STI's SP001 Tank Record

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STI's AST Record Overview

STI's AST Record is an essential item of the SP001 Standard, the leading industry standard for the inspection of shop-fabricated tanks

Under SP001, the AST Record is a responsibility of the owner, but can (and should) be used by SPCC Plan writers for sites using the SP001 Standard

Because few owners know much about the SP001 Standard, the SPCC Plan writer is in an ideal position to create this for the owner during Plan development.

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STI's AST Record Overview

Recall that Professional Engineers (PEs) and SPCC Plan writers have the following obligation:

40CFR112.3(d) By means of this certification the Professional Engineer attests:

(i) That he is familiar with the requirements of this part;

(ii) That he or his agent has visited and examined the facility;

(iii) That the Plan has been prepared in accordance with good engineering practice, including consideration of ***applicable industry standards****, and with the requirements of this part;*

(iv) That procedures for required inspections and testing have been established; and

(v) That the Plan is adequate for the facility.

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STI's AST Record Overview

The AST Record documents the SPCC Plan writer's rationale and basis for a) determining the tank category—and how this determination was made, b) documenting the initial service date of the tank, which sets the timeline for a formal inspections, if required, and c) provides the owner a reference document that supports the work conducted under the SP001 Standard.

It is recommended that the AST Record be included as an appendix in the SPCC Plan, or otherwise be accessible; these are to be reviewed during a SP001 Certified Inspection.

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STI's AST Record Overview

The AST record is used for stationary ASTs—it's not used for portable containers like drums and totes; these are inspected to the portable container checklist.

The AST record does not apply to stationary tanks not covered by the SP001 Standard, such as those of riveted construction, bolted tanks, fiberglass or polyethylene tanks, or others of non-steel construction.

The AST record does not apply to oil filled operating equipment, nor does it apply to oil filled electrical or manufacturing equipment. These aren't considered bulk storage containers under the SPCC regulation.

The STI AST Record is not used for tanks to be inspected under API 653.

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STI SP001 AST Record

Form completed by (Name) _____ Date _____

(Title) _____

OWNER INFORMATION	FACILITY INFORMATION	INSTALLER INFORMATION
Name	Name	Name
Number and Street	Number and Street	Number and Street
City, State, Zip Code	City, State, Zip Code	City, State, Zip Code
	Regulatory facility ID number (if applicable)	

OWNER'S TANK ID	OTHER ID	INITIAL SERVICE DATE
Manufacturer:	Contents:	Construction Date: / Last Repair/Reconstruction Date:
Dimensions:	Capacity:	Last Change of Product Date:
Design: ☐ UL _____ ☐ Horizontal	☐ SwRI _____ ☐ Vertical	☐ API _____ ☐ Other _____ ☐ Unknown ☐ Rectangular
Construction: ☐ Bare Steel ☐ Coated Steel ☐ Double-Bottom	☐ Cathodically Protected (Check one: A. ☐ Galvanic or B. ☐ Impressed Current) Date Installed: _____ ☐ Concrete encased steel ☐ Double-Wall	☐ Stainless steel ☐ Other _____ ☐ Lined inside; Date lining installed: _____
Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete ☐ None ☐ Other _____		CRDM: ☐ yes ☐ no If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank ☐ Double wall tank ☐ CE-AST ☐ other _____
Tank elevated on supports ☐ yes ☐ no Support material: ☐ steel ☐ concrete ☐ other _____		
Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____ If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____		AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

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STI SP001 AST Record

Form completed by (Name) _____ Date _____

(Title) _____

OWNER INFORMATION	FACILITY INFORMATION	INSTALLER INFORMATION
Name	Name	Name
Number and Street	Number and Street	Number and Street
City, State, Zip Code	City, State, Zip Code	City, State, Zip Code
	Regulatory facility ID number (if applicable)	

This part of the AST Record Form is easy—but sometimes the installer isn't known. This would be a question to ask your client. If you don't know the installer, or can't find this information, mark this "unknown"

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STI's AST Record

OWNER'S TANK ID	OTHER ID	INITIAL SERVICE DATE

Manufacturer:	Contents:	Construction Date:	Last Repair/Reconstruction Date:
Dimensions:	Capacity:	Last Change of Product Date:	
Design: ☐ UL _____ ☐ Horizontal	☐ SwRI _____ ☐ Vertical	☐ API _____ ☐ Other _____ ☐ Rectangular	☐ Unknown

OWNERS TANK ID: How the owner identifies the tank, or the name of the tank.

OTHER ID: Other IDs used by the facility to identify tank, if any.

