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Project Operation
GUIDANCE FOR OPERATIONAL CONDITION ASSESSMENTS OF USACE
INLAND NAVIGATION AND FLOOD RISK MANAGEMENT ASSETS

1. Purpose. The purpose of this engineer pamphlet (EP) is to describe a consistent methodology to produce operational condition data for all U.S. Army Corps of Engineers (USACE) assets in the Inland Navigation (INAV) and Flood Risk Management (FRM) programs.
2. Applicability. This EP is applicable to all USACE major subordinate commands (MSCs) having Civil Works (CW) responsibilities in the INAV and FRM programs. Any guidance and requirements in this EP are specific to the INAV and FRM programs.
3. Distribution Statement. Approved for public release; distribution is unlimited.

FOR THE COMMANDER:



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COL, EN
Chief of Staff

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4. References.

a. Executive Order 13327: Federal Real Property Asset Management, 6 February 2004.
<https://www.govinfo.gov/content/pkg/FR-2004-02-06/pdf/04-2773.pdf>

b. 2020 Guidance for Federal Real Property Inventory Reporting, Federal Real Property Council, 17 August 2020.
https://www.gsa.gov/cdnstatic/FY_2020_FRPP_DATA_DICTIONARY_v2_final2.pdf

c. Department of Defense Instruction (DODI) 4165.14 Incorporating Change 1, 4 November 2017. SUBJECT: Real Property Inventory (RPI) and Forecasting.
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/416514p.pdf?ver=2018-12-18-095339-407>

d. DOD Memorandum. SUBJECT: “Standardizing Facility Condition Assessments,” 10 September 2013.
<https://www.acq.osd.mil/eie/Downloads/FIM/DoD%20Facility%20Inspection%20Policy.pdf>

e. Engineer Regulation (ER) 1130-2-554, Project Operation – USACE Condition Assessments.
https://www.publications.usace.army.mil/Portals/76/Users/182/86/2486/ER%201130-2-554.pdf?ver=-QW0hSNrmnHJLrWa98G_Eg%3d%3d

f. ER 1110-2-1156, Safety of Dams – Policy and Procedures.
https://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1110-2-1156.pdf

g. Operational Condition Assessment (OCA) Condition Rating General Guidelines for Corrosion, 14 April 2016. https://usace.dps.mil/sites/KMP-AM/OCAORA/OCA_Policy/Reference/Corrosion%20OCA_General%20Guidelines_4-14-2016.pdf

h. Program Management Plan (PgMP) for Civil Works Asset Management, December 2021.
<https://usace.dps.mil/sites/KMP-AM/PlansandGuidance/Forms/AllItems.aspx?id=%2Fsites%2FKMP%2DAM%2FPlansandGuidance%2FAM%2DPgMP%20Final%2Epdf&parent=%2Fsites%2FKMP%2DAM%2FPlansandGuidance>

5. Records Management (Recordkeeping) Requirements. The records management requirement for all record numbers, associated forms, and reports required by this regulation are addressed in the Army Records Retention Schedule – Army (RRS-A). Detailed information for all related record numbers is located in the Army Records Information Management System (ARIMS)/RRS-A at <https://www.arims.army.mil>. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS-A, see Department of the Army (DA) Pamphlet 25-403, Guide to Recordkeeping in the Army, for guidance.

6. Overview.

a. In this EP, wherever the words “will” and “must” are used, that aspect is mandatory.

b. The Operational Condition Assessment (OCA) process is a crucial tool that USACE CW uses to produce condition ratings for USACE components. OCA ratings inform USACE on current operational conditions, and the ratings can assist in estimating probabilities of failure. USACE uses the OCA-informed probabilities of failure as a factor of estimating risk, which is vital to the budget development process.

c. Assessing each component’s operational condition through an OCA is a foundational step to effective maintenance management and risk-informed budget development.

(1) The OCA program objective is to obtain unbiased, consistent operational condition data of USACE CW components.

