

Logistics

JOINT OIL ANALYSIS PROGRAM (JOAP)

This regulation sets the policy and assigns responsibilities for the JOAP. It implements the Tri-Service JOAP Agreement and applies to all Army, Navy, Air Force, and contractor activities including the Air National Guard US Air Force Reserve units and members that use or maintain aeronautical or non-aeronautical equipment for the Department of Defense (DOD).

1. **Purpose of the JOAP.** To ensure timely and accurate oil analysis support to Army, Navy, and Air Force customers through the strategic location of oil analysis laboratories and the standardization of procedures, data elements, analytical instrumentation, and diagnostic techniques. The JOAP is a combined effort of the Army, Navy, and Air Force to set up and maintain a standard program. The specific diagnostic techniques used for the routine analysis of oil samples are spectrometric and physical property analysis.

2. **JOAP Goals:**

a. To improve the operational readiness and economy of military equipment through the use of oil analysis, a condition-monitoring concept that relies on the detection and measurement of wear-metals and the determination of a lubricant's physical properties.

b. To collect and analyze oil analysis data in order to increase the effectiveness of oil analysis techniques in the diagnosis of potential equipment failures and lubricant condition; to provide wear-metal and lubricant physical property data to the various weapons systems managers and others, as required.

c. To ensure all Army, Navy, and Air Force oil analysis plans and operations are integrated to provide:

(1) Standard laboratory techniques, procedures, data, calibration standards, and analytical instruments.

(2) Interservice oil analysis support to all military departments.

(3) The most cost-effective means of determining the condition of lubricants, fluids, and mechanical systems through the use of various analytical techniques.

3. **JOAP Policy:**

a. Oil analysis is a maintenance tool used primarily for the following purposes:

(1) To determine the internal condition of aeronautical and non-aeronautical engines, transmissions, and gearboxes, and their oil-wetted components, through the analysis of used lubricating oils, greases, and fluids, which has as its goal flight safety, enhanced equipment readiness, reduced maintenance costs, and the extension of component life.

(2) To determine the suitability of lubricants and fluids for continued use, which results in savings and early detection of harmful conditions that, if not corrected, could promote premature component failure.

b. Oil analysis techniques are applied when either of the following conditions exist:

(1) The service responsible for the development of an item of equipment has determined that oil analysis contributes to the enhanced

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safety, economy, improved maintenance, and or reliability of the component or system.

(2) A using service, other than the developing one, has determined that oil analysis should be used to monitor a particular component. In this case, the using service coordinates the application of oil analysis for the component or system with the developing service.

c. JOAP laboratory support will be provided according to the following:

(1) Each JOAP laboratory provides non-reimbursable routine support to all DOD customers within the laboratory's geographical area of support and to all transient DOD customers.

(2) Each service must make sure that laboratory response time meets the operational requirements of the customer service. If the laboratory response time, or total turnaround time, fails to routinely meet customer service operational requirements, the JOAP Coordinating Group (JOAP-CG) must review and resolve the issue.

(3) A maintenance recommendation resulting from an oil analysis finding is communicated by the supporting laboratory to the customer as quickly as possible.

(4) Aeronautical samples shall have precedence over all other routine samples.

(5) Joint-manning of JOAP laboratories are considered in those instances when a JOAP laboratory is unable to provide required support because of a lack of manpower, training, or funding.

(6) When the preponderance of workload at any particular service laboratory originates from another service and it has been established that the workload will be continuing, the JOAP-CG will determine if the service contributing the major portion of the workload should assume responsibility for operation of the servicing laboratory.

(7) JOAP laboratories may provide interservice support when at least conditionally JOAP certified. Only qualified operators and evaluators will support interservice work. Service program managers will establish their own policies for using non-JOAP certified laboratories.

d. The JOAP-CG shall establish working groups as required to accomplish special JOAP tasks. The Joint Data Management Control Board (JDMCB) and the Joint Equipment Standardization Committee (JESC) are standing working groups responsible to the JOAP-CG.

e. Maximum interservice use of oil analysis should be a primary consideration and should be achieved through consolidation of laboratories, coordination of support, standardization of instrumentation, analytical techniques, forms, customer and laboratory procedures, and the establishment and maintenance of a joint data system.

f. The establishment of JOAP laboratories serving geographical areas of support are given priority consideration over those established to support a single installation. A laboratory may be established for a given location only after the JOAP-CG determines that response time needs, mission requirements, or special analytical requirements rule out the use of an area laboratory.

