

CONTAINMENT SYSTEMSCONTAINMENT STRUCTURAL INTEGRITYLIMITING CONDITION FOR OPERATION

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3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

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4.6.1.6.1 Containment Tendons The containment tendons' structural integrity shall be demonstrated at the end of one, three and five years following the initial containment structural integrity test and at five year intervals thereafter. The tendons' structural integrity shall be demonstrated by:

- a. Determining that a representative sample of at least 21 tendons (6 dome, 5 vertical, and 10 hoop) each have a lift off force of between 6760 (minimum) and 8700 (maximum) pounds per tendon wire. This test shall include an unloading cycle in which each of these tendons is detensioned to determine if any wires or strands are broken or damaged. If the lift off force of any one tendon in the total sample population is out of the predicted bounds (less than minimum or greater than maximum), an adjacent tendon on each side of the defective tendon shall also be checked for lift off force. If both of these tendons are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one defective tendon out of the original sample population is evidence of abnormal degradation of the containment structure. Unless there is evidence of abnormal degradation of the containment structure during the first three tests of the tendons, the number of tendons checked for lift off force during subsequent tests may be reduced to a representative sample of at least 9 tendons (3 dome, 3 vertical and 3 hoop).

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- b. Removing one wire from each of a dome, vertical and hoop tendon checked for 1 ft off force and determining that over the entire length of the removed wire that:
1. The tendon wires are free of corrosion.
  2. There are no changes in physical appearance of the sheathing filler grease.
  3. A minimum tensile strength value of 240 Ksi (guaranteed ultimate strength of the tendon material) for at least three wire samples (one from each end and one at mid-length) cut from each removed wire. Failure of any one of the wire samples to meet the minimum tensile strength test is evidence of abnormal degradation of the containment structure.

4.6.1.6.2 End Anchorages and Adjacent Concrete Surfaces The structural integrity of the end anchorages and adjacent concrete surfaces shall be demonstrated by determining through inspection that no apparent changes have occurred in the visual appearance of the end anchorage concrete exterior surfaces or the concrete crack patterns adjacent to the end anchorages. Inspections of the concrete shall be performed during the Type A containment leakage rate tests (reference Specification 4.6.1.2) while the containment is at its maximum test pressure.

4.6.1.6.3 Liner Plate The structural integrity of the containment liner plate shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of the plate and verifying no apparent changes in appearance or other abnormal degradation.

4.6.1.6.4 Reports Any abnormal degradation of the containment structure detected during the above required tests and inspections shall be reported to the Commission pursuant to Specification 6.9.1. This report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedure, the tolerances on cracking, and the corrective actions taken.

## CONTAINMENT SYSTEMS

### CONTAINMENT STRUCTURAL INTEGRITY

#### LIMITING CONDITION FOR OPERATION

- 3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.

APPLICABILITY: MODES 1, 2, 3, and 4

#### ACTION:

- a. With the containment structure exhibiting evidence of possible abnormal degradation per Specification 4.6.1.6.1, perform an engineering evaluation demonstrating the ability of the containment structure to continue to perform its design function. If continued containment integrity cannot be assured by engineering evaluation within 90 days of the surveillance test, be in COLD SHUTDOWN within 36 hours.
- b. With the structural integrity of the containment not conforming at a level consistent with the acceptance criteria of Specification 4.6.1.6.2 or 4.6.1.6.3 restore structural integrity or complete an engineering evaluation that assures structural integrity prior to increasing Reactor Coolant System Temperature above 200°F.

#### SURVEILLANCE REQUIREMENTS

- 4.6.1.6.1 Containment Tendons. The containment tendon's structural integrity shall be demonstrated at the end of one, three, and five years following the initial containment structural integrity test and at five year intervals thereafter. The tendon's structural integrity shall be demonstrated by:

- a. Determining that for a representative sample of at least 21 tendons (6 dome, 5 vertical, and 10 hoop), each tendon has a normalized lift-off force equalling or exceeding its lower limit expected range for the time of the test (see Figures 4.6-1, -2, and -3). If the normalized lift-off force of any one tendon in a group lies between the lower limit expected range and the lower bound individual, an adjacent tendon on each side shall be checked for lift-off force. If both of these tendons are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. If either of the adjacent tendons is found unacceptable, it shall be considered as evidence of possible abnormal degradation of the containment structure.

If the normalized lift-off force of any single tendon lies below the lower bound individual, the occurrence should be considered as evidence of possible abnormal degradation of the containment structure.

