State of California

AIR RESOURCES BOARD

Executive Order G-70-10-A

Relating to the Modification of the Certification
of the Vapor Recovery System for Delivery
Tanks Equipped for Bottom Loading

Pursuant to the authority vested in the Air Resources Board (ARB) by Health and Safety Code Section 41954; and

Pursuant to the authority vested in the undersigned by Health and Safety Code Section 39515 and 39516;

IT IS ORDERED AND RESOLVED: That except as provided below, the certification of the vapor recovery system for delivery tanks equipped for bottom loading is hereby modified to allow more flexibility in the system design and installation. The system certified hereby is described in Exhibits I and II, attached hereto. The system is to be installed in compliance with either American Petroleum Institute Recommended Practice 1004, dated September 1, 1977, or Truck Tank Manufacturers Association Recommended Practice 45-74, dated June 19, 1974.

IT IS FURTHER ORDERED AND RESOLVED: That the vapor recovery system, including the delivery tank, be in compliance with the provisions in Title 19 of the California Administrative Code and, in particular, the provisions of subchapter 11 of Chapter 1 thereof.

IT IS FURTHER ORDERED AND RESOLVED: That the system certified hereby shall in actual use meet the performance criteria for gasoline delivery tanks adopted by the ARB on August 25, 1977. Compliance with these criteria shall be a condition of this certification and, if not met, shall constitute grounds for revocation, suspension, or modification of this certification.

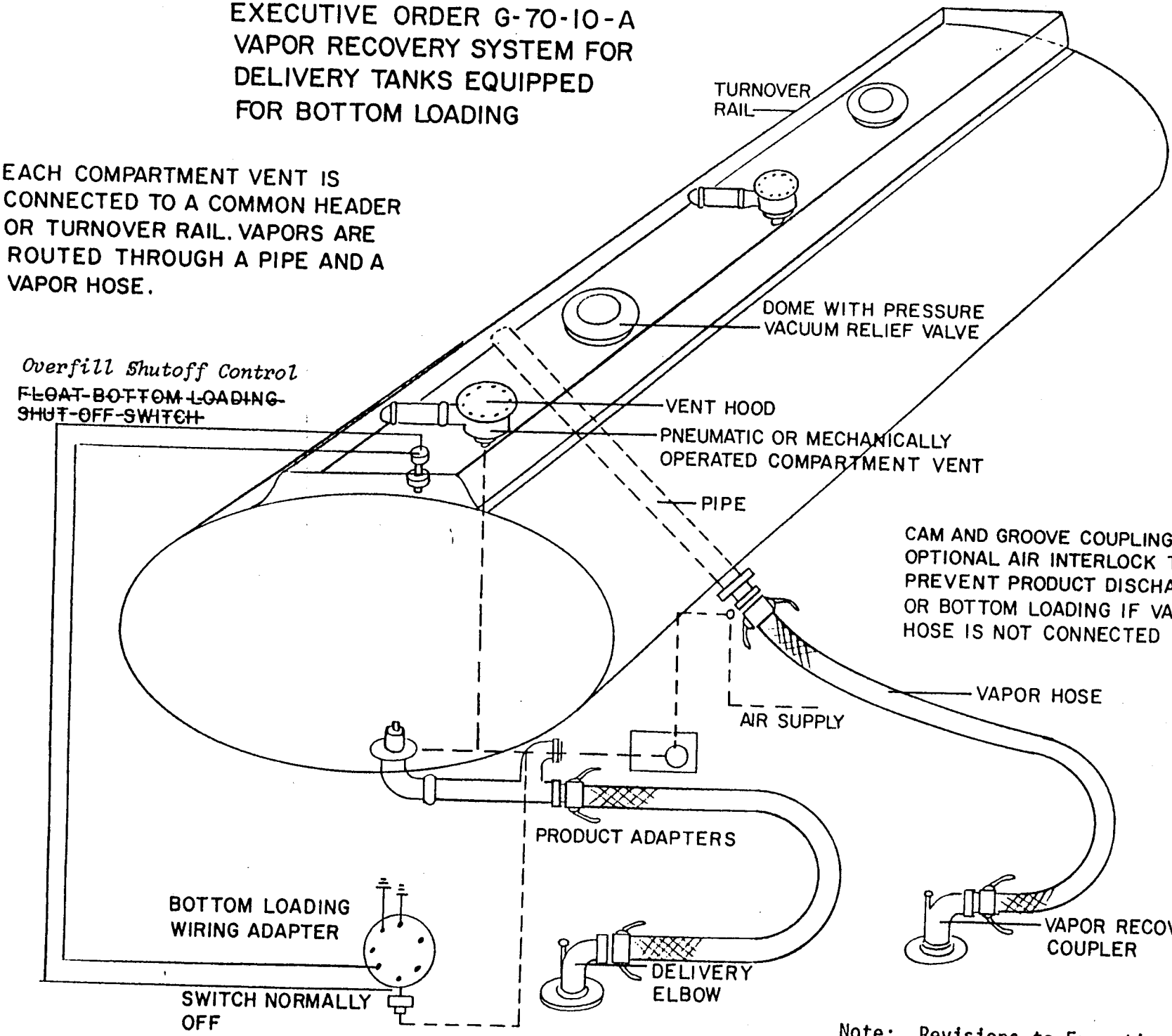
IT IS FURTHER ORDERED AND RESOLVED: That any alteration in the equipment, parts, design, or operation of the system certified hereby is prohibited and deemed inconsistent with this certification, unless the alteration has been approved by the undersigned.

