Pallarino, Bob

From: Manfredi, Mark S CIV CNRH, N4A <mark.manfredi@navy.mil>
Sent: Wednesday, June 20, 2018 11:01 PM
To: Shalev, Omer
Cc: Pallarino, Bob; TU, LYNDSEY; Ichinotsubo, Lene K; roxanne.kwan@doh.hawaii.gov; Linder, Steven; Kern, Frank CIV EXWC, CI11; Regin, Terri M CIV EXWC, CI11; Sanpedro, Lean-Miguel P CIV NAVFAC EXWC, CI9; Piedmont, Eddie D CIV NAVFAC EXWC, CI10; Jamond, Robert M CIV NAVFAC EXWC, CI10; Hayes, Richard III CAPT NAVFAC HI, 00
Subject: RE: EPA Comments on Destructive Testing Plan- Red Hill AOC SOW Section 5
Attachments: Email Destructive Testing Plan Comments_20180612 - Navy Response 20180618.pdf
Signed By: mark.manfredi@navy.mil

Dear Mr. Shalev,

Please find the Navy's responses to your comments/questions embedded in the attached document. We are standing by if you have any further questions.

v/r
Mark

M. S. Manfredi
Red Hill Regional Program Director/Project Coordinator
850 Ticonderoga St, Suite 110
JBPHH, HI 96860
W: 808-473-4148
C: 808-200-6736
F: 808-473-4155

-----Original Message-----
From: Shalev, Omer [mailto:Shalev.Omer@epa.gov]

Sent: Tuesday, June 12, 2018 1:05 PM
To: Manfredi, Mark S CIV CNRH, N4A <mark.manfredi@navy.mil>
Cc: Pallarino, Bob <Pallarino.Bob@epa.gov>; TU, LYNDSEY <Tu.Lyndsey@epa.gov>; Ichinotsubo, Lene K <lene.ichinotsubo@doh.hawaii.gov>; roxanne.kwan@doh.hawaii.gov
Subject: [Non-DoD Source] EPA Comments on Destructive Testing Plan- Red Hill AOC SOW Section 5

Dear Mr. Manfredi:

We received the Destructive Testing Plan on June 4, 2018 and tried to perform a quick review. The Plan addresses most of our concerns and coupon collection should proceed as scheduled.

We recognize that this exercise is being performed to help validate some aspects of the NonDestructive Examination and repair program at the Red Hill Fuel Storage Facility, but we agree that subsequent meetings with the Navy will be needed to determine if the AOC Parties agree that the NDE process is validated. Most of our comments are in the interest of ensuring that our meetings and discussions following this exercise result in agreement over whether or not the NDE process has been validated.

See attachment for our detailed comments and let us know if you have any comments or questions.

Also, I have only sent this to you at the Navy so please distribute to appropriate personnel on your team.

Sincerely,

Omer Shalev

Land Division (LND-4-3)

EPA Region 9

75 Hawthorne St.

San Francisco, CA 94105

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 12, 2018

Mr. Mark Manfredi
Red Hill Project Coordinator
Navy Region Hawaii
Joint Base Pearl Harbor Hickam

Re: NAVFAC Destructive Testing Plan

Dear Mr. Manfredi:

We received the *Destructive Testing Plan* on June 4, 2018 and tried to perform a quick review. The *Plan* addresses most of our concerns and coupon collection should proceed as scheduled.

We recognize that this exercise is being performed to help validate some aspects of the NonDestructive Examination and repair program at the Red Hill Fuel Storage Facility, but we agree that subsequent meetings with the Navy will be needed to determine if the AOC Parties agree that the NDE process is validated. Most of our comments below are in the interest of ensuring that our meetings and discussions following this exercise result in agreement over whether or not the NDE process has been validated.

3.1 Coupons for Testing for NDE Validation

Page 3 of the *Destructive Testing Plan* states:
After on-site observations and third-party laboratory testing is completed, NAVFAC EXWC will then compare the expected outcomes (sketches and notes) identified in this document with the photographs and on-site observations made by NAVFAC EXWC and the third-party laboratory's actual pit-depth and metal loss measurements. These results will be presented in a subsequent meeting with Navy, Regulators and SMEs to determine if the NDE process is validated.