(2) “Operational condition” refers specifically to the following properties of a component:

(a) Physical condition is the state of a component’s material parts. In OCAs, a component’s physical condition might be “like new,” or it may consist of several deficiencies.

(b) Performance is a measure of a component’s current ability to execute the function for which it was designed. Performance is an attribute of the component, and when a component is not performing as designed, it can impact operational procedures and/or maintenance requirements.

(c) Likelihood of failure, which is assessed as the likelihood of the component failing within the next five years.

(3) “Assessment” refers to the use of existing data to determine the component’s operational condition. Data sources are further defined in section 7.

(4) A structured process for conducting condition assessments will be described in section 7.

7. Operational Condition Assessment Process. This section identifies and explains the steps required to complete an OCA.

a. An OCA is the process of determining a condition rating for the components being assessed at a facility.

b. OCAs will be scheduled and conducted where all components will be assessed on an interval of no greater than every five years.

c. OCAs will utilize the following steps:

(1) A team will be assembled that consists of a team leader and team members with the appropriate backgrounds and experience. The Regional Asset Manager (RAM) or the RAM's designee is responsible for organizing a qualified OCA team. See section 8 for additional team requirements.

(2) A facility model will be built or updated to appropriately represent the facility's systems and their components. Facility models will be developed in the applicable national tool and database utilizing any available national guidance.

(3) The OCA will be conducted using the rating scales defined in section 10.

(4) The OCA will utilize data gathered from various sources. Data sources should include, but are not limited to:

(a) Observations from OCA team members.

(b) Site testimony from facility staff.

(c) Periodic inspections or periodic assessments, where applicable to the operational context.

(d) Test or performance data.

(e) Engineering analysis.

(f) Facility and Equipment Maintenance (FEM) system data.

(g) Condition monitoring.

(5) Quality control (QC) will be conducted (see section 11).

(6) Quality assurance (QA) will be conducted (see section 11).

d. Full OCAs include the update and review of condition ratings for all components of a facility. Partial OCAs include update and review of condition ratings for a portion of a facility's components.

e. The OCA will be conducted with regional office oversight, and each MSC will develop a regional management plan that defines how the OCA will be conducted. The plan must include a regional oversight panel that performs QA on their MSC's OCAs. HQ Asset Management (AM) will develop internal controls to ensure consistency and completeness of MSC OCA management plans.

8. Roles and Responsibilities. This section identifies the requirements for a trained, knowledgeable, consistent, and unbiased OCA Team.

a. Operational Condition Assessment Team Composition. An OCA team consists of a team leader and the appropriate team members, depending on the required disciplines.

(1) A team leader with the appropriate level of qualifications and is not a facility staff member.

(2) Each team member represents a specific engineering or operations discipline.

(3) Team members may be drawn from concurrent dam safety related inspections occurring alongside the OCA, however each OCA assessor must meet the requirements of this EP and also have experience and understanding of hazards appropriate to the operational context.

(4) OCA teams are composed of experienced and multidisciplinary staff, which will have the appropriate team makeup depending on the components being assessed (structural, mechanical, electrical, geotechnical, reliability, and so on). OCA teams will also include a team member from Operations.

b. Operational Condition Assessment Team Development.

(1) MSC and District staff should include mentoring of new OCA team members in the OCA process.

(2) Team members should rotate to provide learning opportunities for additional personnel and to increase capability and expertise in conducting future OCAs.

(3) Annual workshops and after-action report activities should be encouraged to gather information from OCA team members and to improve the process where necessary.

c. Roles.

(1) Regional Asset Manager (RAM).

(a) The RAM is responsible for the development and overall coordination of the OCA program in their MSC. RAM responsibilities can be delegated where appropriate, but the RAM is ultimately responsible for the OCA program.

(b) The RAM is responsible for scheduling OCAs.

(c) The RAM is responsible for coordinating with the MSC Dam Safety Program Manager to ensure OCA information is available for use in support of the Dam Safety Program, and to ensure the OCA and periodic inspection programs account for the condition of assets within the risk context appropriate for each program.

(d) The RAM is responsible for ensuring that qualified OCA teams are assembled.

