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IN REPLY
REFER TO DES-I

DEC 16 2009

MEMORANDUM FOR DIRECTOR, DEFENSE ENERGY SUPPORT CENTER

SUBJECT: Automated Tank Gauge (ATG) Installation Policy

Based on the Defense Energy Support Center ATG installation study, this memorandum establishes standardized DoD-wide criteria for all large fuel tanks (capacity greater than 30,000 gals). All tanks in this category will be fitted with ENRAF servo gauges with a combination temperature/water probe and installed in slotted stilling wells (sized as required). Facilities that have existing Automated Fuel Handling Equipment systems, with ATG probes other than ENRAF, shall have those ATG probes replaced with an ENRAF ATG solution when stilling well requirements are met.

The attached documents provide more details on these criteria. Point of contact for DES-I is (b) (6), and (b) (6).

(b) (6)

Staff Director
Installations Management

Attachment



AUTOMATED TANK GAUGE (ATG) INSTALLATION GUIDANCE

A. The following design/ installation guidance for ENRAF ATG probe and stilling wells are provided to accommodate the multiple possible configurations:

1. For tanks constructed with floating roofs or internal floating pans, the recommended stilling well installation is two (2) fully slotted stilling wells; one 6" well located directly over the sump (if feasible) and one 8" well located at a point on the tank that is either at or below the existing datum plate. Two (2) 6" slotted stilling wells are acceptable alternative configurations only if the 8" slotted stilling well is not feasible.

2. For tanks constructed with a fixed roof and no internal floating pan, the recommended stilling well installation is one (1) 8" slotted stilling well located at a point on the tank that is either at or below the existing datum plate. A separate 6" top-side riser shall also be installed directly over the sump (if feasible). A 6" slotted stilling well and a 6" center riser are acceptable alternative configurations only if the 8" slotted stilling well installation is not feasible.

3. A 10" slotted stilling well with an inner 2" slotted stilling well is not the preferred configuration and should be the last configuration considered. This type of stilling well should only be considered in special cases where only one tank penetration is feasible; such as domes with cone roofs or steep inclines, snow roofs, geodesic dome roofs with an internal floating pan, cut and cover tanks with limited penetration access or other non-standard tank roof configurations.

4. Smaller tanks (capacity less than or equal to 30,000 gals) with gauge heights less than 12 feet shall be fitted with Veeder-Root ATG probes and monitoring console. When gauge heights are greater than 12 feet, MTS ATG probes shall be installed with a Ronan monitoring console. Veeder-Root and MTS ATG probes have integrated temperature and water sensors and do not require stilling wells on fixed roof tanks without a floating pan. For these tanks, minimum of 4" risers will be installed at a point on the tank that is either at or below the existing datum plate or at the lowest feasible point in the tank.

5. Vapor Sleeve: Vapor sleeves are no longer required to be provided for installation on ATG slotted stilling wells as detailed in Section 6-14.2.4.1 of the Unified Facilities Criteria (UFC) 3-600-01, 26 September 2006, Change 1, 14 July, 2009. This is only allowed when one 6" and one 8" slotted stilling wells, or two 6" slotted wells, or one 10" slotted stilling well are installed.

6. Normally, the ATG installation will be accomplished in coordination with American Petroleum Institute (API)-653 inspection and stilling well modifications of the existing tanks. When tanks at a facility receive full or modified API-653 inspections; ATG slotted stilling wells and temperature/water probe slotted stilling wells will be installed as part of the API-653 effort. The installation of the ATG slotted stilling wells and temperature/water probe slotted stilling wells will be accomplished thru the Corps of Engineers (USACE), Naval

Facilities Engineering Command, (NAVFAC), and Air Force Civil Engineering Support Agency (AFCESA). ATG probe and temperature/water probe installation for the existing tanks, including connectivity to the control room computer, will be accomplished through Space and Naval Warfare Systems Center (SPAWAR), except in Military Construction (MILCON) projects, as described below.

7. MILCON projects: ATG Install the same ATG solution as the existing tanks at the facility. Install stilling wells with configurations as described above for all tanks associated with MILCON projects. The ENRAF ATG probes will be installed in the tanks constructed by the MILCON project after completion of the MILCON project in conjunction with the installation of the ENRAF ATG probes in the other tanks at the facility. The installation of stilling wells, ATG probe equipment, including connectivity (wired or wireless) to the control room computer, for tanks provided under MILCON will be accomplished through the MILCON contractor and with SPAWAR supervision testing and final acceptance.

