



TRANS TECH CONSULTANTS

Engineering and Environmental Compliance Services
License # 697833 (A-Haz)

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TTC Job Number 2113.01

Mr. Don Mukai

Bravo Systems
2929 Vail Avenue, Commerce, CA 90040 (323) 888-4133
Sent via .pdf to don@sbravo.com

Re: Specification approved by a state registered professional engineer
BRAVO F-64 Series Fittings
CCR Title 23, Division 3, Chapter 16, Article 3, Section 2631(d)

This letter is for an engineering specification review and approval of a secondary containment system element which is not an integral part of primary containment for an underground fuel tank storage system in California. The authority for this approval comes from the California Code of Regulations (CCR) Title 23, Division 3, Chapter 16, Article 3, Section 2631(d).

I have reviewed the following specifications on the Bravo F-Series rigid fiberglass reinforced plastic (FRP) fittings:

1. UL Certifications Directory MH26018 for Vipel F-764 and 774 resins
2. AOC Vipel Product Selection Guide
3. AOC Vipel Corrosion Resistance Resin Guide
4. Bravo Systems document FS-S-DS 11-07C
5. Bravo Systems document FS-S-DS-D 11-07C
6. Bravo Systems document ii-F-Series-TS-08B
7. Bravo Systems drawing 6x4 Termination Fitting Single Wall Part Name F-64-TS
8. Bravo Systems drawing 6x4 Termination Fitting Single Wall Part Name F-64-TS-T
9. Bravo Systems drawing 6x4 Termination Fitting Double Wall Part Name F-64-TS-D
10. Ameron Dualoy product data FP265K (11/07), FP400D (11/07)
11. Ameron Dualoy 3000/L Installation Instructions Bulletin 7501 FP104H (11/07)

The Bravo F-64 Series fitting is a system that provides for penetration of UL-Listed double wall FRP pipe (6" dia. over 4" dia. with Open Gravity Flow leak detection) through single or double wall fiberglass reinforced plastic (FRP) containment structures (sumps). This system maintains the integrity of the interstitial space provided by the secondary piping through the sump wall and provides a test port for the pipe interstice. For double wall sumps, this system provides interstitial fluid contact with the outer wall of the fitting. For the purposes of this review, I have:

1. Reviewed the construction and installation procedures for the F-64 Series FRP bulkhead fittings.
2. Reviewed materials used to construct the secondary containment system for sufficient thickness, density, and corrosion resistance to prevent structural weakening or damage to the secondary containment system as a result of contact with hazardous substances contained in California fuels.

Upon review of the materials and construction, it is my conclusion that sound engineering design and engineering of these piping penetration fittings for single and double wall sumps provides adequate penetration testing and monitoring of the interstitial spaces and provides appropriate materials types, thicknesses, density, and corrosion resistance. I approve the following Bravo F-64 Series fittings part numbers:

Penetration fittings for Ameron Dualoy 3000/L or Smith Red Thread IIA pipe with single wall sumps:

F-64-TS

F-64-TS-T

Penetration fitting for Ameron Dualoy 3000/L or Smith Red Thread IIA pipe with double wall sumps:

F-64-TS-D

Please call with any questions at 707 837-8408.

Sincerely,



Matthew E. Donohue, P.E.
Civil Engineer C57219

