

UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support School
Training Command
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F207

STUDENT OUTLINE

JOINT OIL ANALYSIS PROGRAM (JOAP)

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given the billet of maintenance management chief, a requirement to monitor maintenance management programs, and the references, identify the procedures for processing equipment through the various maintenance related programs, to ensure required programs are utilized in accordance with the references.

2. Enabling Learning Objectives: Given the billet of maintenance management chief, a requirement to monitor maintenance management programs, and the references, identify:
 - a. The purpose of the Joint Oil Analysis Program (JOAP).
 - b. The equipment associated with the Joint Oil Analysis Program (JOAP).

OUTLINE

1. **PURPOSE AND USE**

a. Purpose. A Scientific testing or evaluation performed on used oil, in attempt to determine whether oil may be retained or changed. The testing and evaluation of the oil also provides information on internal condition of engines, transmissions, and other oil-wetted components.

b. Use. The oil can be analyzed using one of two methods:

(1) Spectrometric Analysis: Used to determine the concentrations of various metal particles of microscopic size, which has been produced by the friction of moving parts entering the oil stream, which are then dispersed and suspended throughout the lubricating oil system. The analysis also helps determine which component parts generated the particles.

(2) Physical Property Analysis: Used to detect property changes in used oil viscosity, fuel dilution, or water content which may be indicative of faulty equipment, operating conditions, or maintenance procedures. This analysis reduces the requirement to change oil based on hours, miles, or calendar days as indicated in specified equipment technical manual and lubrication orders.

(3) Oil and filters may be changed when recommended by the oil analysis laboratory.

c. The final determination to change the oil and filters will be the responsibility of the unit commander or his designed representative.

d. Participation in the program is Mandatory for Marine Corps ground equipment listed in TI-4731-14/1_.

e. Oil analysis monitors will be appointed at all units and levels of command with equipment enrolled in the program.

f. The JOAP is an agreement among the Army, Navy, and Air Force to integrate and standardize policies, procedures, research, and development for the program. The Marine Corps is an associate member of the JOAP coordinating group, which is responsible for implementing and monitoring the program. MCO 4731.1A establishes the oil analysis in the Marine Corps.

g. Local Marine Corps collection and handling processes will be detailed in your unit's quality assurance SOP. Many procedures will be equipment peculiar. Oil contamination and equipment internal wear are operating environment related.

2. MAJOR ITEMS/COMPONENTS AFFECTED

a. Major Items Affected. Ordnance, Motor Transport, and Engineer equipment listed in TI-4731-14/1_ encl: (1) through (3).

b. Components Affected. Engines and transmissions as applicable to equipment listed in TI-4731-14/1_.

c. Equipment procured with a manufacture's warranty will have oil sampling scheduled and performed in conjunction with PMCS as indicated in applicable Technical Manual (TM's) until expiration of the warranty period. Check the equipment's advance logistics order (ALO) for warranty information.

Equipment which is deployed from its unit, maintained in long-term storage (6 months or longer), level A packaged, or used for developmental purposes, static displays, or training aids are exempt from the Oil Analysis Program.

3. OIL SAMPLING

a. When to sample.

(1) Scheduled Samples. Oil sampling will be conducted on equipment listed in the TI-4731-14/1_ encl: (1) through (3) in conjunction with the Preventive Maintenance Checks and Services (PMCS).

(a) Equipment procured with a manufacturer's warranty will have oil sampling scheduled and performed in conjunction with the PMCS as indicated in applicable Technical Manual (TM's) until expiration of the warranty period. Equipment procured under a warranty is identified by applicable User's Logistic Support Summary.

(b) Equipment not procured with a manufacturer's warranty or when the warranty has expired will have oil sampling scheduled and performed in conjunction with PMCS per the commodity, chapter of TM 4700-15/1_.

(2) Special Samples. Submitted to the JOAP laboratory under the following reasons:

(a) At the request of the Laboratory.

(b) After an engine or transmission has been replaced.

(c) After indication of a problem (overheating, excessive oil loss, etc.) or contamination (cloudy, dirty, watery, visible metal particles, etc.

(d) At the Commander's discretion, special samples will be marked SPECIAL and banded with red tape or some other conspicuous manner.

(3) Exemptions. Equipment, which is deployed from its home site or used for developmental purposes, static displays or training aids are exempt from the oil analysis program.

(a) The program will be suspended for units in combat.

(4) Warranty Items. Oil filters will be changed per recommendation interval until expiration of the warranty. If the servicing laboratory identifies a problem requiring, either maintenance or lubrication change, the oil analysis monitor will contact the warranty coordinator for guidance. After expiration for the warranty, oil filters will be changed as required, using the applicable TM's and oil analysis laboratory's recommendations as guidelines.

b. How to Sample.

(1) Samples may be taken without warming a component to operating temperature if either the equipment has been operated within the last 30 days or ambient temperature allows.

(2) Ambient temperature may often be too low to easily take a sample. In these cases, equipment should be operated just long enough to warm the oil. However, equipment either coming from storage or a developmental situation, as described in paragraph 5a(3) in TI-4731-14/1_, must always be brought to operating temperature before sampling.

4. SAMPLING METHODS. See Paragraph (3) page 3 of TI-4731-14/1_.

a. Valve method. Open oil sampling valve to flush a SMALL amount of oil from the line.

b. Pump Method. Used to take samples through either the oil filler neck or the through the dip stick.

5. REQUIRED FORMS. See Paragraph (6) forms page 6 of TI-4731-14/1_ and chapter 2, page 2-10-1 of TM 4700-15/1_.

a. DD Form 2026 (Oil Analysis Request)

(1) Preparation instructions are provided in TM 4700-15/1_.

(2) Once returned to the unit by the laboratory, the most current form is retained with the equipment.

b. DA Form 2408-20 (Oil Analysis Log)

(1) Preparation instructions are provided in TM 4700-15/1_.

(2) This form is filed and maintained in the ordnance vehicle logbook or equipment record jacket until the component is disposed of.

c. DA Form 3254-R (Oil Analysis Recommendations and Feedback)

(1) Preparation instructions are provided in TM-9-2300-422-23&P.

(2) This form is used to correspond with the oil analysis lab.

6. OIL ANALYSIS LABORATORIES. Army laboratories are preferred over other JOAP laboratories because (1) they offer both spectrometric and physical property testing, and (2) the Army Oil Analysis Program provides the Marine Corps with a single database to maintain historical data. In the absence of an Army laboratory, the nearest JOAP laboratory or JOAP authorized commercial laboratory with both physical property and spectrometric capabilities is acceptable.

7. MMO. Coordinates and monitors the program. Ensures the following publications are available:

- a. MCO 4731.1A - Marine Corps Order
- b. TI-4731-14/1_ - USMC Oil Analysis Program
- c. TB-43-0210 - Nonarenautical Equipment (AOAP)
- d. TM-9-2300-422-23&P - Army Oil Analysis Sampling Valves, AOAP, Nonaeronautical Equipment
- e. TM 4700-15/1_ - Ground Equipment Record Procedures

REFERENCES:

- 1. MCO 4731.1
- 2. TI-4731-14/1_