

1. THIS INSTRUCTION SUPPLEMENTS BUT DOES NOT ALTER OR SUPERSEDE ANY OTHER INVOKED ULTRASONIC TEST REQUIREMENT EXCEPT THE MANDATORY ULTRASONIC INSPECTION AS INVOKED BY QQ-N-286E, AMENDMENT 1, AMENDMENT 2 OR EARLIER REVISIONS AND AMENDMENTS. THIS STANDARD CLAUSE IS NOT APPLICABLE TO QQ-N-286 REVISION F OR G.

PURPOSE OF THIS INSPECTION IS TO DETECT INTERNALLY CONTAINED CRACKS TRANSVERSE TO THE AXIS IN K-MONEL PARTS.

K-MONEL BAR AND ROD

2. ALL HOT FINISHED AND AGE HARDENED, AND HOT FINISHED, ANNEALED AND AGE HARDENED BAR OF 16 SQUARE INCH AND GREATER IN CROSS SECTIONAL AREA AND ROD 4" AND GREATER IN DIAMETER SHALL REQUIRE AN AXIALLY DIRECTED LONGITUDINAL WAVE INSPECTION REGARDLESS OF LENGTH. BAR AND ROD ORDERED TO A SPECIFIED LENGTH SHALL BE TESTED AT THE SPECIFIED ORDERING LENGTH. THIS TECHNIQUE HAS BEEN APPROVED BY NAVSEA AND IS QUALIFIED FOR BAR/ROD UP TO 10-1/2 INCHES IN DIAMETER AND 194-3/8 INCHES LONG (16.2 FEET) USE OF THIS TECHNIQUE FOR LARGER SIZES WILL REQUIRE SUBMITTAL OF A WRITTEN REQUEST REQUIRING THE PURCHASER AND SUPERVISOR OF SHIPBUILDING WITNESSING.
3. ULTRASONIC PROCEDURE SHALL BE DEVELOPED IN ACCORDANCE WITH MIL-STD-271F, EXCEPT AS MODIFIED HEREIN. TESTING SHALL BE CONDUCTED USING A CONTACT PULSE-ECHO TECHNIQUE SCANNING BOTH END FACES OF THE TEST PIECE. THROUGH TRANSMISSION PITCH-CATCH INSPECTIONS ARE NOT PERMITTED.
4. TRANSDUCERS USED SHALL BE 2.25 MHZ, 3/4" OR 1" DIAMETER, OR 1 MHZ, 1" DIAMETER.
5. A DISTANCE CALIBRATION SHALL BE MADE FOR THE ENTIRE LENGTH OF THE BAR TO BE TESTED. THIS MAY BE ACCOMPLISHED USING

MULTIPLE REFLECTIONS ACROSS THE DIAMETER OF THE TESTPIECE OR A K-MONEL REFERENCE STANDARD OF THE SAME MATERIAL CONDITION. THE MULTIPLE REFLECTION REPRESENTING A DISTANCE AT LEAST EQUAL TO THE LENGTH OF THE TEST PIECE SHALL BE BROUGHT TO A DISCERNIBLE SCREEN HEIGHT.

6. GAIN SETTING SHALL BE ADJUSTED AT THE CENTER OF ONE END FACE ON THE TEST PIECE. ESTABLISH A REFERENCE LEVEL FOR THE REFLECTION FROM THE OPPOSITE END FACE OF THE TEST PIECE AT 80% - 100% FULL SCREEN HEIGHT AFTER VERIFYING PROPER POSITION (LENGTH) ON THE CRT.
7. BOTH END FACES SHALL BE SCANNED 100%, WITH AN OVERLAP OF 25%. SURFACES MAY BE PREPARED AS NECESSARY. DETERMINE THE AMPLITUDE OF ANY REJECTION USING THE HIGHER AMPLITUDE SIGNAL.
8. ACCEPTANCE/REJECTION CRITERIA

THE FOLLOWING CONDITIONS SHALL BE CAUSE FOR REJECTION:

- A. INABILITY TO OBTAIN A BACK REFLECTION 80% - 100% FULL SCREEN HEIGHT DURING CALIBRATION.
- B. ANY INDICATION NOTED OTHER THAN THE BACK REFLECTION FROM THE OPOSITE END FACE WHILE PERFORMING CALIBRATION.
- C. ANY INDICATION OR GRAIN NOISE EQUAL TO OR GREATER THAN 20% OF THE ESTABLISHED REFERENCE LEVEL.
- D. LOSS OF BACK REFLECTION EXCEPT WHEN TRANSDUCER IS ADJACENT TO THE SIDE OF THE BAR OR ROD (WITHIN ONE TRANSDUCER DIAMETER) .
METER) .

K-MONEL FORGED PARTS

9. ALL FORGED PARTS WHERE THE HEAVIEST CROSS -SECTION IS 16 SQUARE INCHES OR GREATER SHALL REQUIRE AN ULTRASONIC INSPECTION.

ULTRASONIC INSPECTION TECHNIQUES SHALL BE DEVELOPED FOR EACH FORGED PART AND SUBMITTED TO THE BUYER FOR APPROVAL. THE ULTRASONIC INSPECTION PROCEDURE SHALL ASSURE 100% THREE DIRECTIONAL COVERAGE (TO THE MAXIMUM EXTENT PRACTICAL) PER THE GUIDLINES OF MIL-STD-271F. HOWEVER, CALIBRATION SHALL BE DESIGNED TO DETECT AND REJECT TRANSVERSELY ORIENTED CONCRACKS ONE INCH IN DIAMETER AND GREATER. WHERE PRACTICAL, THE TECHNIQUE DESCRIBED ABOVE FOR BAR/ROD SHALL BE APPLIED.