

boiler, the steam locomotive owner and/or operator shall complete a repair report (FRA Form No. 19), detailing the work done. Repair reports shall be maintained for the life of the boiler. (See appendix C of this part.)

**§ 230.21 Steam locomotive number change.**

When a steam locomotive number is changed, the steam locomotive owner and/or operator must reflect the change in the upper right-hand corner of all documentation related to the steam locomotive by showing the old and new numbers:

- Old No. 000
- New No. XXX.

**§ 230.22 Accident reports.**

In the case of an accident due to failure, from any cause, of a steam locomotive boiler or any part or appurtenance thereof, resulting in serious injury or death to one or more persons, the railroad on whose line the accident occurred shall immediately make a telephone report of the accident by calling the National Response Center (toll free) at Area Code 800-424-0201. The report shall state the nature of the accident, the number of persons killed or seriously injured, the place at which it occurred, and the location where the steam locomotive may be inspected. Confirmation of this report shall be immediately mailed to the Associate Administrator for Safety, Federal Railroad Administration, Washington, DC 20590, and contain a detailed report of the accident, including, to the extent known, the causes and a complete list of the casualties.

**Subpart B—Boilers and Appurtenances**

**§ 230.23 Responsibility for general construction and safe working pressure.**

The steam locomotive owner and operator are responsible for the general design and construction of the steam locomotive boilers under their control. The steam locomotive owner shall establish the safe working pressure for each steam locomotive boiler, after giving full consideration to the general design, workmanship, age, and overall

condition of the complete boiler unit. The condition of the boiler unit shall be determined by, among other factors, the minimum thickness of the shell plates, the lowest tensile strength of the plates, the efficiency of the longitudinal joint, the inside diameter of the course, and the maximum allowable stress value allowed. The steam locomotive operator shall not place the steam locomotive in service before ensuring that the steam locomotive's safe working pressure has been established.

ALLOWABLE STRESS

**§ 230.24 Maximum allowable stress.**

(a) *Maximum allowable stress value.* The maximum allowable stress value on any component of a steam locomotive boiler shall not exceed ¼ of the ultimate tensile strength of its material.

(b) *Safety factor.* When it is necessary to use the code of original construction in boiler calculations, the safety factor value shall not be less than 4.

**§ 230.25 Maximum allowable stress on stays and braces.**

The maximum allowable stress per square inch of net cross sectional area on fire box and combustion chamber stays shall be 7,500 psi. The maximum allowable stress per square inch of net cross sectional area on round, rectangular, or gusset braces shall be 9,000 psi.

STRENGTH OF MATERIALS

**§ 230.26 Tensile strength of shell plates.**

When the tensile strength of steel or wrought-iron shell plates is not known, it shall be taken at 50,000 psi for steel and 45,000 psi for wrought iron.

**§ 230.27 Maximum shearing strength of rivets.**

The maximum shearing strength of rivets per square inch of cross sectional area shall be taken as follows:

Rivets	Pounds per square inch
Iron Rivets in Single Shear .....	38,000
Iron Rivets in Double Shear .....	76,000
Steel Rivets in Single Shear .....	44,000