8. Sustainment, Restoration & Maintenance (SRM) projects: Stilling well installations will also be accomplished during a SRM project construction when internal access to the tank is available. Stilling well configurations shall be designed and installed as outlined above.

Note: Sample designs for the aforementioned configurations are included in the enclosure. Exceptions to the above guidelines and designs can apply on a case by case basis.

B. The following guidance will apply to the funding procedures pertaining to ATG design and installation:

1. All stilling wells, ATG probes, temperature/water probes, communications devices, fiber optic or copper cabling to the control rooms will be considered as a system and funded with non-ADP capital/operating funds depending on the total cost of the system. If the total cost of the system is greater than or equal to \$250K, it will be funded with capital equipment funding and if the total is less than \$250K, operating funds will be utilized. This system cost will include design, material, labor, contractor overhead and profits, supervision, inspection and overhead for the executing agent. The determination as to whether capital or non-capital funds are used should be based on the total cost of the system and not on individual components. If the installation of individual components crosses fiscal years and are below the capital threshold, the components should still be funded with capital if the total system cost is equal to or above the capital threshold.

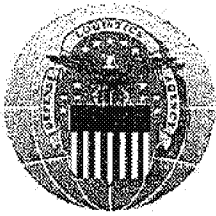
2. ATG probe slotted stilling well and temperature/water probe slotted stilling well installation planned for installation along with API-653 inspections, under the SRM program, will be funded separately with equipment monies. All equipment designed in the MILCON projects, as described above, and other aspects to include design review, integration and testing of the installed ATG system accomplished with SPAWAR will be funded separately from the non-ADP equipment program. Due to practical consideration, the design cost of this equipment part will be included in the MILCON design and funded as such.



Minimum Guidelines for ATG Stilling Wells Installation/Replacement

- This Presentation outlines the minimum requirements for the Installation/Replacement of ATG Stilling Wells for the Enraf/Vito ATG probe systems.
- These requirements are meant to be a guide for Installation/Replacement. Due to variations in tank design actual ATG installation requirements may vary.

ENCLOSURE



Minimum Guidelines for ATG Stilling Wells Installation/Replacement

- Enraf System in tanks with NO floating pan:
 - The Enraf 854 servo gauge may be placed anywhere on the tank at or below a point concentric with the datum plate. A stilling well of 8" is recommended.
 - The Vito temperature/water probe shall be placed over the sump or the lowest feasible point in the tank. A stilling well is **NOT** required nor recommended as long as there are no obstruction present. At a minimum, a 6" riser is recommended. No smaller than a 4" is recommended for a riser design.



