

## BOARD OF WATER SUPPLY

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March 20, 2018

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and

Ms. Roxanne Kwan  
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Dear Mr. Shalev and Ms. Kwan:

Subject: Supplemental Comments on the ABS Consulting Group (ABS) Quantitative Risk and Vulnerability Assessment (QRVA) for the Red Hill Administrative Order on Consent (AOC) Statement of Work (SOW) Section 8

The Honolulu Board of Water Supply (BWS) reviewed the ABS responses dated February 12, 2018 (Hayes, 2018) to the comments we provided in our letter dated December 18, 2017 (Lau, 2017d) and would like to note that some of the ABS responses indicate changes that should strengthen the QRVA. However, we also find multiple instances in which the response is either incomplete, misinterprets or mischaracterizes our original comment, or represents a point of continuing disagreement.

BWS understands the Department of Navy (Navy) and ABS are no longer soliciting input on the QRVA Report and the associated methodology. However, we wish to submit the following supplemental comments for the record to clarify or elaborate on previously expressed comments and concerns. We also refer you to our previously submitted QRVA comment letters (Lau, 2016; Lau, 2017a; Lau, 2017b; Lau, 2017c), which provide further historical perspective on this topic.

## Supplemental QRVA Comments

For ease of reading, we suppress citations for quoted passages when referring either to our most recent letter, dated December 18, 2017 (Lau, 2017d), or to the ABS response (Hayes, 2018).

1. QRVA and Tank Upgrade Alternatives. ABS expressed general disagreement with our statement, “the results of this QRVA Report will likely have little or no effect on the TUA decision (AOC Section 3).” Instead, ABS replies, “We will not know that until the analysis is complete and we have fully digested the results.” This response appears to be detached from the AOC calendar in which the first draft of the QRVA Report is not expected before November 2018 (ABS, 2017a), while an approved TUA decision is expected months earlier in mid-2018 (Navy, 2017). Also, as we have previously noted, the QRVA will not quantify the relative risks of TUAs or the risk reduction achievable by secondary containment.
2. BWS “Preferred Method of Analysis”. Referring to our December 18, 2017 letter (Lau, 2017d), the ABS response mischaracterizes an analysis we provided as “the BWS preferred method, which involves consideration of only RHBFSF [Red Hill Bulk Fuel Storage Facility] failure events”. We did perform such an analysis, as stated in our letter, for purposes of comparison, to show the optimistic bias of preliminary estimates ABS developed using commercial nuclear power plant data of questionable relevance. We have not expressed a preference that the Red Hill data be used exclusively and instead have maintained the position we first expressed in September 2016:

“The [Red Hill] tanks have been in service for nearly 75 years, and there is a documented history of leaks, repairs, and inspections. The BWS strongly recommends that the Navy provide all such documentation to the ABS risk assessor, and that this information be weighted heavily in the risk model development” (Lau, 2016).
3. “Conventional Accepted QRVA Best-Estimate Practice”. Having mischaracterized the BWS position, ABS then criticizes that mischaracterization as conflicting with conventional and accepted best practices. Notwithstanding questions about the need to supplement Site-specific data for a facility with nearly 1,500 tank-years of operating experience, BWS believes it is entirely consistent with best practices to assess the relevance of any “generic” data considered for use in a QRVA and to weigh those data accordingly in any subsequent analysis.
4. Replacement Source of Generic Data on Tank Leakage and Rupture. The BWS supports the ABS decision not to rely on nuclear power plant generic data

(NUREG/CR-6928, 2007), which are predominantly from above-ground storage tanks constructed to nuclear quality standards and maintained in a highly regulated environment. However, the ABS response identifies the new source only as “OGP data”. Without further information, BWS cannot comment further on the suitability of the new data source.

5. Ambiguous Continued Use of NUREG/CR-6928. Although ABS no longer plans to use commercial nuclear power plant data in estimating tank leakage and rupture initiating event frequencies, ABS intends to apply “NUREG/CR-6928 information to assist in probability distribution development for initiating event frequency values”. Lacking information on the precise nature and justification of this intended application, BWS cannot comment further on its validity.
6. Potentially Increasing Leak Rates due to Tank Aging. ABS has agreed to provide “an example analytical approach” incorporating time-dependent leak rates, but does not anticipate applying such an approach in the QRVA, citing lack of access to “significant basic research on such issues at the RHBFSF.” However, ABS also states, “We see no evidence of [failure rate acceleration] based on tank inspection results.” We have not had the opportunity to review ABS analysis and underlying data for their statement that they do not see evidence of failure rate acceleration, but note that a general assumption that the tank walls are not degrading based on failure to see a trend in sparse data is both non-conservative and inconsistent with observations of the ongoing backside corrosion. Nevertheless, we believe responsibility lies with the contractor, not any reviewer, for gathering what ABS describes as “sufficient information to adequately evaluate, quantitatively, what the failure rate acceleration factors would be over time.” Alternatively, the sensitivity of risk estimates to plausible changes in failure rate assumptions should be reported.
7. Maximum Flow Rate of Chronic (Undetectable) Leaks. The QRVA assumes a maximum flow rate of 0.5 gallons per hour (gph) for chronic, undetectable leaks. This value, as we previously noted, derives from leak detection technology and associated information provided by Mass Technology Corporation (MTC). ABS has commented, “We see evidence in [unpublished] inspection reports dated in 2015 that the [MTC] technology is currently in place at the RHBFSF.” However, periodic (e.g., biannual) deployment of the technology in offline tests of tank tightness is insufficient to justify use in the QRVA of a 0.5 gph maximum undetectable leak rate during normal operations. BWS reiterates that the validity of that value depends critically on continuous, successful implementation of the MTC technology at the RHBFSF. We acknowledge and appreciate that ABS has indicated they will revise the QRVA, and thus address the possibility of undetectable leaks with substantially higher flow rates than 0.5 gph, if their initial conclusion cannot be confirmed as correct by the Navy.

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If you have any questions, please feel free to contact Erwin Kawata, Program Administrator of the Water Quality Division at 808-748-5061.

Very truly yours,

  
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## References

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