California Department of Public Health

MEMORANDUM

DATE: August 5, 2008

TO: Gerard Abrams, CHG, DTSC

FROM: Jerry Hensley, CHP, RHB

SUBJECT: Review of Department of Energy's Area IV Santa Susana Field Laboratory Environmental Impact Statement (Area IV SSFL EIS) dated 1 June 2008.

I have reviewed the Data Gap analysis report as referenced to California Senate Bill 990 and accepted health physics practices. Comments are referenced below.

1.3 Stakeholders
California Department of Public Health has regulatory oversight for Building 4100 in Area IV, California Radioactive Materials License # 0015.

1.4.4 California Radioactive Material Regulations. This section is incorrect. Under current agreements, California Department of Public Health has regulatory oversight for Building 4100 in Area IV.

Section 1.6.1 Risk-Based Decision. SB-990 requires that residual radioactivity not exceed suburban residential or rural residential (agriculture) Environmental Protection Agency (EPA) preliminary remedial goals (PRG). This document does not address SB-990 criteria.

Section 1.6.3 Senate Bill 990 Consideration. SB 990 references published values which are default and are conservative for residual radioactivity. This document references site specific values and are less conservative than the default parameters.

2.4 Sources of Data, Table 2-1
Add Document A4CM-AR-0005. Reference to SRE pond and drainage of water should be added to Historical Site Assessment. Specific information is referenced in Section 5.5.2. Although water was sampled and analyzed, residual radioactivity below detection limits can still be present and accumulate in low lying drainage areas. The specific reference follows: “The SRE Pond level was limited by transferring water to a channel draining to the Silvernale Pond in SSFL Area III. A sump pump at the pond drew water from the pond and pumped it through a 4 in. pipe whose outlet was at a culvert under the main access road to Area IV, at the edge of the Old Conservation Yard. The drainage channel was asphalt covered for a few hundred feet downstream of that point. Further drainage was along the uncoated natural channel.”

Section 3.2.5 Step 5 - Develop the Analytical Approach. Provide listing of all radionuclides generated during reactor operation and pare list down using industry acceptable methods (i.e. radiological half-life).

3.2.6.1 Derived Concentration Guideline. PRG values referenced in this section are not based on SB-990. Recommend using background plus 1E-6 agriculture PRG risk values as starting point and indicate reason for increasing screening values above this value.

3.2.6.3 Confidence Interval: The alpha (5%) and beta (10%) values referenced are consistent with accepted industry practices. The LBGR was set to one half of the DCGL, however, the DCGL values are significantly higher than those based on SB-990. The alpha and beta values are appropriate to industry accepted practices. Setting the LBGR to 50% of DCGL, as an initial data point in MARSSIM, may not be appropriate when compared to SB-990 PRG values. Recommend looking at sample variability or twice sample variability for LBGR starting point.

3.2.6.5 Measurement Quality Objectives (MQOs)

Q1: Recommend against using correction factor for calculating MDL.
Use new background values for SSFL site. This will alleviate any errors introduced by using generic correction factors.

Q2: Recommend using all non-detect values in calculations

3.3.1.2 Potential Exposure Pathways

Recommend referencing SB-990 parameters. If anticipated site specific values differ, provide recommended changes along with reasons.

3.4.1.2 Radionuclides
Recommend evaluating information after new background study to determine impact due to radiological decay and natural erosion of soil for radioactivity from nuclear weapons fallout.

3.4.2.3 Radiological PRGs
Information does not reference values in SB-990. The radiological PRGs for the SSFL are based on default EPA methods presented on the following web site: http://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg_search, to meet SB-990, reference default agriculture scenario.

3.5.10 Walkover Radiation Surveys. CDPH is interested in methodology/procedure planned for walkover gamma radiation survey. Recommend use of systems utilizing larger volume sodium iodide detectors (10cm by 10cm by 40 cm) with integrated GPS and spectral storage capability. This will provide a complete record of all information and will reduce detection limits, allow post processing to reduce impact of Compton scatter and allow evaluation of spectral information for elevated measurement locations. Use of portable instruments to report data after response time smoothing will require statistics applicable to response time calculations.