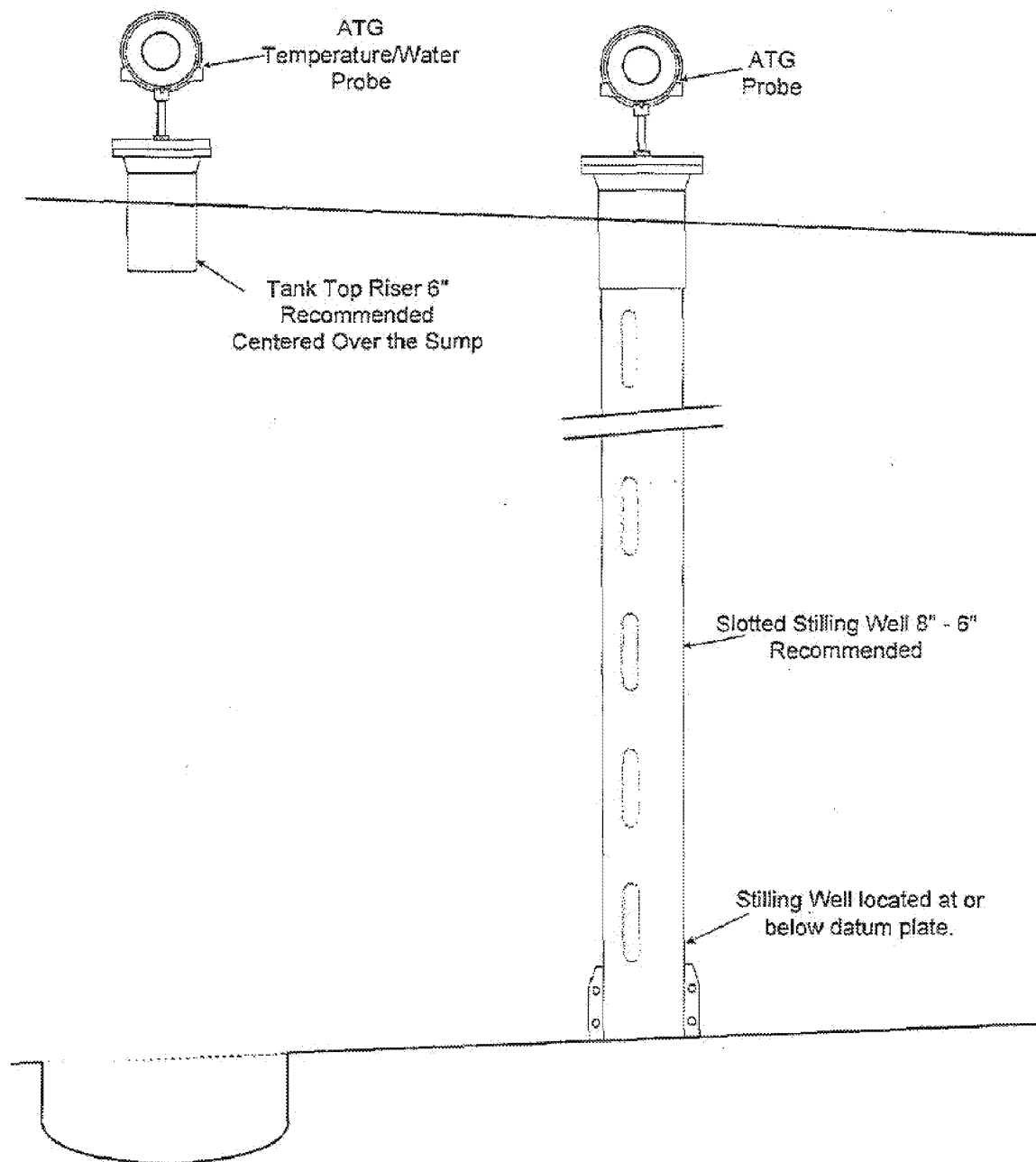
ATG System

- No Floating Pan
- Sump
- Multiple tank top penetrations Allowed

These drawings are for
GUIDANCE ONLY.

NOT TO SCALE.

Actual Design may vary.





Minimum Guidelines for ATG Stilling Wells Installation/Replacement

- Enraf System in tanks with a floating pan and multiple pan penetrations are allowed:
 - The Enraf 854 servo gauge may be placed anywhere on the tank at or below a point concentric with the datum plate. A stilling well of 8" is recommended.
 - The Vito temperature/water probe shall be placed over the sump, or the lowest feasible point in the tank. A stilling well is recommended for the Vito probe. If a stilling well is used it must be no larger than a 6" diameter slotted well (no smaller than a 2" slotted well) and end at least 24" from the bottom of the tank/sump floor.