In addition, determining that the average of the normalized lift-off forces for each sample population (hoop, vertical, dome) is equal to or greater than the required average prestress level; 536 kips for hoop tendons, 622 kips for vertical tendons, and 555 kips for dome tendons (reference Figures 4.6-1, -2, and -3). If the average is below the required average prestress force, it shall be considered as evidence of possible abnormal degradation of the containment structure.

- b. Detensioning one tendon in each group (a dome, a vertical, and a hoop tendon) from the sample population. Removing one wire from each detensioned tendon and:
  1. Determining the extent of corrosion, cracks, or other damage over the entire length of the wire. The presence of abnormal corrosion, cracks or other damage shall be considered evidence of possible abnormal degradation of the containment structure.
  2. A minimum tensile strength of 240 ksi for at least 3 wire samples (one from each end and one at mid length) cut from each removed wire. Failure of any one of the wire samples to meet the minimum tensile strength test shall be considered evidence of possible abnormal degradation of the containment structure.
- c. Taking sheath filler grease samples and checking for changes in its physical appearance.
- d. Unless there is evidence of possible abnormal degradation of the containment structure during the first three tests of tendons, the number of tendons checked for lift-off force during subsequent tests may be reduced to a representative sample of at least 9 tendons (3 dome, 3 vertical, 3 hoop).

4.6.1.6.2 End Anchorages and Adjacent Concrete Surfaces. The structural integrity of the end anchorages and adjacent concrete surfaces shall be demonstrated by determining through inspection that no apparent changes have occurred in the visual appearance of the end anchorage, concrete exterior surfaces or the concrete crack patterns adjacent to the end anchorages. Inspections of the concrete shall be performed during the Type A containment leakage rate tests (reference Specification 4.6.1.2) while the containment is at its maximum test pressure.

4.6.1.6.3 Liner Plate. The structural integrity of the containment liner plate shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of the plate and verifying no apparent changes in appearance or other abnormal degradation.

4.6.1.6.4 Reports. Any evidence of abnormal degradation of the containment structure detected during the above required tests and inspections shall be reported to the Commission pursuant to T.S. 6.9.1. This report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedure, the tolerances on cracking, and the corrective actions taken.



