

IF ANY NICUAL (K-MONEL) MATERIAL IS UTILIZED IN THIS ORDER, IT MUST BE IN ACCORDANCE WITH ONE OF THE FOLLOWING MODIFICATIONS:

A). QQ-N-286 REVISION F, DATED 29 NOVEMBER 1990, AND HAVE BEEN PRODUCED ONLY BY SPECIAL METALS CORPORATION (FORMERLY INCO ALLOYS INTERNATIONAL/HUNTINGTON ALLOYS INC) WITH A PRODUCTION (POUR) DATE LATER THAN DECEMBER 21, 1976.

FIRST ARTICLE TESTING PER PARAGRAPH 3.1 OF QQ-N-286 REVISION F IS REQUIRED FOR ALL HEATS PRODUCED AFTER FEBRUARY 19, 2001. SPECIAL METALS CORPORATION WAS EXEMPT FROM FIRST ARTICLE TESTING FOR ALL HEATS PRODUCED PRIOR TO FEBRUARY 19, 2001.

TEST REPORTS FOR EACH HEAT AND LOT OF MATERIAL FURNISHED SHOWING ACTUAL RESULTS OF CHEMICAL ANALYSIS, MECHANICAL PROPERTY TESTING AND FIRST ARTICLE TESTING* REQUIRED BY THE SPECIFICATION SHALL BE FURNISHED FOR LEVEL 1 MATERIAL AND MADE AVAILABLE UPON REQUEST FOR LEVEL N MATERIAL. TEST REPORTS SHALL BE ANNOTATED BY THE SUPPLIER WITH THE BUYERS PURCHASE ORDER NUMBER, ITEM NUMBER, MATERIAL SPECIFICATION/REVISION (INCLUDING FORM AND CONDITION) AND SHALL INDICATE THE SAME HEAT AND LOT NUMBER, OR TRACEABILITY NUMBER THAT IS MARKED ON THE MATERIAL SUPPLIED FOR LEVEL 1 APPLICATIONS ONLY.

. *IF REQUIRED BASED UPON PRODUCTION DATE

B). QQ-N-286 REVISION G, WITH THE FOLLOWING MODIFICATIONS:

REVISE PARAGRAPH 4.2.2.2 OF QQ-N-286G AS FOLLOWS:

4.2.2.2 SLOW STRAIN RATE TENSILE TESTS. THREE SPECIMENS SHALL BE PREPARED AND TESTED PER LOT. SPECIMENS SHALL BE TAKEN AFTER THE FINAL HEAT TREATMENT. WHEN MATERIAL IS SHIPPED IN THE ANNEALED CONDITION, SPECIMENS MAY BE TAKEN AFTER THE FINAL ANNEAL AND SHALL BE HEAT TREATED IN ACCORDANCE WITH 4.3.6.1.

4.2.2.2.1 BAR, ROD AND FORGINGS. SLOW STRAIN RATE TENSILE TEST SPECIMENS SHALL BE TAKEN FROM ONE END OF A BAR, ROD, OR FORGING AT THE QUARTER DIAMETER (HALF RADIUS) AND IN THE LONGITUDINAL DIRECTION.

BARS, RODS OR FORGINGS TOO SMALL TO HAVE A SLOW STRAIN RATE TEST SPECIMEN TAKEN FROM THE QUARTER DIAMETER THAT ARE TAKEN FROM A LOT (SEE 4.2.1.3) THAT DOES NOT HAVE ANY LARGER SIZES SHALL HAVE THE SPECIMENS TAKEN FROM THE CENTER AND IN THE LONGITUDINAL DIRECTION.

BARS, RODS OR FORGINGS TOO SMALL TO HAVE A SLOW STRAIN RATE TEST SPECIMEN TAKEN FROM THE CENTER THAT ARE TAKEN FROM A LOT (SEE 4.2.1.3) THAT DOES NOT HAVE ANY LARGER SIZES SHALL BE TAKEN FROM THE HEAT AT THE LATEST INTERMEDIATE ROLLING OR FORGING STEP THAT A SLOW STRAIN RATE TEST SPECIMEN CAN BE TAKEN FROM THE MID-RADIUS

AND HEAT TREATED USING THE SAME HEAT TREATMENT PROCEDURES USED ON THE PRODUCTION HEAT.

4.2.2.2.2 WIRE. SLOW STRAIN RATE TENSILE TEST SPECIMENS SHALL BE TAKEN FROM THE HEAT AT THE LATEST INTERMEDIATE ROLLING OR FORGING STEP THAT A SLOW STRAIN RATE TEST SPECIMEN CAN BE TAKEN FROM THE MID RADIUS AND HEAT TREATED USING THE SAME HEAT TREATMENT IN ACCORDANCE WITH 4.3.6.1.