g. A single, tri-service staffed JOAP Technical Support Center (JOAP-TSC) is maintained to provide technical support to the JOAP in order to increase program effectiveness, readiness, and economy. The JOAP-TSC is staffed with personnel provided by each military department. A military director (O-4/5) (use rank) directs all operations of the JOAP-TSC. The Director, JOAP-TSC, is filled on a rotating basis among the three services from outside the JOAP-CG or the JOAP-TSC. The Director, JOAP-TSC, is rated by the applicable service office of primary responsibility (OPR)-level organization. The Chairperson, JOAP OPRs, will submit a letter of evaluation on the Director, JOAP-TSC, to the appropriate rating official. The JOAP-TSC performs tasks specified in the JOAP-TSC Charter or approved by the JOAP-CG. Tasks assigned by the JOAP-CG are sent to the JOAP-TSC by the Chairperson, JOAP-CG, after such tasking has been coordinated by the JOAP-CG. If backlogs occur, the Chairperson, JOAP-CG, and Director, JOAP-TSC, are responsible for jointly prioritizing taskings consistent with the overall objectives of the JOAP and the JOAP-TSC charter.

h. Within its scope of capability, the JOAP-TSC shall be the preferred agency for operational test and evaluation of instruments and techniques being considered for inclusion in the JOAP. When individual service research, development, test, and evaluation organizations perform studies or tasks initiated by the individual service programs for possible JOAP application, the associated plans (e.g., objectives, technical approach, desired products) are coordinated with the JOAP-TSC. The JOAP-CG is the approving authority for all such studies and tasks.

i. The JOAP-CG implements and monitors JOAP activities and provides support and tasking to the JOAP-TSC.

j. The JOAP-CG is represented by a chairperson who is selected from one of the three service program representatives for a 1-year term. The term of the Chairperson, JOAP-CG, normally coincides with that of the Chairperson, JOAP OPRs. The Chairperson, JOAP-CG, ensures strict adherence to JOAP policy through effective coordination of activities with the other members of the JOAP-CG, the Chairperson, JOAP OPRs, and the Director, JOAP-TSC.

k. The JOAP OPRs provide interservice policy coordination and direct departmental management oversight. The JOAP OPRs provide headquarters level review on all matters requiring resolution above the JOAP-CG. One OPR representative is designated as Chairperson, JOAP OPRs, and is the primary point of contact for matters originating from the JOAP-CG. The Chairperson, JOAP OPRs, must be rotated among the three services and have a tenure of 1 year. It is desirable that the Chairperson, JOAP OPRs, and the Chairperson, JOAP-CG, are from different military departments.

l. The JOAP-CG will meet as required to effect resolution of JOAP issues. The JOAP-CG shall also provide a status briefing to the JOAP OPRs no less than annually.

m. The Chairperson, JOAP-CG, communicates all issues requiring higher level resolution to the Chairperson, JOAP OPRs. The Chairperson, JOAP OPRs, takes further action as required to effect resolution favorable to the purpose and goals of the JOAP.

n. The JDMCB acts as the JOAP data system administrator whose task is to ensure compatibility among the services. The primary focus of this task will be to ensure that each service obtains valid data concerning oil analysis support of its equipment by another service. The JDMCB:

(1) Reports to the JOAP-CG.

(2) Comprises representatives from each service, with a nonvoting associate member from the JOAP-TSC.

(3) Is chaired by an individual assigned by the JOAP-CG. The chairperson serves a 3-year term and is chosen from the three services on a rotating basis.

o. The purpose of the JESC is to facilitate standardization goals of the JOAP through consolidation of tri-service requirements for in-

struments, e.g., spectrometers and viscometers. The JESC:

(1) Reports to the JOAP-CG.

(2) Comprises technical representatives from each service.

(3) Is chaired by an individual assigned by the JOAP-CG. The chairperson serves a 3-year term and is chosen from either the services or the JOAP-TSC.

p. JOAP laboratories performing interservice support are open to visits by JOAP-CG representatives from the services receiving support, or by the JOAP-TSC, upon prior coordination with the owning service program manager.

q. Instrumentation, forms, and procedures must be standardized to improve the economy and efficiency of the overall joint program. The JDMCB and the JESC will be the primary focal points under the guidance of the JOAP-CG to facilitate program standardization.

r. The assignment of the Chairperson, JOAP-CG and the Chairperson, JOAP OPRs are effective 1 October of each year. The assignment of the director of the JOAP-TSC is effective in September of every third year.

#### 4. JOAP Responsibilities:

a. Each military department must:

(1) Establish and administer an effective JOAP according to the goals and policies of this regulation.

(2) Issue supplemental instructions to this regulation to implement service participation in JOAP and to promote maximum participation and cooperation.

(3) Ensure all appropriate planning documents (budgets, facilities, manpower, maintenance, etc.) include requirements for JOAP and JOAP-TSC support.