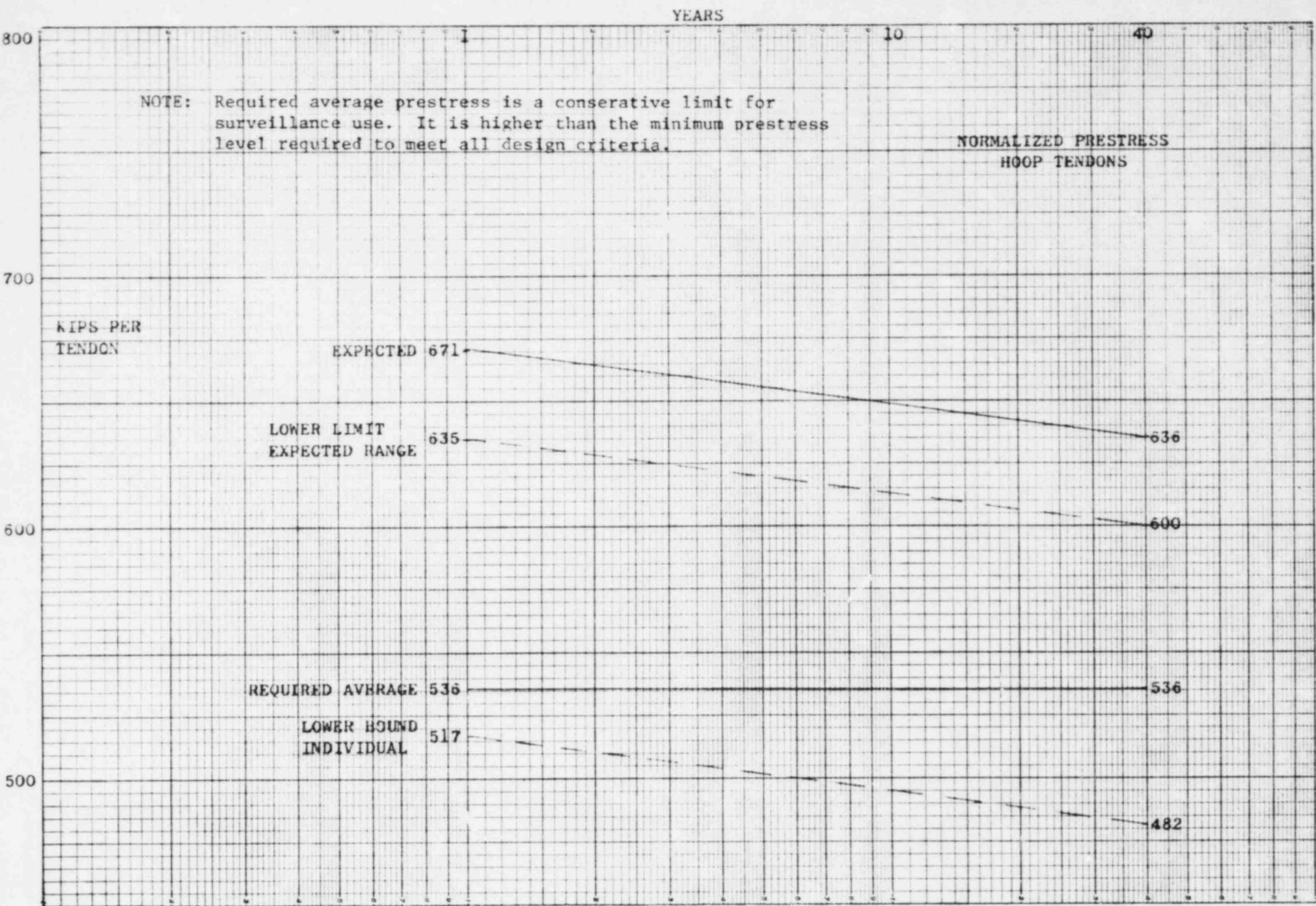


FIGURE 4.6-1

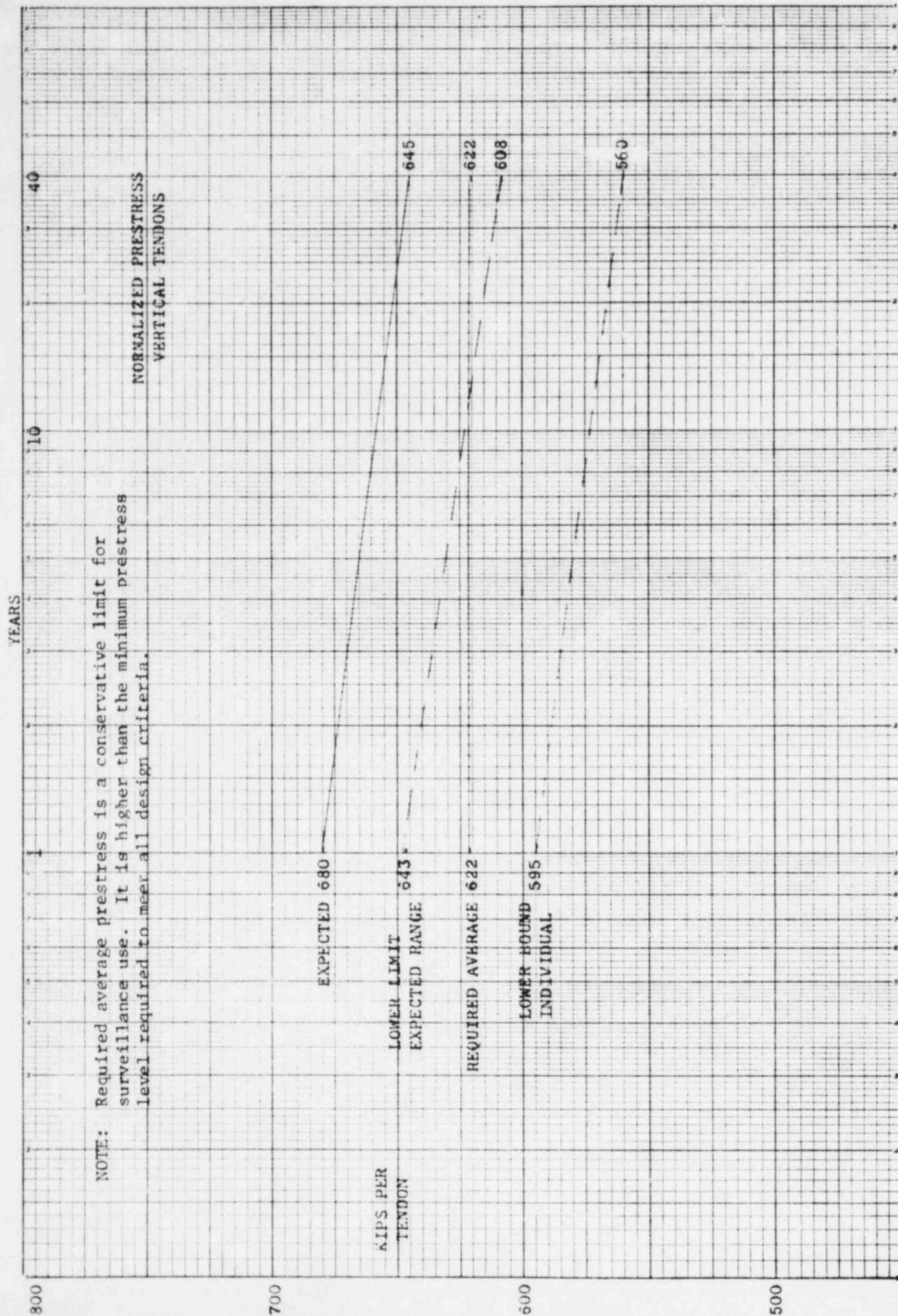