(e) The RAM is responsible for the overall QA of the OCA program within their MSC.

(f) The RAM will ensure that any OCA data used for budget purposes is current and valid per the requirements of this guidance.

(g) The RAM is responsible for approving OCA team leads and team members based on the requirements of this guidance.

(2) Regional Oversight Panel.

(a) The Regional Oversight Panel is composed of experienced and multidisciplinary staff, assembled by the RAM, and approved by HQUSACE.

(b) Annually, as OCAs are conducted, the Regional Oversight Panel will conduct QA checks of the OCA data and compliance with the ER and the requirements of this EP.

(3) OCA Team Leader.

(a) The OCA Team Leader facilitates OCA activities and leads communications with the participating facility and District staff.

(b) The OCA Team Leader works with the facility staff to ensure the facility model is current and accurate.

(c) The OCA Team Leader is the technical point of contact (POC) for all ensuing requests for reconsideration of the OCA ratings during the QA phase.

(d) The OCA Team Leader must have previously performed at least three OCAs and must be approved by the RAM.

(4) OCA Team Members.

(a) OCA team members are selected by a combination of qualifications and availability of trained/experienced individuals.

(b) OCA team members will have at least five years of experience in their discipline (engineering/operations). Experience must include design and/or maintenance work in the context of the assessed infrastructure or participation in other inspections, such as Dam Safety Periodic Inspections or other operational or facility inspections.

(c) Prior to conducting an OCA, team members must be familiar with and trained in the OCA process. OCA team members will take HQ level OCA training and will be mentored by an experienced team member of their discipline, which consists of accompanying them on at least two OCAs to gain understanding of how to conduct an OCA and best practices.

(d) OCA team members will coordinate where appropriate with site staff, program managers, maintenance management staff, and others.

(5) Facility managers, operations managers, and program representatives are responsible for ensuring that facility areas of current concern are discussed with the OCA team.

(6) HQ Asset Management.

(a) Annually, HQ AM will conduct national QA checks of the OCA data and compliance with the policy and EP.

(b) Annually, and additionally as needed, HQ AM will conduct national training on the requirements of this document.

9. Operational Condition Assessment Scheduling and Funding. This section identifies the scheduling and funding for OCAs.

a. Scheduling Operational Condition Assessments.

(1) An OCA will be performed on every component built into facility models no less frequently than every five years while the asset is owned, operated, and/or maintained by USACE CW. Any new component will have an OCA done upon turnover to USACE.

(2) An OCA can be scheduled at any time to update OCA ratings based on known condition changes. Updates could be made following improvements in condition due to replacement or repair, worsening condition, or damage due to accidents, flooding, and so on.

(3) An OCA will be scheduled as soon as practicable but no more than 12 months after any component rated lower than a C- is repaired. The OCA process for a repaired component may commence at any time after the repair FEM work order affecting the component is in complete status in FEM.

(4) The OCA schedule will be coordinated among the following parties: the RAM or the RAM's designee, District staff (such as OPMs or other resource managers), OCA team members, and others as required.

(5) OCAs will be conducted concurrently with Dam Safety Periodic Inspections/Assessments and site visits will occur at the same time. Any personnel that assess the OCA must meet the qualifications described in section 8 in the context of operational impacts.

(6) OCAs will be conducted, when possible and where applicable, concurrently with the Levee Safety, annual facility inspections, and other types of inspections.

b. OCAs are funded by the District's operations and maintenance (O&M) facility funds.

10. Operational Condition Assessment Ratings. This section introduces and defines OCA ratings and explains the standard OCA rating scale.

a. An OCA rating is assigned to an individual component following an assessment of its operational condition under normal operating circumstances.

b. Condition factors bearing on the OCA rating must be understood and assessed within the operational context of the original design and normal operations, not the full spectrum of scenarios conceivable for the facility which are unforeseeable and beyond the control of operators and maintainers of the facility.

