



TRANS TECH CONSULTANTS

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

July 8, 2008
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 and via FedEx Std.

Re: Specification approved by a state registered professional engineer
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 examined and 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 FS-A-DS-D 11-07A
7. Bravo Systems document FS-1X-D 6-30B
8. Bravo Systems document F-Series ADS 11-07A
9. Bravo Systems document ii-F-Series-1X-SS-D-08B
10. Bravo Systems document ii-F-Series-1X-SS-08A
11. Bravo Systems document ii-F-Series-LCX-08B
12. Bravo Systems document ii-F-Series-TS-08B
13. Bravo Systems drawing F 30 Assembly-Detail-06-30-08 2213[1].dwg
14. Smith Red Thread IIA Installation Instructions
15. Smith Bulletin D4010 April 15, 2007
16. Smith Bulletin D4025 December 15, 2007
17. Smith Bulletin B2102 May 1, 2006
18. Ameron Dualloy LCX Installation Instruction Bulletin 9903 FP824D (11/07)
19. Ameron Dualloy product data FP737F(11/07)
20. Ameron Dualloy 3000/L Installation Instructions Bulletin 7501 FP104H (11/07)
21. RPM Technology Petrol Seal Weight Loss and Flexibility
22. RPM Technology Petrol Seal Swell Test Results

23. RPM Technology Petrol Seal Test Report w Methods
24. RPM Technology Petrol-Seal Summary Test Report Fuel Exposure
25. APA Full Immersion Data for Selected APA Products
26. APA Fluid Resistance Guide Alcryn
27. Third Party Approval Stainless Steel Hose Clamps by James H. Ray 02/13/2001
28. UL B-200 Dispenser Containment Sump System MH17263, 95NK3824 (3 pages) 01/13/96
29. UL B-200 Dispenser Containment Sump System MH 18486 94NK14961 (6 pages) 01/18/95

This system provides for penetration of Smith or Ameron double wall fiberglass pipe and for the penetration of PVC coated or galvanized rigid metal conduit through single or double wall 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 a separate testing point for the sump interstice and provides interstice fluid contact with the outer pipe wall. For the purposes of this review, I have:

1. Reviewed the construction and installation procedures for the F-Series fiberglass reinforced plastic (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 above engineering specifications for the following Bravo F-Series fittings part numbers:

Termination Fittings AMERON OR SMITH Singlewall Sumps

F-43-TS
 F-43-TS T
 F-32-TS
 F-32-TS T

Termination Fittings AMERON LCX Singlewall Sumps

F-33-LS
 F-33-LS T
 F-22-LS
 F-22-LS T



Penetration Fittings AMERON OR SMITH Singlewall Sumps

F-44-SS

F-33-SS

F-33-LL

F-22-LL

Penetration Fittings Hot Dipped Galvanized Conduit and Rob Roy PVC Coated Conduit

F-10-SS

F-17-SS

F-10-RR

F-17-RR

Doublewall Termination Fittings AMERON OR SMITH

F-43-TS D

F-32-TS D

Doublewall Termination Fittings AMERON LCX

F-33-LS D

F-22-LS D

Doublewall Penetration Fittings AMERON OR SMITH

F-44-SS

F-33-SS

F-33-LL

F-22-LL

Doublewall Penetration Fittings Hot Dipped Galvanized Conduit and Rob Roy PVC Coated Conduit

F-10-SS -D

F-17-SS-D

F-10-RR-D

F-17-RR-D

Please call with any questions at 707 837-8408. Thanks!

Sincerely,



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



JUL 08 2008

