

JUSTIFICATION AND APPROVAL FOR ESTABLISHMENT  
OF A QUALIFICATION REQUIREMENT AND  
DETERMINATION REGARDING SPECIFICATION OF  
STANDARDS FOR QUALIFICATION

1. Nature and/or Description of Action Being Approved

The Assistant Deputy Under Secretary of the Navy (Safety and Survivability) (ADUSN (S&S)) has certified commercial devices demonstrated to meet the qualification requirements for a synthetic-based metal conditioner used to operationally increase the survivability of mechanical equipment. In accordance with "Justification for Establishment of Qualification Requirements for Operational Safety Items" dated 7 April 1988, this action establishes the qualification requirement and includes a determination that it is unreasonable to specify, at this time, the standards for qualification of the synthetic-based metal conditioner discussed herein.

2. Description of Supplies/Services

- a. Brief description (nomenclature and part number) of the item(s) qualifying for use:

Militec-1 Metal Conditioner

- b. Suppliers:

Militec, Incorporated  
1825 K Street N. W.  
Suite 807  
Washington, D. C. 20006  
(202) 223-3784

- c. Brief description of the end use of the item:

The Militec-1 is a synthetic-based metal conditioner that provides lubrication to metal surfaces without the oil or primary lubricant being in constant circulation around metal surfaces. The mechanism for achieving this is through a molecular bond with the metal surfaces.

3. Authority for Establishing Qualification Requirement

Public Law 99-661  
FAR 9.2

#### 4. Necessity for Qualification Prior to Award

Historically, friction between moving metal parts is reduced using petroleum and synthetic lubricants, sometimes with additives to enhance viscosity. Commercially, these are produced under tradenames like STP Oil Additive. Other compounds manufactured under tradenames such as Slick 50 add coatings of teflon to the metal surface. Although these methods reduce friction and metal wear in certain applications, they do not allow for continued lubrication of the metal parts for periods of time when the primary lubricant may be rendered ineffective or lost.

Militec-1 metal conditioner forms a chemical barrier to the metal surfaces with a molecular coating of oil. This allows the metal surfaces to remain lubricated even after the oil is removed. A surface treatment also provides lubrication to the metal components during start-up periods when the metal is normally unprotected. Additionally, the molecular bonding provides corrosion protection to the metal surfaces if exposed to saltwater contamination. These factors contribute to the survivability of a machine or combustion engine (or their components) in the event of catastrophic failure of the oil reservoir.

In April 1988, the Commander in Chief of the Atlantic Fleet Maintenance Office, Norfolk, VA initiated operational assessments of the Militec-1 metal conditioner. The metal conditioner has been used in shipboard P250 Mod 1 firefighting pumps, aircraft handling equipment (yellow gear) at a Naval Air Rework Facility, small boat diesel engines, a variety of diesel, gas and two-cycle internal combustion engines, several types of gearboxes, and main propulsion shaft bearings. It has not been used in gas turbines.

In July 1988, the Combat Support System, Marine Corps Research, Development, and Acquisition Command, Quantico, VA conducted an evaluation of the Militec-1 metal conditioner with 10W30 oil in the M-151A2 engine of a general purpose ground transport vehicle. The test vehicle, carrying full combat weight, operated without oil under full engine load for over 25 minutes and 12 miles with no loss of power.

The Submarine Materials Review Board of the Navy Environmental Health Center evaluated Militec-1 for specific health hazards when used in air compressor lubricating oil. Based on the Board's recommendations the Navy Medical Command concurred with the use of the Militec-1 metal conditioner under the limited usage category which covers hydrocarbon materials such as lubricants. Only normal precautionary safety measures were recommended when handling the metal conditioner.

Militec-1 metal conditioner has also been used by U. S. Marine Corps in automatic weapons to decrease jamming and prevent corrosion.

The metal conditioner of this qualification requirement provides the following features:

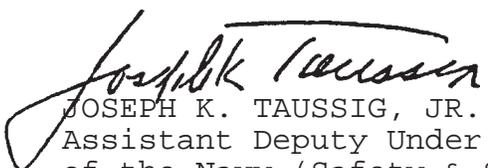
- a. forms a chemical barrier which reduces friction, corrosion, and rust;
- b. assists in neutralization of acids formed as products of combustion;
- c. provides protection over high heat ranges resulting in reduced energy consumption;
- d. provides for continued operation of mechanical parts of internal combustion engines, gearboxes, and shaft bearings even after the primary lubricant is removed;
- e. does not-change viscosity of the primary lubricant;
- f. reduces "dry" start-ups by forming a molecular bond on all metal surfaces of mechanical equipment;
- g. and does not allow material build-up on the metal surfaces which would change the tolerances on finely machined parts.

Delaying the qualification of the Militec-1 Metal Conditioner severely impairs the ability of essential mechanical equipments such as compressors, pumps, combustion engines, gearboxes, and shaft bearings (excluding gas turbines) to survive and continue to operate in the event of emergencies where there is a loss, contamination or non-existence of the primary lubricant.

#### 5. Certification

The Militec-1 Metal Conditioner provided by the supplier listed in section 2 above is a material that meets the Navy's qualification requirements and is certified and approved for immediate use by all commands having available discretionary funds. Militec should be used in accordance with the manufacturer's instructions and Material Safety Data Sheet. Other qualified sources are continuing to be sought.

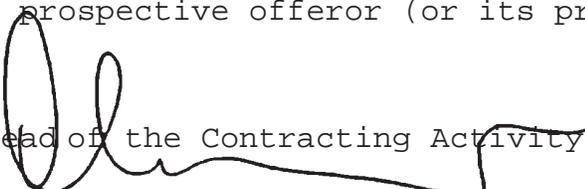
I hereby certify that the facts and representations which are included in this qualification requirement, certification and approval and which form a basis for this action are accurate to the best of my knowledge.

  
JOSEPH K. TAUSSIG, JR.  
Assistant Deputy Under Secretary  
of the Navy (Safety & Survivability)

DATE: 13 JULY 1989

APPROVAL:

Based on this justification No. 89-006, the foregoing qualification requirement is established. Pursuant to FAR 9.202 (b), it is further determined that the requirements of FAR 9.202(a)(1)(ii) through (4) are waived for two (2) years as it is unreasonable to specify all the standards for qualification which a prospective offeror (or its product) must satisfy.

  
Head of the Contracting Activity (HCA)

D. W. MCKINNON, JR., RADM, SC  
Commander, Naval Supply Systems Command

DATE: 20 July 1989