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basic characteristic of a primary stress is that it is not self-limiting. Primary stresses that considerably exceed the yield strength result in failure or at least in gross deformations.)

Primary general membrane stress means the primary membrane stress that is so distributed in the structure that no redistribution of load occurs as a result of yielding.

Primary local membrane stress means the resulting stress from both a membrane stress, caused by pressure or other mechanical loading, and a primary or a discontinuity effect that produces excessive distortion in the transfer of loads to other portions of the structure. (The resulting stress is a primary local membrane stress although it has some characteristics of a secondary stress.) A stress region is local if:

$$S_1 \leq 0.5\sqrt{Rt};\ \text{and}$$

$$S_2 \leq 2.5\sqrt{Rt}$$

Where:

S_1=distance in the meridional direction over which the equivalent stress exceeds 1.1 f.

S_2=distance in the meridional direction to another region where the limits for primary general membrane stress are exceeded.

R=mean radius of the vessel.

t=wall thickness of the vessel at the location where the primary general membrane stress limit is exceeded.

f=allowable primary general membrane stress.

Secondary stress means a normal stress or shear stress caused by constraints of adjacent parts or by self-constraint of a structure. The basic characteristic of a secondary stress is that it is self-limiting. Local yielding and minor distortions can satisfy the conditions that cause the stress to occur.

PART 155 [RESERVED]