Executed at Sacramento, California this 18th day of November, 1977.

William H. Lewis, Jr.
Executive Officer

EXHIBIT I
EXECUTIVE ORDER G-70-10-A
VAPOR RECOVERY SYSTEM FOR DELIVERY TANKS EQUIPPED FOR BOTTOM LOADING

NOTE: EACH COMPARTMENT VENT IS CONNECTED TO A COMMON HEADER OR TURNOVER RAIL. VAPORS ARE ROUTED THROUGH A PIPE AND A VAPOR HOSE.



Note: Revisions to Executive Order G-70-10 noted in italics

EXHIBIT II

Attachment to Executive Order G-70-10-A

Vapor Recovery System for Delivery Tanks Equipped for Bottom Loading

I. General Requirements

A. The design for closed system bottom loading and unloading must be compatible with the State Fire Marshal regulations contained in Title 19, subchapter 11 of the California Administrative Code. The loading and unloading pressures and the control of vacuum in the system must be controlled within the design limits of the delivery tanks.

Normal vents are to be installed in each compartment per Fire Marshal regulations, which require a minimum through area of 0.44 square inch (sq in). The outbreathing vent shall open at not more than one pound per sq in gauge, and the inbreathing vent shall open at not more than six ounces per sq in vacuum.

The installed system shall be capable of meeting the Air Resources Board's leak-rate criteria as specified in the Air Resources Board Certification and Test Procedures for Vapor Recovery Systems of Gasoline Delivery Tanks.

II. Components for Bottom Loading with Vapor Recovery

A. Compartment Vents

The compartment vents should be designed to fit or match with either a standard Truck Trailer Manufacturers Association (TTMA) four-inch sump or a standard TTMA three-inch pipe flange. These are the vents normally provided to protect the tank during bottom loading. In

any delivery tank vapor recovery system, the compartment vents shall be mechanically or pneumatically opened prior to loading or unloading.

B. Vapor Collection Hood

The vapor collection hood installed over the vents shall have a minimum of one outlet with an area of at least 7.3 sq ins. If the collection hood is of rigid construction, it should be protected by a rollover device.

C. Header

The header may be either a separate tube or the overturn rail; if a rail is used it must be fully welded and load tested. Provisions for flushing, draining, or gas-freeing of the header shall be provided and appropriate precautions included in a danger label.

The header must have a minimum area equivalent in cross-section to a 101.6 mm (four-inch) pipe, terminating in a 101.6 mm adapter. Connections from compartments (through the vapor collection hood) to the header must have a minimum area equivalent in cross-section to a 76.2 mm (three-inch) pipe, or 7.1 sq in (TTMA recommends an area of $\geq$11.7 sq in). The header is to be provided with appropriate shear sections in accordance with State Fire Marshal regulations. If design constraints prevent the use of a 101.6 mm (four inch) header, then an equivalent header of 76.2 mm (3 inch) diameter may be used.

D. Components for Mating to a Terminal's Vapor Recovery System

The component for mating to a terminal's vapor recovery system is a 101.6 mm (four-inch) cam type, quick coupler vapor recovery adapter functionally interchangeable with military specification MIL-C-27487. If a 76.2 mm (three inch) header is used, then an equivalent 76.2 mm (three inch) vapor recovery adapter may be used.

For loading, it is recommended that the delivery tank vapor recovery adapter be located not more than 2.134 m (seven-feet) forward or rear of the center line of the bottom loading adapter(s) and installed on a center not more than 1.524 m (five-feet) above grade when the delivery tank is unloaded and not less than .762 m (2.5 feet) under full load. Where circumstances require a vapor recovery adapter location other than as described above during the loading operation, it should be curb-side and equipped with the 101.6 mm adapter (The Truck Trailer Manufacturers Association recommend installation of the vapor recovery pipe at the rear head of the tank as an alternative).

The location of the tank vapor recovery adapter on the delivery tank will be determined by the tank piping design and the location of the bottom loading product adapter, but whenever possible the vapor recovery adapter should be located as described above.

E. Vapor Hose Connections

To recover vapors during loading or unloading, both the delivery hose and the vapor hose must be a tight (no-leak) fitting.

II. Components for Mating to a Delivery Point's Vapor Recovery System

A. The system installed on the delivery tank for recovery of vapors during bottom loading (Section I above) can also be utilized to recover vapors at the unloading point when such recovery is required.

B. It is desirable to keep the length of vapor recovery hoses to a minimum. Therefore, it is recommended that the vapor recovery adapter(s) used during unloading be located in the area recommended for loading. If the vapor recovery adapter used for loading is not adjacent to the product unloading adapter, it may require a tee and a connecting line on the tank vehicle in order to provide an outlet(s) adjacent to the delivery tank

outlet. Caution: If more than one connection is installed, all but the connection(s) being used must be closed or covered when recovering vapors during loading and unloading.

If a separate product adapter(s) is used for unloading, the delivery tank should be equipped with vapor recovery fittings of the conventional cam and groove type with a minimum of 50.8 mm (two-inch) size. The vehicle equipment should include one vapor recovery adapter for each delivery hose to be used unless one adequately sized adapter is used for recovery of vapors during multiple hose delivery.

III. Optional Equipment

It is recommended that air interlocks be incorporated into the delivery tank vapor recovery systems. The air interlocks should be designed to prevent product discharge or product loading without first connecting vapor recovery hose(s) to the delivery tank vapor recovery adapter(s).