To the extent an assessor is unable to determine the scenarios contemplated in the original design, hydrologic events beyond the 1000-year return interval can be considered outside the operational context. The operational context must include the expected (likely) events, for which the project is expected to operate and where consequences can be reasonably avoided by action of the operators and maintainers. This context (often bracketed by the 1000-year event) is significant because scenarios outside this context have been considered the subject of "force majeure" for Civil Works facilities by the courts.

c. After reviewing and synthesizing objective sources associated with an individual component's condition, an OCA assessor assigns the rating through applying the assessor's professional judgment.

d. The OCA rating is based on a scale that reflects the degree of severity of an observed and/or documented deficiency and/or concern and its influence on the component's physical condition, performance, and/or likelihood of failure. A component deficiency is a physical characteristic, such as deterioration or damage.

e. When the operational condition of a component is evaluated and rated, the following three elements must be taken into consideration, with the lowest rated of the three being the result rating:

(1) The magnitude and progression of the deficiency on the physical properties.

(2) The level or degree to which the deficiency degrades the component's performance, alters operational procedures, and/or increases maintenance requirements.

(3) The component's likelihood of failure within five years.

f. A standard OCA rating scale is used to assign an OCA rating to each component. See Table 1.

(1) The scale uses school-style ratings A through F, as well as a CF rating for Completely Failed, and a U rating for Unratable.

(2) A component's condition will also be evaluated to determine if it lies near the transitional boundary between one OCA rating and the next lower rating by adding a minus (-) to the condition rating (Table 1). A minus rating increment may be assigned when an assessor determines that the component meets the definition of a particular OCA rating but may be showing initial signs of the next lower OCA rating. The assessor may believe the component is at the point where it will soon worsen to a lower condition rating.

(3) In addition to the standard OCA rating scale (A through CF), each of the ten standard OCA ratings may also be described by a qualitative descriptor (such as “Excellent” for A or “Failing” for F) or an index value (such as 9 for A or 0 for CF) as noted in Table 1. These qualitative descriptors and index values are intended as alternate ways to describe OCA ratings in words or values. While these alternate methods can be helpful for reporting or communication, the standard OCA rating scale (A through CF) remains as the single, official representation of OCA ratings.

(4) A rating of U (Unratable) will be applied only when, after applying due diligence in reviewing available data sources, an assessor does not have adequate confidence in rating a component A to CF. An assessor will judge their confidence level relative to the criticality or importance of the component, such that more critical or important components shall receive greater scrutiny.

(5) The FRM OCA program also contains a Dam Safety (DS) rating for components whose condition and probability of failure attributes are best considered in the context of hazards associated with loss of life due to dam failure. This subset of components from the FRM OCA component list are subject to dam safety-related considerations and not appropriately rated in the operational context. When present in a facility model, these components will default to a DS rating that cannot be adjusted by assessors.

g. OCA ratings below a B (B-, C, C-, D, D-, F, and CF) will be verified by observation, consultation with technical experts, testimony by facility staff, and/or documentation from other sources.

(1) OCA ratings below a B will be supported by written comments documenting the component’s condition, a description of any deficiencies present, and the source of knowledge. Comments will refer to objective references of condition to the extent possible.

(2) OCA rating comments will include details describing the condition of the component and will provide specifics regarding any effects of the deficiency on facility operations, maintenance requirements, and component performance. The comment will use wording from the condition rating definitions (Table 1) along with further description noting the specific condition of the component.

(3) OCA rating comments will also specify the source of information (assessor observation, staff testimony, inspection report, or other documentation).

(4) Additional comments will be included to support the rationale for assigning a minus increment.

(5) OCA ratings below a C- will include an approved valid FEM work order number in the FEM Work Order Number field in the OCA tool. The OPM will provide the work order number to the assessment team. The content in the FEM work order will address the deficiency documented in the OCA. The FEM work order may address other deficiencies at the facility, and the FEM work order may address multiple OCA components so long as the work order documents the work necessary to address the deficiency associated with the OCA component rating entered in the tool.