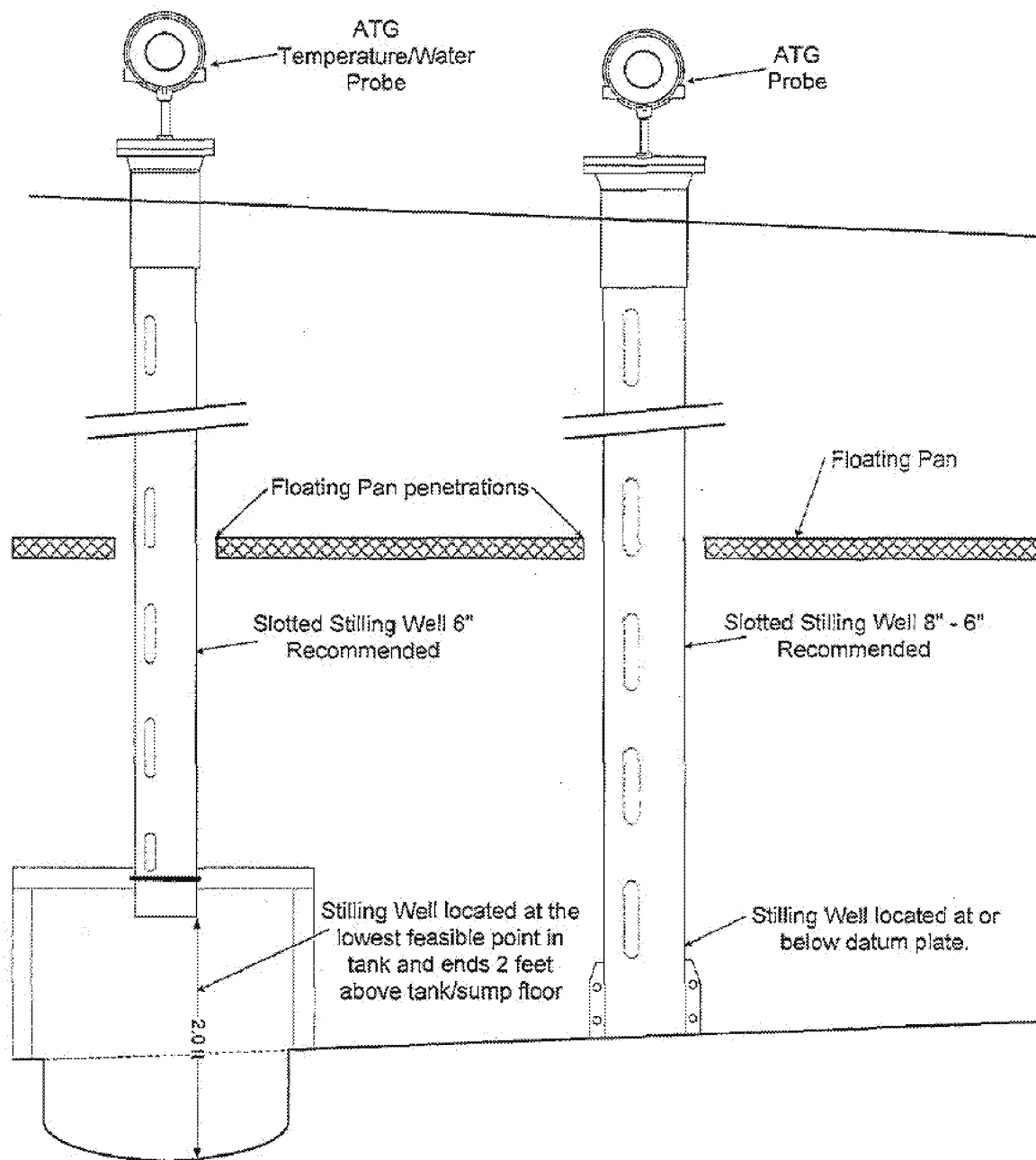
ATG System

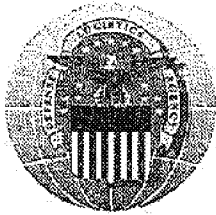
- Floating Pan
- Sump
- Multiple pan penetrations Allowed

These drawings are for
GUIDANCE ONLY.

NOT TO SCALE.

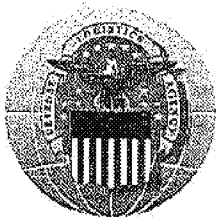
Actual Design may vary.





Minimum Guidelines for ATG Stilling Wells Installation/Replacement

- Enraf System in tanks with a floating pan and only ONE pan penetration is allowed:
 - The Enraf 854 servo gauge and Vito temperature/water probe shall be collocated in a 10" stilling well with a 2" inner well. The collocated stilling well shall be placed over the sump if feasible. If the stilling well cannot be placed over the sump, it shall be placed over the lowest feasible point in the tank. The collocated stilling well shall end 24" from the bottom of the tank floor.
 - THIS IS FOR SPECIFIC CONFIGURATIONS ONLY!!!



