

OWNER

T-101 Secondary Containment and SPCC Design Note

Design Note



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Project:



TORUS

, County,

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ISSUE SUMMARY AND APPROVAL

This page records each issue of CIV-RPT-003. The preparer, reviewer and approver sign for each revision.

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1. INTRODUCTION

1.1. PURPOSE

This note sets out the basis on which the [REDACTED] [REDACTED] is subject to the federal Spill Prevention, Control, and Countermeasure (SPCC) rule, 40 CFR Part 112, and records the design of the secondary containment, drainage, overfill protection and truck loading provisions for liquids tank T-101. It gives the Owner the design information needed to prepare and implement the facility SPCC Plan before the station begins operation.

1.2. SCOPE AND EXCLUSIONS

The note covers every container of oil at the station, the containment around T-101 and its truck hose connection, and the buried piping that carries liquids to the tank. It is not the SPCC Plan. The Plan itself, the determination of whether a discharge could reasonably be expected to reach waters of the United States, and any state requirements for the tank under [REDACTED] [REDACTED] or [REDACTED] Department of Environmental Quality rules are addressed in Volume 9, Regulatory. The structural design of the containment is in [REDACTED] STR-CAL-002, Foundation Design.

2. OIL STORAGE AND APPLICABILITY

TORUS listed every container at the station that holds oil or could be mistaken for one. Table 2-1 gives the result. Liquids drained from the filter separator and pig receiver are condensate and produced water; under 40 CFR 112.2 they are oil whatever their water fraction, so T-101 counts at its full shell capacity.

Table 2-1: Oil Containers at the Station

Container	Contents	Capacity, gal	Owner	Treatment
T-101 liquids tank	Condensate and produced liquids	4,242	Owner	Counts toward the Owner's aggregate
XF-101 pad-mount transformer	Mineral oil (oil-filled operational equipment)	95	Electric cooperative	Counts toward the utility's plan (HOLD H-10)
G-101 standby generator	Engine crankcase oil	4	Owner	Below 55 gal; excluded
SDV-101, SDV-102, SDV-103 actuators	Hydraulic oil, each	6	Owner	Below 55 gal; excluded
H-101 line heater bath	Water and ethylene glycol	-	Owner	Not oil; excluded

Note 1: Capacities other than T-101 are typical values pending vendor data (HOLD H-15).

The Owner's aggregate aboveground oil storage is 4,242 gal, all in T-101. This exceeds the 1,320 gal threshold of 40 CFR 112.1(d)(2)(ii), so the rule applies, subject to the Owner's determination that a discharge could reach navigable waters by way of the site drainage described in CIV-CAL-002, Hydrology and Drainage.

The station is expected to be a qualified facility under 40 CFR 112.3(g). Its aggregate capacity is below 10,000 gal, and as a new facility it has no reportable discharge history. Because no single container exceeds 5,000 gal (T-101 holds 4,242 gal), it qualifies as Tier I, and the Owner may self-certify a Plan prepared on the template of Appendix G to Part 112. If the final tank were larger than 5,000 gal, the station would become a Tier II facility; above 10,000 gal in aggregate, a Plan certified by a professional engineer would be required. The Plan must be prepared and implemented before operations begin.

3. T-101 CONTAINMENT AND SPILL PREVENTION

3.1. DESIGN CRITERION

40 CFR 112.8(c)(2) requires secondary containment for the entire capacity of the largest container plus sufficient freeboard for precipitation. The rule does not set the storm. TORUS sized the containment for 110 % of the tank shell capacity plus the 25-year, 24-hour rainfall falling on the containment, and added 6 in of freeboard. The 110 % figure is common industry practice and gives margin for a tank that may be filled to its shell height; the 25-year, 24-hour storm (6.33 in, from NOAA Atlas 14 as tabulated in CIV-CAL-002) is the storm the site drainage is designed for, so the containment and the drainage share one design event.

3.2. CONTAINMENT CAPACITY

Table 3-1 sets out the capacity check.

