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| Title:            | Hydrotest requirements in Annex C&H   | Agenda Item # 650-2028  |
| Date:             | <a href="#">May, 2022</a>   |   |
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| Purpose:          | Allow for construction of floating roofs without hydrotests where required  |   |
| Source:           | Questions raised during previous agenda item for hydrotest exemptions 650-680, which has passed to publication.   |   |
| Revision:         | <del>0-14</del> <del>5-6</del> <del>7</del> 8   |   |
| Impact:           | Impact is relatively small as most floating roof construction is during tank construction and most tank construction requires hydrotest.  |   |
| Rationale:        | Some newly built tanks per API 650 may see hydrostatic test requirements waived if water is unavailable. Additionally, floating roofs are sometimes installed new into existing tanks following annex C or H and may not necessarily require a hydrostatic test. This includes steel pan roofs, etc... where materials are brought into tank in such a manner that a hydrostatic test is not required. Modifying annexes to allow for first fill with product   |   |
| Current wording:  | <p><b>C.4.3</b> The roof shall be given a flotation test while the tank is being filled with water and emptied. During this test, the upper side of the lower deck shall be examined for leaks. The appearance of a damp spot on the upper side of the lower deck shall be considered evidence of leakage.</p> <p><b>C.4.4</b> The upper side of the upper decks of pontoon and double-deck roofs shall be visually inspected for pinholes and defective welding.</p> <p><b>H.4.4.4 Types of Primary Seals</b></p> <p>...</p> <p>Unless specified otherwise by the Purchaser, the seal shoe and compression mechanism shall be installed before hydrostatic testing. It may be necessary to remove the seal shoe after a hydro-test to accommodate cleaning, application of interior linings, or any situation where the installed shoe might interfere with the process. The fabric seal may be installed after the hydrostatic testing.</p> <p><b>H.6.6 INITIAL FLOTATION</b></p> <p>A flotation test and initial fill inspection shall be conducted by the Purchaser. This test may be performed or witnessed by the erector, as subject to agreement with the Purchaser. The party performing the flotation test shall make water connections and supply all tank closures required for testing and remove all water connections and temporary closures (including gaskets, fasteners, test blanks, etc.) after completion of the test, unless otherwise specified by the Purchaser.</p> <p><b>H.6.6.1</b> Internal floating roofs in accordance with types H.2.2a, b, c, d, and g shall be given a flotation test on water. Internal floating roofs in accordance with types H.2.2e and H.2.2f shall be given a flotation test on water or product at the option of the Purchaser. During this test, the roof and all accessible compartments shall be checked to confirm that they are free from leaks. The appearance of a damp spot on the upper side of the part in contact with the liquid shall be considered evidence of leakage.</p> <p><b>H.6.6.2</b> During initial fill the internal floating roof should be checked to confirm that it travels freely to its full height. The peripheral seal shall be checked for proper operation throughout the entire travel of the internal floating roof. During the first event of lowering the level from full height, particular attention shall be given for tanks that contain a floating suction to ensure proper operation.</p> <p><b>H.6.6.3</b> -Because of possible corrosive effects, consideration shall be given to the quality of water used and the duration of the test. Potable water is recommended. For aluminum floating roofs, AL.7.5 shall be followed. For stainless steel floating roofs, S.4.10 shall be followed.</p> <p><b>H.6.6.4</b> The high flotation level shall be evaluated for clearance and the floating suction (if existing) shall be compensated for the excess buoyancy that will be encountered during hydrostatic testing of the floating roof system.</p> |   |
| Proposed wording: | <p>C.4.3 The roof shall be given a flotation test while the tank is being filled with water and emptied. During this test, the upper side of the lower deck shall be examined for leaks. The appearance of a damp spot on the upper side of the lower deck shall be considered evidence of leakage. If the tank is not going to be hydrotested <u>as allowed by 7.3.6.2.2</u>, the flotation test can be performed on first fill, with the written agreement of the Purchaser. <u>If hydrostatic testing is not performed, additional NDT on the floating roof shall be performed to ensure proper flotation and operation prior to first filling. Additional NDT shall consist of applying to all surfaces to be wetted with product during operation with penetrating oil, letting stand for at least four hours and examining the opposite side of the surfaces for evidence of wicking or staining. A vacuum box test shall be performed on all welds within those wetted areas.</u></p>  |   |

A survey of the tank shell and all fixed penetrations through the floating roof shall be performed to verify adequate floating roof clearance for all new floating roofs.

#### **H.4.4.4 Types of Primary Seals**

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Unless specified otherwise by the Purchaser, the seal shoe and compression mechanism shall be installed before hydrostatic testing or first fill with product if a hydrotest is not going to be performed in accordance with 7.3.6.2.2. It may be necessary to remove the seal shoe after a hydro-test to accommodate cleaning, application of interior linings, or any situation where the installed shoe might interfere with the process. The fabric seal may be installed after the hydrostatic testing.

#### **H.6.6 INITIAL FLOTATION**

A flotation test and initial fill inspection shall be conducted by the Purchaser. This test may be performed or witnessed by the erector, as subject to agreement with the Purchaser. The party performing the flotation test shall make water connections and supply all tank closures required for testing and remove all water connections and temporary closures (including gaskets, fasteners, test blanks, etc.) after completion of the test, unless otherwise specified by the Purchaser. If the tank is not going to be hydrotested per 7.3.6.2.2, the flotation test can be performed on first fill of product with written agreement of the Purchaser.

**H.6.6.1** Internal floating roofs shall be given a flotation test on water or product at the option of the Purchaser. Flotation tests with product may be performed during the initial fill. During this test, the roof and all accessible compartments shall be checked to confirm that they are free from leaks. The appearance of a damp spot on the upper side of the part in contact with the liquid shall be considered evidence of leakage.

**H.6.6.4** The high flotation level shall be evaluated for clearance and the floating suction (if existing) shall be compensated for the excess buoyancy that will be encountered during hydrostatic testing (if performed) of the floating roof system.

**H.6.6.5** If hydrostatic testing is not performed, additional NDT shall be performed to ensure proper flotation and operation prior to first filling.

**H.6.6.5.1** Non-contact internal floating roofs defined in H.2.2.e shall have pressure tests of 100% of the closed compartment cylinder sections.

**H.6.6.5.2** For all other internal floating roofs, except those meeting H.2.2(f) with non-perforated honeycomb cell walls, the additional NDT shall consist of applying to all surfaces to be wetted with product during operation with penetrating oil, letting stand for at least four hours and examining the opposite side of the surfaces for evidence of wicking or staining. A vacuum box test shall be performed on all welds within those wetted areas.

**H.6.6.5.3** For all internal floating roofs, a survey of the tank shell and fixed penetrations through the floating roof shall be performed to verify adequate floating roof clearance.