

(2) Nominal diameters greater than 51mm (2 in.); or

(3) Nominal diameters greater than 19mm (0.75 in.) and pressures above 1034 kPa (150 psig).

(c) (*Modifies PG-42.*) Butt welding flanges and fittings must be used when full radiography is required by § 56.95-10.

[CGD 81-79, 50 FR 9432, Mar. 8, 1985]

**§ 52.01-105 Piping, valves and fittings (modifies PG-58 and PG-59).**

(a) Boiler external piping within the jurisdiction of the ASME Code must be as indicated in PG-58 and PG-59 of the ASME Code except as noted otherwise in this section. Piping outside the jurisdiction of the ASME Code must meet the appropriate requirements of part 56 of this subchapter.

(b) In addition to the requirements in PG-58 and PG-59 of the ASME Code, boiler external piping must:

(1) Meet the design conditions and criteria in § 56.07-10 of this subchapter, except § 56.07-10(b);

(2) Be included in the pipe stress calculations required by § 56.31-1 of this subchapter;

(3) Meet the nondestructive examination requirements in § 56.95-10 of this subchapter;

(4) Have butt welding flanges and fittings when full radiography is required; and

(5) Meet the requirements for threaded joints in § 56.30-20 of this subchapter.

(c) Steam stop valves, in sizes exceeding 152mm (6 inch) NPS, must be fitted with bypasses for heating the line and equalizing the pressure before the valve is opened.

(d) *Feed connections.* (1) Feed water shall not be discharged into a boiler against surfaces exposed to hot gases or radiant heat of the fire.

(2) Feed water nozzles of boilers designed for pressures of 2758 kPa (400 psi), or over, shall be fitted with sleeves or other suitable means employed to reduce the effects of metal temperature differentials.

(e) *Blowoff connections.* (1) Firetube and drum type boilers shall be fitted with a surface and a bottom blowoff valve or cock attached directly to the boiler or to a short distance piece. The surface blowoff valve shall be located

within the permissible range of the water level, or fitted with a scum pan or pipe at this level. The bottom blow-off valve shall be attached to the lowest part of the boiler or fitted with an internal pipe leading to the lowest point inside the boiler. Watertube boilers designed for pressures of 2413 kPa (350 psig) or over are not required to be fitted with a surface blowoff valve. Boilers equipped with a continuous blowdown valve on the steam drum are not required to be fitted with an additional surface blowoff connection.

(2) Where blowoff pipes are exposed to radiant heat of the fire, they must be protected by fire brick or other suitable heat-resisting material.

(f) *Dry pipes.* Internal dry pipes may be fitted to the steam drum outlet provided the dry pipes have a diameter equal to the steam drum outlet and a wall thickness at least equal to standard commercial pipe of the same diameter. Openings in dry pipes must be as near as practicable to the drum outlet and must be slotted or drilled. The width of the slots must not be less than 6mm (0.25 in.). The diameter of the holes must not be less than 10mm (0.375 in.). Where dry pipes are used, they must be provided with drains at each end to prevent an accumulation of water.

[CGD 81-79, 50 FR 9432, Mar. 8, 1985]

**§ 52.01-110 Water-level indicators, water columns, gauge-glass connections, gauge cocks, and pressure gauges (modifies PG-60).**

(a) *Boiler water level devices.* Boiler water level devices shall be as indicated in PG-60 of the ASME Code except as noted otherwise in this section.

(b) *Water level indicators. (Modifies PG-60.1.)* (1) Each boiler, except those of the forced circulation type with no fixed water line and steam line, shall have two independent means of indicating the water level in the boiler connected directly to the head or shell. One shall be a gage lighted by the emergency electrical system (See Subpart 112.15 of Subchapter J (Electrical Engineering) of this chapter) which will insure illumination of the gages under all normal and emergency conditions. The secondary indicator may