



UPDATE

Revised SPCC Rule – 40CFR112 (Spill Prevention, Control and Countermeasures)

ConVault AST owners should be aware of an apparent increase in the number of fines being reported for failure to properly prepare and implement an SPCC plan. They should also be aware of the changes currently being interpreted and placed into effect.

Applicability:

Most aboveground storage tank (ASTs) facilities are subject to the SPCC rule if the facility has the capacity to store more than 1,320 gallons of fuel.

The SPCC Final Rule is 112 pages long (including comments) and is complicated reading. However, a short 8-page explanation brochure can be downloaded from the EPA website at:
<http://www.epa.gov/oilspill/pdfs/spccbluebroch2002.pdf>.

Recent History:

On July 17th, 2002, EPA issued a final rule amending the Oil Pollution Prevention regulation. This rule addresses requirements for SPCC Plans and some provisions may also affect Facility Response Plans (FRPs).

The SPCC requirements were originally promulgated on December 11, 1973 and EPA has proposed revisions to the SPCC rule on three occasions, in 1991, 1993, and 1997. The new SPCC rule addresses these proposed revisions and became effective August 16, 2002. The Agency subsequently extended the compliance deadline for revision and professional engineer (PE) certification of SPCC plans to August 17, 2004. The Plans must be implemented by February 18, 2005.

On March 31, 2004 EPA held a public meeting with the regulatory community and interested stakeholders explaining the results of the settlement agreements from two lawsuits (API vs. EPA and PMAA vs. EPA in re: the July 2002 rule) and to explain Agency efforts to clarify

the regulations and facilitate compliance. More information and documents from the March 31, 2004 SPCC Stakeholder Meeting are currently available online at <http://www.epa.gov/oilspill/index.htm>. Alternately, the following documents are currently directly available online:

- [SPCC Stakeholder Meeting Cover Page \(PDF, 314K\)](http://www.epa.gov/oilspill/pdfs/SPCCMtgCover.pdf)
- [Meeting Agenda \(PDF, 6K\)](http://www.epa.gov/oilspill/pdfs/SPCCMtgAgenda.pdf)
- [Settlement Agreement \(PDF, 2.9M\)](http://www.epa.gov/oilspill/pdfs/SettlementAgreement.pdf)
- [SPCC Settlement Issues Presentation \(PDF, 2M\)](http://www.epa.gov/oilspill/pdfs/SettlementAgreement.pdf)
- <http://www.epa.gov/oilspill/pdfs/SPCCFinalSettlementPres.pdf>

Highlights of Final Rule:

- Exempts completely buried storage tanks subject to all of the technical requirements of the UST regulations (40 CFR Parts 280 or 281);
- Exempts portions of certain facilities or any facility used exclusively for wastewater treatment;
- Establishes a de minimis container size of 55 gallons;
- Establishes an aboveground storage capacity threshold of greater than 1,320 gallons and removes the 660 gallon threshold;
- Revises the trigger for submitting information on spills at SPCC regulated facilities to EPA. Facilities are now required to submit information after having 2 discharges (over 42 gallons) in any 12-month period or a single discharge of more than 1,000 gallons;
- Allows deviations from most rule provisions (with the exception of secondary containment requirements) when equivalent environmental protection is provided;
- Provides for a flexible plan format, but requires a cross-reference showing that all regulatory requirements are met; and
- Clarifies rule applicability to the storage and operational use of oil.

The SPCC Final Rule can be found in Title 40 of the Code of Federal Regulations (CFR), Part 112 (Oil Pollution Prevention).

A copy can be downloaded from the EPA website at <http://www.epa.gov/oilspill/lawsregs.htm#spcc> and a version with bookmarks included for easier use is available at <http://www.convault.com/40cfr112wb.pdf>.

Concerns:

Although the EPA expects the 2002 rule to reduce the number of sites meeting the threshold by about 55,000, and reduce the regulatory burden by approximately 40 percent, there were still several concerns. These included integrity testing, loading rack containment, bulk plant security and the definition of impracticality. Of these concerns, the main two that concern ConVault aboveground storage tank (AST) owners are:

1. The requirement for integrity testing on a regular basis in section 112.8(c)(6); and
2. The interpretation of section 112.7(h). This section appeared to require containment systems for the delivery truck that brings fuel to the AST.

Both of these concerns were addressed in the March 31, 2004 meeting when EPA discussed the PMAA/EPA settlement agreement.

Conclusions:

1. EPA will allow a visual inspection to qualify as an "equivalent environmental inspection" as long as:
 - a. The shop-fabricated AST is 30,000 gallons or less,
 - b. Is elevated in a manner that decreases corrosion (as compared to a container in contact with soil), and
 - c. All sides of the container, including the bottom, are visible during inspection.

