**Case 2180-7**

**Seamless 11Cr-2W Material**

**Section I; Section VIII, Division 1**

Inquiry: May 11Cr-2W seamless tubes, pipes, plate, and forgings that conform to the specifications listed in Table 1 be used for Sections I and VIII, Division 1 construction?

Reply: It is the opinion of the Committee that 11Cr-2W seamless tubes, pipes, plate, and forgings that conform to the specifications listed in Table 1 may be used for Sections I and VIII, Division 1 construction, provided the following requirements are met:

1. The maximum allowable stress values for the material shall be those given in Table 2 and 2M.
2. Separate Welding Procedure qualifications shall be conducted in accordance with Section IX. For purposes of Performance Qualification this material shall be considered P-No. 15F. Procedures and performance qualifications qualified under previous versions of this Case do not require requalification.
3. Postweld heat treatment for this material is mandatory, and the following rules shall apply:
	1. The time requirements shall be those given for P-No. 15E, Group 1 materials in Tables PW-39 and UCS-56 for Sections I and VIII, Division 1, respectively.
	2. The PWHT temperature range shall be 1350°F to 1470°F (730°C to 800°C).
4. For Section VIII, Division 1 applications, all requirements of Part UCS shall apply.
5. Except as provided in (f) if during the manufacturing any portion of the component is heated to a temperature greater than 1470°F (800°C), then the component must be reaustenitized and retempered in its entirety in accordance with the product specification or that portion of the component heated above 1470°F (800°C), including the Heat-Affected Zone created by the local heating, must be replaced, or must be removed, reaustenitized, and retempered, and then replaced in the component.
6. If the design stress values to be used are less than or equal to the allowable stress values provided in Table 1A of Section II, Part D for Grade 9 (SA-213 T9, SA-335 P9, or equivalent product specifications) at the design temperature, then the requirements of (e) may be waived provided that the portion of the component heated to a temperature greater than 1470°F (800°C) is reheat treated within the temperature range 1350°F to 1425°F (730°C to 775°C).
7. This Case number shall be shown on the Manufacturer's Data Report.
8. This Case number shall be shown in the material certification and marking of the material.

CAUTIONARY NOTE: This material has demonstrated a susceptibility to creep cavity formation and damage in the time-dependent regime resulting in very low strain before rupture and high sensitivity to multiaxial stresses (e.g. trending to notch weakening behavior). The accumulation of creep damage is known to contribute to a decreased life expectancy. Additional cautionary information is provided in para. PW-10 of Section I.

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| **Table 1****Specification** |
| Forgings | SA-182 F122 |
| Pipe | SA-335 P122 |
| Plate | SA-1017 Grade 122 |
| Tube | SA-213 T122 |

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| **Table 2****Maximum Allowable Stress Values** |
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| **For metal temperature not exceeding, °F** | **Max Allowable Stress Values, ksi** |
| -20 to 100 | 25.7 |
| 200 | 25.7 |
| 300 | 25.0 |
| 400 | 24.2 |
| 500 | 23.7 |
| 600 | 23.1 |
| 650 | 22.9 |
| 700 | 22.5 |
| 750 | 22.1 |
| 800 | 21.6 |
| 850 | 21.1 |
| 900 | 20.3 |
| 950 | 19.5 |
| 1000 | 18.5 |
| 1050 | 14.4 |
| 1100 |  10.4 [Note (1)] |
| 1150 |  6.8 [Note (1)] |
| 1200 | 4.5 [Note (1)] |
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| NOTE:* 1. These stress values are obtained from time-dependent properties.
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| **Table 2M****Maximum Allowable Stress Values** |
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| **For metal temperature not exceeding, °C** | **Max Allowable Stress Values, MPa** |
| -28 to 40 | 177 |
| 65 | 177 |
| 100 | 177 |
| 125 | 175 |
| 150 | 172 |
| 175 | 170 |
| 200 | 167 |
| 225 | 165 |
| 250 | 164 |
| 275 | 162 |
| 300 | 160 |
| 325 | 159 |
| 350 | 157 |
| 375 | 155 |
| 400 | 152 |
| 425 | 149 |
| 450 | 146 |
| 475 | 141 |
| 500 | 137 |
| 525 | 131 |
| 550 | 118 |
| 575 | 90.3 [Note (1)] |
| 600 | 65.6 [Note (1)] |
| 625 | 44.2 [Note (1)] |
| 650 [Note (2)] | 30.3 [Note (1)] |
|  |  |
| NOTE:* 1. These stress values are obtained from time-dependent properties.
	2. The maximum use temperature is 649°C. The value at 650°C is provided for interpolation purposes only.
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