INITIAL SERVICE DATE: The date on which liquid was originally placed in the AST, regardless of the ASTs current location and/or ownership. If the initial service date is not known (e.g., rented, or repurposed AST), the owner is responsible for documenting this using nameplates, as built drawings, inspection records, due diligence reports, permits, etc.

This field is particularly important as it sets the inspection clock

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STI's AST Record

OWNER'S TANK ID	OTHER ID		INITIAL SERVICE DATE
Manufacturer:	Contents:	Construction Date:	Last Repair/Reconstruction Date:
Dimensions:	Capacity:	Last Change of Product Date:	
Design: ☐ UL _____	☐ SwRI _____	☐ API _____ ☐ Other _____	☐ Unknown
☐ Horizontal	☐ Vertical	☐ Rectangular	

MANUFACTURER: Who fabricated the tank—the tank placard should have this, or could be a label. In some cases it may not be known.
CONTENTS: What the tank is storing
CONSTRUCTION DATE: The fabrication date, hopefully found on a placard or label. The construction date is prior to the service date.
LAST REPAIR/RECONSTRUCTION DATE: For most facilities, this will not apply, unless repairs have been performed on the tank itself. Reconstruction is more common on single-walled tanks; an example might be a tank bottom replacement

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STI's AST Record

OWNER'S TANK ID	OTHER ID		INITIAL SERVICE DATE
Manufacturer:	Contents:	Construction Date:	Last Repair/Reconstruction Date:
Dimensions:	Capacity:	Last Change of Product Date:	
Design: ☐ UL _____	☐ SwRI _____	☐ API _____ ☐ Other _____	☐ Unknown
☐ Horizontal	☐ Vertical	☐ Rectangular	

DIMENSIONS: Bring a tape measure or other way to get the length and diameter (for cylindrical tanks), or length, width, and height of a rectangular tank
CAPACITY: How much the tank holds, the entire shell capacity—not how full you fill it.
LAST CHANGE OF PRODUCT DATE: This would be more commonly apply tanks that saw a substantial change in product service, such as switching from gasoline to diesel. Owner should provide this info.

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STI's AST Record

OWNER'S TANK ID		OTHER ID		INITIAL SERVICE DATE
Manufacturer:	Contents:	Construction Date:		Last Repair/Reconstruction Date:
Dimensions:	Capacity:	Last Change of Product Date:		
Design: ☐ UL _____	☐ SwRI _____	☐ API _____	☐ Other _____	☐ Unknown
☐ Horizontal	☐ Vertical	☐ Rectangular		

DESIGN: This requires some experience and knowledge about tank designs. Look closely for placards on tanks as this is normally where more clues can be found about the design.

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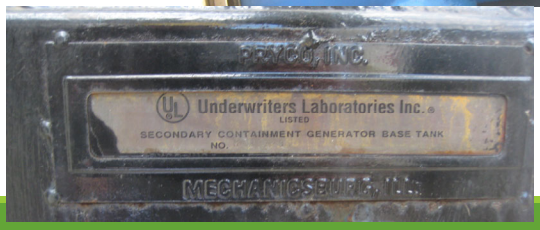
Identifying Tank Designs

UL 142: "Steel Aboveground Tanks for Flammable and Combustible Liquids" Scope: Covers steel welded horizontal, vertical, and rectangular tanks, including single and double walled designs. Shop-fabricated tanks, designed only for stationary service. First published 1922.



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Identifying Tank Designs

UL 2085: "Protected Aboveground Tanks for Flammable and Combustible Liquids" Scope: Covers atmospheric tanks with secondary containment and an insulation system intended to reduce heat transferred to the primary tank when exterior is exposed to a hydrocarbon pool fire, and provided with protection from physical damage. Shop-fabricated tanks, designed only for stationary service. First published December 1994

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Identifying Tank Designs

UL 80: "Standard for Steel Tanks for Oil-Burner Fuels and Other Combustible Liquids" Scope: Covers steel welded (cylindrical, rectangular, and obround) in horizontal or vertical orientation intended primarily for storage and supply of oil burning equipment, or alternatively storage of diesel fuels for compression ignition engines and motor oils (new and used) for automotive service stations, in aboveground applications. Include steel primary, steel secondary and steel diked type designs. Shop-fabricated tanks, designed only for stationary service, 60-660 gallons. First published 1927.

