

[12] Patent

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[21] Application No.: GCC/P/2001/1520 [22] Filing Date: 23/07/2001 [30] Priority: [31] Priority No. [32] Priority date [33] State 60/223,495 07/08/2000 US [72] Inventors: 1- Jayoung Koo, 2- Narasimha- Rao V. Bangaru, 3- Mario Luis Macia, 4- Douglas P. Fairchild, 5- Danny Lee Beeson, 6- Adnan Ozekcin [73] Owner: ExxonMobil Upstream Research Company, 3120 Buffalo Speedway, Houston, Texas 77098-1806, USA [74] Agent: Saud M. A. Shawwaf	[51] Int.Cl. ⁷ : C22C 38/08 [56] Cited Documents: - US 6,114,656 A (FAIRCHILD) 05 September 2000 - US 5,837,956 A (OKABE et al.) 17 November 1998 - US 5,300,751 A (ENDO et al.) 05 April 1994 - US 3,867,608 A (OHWA et al.) 18 February 1975

[54] WELD METALS WITH SUPERIOR LOW TEMPERATURE TOUGHNESS FOR JOINING HIGH STRENGTH, LOW ALLOY STEELS

[57] Abstract: Weld metals suitable for joining high strength, low alloy steels are provided. These weld metals have microstructures of acicular ferrite interspersed in martensite, yield strengths of at least about 690 MPa (100 ksi), and DBTTs lower than about -50°C (-58°F) as measured by a Charpy V-notch energy versus temperature curve. These weld metals include about 0.04 wt% to about 0.08 wt% carbon; about 1.0 wt% to about 2.0 wt% manganese; about 0.2 wt% to about 0.7 wt% silicon; about 0.30 wt% to 0.80 wt% molybdenum; about 2.3 wt% to about 3.5 wt% nickel; about 0.0175 wt% to about 0.0400 wt% oxygen, and at least one additive selected from the group consisting of (i) up to about 0.04 wt% zirconium, and (ii) up to about 0.02 wt% titanium.

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No. of figures: 16