EPA intends to develop guidance in the near future on appropriate visual inspection of shop-built containers. ConVault has prepared a memo stating that ConVault does not recommend integrity testing. The PE can use this memo in his documentation when preparing the SPCC plan.

2. EPA has confirmed that the loading and unloading area containment requirements only apply to facilities with loading racks and not to ASTs at other locations.

More information about the new rule is available at: <http://www.epa.gov/oilspill/spccrule.htm>.

WHAT IS THE "FLAMESHIELD STANDARD"?

By John Ekhtiar, VP Engineering

I have been getting calls from our sales organizations asking questions such as "What is the Flame Shield Standard?" "Do our tanks meet the standard?" and similar questions. It appears their clients and the Authorities Having Jurisdiction (AHJ) have been asking the same kinds of questions. The reason they are asking these questions is that the specifying engineers and contractors are requiring that the tanks meet the "Flame Shield Standard".

I thought it would be helpful to members of the ConVault Network, the AHJs, the specifying engineers and customers to write and explain what the "Flame Shield Standard" is, and explain which fire codes accept this standard.

FlameShield

The short answer is that "FlameShield" is not a manufacturing standard, or a testing standard, but rather a trademark used by manufacturers for marketing a non-insulated doublewall steel tank that was originally listed by Southwest Research Institute (SwRI) as a "fire resistant" tank under SwRI 97-04.

None of the current national model fire codes such as National Fire Protection Association (NFPA 1 UFC, NFPA 30 & 30A), Uniform Fire Code (UFC) and International Fire Code (IFC) make any reference to SwRI 97-04. So, where did this standard come from, how was it developed and why do some specifying engineers make reference to it, requiring ASTs to meet this standard's requirements?

The following is a review of some standards for shop fabricated ASTs, current national model fire codes' requirements and which standards meet them.

U.L. 2080 Fire Resistant Tank

In the **2003** editions, NFPA 30 and 30A recognize the UL 2080 Standard as a standard for Fire Resistant tanks. (See sections 4.2.3.1.1(1) in NFPA 30 and sections 3.3.15.2, 4.3.4 and D.1.2.5 in NFPA 30A.) However, when defining Fire Resistant tanks, the **2000** editions of NFPA 30, section 1.6.43.3 and NFPA 30A, section 3.1.19.2 (and prior editions) specified only that Fire-Resistive tanks provide “fire-resistive protection from exposure to a high intensity liquid pool fire”. The codes did not specifically determine the testing requirements and the temperature criteria needed for the fire test to meet the intent of the code. The NFPA code writers left it to the standards developing organizations such as Underwriters Laboratories (UL) to design a standard to satisfy the code’s intentions. In 1997, UL developed the UL 2080 Standard for Fire Resistant tanks to meet the code intent. Among other requirements, UL 2080 Standard for Fire Resistant tanks specifies that the tanks must be tested in a 2000 °F furnace for two hours. The temperature pass/fail criteria for the primary tank after 2 hours of fire test are:

1. The average maximum temperature rise recorded on the primary tank shall not exceed 800 °F and
2. The maximum temperature of any single thermocouple on the tank shall not exceed 1000 °F.

Even though the 2080 Standard for Fire Resistant tanks is inferior to UL 2085 (see criteria below), at least it has some temperature rise limitations and has the option for listing for resistance against vehicle and ballistic impacts.

SwRI 97-04 Fire Resistant Tank

Southwest Research Institute (SwRI) responded to the NFPA needs for a fire resistant tank by developing its SwRI 97-04 Standard for Fire Resistant tanks. Although the standard requires a two-hour fire test in a 2000 °F furnace, it has **no** temperature rise limitation criteria. It allows the tank to pass the test if the tank itself survives the fire for two hours without falling apart. You may wonder what effect the red-hot tank will have on the product, but the question is not addressed in the criteria.

Another problem that intensifies the deficiency of SwRI 97-04 is the way the fire codes determine the size of a tank to be fire tested. The fire test requires the size of tank to be tested to have the maximum ratio of tank surface area to tank volume. It so happens that the smallest size tank gives the highest surface area to volume ratio. Therefore, the smallest size tank gets

tested. If the tank with the largest span between tank supports were to be tested, one wonders if it would buckle between the legs due to high temperatures and weakened steel. Furthermore, the tanks are tested empty, so there is no product load/weight to stress the tank during the fire test.