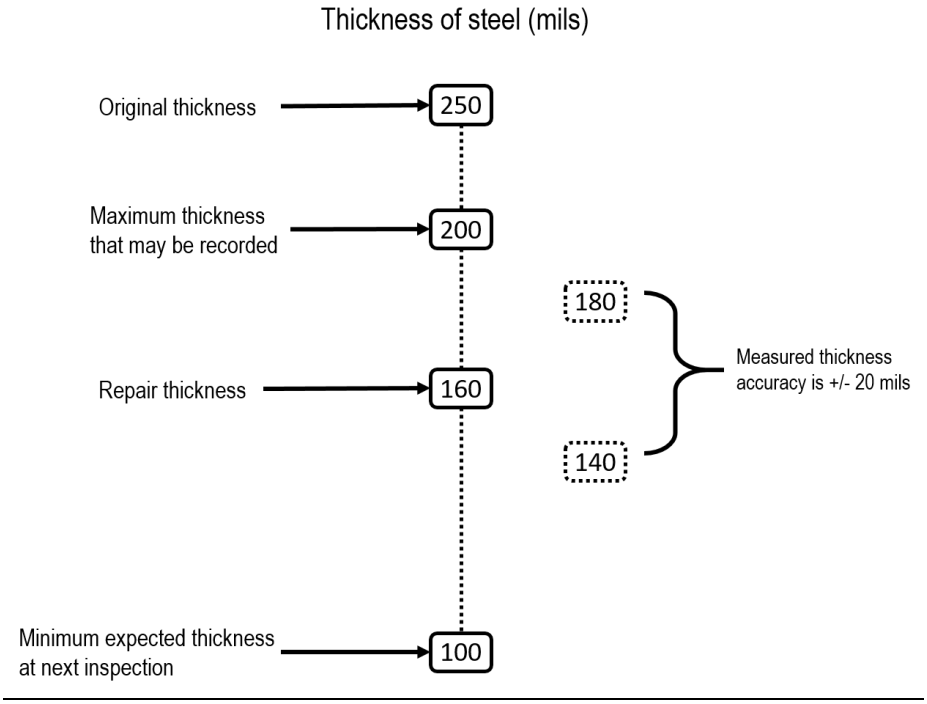
Comment 1. Therefore, it is EPA's understanding that the coupons pulled for this destructive work will reflect the diagrams and stated measurements in Appendix B with discrepancies up to the criteria described on page 4.

Page 4 of the *Destructive Testing Plan* states:
In addition to this qualitative validation of the expectations based on the NDE data a quantitative validation will be performed based on the following criteria:

- *Backside Pitting. Prove-up measurement (pit depth) within 20 mils of actual laboratory results.*
- *Wall Thinning. Prove-up measurement within 5% of actual laboratory results.*
- *Welds. (If any identified) Detecting a surface-breaking crack with minimum width dimension of 0.025 inch.*

Navy Response to comment 1. The EPA's understanding is correct; The coupons pulled for this destructive work will reflect the diagrams and stated measurements in Appendix B with discrepancies up to the criteria described on page 4.

Comment 2. Although Section 3.1.1. describes the screening criteria, it is a little confusing. The discussion may be assisted by a diagram, similar to the one below. It would beneficial for the Navy to confirm the accuracy of our diagram. The diagram below illustrates our understanding of screening criteria for those areas where the original steel thickness is 250 mils.