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Identifying Tank Designs

UL 2258: "UL Standard for Safety for Aboveground Nonmetallic Tanks for Fuel Oil and Other Combustible Liquids" Scope: Covers nonmetallic or composite primary tanks, secondary tanks, and open or closed secondary containments from 60-660 gallons (cylindrical, rectangular, and obround) in horizontal or vertical orientation intended primarily for storage and supply of heating fuel for oil burning equipment, or alternatively storage of diesel fuels for compression ignition engines and motor oils (new and used) for automotive service stations, in aboveground applications. Shop-fabricated tanks, designed only for stationary service. First published May 2018

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Identifying Tank Designs

Unacceptable Underwriters Labs UL Tanks:

UL 58: "Standard for Steel Underground Tanks for Flammable and Combustible Liquids" Scope: Covers steel welded for UNDERGROUND USE ONLY (also known as "buried" tanks). Horizontal cylindrical shop fabricated tanks only.

These tanks are not suitable for aboveground use and prohibited in the Fire Code for use aboveground and are not be used for storing liquids regulated by SPCC or APSA.

These tanks lack suitable emergency venting and were designed originally to rely upon the tank backfill materials for support; these now pose unacceptable safety risks if used aboveground.

These can be difficult to conclusively identify in the field without some experience and training. If you encounter or suspect tanks of this design are being used aboveground, you should contact a tank engineer or qualified STI inspector.

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Identifying Tank Designs

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Identifying Tank Designs

Southwest Research Institute listing program tanks:

SwRI 93-01 (2 hr fire rated), or SwRI 95-03 (4 hr fire rated): SwRI provides a listing service for these tank designs. One of the most commonly encountered in CA is the Supervault, which can be provided in rectangular and cylindrical designs

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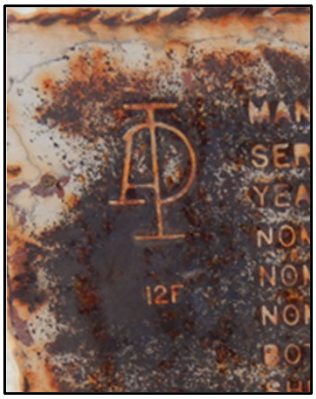
Identifying Tank Designs

American Petroleum Institute (API) Designs

API 12F: "Specification for Shop-Welded Tanks for Storage of Production Liquids" Scope: Vertical cylindrical shop fabricated tanks only. Common in oil field applications, but occasionally found elsewhere. Have characteristic cleanout manways, but designs can vary.



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Identifying Tank Designs

American Petroleum Institute (API) Designs

API 650 Appendix J: "Shop- Assembled Storage Tanks" Scope: Vertical cylindrical shop fabricated tanks. Maximum diameter 20 feet.

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Identifying Tank Designs

Unknown Construction:

Occasionally tanks of unknown construction are found during SPCC Plan development

Photo courtesy Max Wagner

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Tank Geometry

OWNER'S TANK ID		OTHER ID		INITIAL SERVICE DATE
Manufacturer:	Contents:	Construction Date:		Last Repair/Reconstruction Date:
Dimensions:	Capacity:	Last Change of Product Date:		
Design: ☐ UL	☐ SwRI	☐ API	☐ Other	☐ Unknown
☐ Horizontal	☐ Vertical	☐ Rectangular		

Horizontal: cylindrical tank with long dimension arranged horizontally
Vertical: cylindrical tank with long dimension arranged vertically
Rectangular: pretty self explanatory, but would include square tanks.

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Tank Construction

Construction: ☐ Bare Steel ☐ Coated Steel ☐ Double-Bottom ☐ Cathodically Protected (Check one: A. ☐ Galvanic or B. ☐ Impressed Current) Date Installed: _____
☐ Concrete encased steel ☐ Stainless steel ☐ Other _____
☐ Double-Wall ☐ Lined inside; Date lining installed: _____

- **Bare steel** tanks are uncommon, and would be subject to corrosion almost immediately. Most fabrication standards require at least a primer coat prior to shipping
- **Coated steel** tanks are the most common, typically consisting of a primer coat and exterior paint coat
- **Double-bottom tanks** are typically vertical cylindrical tanks with a second bottom below the primary tank, that should have a location where the space between the bottoms could be checked or monitored. These aren't particularly common in the shop-fabricated tank world, but are found in some field erected tanks.