(4) Coordinate oil analysis research, development, test, and evaluation projects and studies among the services and the JOAP-TSC to avoid duplicate efforts with regard to the improvement, enhancement, augmentation, or replacement of existing analytical testing techniques, and to ensure tri-service agreement on JOAP study objectives and methodology.

(5) Ensure that oil analysis laboratories provide oil analysis support to the other services according to this regulation and the JOAP Manual. Issues of untimely support, or noncompliance with an individual service's oil analysis requirements, shall be brought to the attention of the JOAP-CG. If issues cannot be resolved at this level, the Chairperson, JOAP-CG, will ele-

vate any unresolved issues to the OPR for further action.

(6) Appoint a primary and alternate member to the JOAP-CG, the JDMCB, and the JESC.

(7) Provide personnel to staff the JOAP-TSC.

(8) Provide funding for JOAP-TSC operations to include laboratory equipment, supplies, travel, and other expenses as agreed to by the JOAP-CG.

(9) Determine the applicability of oil analysis techniques and related evaluation criteria for its equipment.

(10) Designate an OPR to provide interservice policy coordination and direct departmental management of JOAP.

(11) Designate, through the service JOAP OPR, an oil analysis program management office that will serve as executive agent for execution of its oil analysis program and participation in the JOAP. The service Oil Analysis Program management office will ensure that intraservice activities do not interfere with the purpose and objectives of the JOAP except in unique circumstances.

(12) Ensure the collection, analysis, and distribution of oil analysis data required to support interservice customers and meet JOAP objectives.

(13) On a rotational basis, provide a military director for the JOAP-TSC from outside the permanent JOAP-TSC staff.

(14) Manage the JOAP-TSC according to its tri-service charter. The charter will be reviewed by the JOAP-CG and the Director, JOAP-TSC, every 5 years. If required, an update recommendation is made to the JOAP OPRs for their action.

b. The Department of the Army:

(1) Develops and maintains coordinated annual and 5-year JOAP plans.

(2) Develops and maintains performance work statement for contractor-operated laboratories.

c. The Department of the Navy:

(1) Provides administrative support for the JOAP-TSC, to include facilities.

(2) Funds the publication and distribution of the JOAP Manual and its changes.

(3) Prepares and distributes spectrometric oil standards for JOAP laboratories on a reimbursable basis. Develops and maintains, with JOAP-CG approval, all procedures that will ensure availability of JOAP spectrometric oil standards for all service laboratories.

d. The Department of the Air Force:

(1) Establishes, administers, and provides budgetary support for JOAP logistics support, including:

(a) Provisioning support for standard JOAP spectrometers and other standard instruments used by Army, Navy, and Air Force oil analysis laboratories in support of the JOAP.

(b) Depot repair and overhaul support for JOAP standard spectrometers and other standard instruments used by Army, Navy, and Air Force oil analysis laboratories in support of the JOAP.

(c) Procurement of JOAP approved equipment.

(2) Administers and provides budgetary support for DOD spectrometer operator and maintenance training.

(3) Funds the publication of this regulation.

(4) Administers, funds, and maintains a central data base available for use by the departments of the Air Force and Navy.

BY ORDER OF THE SECRETARIES OF THE AIR FORCE, THE ARMY, AND THE NAVY

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1 Attachment  
Glossary of Terms

#### SUMMARY OF CHANGES

This revision more specifically defines the Joint Oil Analysis Program (JOAP) organizational structure and the roles and responsibilities of the key management positions with that structure. It provides additional guidance on interservice management processes to ensure coordinated planning and execution within the JOAP and between the three service oil analysis programs. It also expands policy definitions regarding the characteristics of effective interservice support. The Joint Equipment Standardization Committee (JESC) and the Joint Data Management Control Board (JDMCB) are newly established technical area coordinating groups. There is also the new position of chairperson of the JOAP offices of primary responsibility to facilitate resolution of difficult program issues.

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## GLOSSARY OF TERMS

**CERTIFICATION.** The process by which a laboratory and its personnel are determined to be capable and qualified to analyze oil samples, evaluate oil analysis results, and make maintenance recommendations based upon those analytical results. Certification Program. A program managed by the JOAP-TSC in coordination with each service oil analysis program management office, to ensure that laboratories and personnel meet certification requirements of individual service oil analysis programs.

**CORRELATION PROGRAM.** A program managed by the JOAP-TSC in which all JOAP laboratories receive and analyze used and synthesized oil samples. The primary purpose of this program is to ensure that all spectrometers, or other analytical instruments, produce correlative results that can be used to determine inter- and intraservice analysis capability. Participants include the Army, Navy, Air Force, allies enrolling through Foreign Military Sales, defense contractors with government contracts requiring oil analysis, private contractors supporting authorized users, and others as authorized by the JOAP-CG. By approval of the JOAP-CG, the Correlation Program may be expanded to include other laboratory instruments and techniques.