Navy Response to comment 2. While the above diagram is essentially accurate the Navy is concerned that, as depicted, the diagram could be interpreted to mean that the tolerance of +/- 20 mils only applies to the established threshold for repair, 160mils and that the "actual" threshold is 140mils. That would be an incorrect interpretation. The repair threshold is 160 mils with no tolerance assigned to it. The tolerance of +/- 20mils applies to the instruments used and would be applied to every measured reading. Therefore, the Navy recommends modifying the above diagram to remove the "180" and "140" and associated text and simply adding a footnote at the bottom of the diagram to indicate "The tolerance for all measurements of wall thickness is +/-20mils." Further, it should be noted that a sufficient factor of safety has been incorporated in to the inspection process that even at 140mils the tank would still arrive at its next inspection cycle (20 years) before the minimum wall thickness of 100mils was reached due to corrosion. The Navy wishes to emphasize that the objective of the inspection phase of the clean, inspect and repair process (CIR) is NOT to characterize and record every single indication as revealed in the inspection process, but rather to identify those areas in need of repair so that sufficient steel plate could be applied to those sites to restore the wall thickness back to original levels or greater, thereby extending the service life beyond the next inspection cycle.

Comment 3. In our discussion with Navy staff however, it also our understanding that locational accuracy of backside indications, including isolated pits, would be within 1 inch of the expected outcome. EPA does not see this stated in the Plan and it should be reflected either in the description on Page 4 or the Appendix B coupon diagram descriptions.

Navy Response to comment 3. Navy concurs. Backside indications are expected to have a locational accuracy within 1 inch of their reported locations.

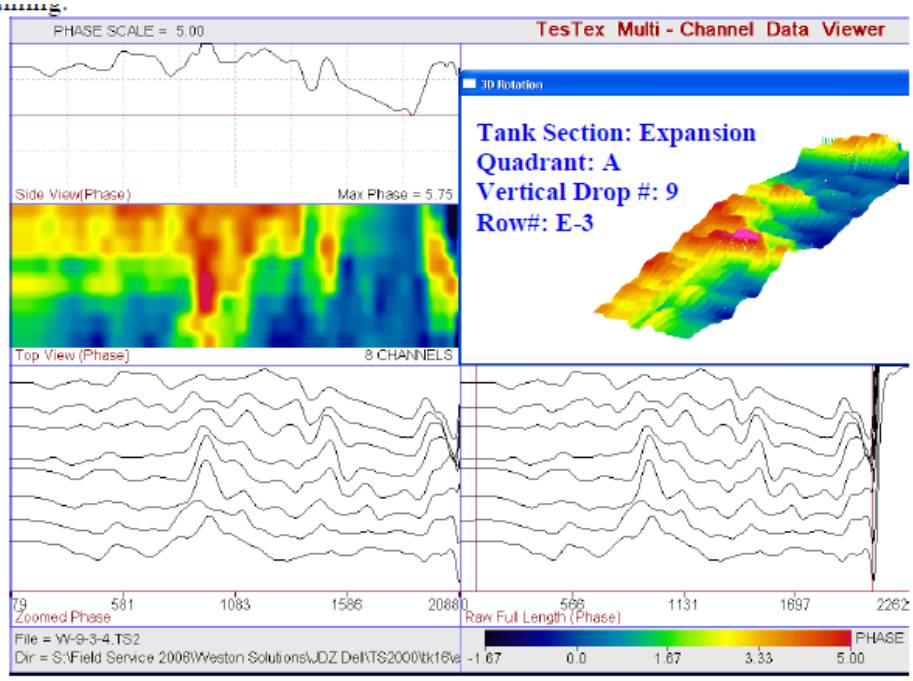
5.0- Repair of Coupon Sites

Comment 4. It is EPA's understanding that some cement will be removed from the portions of the tank where coupons are removed (see p.12 of Plan). EPA also understands that coupon sites will be repaired with an inserted plate and then covered with a fillet welded plate. Given that cement from the tank will be removed, will there be any grout or sealant placed on the backside of the steel plate insert? Please explain why or why not?

Navy Response to comment 4. Any concrete repairs necessary as a result of coupon removal and or concrete sampling will be determined after the coupons are removed and proper assessment can be made. These repairs, if necessary, will be included as part of the ongoing CIR contract for tank 14. Navy will keep EPA and DOH apprised of these repairs.