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Tank Construction

Construction: ☐ Bare Steel ☐ Coated Steel ☐ Double-Bottom ☐ Cathodically Protected (Check one: A. ☐ Galvanic or B. ☐ Impressed Current) Date Installed: _____
☐ Concrete encased steel ☐ Stainless steel ☐ Other _____
☐ Double-Wall ☐ Lined inside; Date lining installed: _____

- **Double wall** tanks are those found of steel over steel design, typically built to UL 142 or UL 2085
- **Concrete encased steel** tanks are those now referred to in the SP001 Standard as Concrete Exterior tanks.
- **Stainless steel** tanks are those fabricated of stainless steel. While typically more expensive, some applications require stainless steel for various reasons.
- **Other:** this applies to other construction designs, which are not as commonly encountered.
- **Cathodic protection** is needed primarily on vertical tanks with bottom plates in contact with soil, sand or other similar materials. Tanks on a continuous concrete pad do not use cathodic protection, as these tanks are already protected by not being in direct contact with soil
- **Galvanic** cathodically protected tanks use passive sacrificial anodes and would not have an associated power supply for the CP system
- **Impressed current** cathodic protection methods also use anodes, but require power to operate. These systems will have a rectifier and output panel associated with the system.
- **Lined inside:** Some tanks may have protective linings, such as epoxy coatings or similar materials.

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SP001 AST Record-Tank Classification

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete ☐ None ☐ Other _____	CRDM: ☐ yes ☐ no If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank ☐ Double wall tank ☐ CE-AST ☐ other _____
Tank elevated on supports ☐ yes ☐ no Support material: ☐ steel ☐ concrete ☐ other _____	
Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____ If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____	AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

SPILL CONTROL – A means of preventing a release of liquid to the environment, including adjoining property and waterways. Spill control methods include:

- Remote impounding
- Secondary containment system
- Secondary containment dike/berm
- Open top steel diked AST
- Closed top steel diked AST with overfill prevention
- Double-wall AST with overfill prevention
- CE-AST with overfill prevention

A tank insulation system or insulating jacket does not constitute spill control.

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SP001 AST Record-Tank Classification

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete ☐ None ☐ Other _____	CRDM: ☐ yes ☐ no If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank ☐ Double wall tank ☐ CE-AST ☐ other _____
Tank elevated on supports ☐ yes ☐ no Support material: ☐ steel ☐ concrete ☐ other _____	
Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____ If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____	AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

TANK SUPPORTS – Structures designed to elevate an AST above the ground. These include saddles, skids, beams, legs, and similar structures.

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SP001 AST Record-Tank Classification

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete ☐ None ☐ Other _____	CRDM: ☐ yes ☐ no If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank ☐ Double wall tank ☐ CE-AST ☐ other _____
Tank elevated on supports ☐ yes ☐ no Support material: ☐ steel ☐ concrete ☐ other _____	
Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____ If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____	AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

RELEASE PREVENTION BARRIER (RPB) – A liquid containment barrier that is installed under the AST. Its purpose is to divert leaks toward the perimeter of the AST where they can be easily detected, as well as to prevent liquid from contaminating the environment. RPBs are composed of materials compatible with the liquid stored in the AST and meet appropriate engineering standards. Examples are steel (as in steel double-bottom tanks), concrete, elastomeric liners, or other suitable materials, provided the above criteria are met.

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SP001 AST Record-Tank Classification

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete ☐ None ☐ Other _____	CRDM: ☐ yes ☐ no If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank ☐ Double wall tank ☐ CE-AST ☐ other _____
Tank elevated on supports ☐ yes ☐ no Support material: ☐ steel ☐ concrete ☐ other _____	
Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____ If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____	AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

CONTINUOUS RELEASE DETECTION METHOD (CRDM) – A means of detecting a release of liquid through inherent design. CRDM is passive because it does not require sensors or power to operate. Liquid releases are visually detected by facility operators. The system shall be designed in accordance with good engineering practice. Several acceptable and commonly used CRDM systems are:

- Release prevention barrier (RPB)
- Double-wall AST or double-bottom AST
- Elevated AST, with or without release prevention barrier
- Steel diked AST, open or closed top
- Concrete exterior AST (CE-AST) with an integral secondary containment and interstitial monitoring opening

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SP001 AST Record-Tank Classification

Spill control: ☐ Earthen Dike ☐ Steel Dike ☐ Concrete ☐ None ☐ Other _____	CRDM: ☐ yes ☐ no If yes, type: ☐ Release Prevention Barrier ☐ Elevated tank ☐ Double bottom tank ☐ Double wall tank ☐ CE-AST ☐ other _____
Tank elevated on supports ☐ yes ☐ no Support material: ☐ steel ☐ concrete ☐ other _____	
Release Prevention Barrier: ☐ yes ☐ no If yes, Date Installed: _____ If yes, Type: ☐ concrete ☐ synthetic liner ☐ clay liner ☐ steel ☐ other _____	AST Category: ☐ Category 1 ☐ Category 2 ☐ Category 3

Category 1 - ASTs with spill control and CRDM.

Category 2 - ASTs with spill control, and without CRDM

Category 3 - ASTs without spill control (note Category 3 ASTs may not meet regulatory requirements)

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