(h) If cargo vapor is collected by a facility that requires the vapor from the vessel to be inerted in accordance with 33 CFR 154.2105, the oxygen content in the vapor space of each cargo tank connected to the vapor collection system must not exceed 60 percent by volume of the cargo's minimum oxygen concentration for combustion (MOCC), or 8 percent by volume for vapor of crude oil, gasoline blends, or benzene, at the start of cargo transfer. The oxygen content of each tank, or each area of a tank formed by each partial bulkhead, must be measured at a point 1.0 meter (3.28 feet) below the tank top and at a point equal to one-half of the ullage.

(i) If the vessel is equipped with an inert gas system, the isolation valve required by 46 CFR 39.2001(e) must remain closed during vapor transfer.

(j) Unless equipped with an automatic self-test and circuit-monitoring feature, each high-level alarm and tank overfill alarm on a cargo tank being loaded, required by 46 CFR 39.2007 or 39.2009, must be tested at the tank for proper operation within 24 hours prior to the start of cargo transfer.

Subpart 39.4000—Vessel-to-Vessel Transfers Using Vapor Balancing

§ 39.4001 General requirements for vapor balancing—TB/ALL.

(a) Vessels using vapor balancing while conducting a vessel-to-vessel transfer operation, directly or through a shore loop, must meet the requirements of this subpart in addition to the requirements of 46 CFR part 39, subparts 39.1000, 39.2000, and 39.3000. Arrangements other than vapor balancing used to control vapor emissions during a vessel-to-vessel transfer operation must receive approval from the Commandant.

(b) A vapor balancing operation must receive approval from the Commandant to use a compressor or blower to assist vapor transfer.

(c) Vapor balancing is prohibited when the cargo tanks on a vessel discharging cargo are inerted and the cargo tanks on a vessel receiving cargo are not inerted.

(d) A vessel that intends to collect vapors (during a vessel-to-vessel transfer operation) from cargoes not previously approved must receive specific approval from the Commandant before beginning transfer operations.

§ 39.4003 Design and equipment for vapor balancing—TB/ALL.

(a) During transfer operations, if the cargo tanks are inerted on a vessel discharging cargo to a receiving vessel with inerted cargo tanks, the service vessel must—

(1) Inert the vapor transfer hose prior to transferring cargo vapor; and

(2) Have an oxygen analyzer with a sensor or sampling connection fitted within 3 meters (9.74 feet) of the vessel vapor connection that—

(i) Activates a visible and an audible alarm on the service vessel where cargo transfer is controlled when the oxygen content in the vapor collection system exceeds 60 percent by volume of the cargo's minimum oxygen concentration for combustion (MOCC), or 8 percent by volume for vapor of crude oil, gasoline blends, or benzene;

(ii) Has an oxygen concentration indicator located on the service vessel where the cargo transfer is controlled; and

(iii) Has a connection for injecting a span gas of known concentration for calibration and testing of the oxygen analyzer.

(b) If the cargo tanks are not inerted on a vessel discharging cargo during transfer operations, and the cargo is flammable or combustible, the vapor collection line on the service vessel must be fitted with a detonation arrester that meets the requirements of 33 CFR 154.2106, and be located within 3 meters (9.74 feet) of the vessel vapor connection.

(c) An electrical insulating flange or one length of non-conductive hose must be provided between the vessel vapor connection on each vessel operating a vessel-to-vessel cargo transfer.

§ 39.4005 Operational requirements for vapor balancing—TB/ALL.

(a) During a vessel-to-vessel transfer operation, each cargo tank being loaded must be connected by the vapor collection system to a cargo tank that is being discharged.

(b) If the cargo tanks on both the vessel discharging cargo and the vessel