7.0- Report Content

Comment 5. In the Destructive Testing Final Report, the Navy should plan to include the "3D" wave scan images produced by TesTex or EEI for the selected coupon locations, especially those with indications cited in the Master Table. EPA understands that some coupon locations may not have these images because they were not marked by TesTex or EEI, so wave scan images were never recorded and stored. However, for those coupon locations where wave scan images, partial or complete, were recorded, they should be included in the *Destructive Testing Final Report*. EPA acknowledges that these wave scan images were not available at the time of the *Destructive Testing Plan* or for the design of some of the Tank 14 clean and inspect repairs, resulting in the Navy producing the diagrams in Appendix B. See example image from a previous API Tank Report..



Flaw # 450, 451, 452, 453, & 454: The waveform above depicts an underside corrosion area exhibiting 0.160", 0.180", 0.150", 0.160", & 0.190" wall remaining.

Navy Response to comment 5. The wave scan images as depicted above were not saved or retained by the contractor and therefore do not exist for tank 14. The requirement to save these images was not included in the CIR contact of tank 14.

General Comments

Comment 6. Although Table 1 is useful, the excerpts of the raw data rows from Master Table as of date of the *Destructive Testing Plan* should be included in the *Final Report* and sent to EPA and DOH before coupons are removed to ensure the integrity of this exercise. If the Navy does not provide an updated Master Table, then we will consider the Excel File "Red Hill Tank 14 NDE Data 12Feb2018 Distrib Limited.xls" Master Table sheet sent to EPA via mail from Mr. Mark Manfredi on March 2, 2018 to be the final version of this Master Table prior to the removal of coupons from the tank.

Navy Response to comment 6. For the purposes of this Destructive Testing Plan, EPA and DOH should consider the Excel File "Red Hill Tank 14 NDE Data 12Feb2018 Distrib Limited.xls" Master Table sheet sent to EPA via mail from Mr. Mark Manfredi on March 2, 2018 to be the final version of this Master Table. This is the same file the Navy is currently using to negotiate repairs to tank 14.

Comment 7. Higher resolution photographs (greater than 5 MP) after removal, including on base, and especially at the laboratory should be captured. For pictures taken on base and at the laboratory we suggest a 13MP image over the area of the coupon. Additionally, the lighting of the coupon should be performed in a way that allows for high quality images that are not impaired by shadows.

Navy Response to comment 7. Minimum resolution for photographs will 10MP

Comment 8. In Table 2, what is meant by "coupon thickness". Is that at a single point, or from multiple points on the coupon? Please explain.

Navy Response to comment 8. On Table 2 of the Destructive Testing Plan, the term "coupon thickness" is intended to mean nominal thickness as measured in the field upon coupon removal.

Comment 9. It would be helpful for the Navy to include a figure or diagram of the tank to show where coupons were selected in relation to tank area. See example map of tank below.

Navy Response to comment 9. See attached schematics.

Diagram of Extension Ring and Barrel with Agreed-Upon and Alternate Coupon Locations

Row #	Plate Numbers - Quadrant A				Plate Numbers - Quadrant B				Plate Numbers - Quadrant C				Plate Numbers - Quadrant D			
E4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
E3	16	1	2	3	4	5	6	7	8	9	10	11	12 [2]	13 [3]	14	15	16
E2	1	2	3 [4]	4	5	6	7	8	9	10	11	12	13	14	15	16
E1	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
27	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15 [5]	16
25	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
24	1	2	3	4	5	6	7	8 [6]	9	10	11	12	13	14	15	16
23	16	1	2	3	4	5	6	7 [7]	8	9 [A1]	10	11	12	13	14	15	16
22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
21	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	1	2	3	4	5	6	7	8	9	10	11	12	13 [8]	14	15	16
19	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	16	1	2	3	4	5	6	7	8	9	10	11	12	13 [9]	14	15	16
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
13	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11	16	1	2	3	4 [A2]	5	6	7	8	9	10	11	12	13	14	15	16
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
7	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
5	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
3	16	1	2	3 [A3]	4	5	6	7	8	9	10	11	12	13	14	15	16
2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

