEHI Responses to AIR Data Requests Set 3, dated January, 2013. This document is accompanied by the most recent Proof of Service list, which I copied from the web page for this project at: http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, as appropriate, in the following manner:

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

_X_ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; OR

____ Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: 1/4/13