Table 3-1: T-101 Containment Capacity

Item	Value	Source
Containment inside plan	24 ft x 24 ft (576 ft ²), X 18 to 42 ft, Y 88 to 112 ft	MEC-DWG-001, Plot Plan
Tank	9 ft 6 in OD x 8 ft shell, 567 ft ³ (4,242 gal, 101 bbl)	MEC-DS-004, T-101 Liquids Tank
110 % of shell capacity	624 ft ³	Project criterion
25-year, 24-hour rainfall on the containment	6.33 in, 304 ft ³	CIV-CAL-002
Net liquid area, less the tank footprint	505 ft ²	Calculated
Required liquid height	1.84 ft	Calculated
Wall height above the slab	30 in, including 6 in freeboard	STR-CAL-002
Volume below the wall top	1,263 ft ³ (9,446 gal), 223 % of shell capacity	Calculated

The required height follows from $h = (1.10 V_{shell} + A P_{25}) / (A - A_{tank})$, which gives $(624 + 304) / 505 = 1.84$ ft. The 30 in wall therefore holds the full design spill and the design storm together. A larger tank of the same diameter could be accepted up to 4,804 gal of shell capacity before the wall would need to be raised.

3.3. CONSTRUCTION

The containment is a reinforced concrete slab with 8 in walls cast integrally, designed as liquid-retaining concrete to ACI 350. The reinforcement ratio and the low service stress in the walls control cracking, a PVC waterstop seals the wall-to-slab joint, and no pipe passes through a wall below its top.

All piping enters over the wall. The interior is lined with a chemical-resistant epoxy so that hydrocarbon cannot enter hairline shrinkage cracks before a spill is cleaned up. The slab falls 1/8 in per foot to a 24 in by 24 in by 12 in sump.

An empty tank in a flooded containment would float: the buoyancy with water at the wall top exceeds the tank weight by 8.8 kip. The tank is therefore held down by four anchor chairs, so that a storm cannot lift it off its connections. STR-DWG-005 (Appendix A) shows the containment.

3.4. DRAINAGE OF THE CONTAINMENT

Rainwater collects at the sump and drains through a 2 in ball valve of manual, open-and-closed design. The valve is kept closed and locked. Flapper valves and automatic drains are not permitted, because they could release oil without anyone seeing it (40 CFR 112.8(c)(3)). Before each release, the operator inspects the water for a sheen and releases only uncontaminated water onto the gravel pad, where it joins the pad's perimeter drainage. The operator then relocks the valve and records the date, volume, observation and name; the records are kept for three years. Water with any sheen is removed by vacuum truck. The drain discharge point is at least 10 ft from the containment and away from the truck stand.

3.5. TANK INTEGRITY AND OVERFILL PREVENTION

Table 3-2 lists the provisions for the tank itself and the piping that fills it.

Table 3-2: Tank and Transfer Piping Provisions

Element	Provision
Tank	API 12F welded steel, atmospheric, with pressure-vacuum relief valve PVRV-193, flame arrestor FA-193 and emergency vent EV-193. Set on a 4 in sand cushion so that the bottom edge can be inspected for leaks. Externally coated.
Level and overfill	Radar level transmitter LT-191 alarms high level to the control system. High-high level switch LSHH-192 closes the filter separator dump valve through the safety system and alarms, so the tank cannot be overfilled from the process.
Direct reading	A level gauge on the tank is visible from the truck stand.
Integrity testing	Inspected to STI SP001: a monthly visual inspection by the operator and a formal external inspection by a certified inspector at the interval SP001 sets for the tank's category.
Transfer piping	The liquid lines from the filter separator and pig receiver are buried, coated and cathodically protected, pressure tested before service, and inspected whenever exposed (40 CFR 112.8(d)).

3.6. TRUCK LOADING

A vacuum truck parks on the T-101 truck stand north of the containment and connects to a hose connection on the containment's north wall. This is a hose connection, not a loading rack, so the loading-rack requirements of 40 CFR 112.7(h) do not strictly apply. The design nevertheless follows their intent, as Table 3-3 shows. A curbed pad large enough to hold a failed truck compartment was

considered and rejected: a vacuum truck compartment holds about 5,000 gal, and a pad to contain it would take up most of the truck stand. The rule allows active measures for this case, and they are used here.