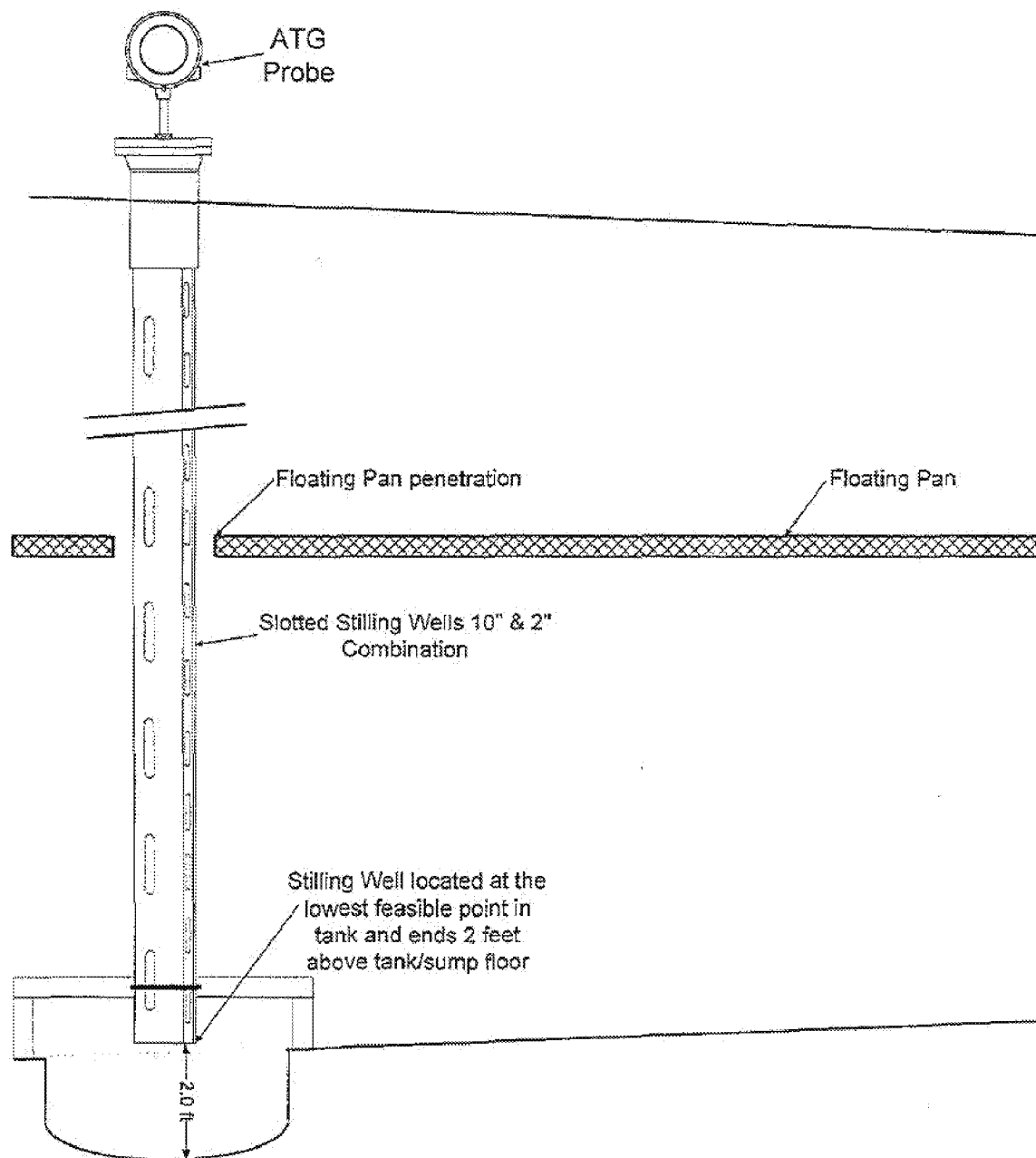
ATG System

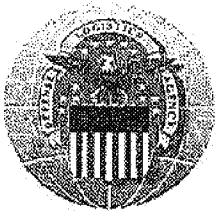
- Floating Pan
- Only One Penetration Allowed

These drawings are for
GUIDANCE ONLY.

NOT TO SCALE.

Actual Design may vary.





