- Do you know what they are referring to when they refer to impellers? Is it part of a pump used to drain the drydock? The report says the pumps were not visible and were presumed to have been removed.

- GENERAL COMMENT #2. ~~It is unclear why 20 bias alpha and beta locations were sufficient.~~ The text in Section 6.2.1.1 and Table 7 indicates~~states~~ that 798 measurements (11 percent) exceeded the alpha release criterion of 100 disintegrations per 100 square centimeters (dpm/100 cm^2) in Survey Unit 1, and alpha and beta two-minute bias static measurements were performed at the 20 most elevated scan locations. Please explain why the other 700+ locations that exceeded the alpha release criterion were not further investigated. Section 5.4.3 of the Work Plan calls for static measurements at biased locations to investigate survey results exceeding project ILs. Similar circumstances occurred in Survey Units 2 and 3. ~~Section 3.4.5 (Alpha/Beta Static Measurements) states follow-up bias alpha/beta static measurements were to be performed at the highest alpha/beta scan locations in each survey unit (SU) to investigate the locations with the highest potential for elevated radioactivity and that a minimum of 20 bias alpha and beta measurement locations were identified in each SU. However, Section 6.2.1.1 does not state how it was determined collecting only a minimum of the 20 samples was sufficient to investigate the SU when there were 798 measurements above the scan investigation level (IL). For SU 2, 20 bias alpha and beta measurements were collected and there were 353 exceedences (5 percent), and in SU 3, there were 997 measurements (11 percent) that exceeded the alpha release criterion, but only 20 bias measurements were collected. Please revise the text to address this concern.~~

Commented [A1]: Does Section 6.4.5 offer an explanation where, if I understand it correctly, they say they did an outlier test on the data, identified 14 outliers, and therefore decided to follow up on the 20 highest measurements in each SU?

- Figure 18, SU3 Gamma Scan Results - Berth 62 & 63 Vertical Surfaces: Figure 18 includes two summary data insets, one for concrete and one for gamma scans of metal surfaces, but the figure does not specify if the Z-score exceedances (colored dots) depicted on this figure were from the concrete or the metal matrix. It is noted that the highest result reported at 13,940 cpm, which is color coded orange to denote a Z-Score above 3, is identified as being from the scanning of the metal surfaces but it is unclear if all z-score exceedances depicted in this figure are from the gamma scanning of the metal, concrete, or both. Please revise the figure to clarify if the color coded gamma scanning results are from the concrete scans or metal scans.

Commented [A2]: What is the value of knowing whether the exceedances are due to concrete and/or metal?

- Figure 18, SU3 Gamma Scan Results - Berth 62 & 63 Vertical Surfaces: Figure 18 depicts a Z-Score exceedance on metal of 10.5, which significantly exceeds the Z-score trigger of three for additional investigation; therefore, an explanation for this large exceedance should be provided. For example, Section 6.1.1.3 (Survey Unit 3) should discuss why such a large deviation in the Z-score was obtained at this location and whether follow-up gamma static measurements and/or gross alpha/beta measurements also indicated elevated radioactivity. Please revise the Report to address the potential reasons behind the elevated gamma scan result and what alpha/beta scans and statics or a follow-up gamma static measurement indicated about the level and types of radioactivity present at this location.

Commented [A3]: The text says there were 22, 16, and 37 locations in the 3 SUs that exceeded the IL. What is the value of asking about only the max of those 75 exceedances?

- Table 12, Sample Summary Statistics and Section 6.3, Solid Sample Laboratory Analysis Results, Pages 6-7 and 6-8: There are a ~~few~~ five concrete samples with low-levels of Plutonium-239 (Pu-239) reported above the ~~Decision Level Concentration (DLC)~~ MDC in

Table 12. (See comment ____ about use of the MDC.) ~~; however, the text in~~ Section 6.3 ~~does not discuss whether these values should be considered definitive detections. Instead, the text only~~ states that the values were detected below the quantitation limit goal and does not discuss the results further. ~~In addition, Table 12 does not list the total propagated uncertainty (TPU) associated with any of the radionuclide results; therefore, the actual data packages in Appendix J must be reviewed to obtain this information. TPU information is important because a reported value above the DLC would not be considered a definitive detection if the associated TPU is larger than the reported value, or if the results would fall below the MDC if the absolute value of the uncertainty is subtracted from the result. In addition, there is no indication in Table 12 as to whether any of the data was qualified as a result of the data validation; this information must be obtained from Appendix I. In order to support the presentation of the results of the investigation and conclusions thereof, please revise Table 12 to include the associated TPUs for all results, and revise the text and Table 12 to state whether any data qualifiers were required as a result of the data validation. Finally, p~~Please revise Section 6.3 to discuss whether the values reported for Pu-239 should be considered definitive detected values, and if so, to discuss the source of the Pu-239 and whether this impacts the conclusions about the status of the submarine pens. We recommend that the discussion provide the total propagated uncertainty for the five samples and apply any data qualifiers resulting from validation of the data.

Commented [A4]: What is the value of providing TPUs for values below the MDC/DLC?

- Table 12, Sample Summary Statistics: Table 12 uses the Method Detection Limit (MDL) instead of the DLC. The Work Plan calls for the use and reporting of the DLC. ~~; however~~, MDL is a term associated with chemical data, not radiochemistry. ~~Radiochemical analyses do not quantify a specific limit of detection due to the random, statistical nature of the presence of radioactivity and the detection thereof, so using MDL is not appropriate.~~ Please revise Table 12 to replace the MDLs with DLCs.

- Appendix D, Reference Background Area Data: Appendix D does not include background data for gamma scanning surveys for concrete or metal or background data for the Canberra InSpector 1000 static measurements for concrete and metal. Please revise the Report to include background data for gamma scans using the Ludlum Model 44-20 3-inch by 3-inch NaI gamma scintillation detector and the RS-700. In addition, please revise the Report to include a list of the background data for the InSpector 1000 used for the static measurements.

Commented [A5]: What about summary statistics in Table 5? Are they also missing for some of the instruments?

I see gamma static RBA results on the last page of Appendix D for the Ludlum. Scan background measurements are a separate set of measurements?

I see a Field Change Request form in Appendix B (pp. B-5 and B-6) that says they will use an area in the Finger Piers as a concrete background area after scabbing the top surface, It also says "Scans, statics and concrete laboratory samples will be collected before and after scabbling and the information will be provided in the report." Did they do that? Is that the area referred to in Section 4.3.1? It says "A small concrete pad adjacent to SU 3 was used as the RBA for gamma measurements. …This small pad was non-impacted because it was separate from the submarine pens and could not have been used for ship repair or other radiological operations due to its small size."