	1 [4]	Agreed Upon [Coupon #]	2 [A1]	Alternate [Coupon #]	3	Other

Diagram of Upper Dome with Agreed-Upon Coupon Location

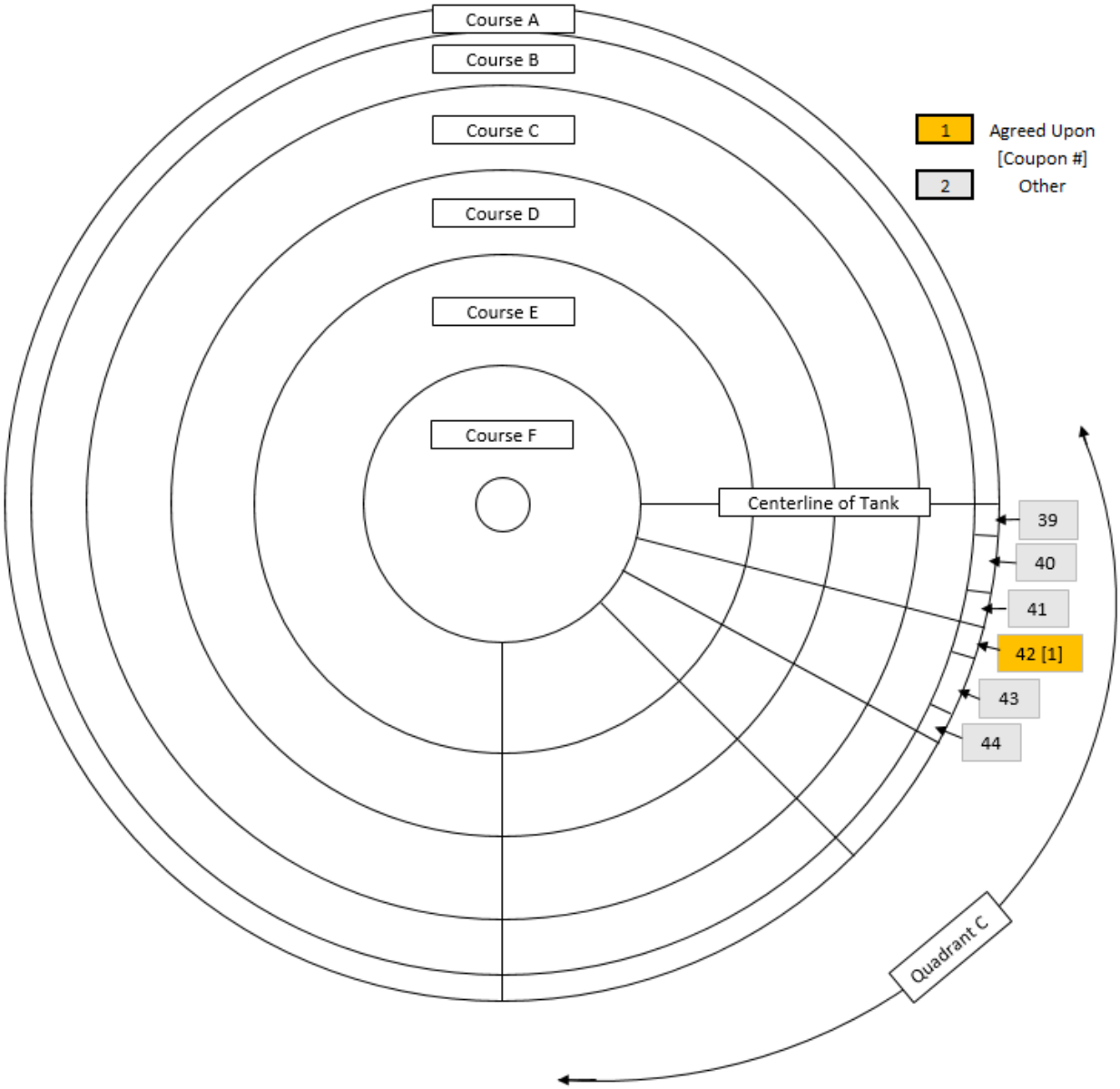