**CORRELATION SAMPLE.** A sample of oil, synthetic or mineral, prepared by the JOAP-TSC and used to monitor instrument capability to produce desired results and laboratory personnel compliance with JOAP technical order procedures. Correlation sample data provide critical information relative to a laboratory's certification status.

**CUSTOMER.** Any activity authorized by the JOAP-CG to submit samples to and receive oil analysis results and recommendations from a JOAP laboratory. Any JOAP-CG member may authorize customers to use his or her service's laboratory if the additional workload does not interfere with an existing workload.

**EVALUATION CRITERIA.** Information used by oil analysis laboratories in the evaluation of oil analysis results. Evaluation criteria may

comprise wear-metal limits, wear-metal trends, decision tables, physical test limits, component part composition, component diagrams, and specific comments related to the particular component from which an oil sample is taken.

**INTERSERVICE CUSTOMER.** An activity within one of the services that has oil analysis support provided by another service's laboratory. Joint Oil Analysis Program - Coordinating Group (JOAP-CG). A working group responsible for implementing and monitoring JOAP activities. It is composed of oil analysis program management representatives from the Army, Navy, and Air Force. The Marine Corps and Coast Guard may be included as nonvoting, associate members of the JOAP-CG.

**JOAP LABORATORY.** An Army, Navy, or Air Force oil analysis laboratory operating according to JOAP regulations. Its personnel must be certified according to established JOAP procedures and capable of providing oil analysis support to the other services.

**JOAP MANUAL.** A tri-service manual (NAVAIR 17-15-50.1/50.2/50.3/50.4, TM 38-301-1/-2/-3/-4, and TO 33-1-37-1/-2/-3/-4) containing consolidated procedures, methods, and evaluation criteria used by JOAP oil analysis laboratories and customers.

**JOAP SPECTROMETER.** An analytical instrument, approved by the JOAP-CG, used to detect and measure designated wear metals contained in lubricating oils and other fluid samples.

**JOAP OFFICES OF PRIMARY RESPONSIBILITY.** The Army, Navy, and Air Force executive agents responsible for ensuring effective interservice policy coordination and problem resolution and providing management control over their respective service oil analysis programs.

**JOAP TECHNICAL SUPPORT CENTER (TSC).** An organization composed of technical representatives from each service that provides technical support to the JOAP and performs technical tasks for the JOAP-CG.

**JOINT DATA MANAGEMENT CONTROL BOARD (JDMCB).** A working group tasked to ensure standardization of computer codes, review individual service data requirements, and provide for effective data system integration across service lines.

**JOINT EQUIPMENT STANDARDIZATION COMMITTEE (JESC).** A working group tasked to serve as the integrating focal point among the three services for consolidating functional requirements for standard JOAP equipment. The JESC will also coordinate evaluation criteria and test and evaluation plans in support of joint evaluation and testing projects accomplished by the JOAP-TSC.

**NON-JOAP LABORATORY.** A laboratory that does not meet the requirements of this regulation or the JOAP Laboratory Manual, but may or may not participate in some portions of the JOAP. A non-JOAP laboratory cannot be JOAP certified through the JOAP certification program. Use of non-JOAP laboratories will be at the discretion of the individual service program managers.

**PHYSICAL PROPERTY ANALYSIS.** Analytical procedures used to determine the suitability of a lubricant or fluid for continued use. Tests include analyses for water and fuel contamination, fluid viscosity, and solids contamination.

**RESPONSE TIME.** The elapsed work hours from the time that an analysis request is re-

ceived in the oil analysis laboratory and required processing is completed. Laboratory processing is completed when the sample analysis is evaluated and, if required, action is taken to notify the customer of a maintenance recommendation.

**SPECTROMETRIC ANALYSIS.** A technique used to detect and measure wear metals and other elements from oil-wetted components in aeronautical and nonaeronautical equipment components and to alert maintenance personnel about conditions that may lead to component failure if not corrected.

**SPECTROMETRIC CALIBRATION STANDARD.** A mineral oil that contains known quantities of specific organo-metallic compounds, has a controlled viscosity and flash point, and is used to calibrate and standardize spectrometers. Standards composition must be approved by the JOAP-CG.

**TURNAROUND TIME.** The interval encompassing the period from the time the sample is taken until an answer (maintenance recommendation, request for resample, etc.) is received by the customer. Turnaround time requirements may vary for the individual customers.

**VISCOSITY CALIBRATION STANDARD.** A fluid of known viscosity used by oil analysis laboratories to standardize the viscometers used in the performance of physical property tests.