

BOARD OF WATER SUPPLY

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March 9, 2017

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and

Mr. Steven Chang, P.E.
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Dear Messrs. Pallarino and Chang:

Subject: Board of Water Supply (BWS) Comments Pertaining to the Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) February 15, 2017 Administrative Order on Consent (AOC) Sections 2, 3, 4, 5 and 8 Meeting

On February 15, 2017, the BWS met with the EPA, DOH and the United States Navy (Navy) and their consultants to discuss the status of various work plans for the activities under Sections 2, 3, 4, 5 and 8 of the AOC. Section 2 pertains to Tank Inspection Repair and Maintenance (TIRM), Section 3 pertains to Tank Upgrade Alternatives (TUA), Section 4 pertains to Release Detection (RD)/Tank Tightness Testing, Section 5 pertains to Corrosion and Metal Fatigue and Section 8 pertains to the Risk and Vulnerability Assessment (RVA). The following recaps our comments and recommendations offered at the meeting.

Leak Detection

The Navy is evaluating two leak detection systems – Low Range Differential Pressure (LRDP) from Vista Research and Mass Technology Corporation's SIM-100. The BWS agrees that these appear to be the best available technologies for single-wall tanks, but

notes that the leak detection and opportunity for remediation remain far inferior to what is possible through interstitial monitoring of double-wall tanks.

The BWS understands from meeting discussions that the Navy is considering reinstallation of a tell-tale system. The system would reportedly be composed of a network of pipes with hundreds of penetrations through the steel liner and intended to provide interstitial monitoring as well as a weep system for water and fuel trapped between the liner and concrete. Based on the nature of the interstitial space and poor performance of the previous tell-tale system, the BWS is not convinced that such a system could ever be as reliable as interstitial monitoring of an engineered secondary containment. In fact, the hundreds of liner penetrations required for such a system may actually increase the risk of future leaks.

Non-Destructive and Destructive Testing

The BWS agrees that, if done properly, non-destructive evaluation (NDE) could be a useful tool for characterizing the condition of the steel liner and identifying potential problems. However, NDE techniques are not perfectly reliable and often depend on operator judgment; it remains unclear how the Navy and regulators plan to account for the uncertainties inherent in NDE. The BWS believes that rigorous calibration (probability of detection curves) and systematic verification/validation are required to demonstrate that the NDE results are sufficiently sensitive, specific, and reliable to be used as a substitute for destructive evaluation. The Regulatory Agencies should require at a minimum rigorous calibration with probability of detection curves and systematic verification/validation of the NDE methods.

The Navy appears to be reluctant to perform extensive concrete coring because they are concerned that it might prolong the schedule and damage the reinforced concrete tank structure. The BWS believes that removal of liner samples will be the only opportunity to characterize the full depth of concrete as well as the liner-to-concrete and concrete-to-rock interfaces. As such, any schedule impacts and/or the trivial risk of damaging the reinforced concrete tank are more than offset by the potential benefits of fully-characterizing the conditions behind the liner. This is particularly true should removal of the steel liner expose product behind the liner or concrete cracks that might function as conduits for released fuel.

The BWS understands from meeting discussions that ABS Consulting will be resubmitting their work scope plan on or before April 13, 2017 and that there will be little change from their previous version (April 11, 2016, Draft A) other than the addition or expansion of an appendix to more fully describe Section 8 of the AOC. The BWS had reviewed the prior submittal and forwarded many comments, concerns, and suggestions about numerous deficiencies in that work scope plan; we were disappointed to learn in the meeting that neither the Navy nor the regulators intend to incorporate BWS input (prior or future) into the risk model.

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Risk and Vulnerability Assessment (RVA)

The BWS understands from meeting discussions that the RVA study will not be completed in time to inform decisions regarding tank upgrade alternatives (TUAs). This greatly diminishes one of the principal motivations of the study, that is, informing the Navy and regulators by how much each alternative can be expected to reduce leak risk. The BWS recommends that the Navy and regulators conduct a short-term, focused, quantitative reliability study of the currently-contemplated TUAs, including relocation. These recommendations (and several others) were provided to the EPA and DOH in our detailed review of the RVA report outline previously (Lau, 2016a).

We understand from meeting discussions that the contaminant fate and transport models will not be completed in time for inclusion into the RVA study. Therefore, the risk analysis cannot quantify the risk of aquifer contamination, only the risk that product will escape the tank lining or piping. The BWS recommends that the Navy expand the risk study to include aquifer contamination risk when the fate and transport models are complete, as previously agreed to in past AOC meetings (Lau, 2016b).

If you have any questions, please feel free to contact me at 808-748-5061.

Very truly yours,



ERNEST Y. W. LAU, P.E.
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cc: Mr. Mark Manfredi
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References

Lau, E. (2016a). Board of Water Supply (BWS) Comments on the Section 8 Red Hill Bulk Fuel Storage (RHBFSF) Facility Administrative Order on Consent (AOC) Work Plan and Associated Scoping Meetings Conducted on August 31 - September 1, 2016, Letter to Mr. Bob Pallarino, Environmental Protection Agency, Mr. Steven Y.K. Chang, State of Hawaii, Department of Health, and, Mr. Jimmy Miyamoto, NAVFAC Hawaii. September 27.

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Lau, E. 2016b. Board of Water Supply (BWS) Comments Discussed with the United States Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) at the October 4 and 5, 2016 meeting to discuss the Work Plans Developed under Sections 2, 3, 4, and 8 of the Red Hill Facility Administrative Order on Consent (AOC) Statement of Work (SOW). Letter to Bob Pallarino, Environmental Protection Agency, and Steven Y.K. Chang, State of Hawaii Department of Health. November 4.