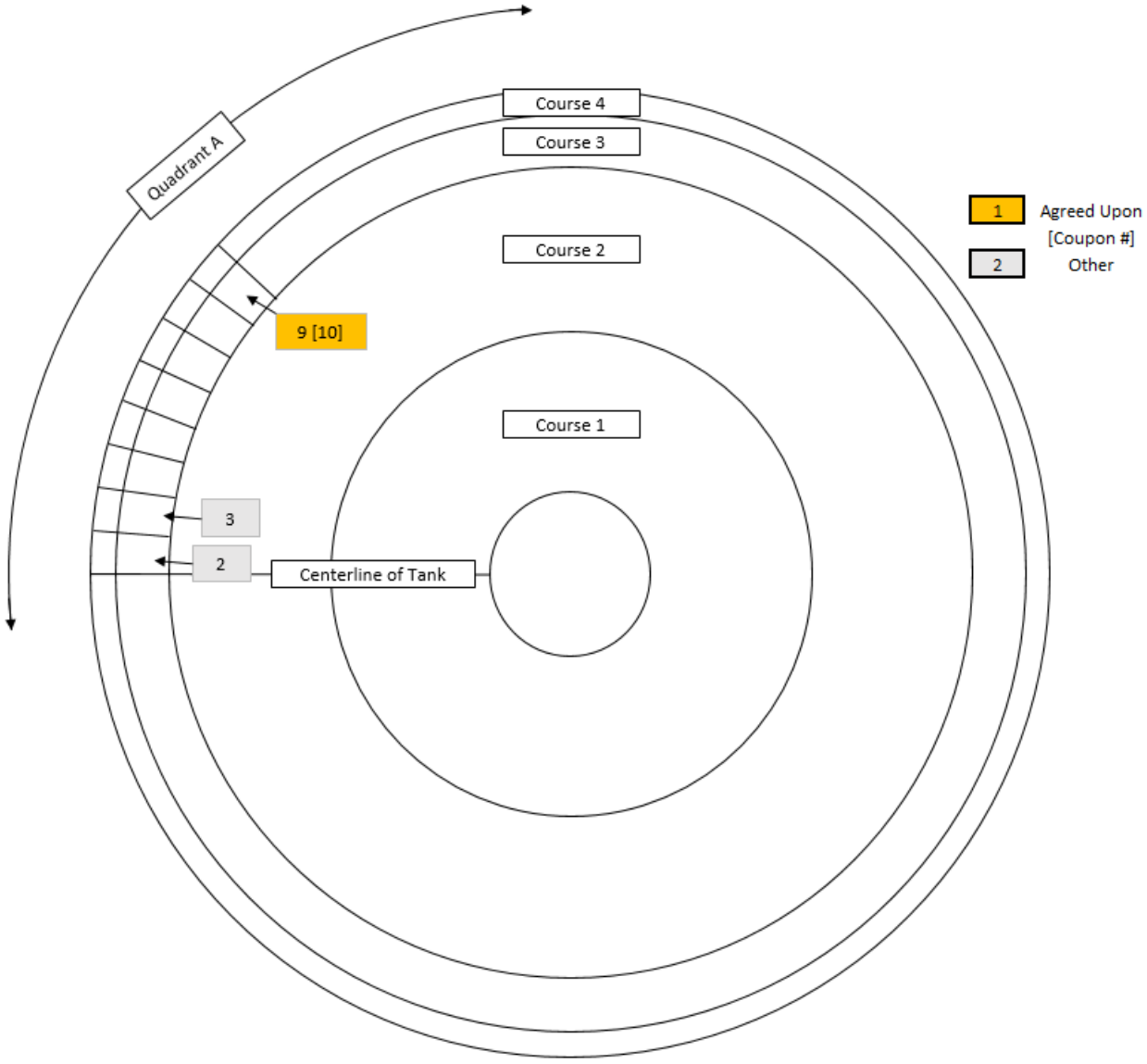


Diagram of Lower Dome with Agreed-Upon Coupon Location



3.0 TANK MAPS
Dunkin & Bush, Inc.
Honolulu, HI