Table 3-3: Truck Loading Provisions

Element	Provision
Drip pad	Concrete pad 16 ft by 6 ft at the hose connection, with a 6 in mountable curb, sloped 1 % to a 12 in sump. It holds about 359 gal, enough for the hose drain-down and connection drips.
Truck compartment failure	Active measures under 40 CFR 112.7(c): a spill kit with 100 gal of absorbent capacity in a marked cabinet at the stand, drain-inlet covers, and an attendant present throughout the transfer.
Premature departure	Wheel chocks and a warning sign at the connection. The hose is disconnected and capped before the truck moves.
Inspection	The truck's lowest drain and outlets are checked for leaks before filling and before departure.
Protection	Bollards along the west face and at the north corners protect the containment from vehicles.

3.7. OTHER PLAN PROVISIONS

The Owner's Plan will also need to address inspections and records (monthly visual inspection of the tank, containment, valves and truck stand, with records kept three years), annual discharge-prevention briefings for operating personnel and a named person accountable for discharge prevention, security (the station is fenced with locked gates and lit, and the containment drain valve is locked), the transformer as oil-filled operational equipment under the utility's own program, the discharge reporting thresholds of 40 CFR 112.4, and the five-year Plan review of 40 CFR 112.5.

4. SUMMARY AND CONCLUSIONS

TORUS concludes that:

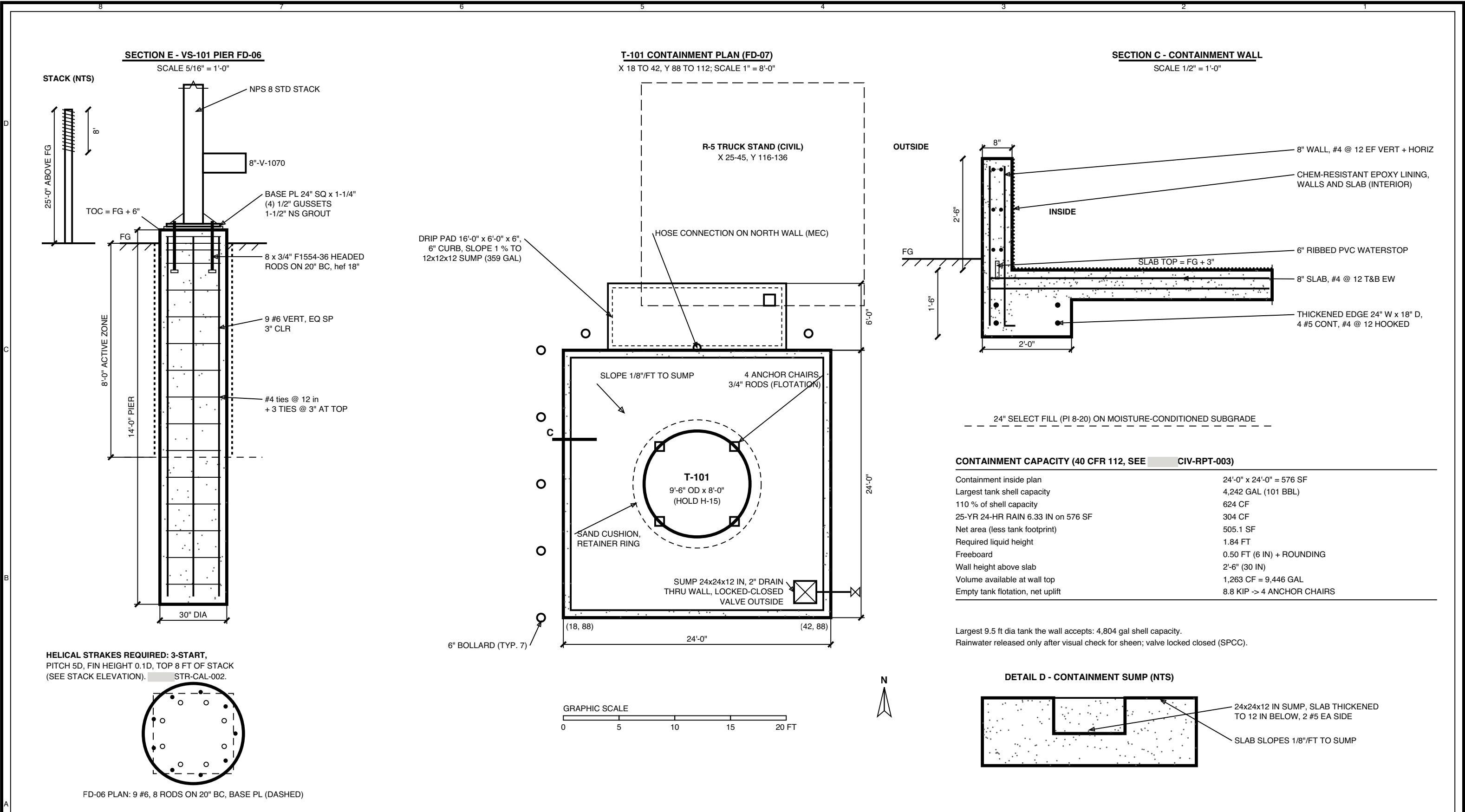
1. The station is subject to 40 CFR Part 112, with 4,242 gal of Owner oil storage against the 1,320 gal threshold, and is expected to be a Tier I qualified facility.
2. The T-101 containment, 24 ft by 24 ft with a 30 in wall, holds 9,446 gal, which covers 110 % of the tank shell capacity plus the 25-year, 24-hour storm with 6 in of freeboard.
3. Rainwater shall be released only through the locked manual drain valve after inspection, with records kept.
4. Overfill is prevented by the high and high-high level instruments, and the tank shall be anchored against flotation.