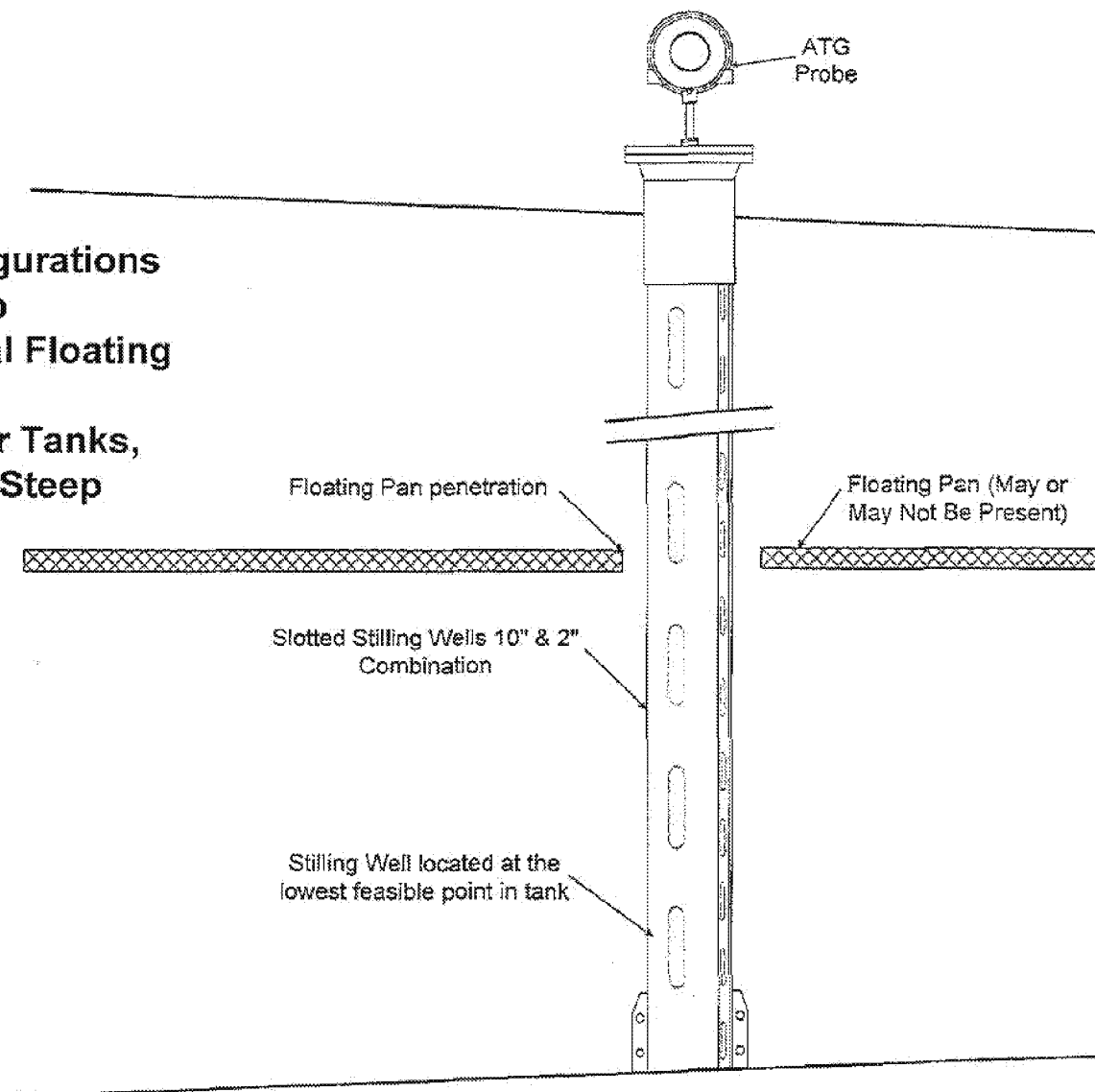
ATG System

- Only One Penetration Allowed
- Non-Standard Tank Roof Configurations
- Can Not Be Located Over Sump
- May or May Not Contain Internal Floating Pan
- Typical for Some Cut and Cover Tanks, Geodesic Domes, Snow Domes, Steep Incline Domes, etc.

These drawings are for
GUIDANCE ONLY.

NOT TO SCALE.

Actual Design may vary.





Minimum Guidelines for ATG Stilling Wells Installation/Replacement

- These are only recommendations for the installation of Enraf ATG systems.
- Good engineering practices should be used in determining if deviations from these recommendations are necessary.
- Any deviation from these configurations requires DESC-WI approval. (b) (6)
[REDACTED] for guidance.