FIGURE 4.5-2

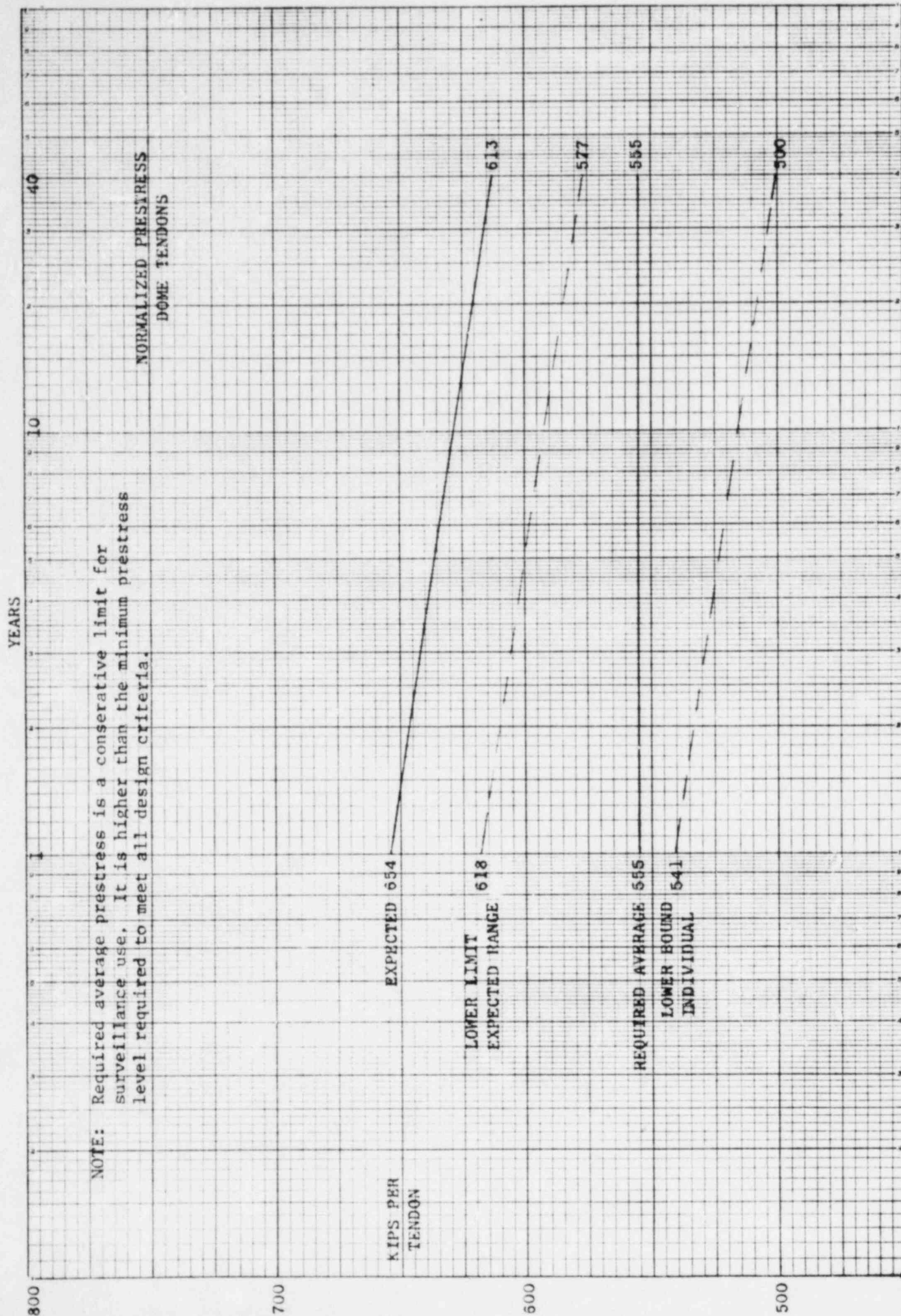


FIGURE 4.6-3