The name FlameShield became synonymous with the SwRI 97-04 Standard because it was originally manufactured under that listing, and was heavily marketed. However, according to documents on the SwRI website, only two products currently reference 97-04 on their SwRI label: SuperVault MH Tank/Pyrotector, and Pyrotector of Mexico. Tanks labeled FlameShield only state that the tank has been “built in accordance with UL 142 (1994) and complies with the requirements of Sections 2-4.5(a) of NFPA 30A, **1996** edition as a Fire Resistant Tank.” However, NFPA 30A, **2003** edition (Section 3.3.15.2) defines a Fire Resistant Tank as a tank “...which is listed in accordance with the provisions contained in UL 2080, *Standard for Fire Resistant Tanks for Flammable and Combustible Liquids*, or an equivalent standard”. SwRI 97-04 does not appear to be an equivalent standard, mainly because it does not contain temperature criteria, as does UL 2080. Nor does FlameShield appear to meet the definition of Fire Resistant Tank according to the **2003** edition of NFPA 30A.

UL 2085 Protected Aboveground Storage Tank

Compare the SwRI 97-04 Standard and FlameShield with the UL 2085 Standard for Protected Aboveground Tanks. Among other requirements, UL 2085 specifies that the tanks must be tested in a 2000 °F furnace for two hours. The temperature pass/fail criteria for the primary tank after 2 hours of fire test are:

1. The average maximum temperature rise recorded on the primary tank shall not exceed 260 °F and
2. The maximum temperature of any single thermocouple on the tank shall not exceed 400 °F.

The 400 °F temperature limit is based on the auto ignition temperature of Heptane. Heptane is one of the lightest petroleum product components in gasoline. The UL 2085 Standard limits the temperature of the tank after exposure to the 2-hour fire test so that the tank contents should not reach a point to automatically ignite the gasoline component in the tank.

The UL 2085 Standard also provides criteria for resistance against vehicle impact, ballistic impact and fire hose

impact. It should be noted that UL 2085 is based on criteria designed to both prevent explosion inside the tank due to temperature rise and provide resistance against many kinds of external physical impacts.

UL 2085 Standard for protected aboveground tanks is the most stringent standard for shop-fabricated atmospheric ASTs. Tanks meeting the requirements of UL 2085 also meet the requirements of UL 2080 and UL 142. The preferred listing by all current national model fire codes is UL 2085. The Uniform Fire Code was the code that originally established the criteria for the protected aboveground tanks in its Appendix A-II-F-1, UFC Standard (79-7). Underwriters Laboratories designed the UL 2085 Standard to meet the UFC requirements. Once the

standard was established, other fire codes such as the IFC and NFPA in its NFPA 30 & 30A codes made reference to UL 2085 and required the tanks to meet the standard. NFPA 30, 2003 edition specifically refers to UL 2085 in sections 3.3.41.1.1 and 4.2.3.1.1(1). NFPA 30A, 2003 edition refers to UL 2085 in sections 2.3.3, 3.3.15.4 and 4.3.5. There is no mention or any reference to SwRI Standard 97-04 in any of the current model fire codes.

ConVault tanks are listed under UL 2085 Standard and meet or exceed all protected aboveground tank requirements.

For a better understanding of these standards, please see the following comparison table.

COMPARISON CHART UL 2085, UL 2080 & SwRI 97-04 STANDARDS

Test requirements	ConVault	UL 2085 Protected, Insulated & Fire Resistant	UL 2080 Insulated & Fire Resistant	SwRI 97-04 Fire Resistant
Full Scale 2000 °F Fire Test				
-Test duration	2-hour	2-hour	2-hour	2-hour
-Maximum average temperature rise of the tank	Less than 260 °F	260 °F	800 °F	No Criteria
-Maximum individual single point thermocouple temperature	Less than 400 °F	400 °F	1000 °F	No Criteria
-Basis for single point max. temperature criteria	Auto ignition temperature of heptane	Auto ignition temperature of heptane	Building code requirements for steel plate structural integrity	No Criteria
Secondary containment is an integral component of the system	Yes	Yes	Yes	Optional
Secondary containment insulation is an integral component of the system	Yes	Yes	Yes	No
Fire Test of Interstitial Space	Yes	Yes	Yes	No
Interstitial Communication Test	Yes	Yes	Yes	Optional
Mini Fire Test on Construction Material	Yes	Depends on Tank Construction	Depends on Tank Construction	No
Vehicle Impact Test	Yes	Optional	Optional	No
Ballistic (Projectile) Impact Test	Yes	Optional	Optional	No
Hose Stream Test	Yes	Yes	No	Yes
Ball Impact test	Yes	Depends on Tank Construction	Depends on Tank Construction	No
Pipe Fitting bending Moment Test	Yes	Yes	Yes	No
Pipe Fitting Torque Test	Yes	Yes	Yes	No
Lift Strength Test	Yes	Yes	Yes	No
Load Test	Yes	Yes	Yes	No

Note: All of these standards require emergency venting to assure safe operation of the tank system in the event of a fire.