3.6.3.1 Definition of Survey Units
Recommend using default MARSSIM survey unit size. If survey unit passes statistical tests then additional work is not necessary.

3.6.6.1 Radionuclide Sample Number for Risk Assessment and Delineation Based on MARSSIM
Recommend recalculating sample density using SB 990 PRG values. Recommend using a relative shift of 1 instead of 1.5 for survey units without sufficient data to calculate sample density. This will increase number of samples but is still within acceptable MARSSIM variability and is conservative.

3.6.8 Gamma Walkover Survey Data Gap Analysis Methodology
CDPH is interested in methodology/procedure planned for walkover gamma radiation survey. Recommend use of larger volume sodium iodide detectors with GPS and spectral storage capability for post processing and lowering detection limits for large areas. Use of a system that captures values only after response time calculations requires applicable statistics and may not meet site requirements.

3.11 Building Data Gaps Analysis Methodology
Recommend additional information on tritium and other low energy beta emitters at sites where there is a potential for generation or use. Gross alpha or gross beta measurements will significantly under report or not detect low energy beta emitters.

Exhibit 3-1a
Recommend use of new radiological background study determine what effect SB-990 will have on this flow chart. Survey unit classifications were calculated using other than SB-990 values. Recommend reevaluating survey unit classification until new radiation background study is completed. Using the percentages of the DCGLs referenced in this report to classify survey units when evaluated against SB-990 might be impossible.

Exhibit 3-1b
Recommend using MARSSIM survey unit sizes. If data satisfies MARSSIM statistics, then locations can be released without additional sampling efforts.

Figure 3-6
Provide sample information on all locations. Unable to locate data from the SRE facility after remediation.

Table 3-2
Provide information on effects of radiological decay, soil erosion and migration (horizontal and vertical) on background radioactivity levels.

Table 3-3
Radionuclide Soil Human Health PRGs are not based on SB-990

Table 3-11
Radiological Contaminates of Interest
List of all potential radionuclides not referenced. No reference to Pa-231 and other Th-232 fuel activation products, missing additional isotopes in list, and no reference to californium, antimony, holmium, niobium, promethium, and zirconium. Provide justification or reasons for not listing the above-mentioned radionuclides as radiological contaminants of interest.

4.1.1.2 Characterization and Extent of Contamination Approach
Detection limits may not be lower than SB-990 PRG values. Recommend analyzing subsurface samples when the surface sample shows significantly elevated levels. This will assist in evaluating contamination depth profile.

4.1.2.3 Gamma Walkover Survey Data Gap
Statistics are not referenced for portable radiation instruments used for gamma walk over survey - survey reports noted below. Specific issue is using data after being manipulated (smoothed) by instrument response time averaging vice audible response in MARSSIM. The document will need to address the instrument response time, detection limits and additional other impacts to include response time settings.

1. Final Status Survey Report: Characterization and Final Status Survey Radioactive Materials Handling Facility Perimeter, Cabrera Services, March 2006 (8 survey units located north and west of the Radioactive Materials Handling Facility);
2. Final Status Survey Report: Final Status Survey Post Historical Site Assessment Sites, Block 1, Cabrera Services, March, 2007 (Sites 4023, 4028, 4030, 4363 and 4583 as noted in the report);
3. Characterization and Final Status Survey Report: Radioactive Materials Handling Facility Holdup Pond (Site 4614);

4.8.2 Ambient Air Data
Request additional information on sampling points for Hot Lab. In this section elevated values were noted “On four occasions the north and west Hot Lab samples exceeded the alpha DCG limits” based on the conservative use of the Pu-239 concentration guide. The report concludes that “The activity detected in ambient air is attributed to naturally occurring radioactive materials.” Was the sample point before or after the facility HEPA filter? Residual radioactivity from radon progeny on air sample filters in the exhaust duct after the HEPA filter is normally very low or non-existent, however, filters prior to the HEPA filter may contain elevated levels of naturally occurring radon progeny.

4.8.4 Conclusions
There is insufficient air sample data to accurately quantify any releases during the early operations of the reactors and associated facilities.

cc: Steve Hsu
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