The next step is for the Owner to prepare and implement the SPCC Plan before start-up. Open items: the final tank capacity from the vendor (HOLD H-15), transformer ownership and oil volume (HOLD H-10), and the site rainfall at the surveyed coordinates.



APPENDIX A. T-101 CONTAINMENT DETAILS





NOTES / REFERENCES

- f'c = 4,000 PSI, W2 EXPOSURE (CONTAINMENT); A615 GR 60; 2 IN CLEAR FORMED, 3 IN AGAINST EARTH.
 - NO JOINTS IN 24 FT CONTAINMENT; WALL-SLAB COLD JOINT WITH PVC WATERSTOP. HYDRO-TEST 24 H.
 - CONTAINMENT AT X 18-42, Y 88-112. TANK 9'-6" x 8'-0" (HOLD H-15).
 - VS-101: HELICAL STRAKES TOP 8 FT REQUIRED. PIER 8 FT BOND BREAKER AT TOP.
 - LOADOUT FROM R-5 TRUCK STAND; HOSE CONNECTION ON NORTH WALL OVER DRIP PAD.
- REF: STR-CAL-002; CIV-RPT-003; STR-DWG-001

REVISIONS

REV	DATE	DESCRIPTION	BY	CHK	APP
A	2026-09-29	ISSUED FOR REVIEW (IFR)			

PRELIMINARY - ISSUED FOR REVIEW - NOT FOR CONSTRUCTION

ENGINEER OF RECORD SEAL

NOT SEALED
PRELIMINARY

PE NO. _____

PROJECT

120 MMSCFD RECEIPT INTO _____

COUNTY, _____
DISCIPLINE: STRUCTURAL
SCALE: AS NOTED

VS-101 AND T-101 CONTAINMENT

PIER, CONTAINMENT PLAN, SECTIONS
DRAWN: _____ CHECKED: _____ APPROVED: _____
DWG NO. _____
STR-DWG-005
SHEET 1 OF 1 REV A