4.2.2.2.3 SHEET AND PLATE. SLOW STRAIN RATE TENSILE TEST SPECIMENS SHALL BE TAKEN FROM ONE END OF A PLATE AT THE QUARTER THICKNESS AND IN THE LONGITUDINAL DIRECTION. PLATE TOO SMALL TO HAVE A SLOW STRAIN RATE TEST SPECIMEN TAKEN FROM THE QUARTER THICKNESS MAY HAVE THE SPECIMENS TAKEN FROM THE CENTER AND IN THE LONGITUDINAL DIRECTION. SHEET AND PLATE TOO SMALL TO HAVE A SLOW STRAIN RATE TEST SPECIMEN TAKEN FROM THE CENTER MAY HAVE THE SPECIMENS TAKEN AT THE LATEST INTERMEDIATE ROLLING STEP THAT A SLOW STRAIN RATE TEST SPECIMEN CAN BE TAKEN FROM THE QUARTER THICKNESS.

REVISE PARAGRAPH 4.3.6.4.4 OF QQ-N-286G AS FOLLOWS:

4.3.6.4.4 TEST LABORATORY: SLOW STRAIN RATE TENSILE TESTING SHALL BE PERFORMED BY A NAVSEA APPROVED TEST LABORATORY. THE FOLLOWING IS A LISTING OF THE CURRENTLY APPROVED TEST LABORATORIES, ANY ONE OF WHICH MAY BE USED AT THE VENDORS DISCRETION.

HUNTINGTON ALLOYS,
A SPECIAL METALS COMPANY
ATTN: FRANK VELTRY

3200 RIVERSIDE DRIVE
HUNTINGTON, WV 25705

METALLURGICAL CONSULTANTS, INC.
ATTN: W.M. BUEHLER
4820 CAROLINE
P.O. BOX 88046
HOUSTON, TX 77288-0046

NAVAL SURFACE WARFARE CENTER,
CARDEROCK DIV.
ATTN: CHARLES ROE

CODE 614
9500 MACARTHUR BLVD.
WEST BETHESDA, MD 20817-5700
ATI ALLVAC-ALLEGHENY TECHNOLOGIES INC.
ATTN: DR. W.D. CAO
2020 ASHCRAFT AVE.
MONROE, NC 28110

MANNESMANN ROHRENWERKE
MANNESMANN FORSCHUNGSINSTITUT (MFI)
ATTN: DR. WEISS
POSTFACH 251160
47251 DUISBURG
GERMANY

WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.

OLD ROUTE 30, WESTMORELAND DRIVE

P.O. BOX 388 WESTMORELAND DRIVE

YOUNGSTOWN, PA 15696-0388

REVISE PARAGRAPH 6.2 S) AS FOLLOWS:

S) THE LABORATORY CONDUCTING THE SLOW STRAIN RATE TENSILE TESTING SHALL BE ONE APPROVED BY NAVSEA (SEE 4.3.6.4.4).

NOTE: FIRST ARTICLE TESTING INVOKED ELSEWHERE IN THIS PURCHASE ORDER DOES NOT APPLY TO MATERIAL PRODUCED IN ACCORDANCE WITH REVISION G OF QQ-N-286.

TEST REPORTS FOR EACH HEAT AND LOT OF MATERIAL FURNISHED SHOWING ACTUAL RESULTS OF CHEMICAL ANALYSIS, MECHANICAL PROPERTY TESTING AND SLOW STRAIN RATE TENSILE TESTS REQUIRED BY THE SPECIFICATION SHALL BE FURNISHED FOR LEVEL 1 MATERIAL AND MADE AVAILABLE UPON REQUEST FOR LEVEL N MATERIAL. TEST REPORTS SHALL BE ANNOTATED BY THE SUPPLIER WITH THE BUYERS PURCHASE ORDER NUMBER, ITEM NUMBER, MATERIAL SPECIFICATION/REVISION (INCLUDING FORM AND CONDITION) AND SHALL INDICATE THE SAME HEAT AND LOT NUMBER, OR TRACEABILITY NUMBER THAT IS MARKED ON THE MATERIAL SUPPLIED FOR LEVEL 1 APPLICATIONS ONLY.

FIGURE 4: DELETE CAPTION AND REPLACE WITH "TEMPLATE FOR SLOW STRAIN RATE FRACTURE TEST EVALUATION. CONCENTRIC CIRCLES 2.5000", 1.5625", AND 0.6250" IN DIAMETER IN A 3.5" BY 4.5" FRAME"