(6) When a U rating is applied, the assessor will document their reasoning and describe why the component was unratable. Additionally, the assessor will provide recommendations on the information needed to rate the component A-CF.

h. In addition to the required OCA rating comments, OCA ratings will be supported (where practical) with appropriate rating support data. Rating support data can include photographs, audio, video, Global Positioning System (GPS) coordinates, references to FEM maintenance work orders, and performance data (from the Lock Performance Monitoring System – Navigation Business Line), Operations and Maintenance Business Information Link, Hydropower and other business lines, and/or other sources (where practical).

i. If an OCA rating is disputed, the RAM or the RAM's designee will be consulted to resolve the issue.

Table 1
OCA Rating Scale and Definitions

OCA Rating	Index Value	Descriptor	Physical Condition	Performance	Likelihood of Failure
A	9	Excellent	No signs of degradation and recently put into service.	No performance issues and was recently put into service.	Extremely unlikely to fail within the next 5 years.
A-	8				
B	7	Good	Minor deficiencies.	No performance issues.	Low likelihood of failure within the next 5 years.
B-	6				
C	5	Fair	Moderate deficiencies.	Deficiency is beginning to affect component's performance, operational procedures, and/or maintenance requirements.	Potential failure mode with a moderate likelihood of failure within the next 5 years.
C-	4				
D	3	Poor	Significant deficiencies affecting a substantial portion or critical feature of the component.	Deficiency increasingly affects component's performance, operational procedures, and/or maintenance requirements.	Potential failure mode with a high likelihood of failure within the next 5 years.
D-	2				
F	1	Failing	Severe deficiencies affecting a substantial or critical feature of the component.	Deficiency substantially affects component's performance, operational procedures, and/or maintenance requirements.	Potential failure mode that could fail imminently.
CF	0	Completely Failed	Due to degradation, component has failed and does not perform its intended function.	Component has failed or does not perform its intended function.	Component has failed.
U¹	n/a	Unratable¹	Unratable. ¹	Unratable. ¹	Unratable. ¹

¹See detailed guidance in sections e.(4) and f.(5) of this section.

11. Operational Condition Assessment Quality Control and Quality Assurance. This section describes QC and QA reviews to help ensure the OCA data is the highest quality possible and MSC AM processes meet AM tenets.

a. Quality Control. All OCAs will have QC performed by the OCA team and representatives from the District's Operations Division to validate the following:

- (1) Components are accurately represented in the facility models.
- (2) OCA ratings and comments are complete, accurate, and justified with proper written comments and appropriate rating support data (such as photographs and report references), as required by this guidance.

b. Quality Assurance.

- (1) QA will be performed at the MSC level to ensure the requirements of this guidance are followed.
- (2) A National QA Consistency Review will be conducted annually across all MSCs to evaluate and improve the consistency of OCA data.

Glossary

Assessment

The application of professional judgment using data from asset monitoring to determine and apply an asset's condition rating.

Asset

Any resource (for example, facility, structure, piece of equipment) that USACE has the responsibility to account for or maintain.

Asset Management (AM)

The coordinated activity of the USACE CW to realize value from assets.

Bias

A particular tendency, trend, inclination, feeling, or opinion, especially one that is preconceived or based on subjective data or incomplete objective data.

Component

A defined part or feature of a USACE asset that will be maintained, repaired, or replaced.

Deficiency

A physical characteristic, such as deterioration, damage, or other irregular flaw, and/or a violation of regulations.

Facility

A constructed USACE asset that serves a particular purpose and that is not a part of another USACE asset.

Facility Model

A representation of a facility's components, systems, and their relations or linkages, which will be developed for each facility and will be used by an OCA team to conduct an OCA.

Facilities and Equipment Maintenance (FEM) System

Facilities and Equipment Maintenance System is the Department of Defense Joint Logistics Systems Center's standard Computerized Maintenance Management System. FEM is the USACE tailored version of MAXIMO Enterprise Base System, which is a Commercial-Off-the-Shelf System. FEM is an enabler for life cycle asset management, providing critical data and information required to meet real property performance measures related to "right" cost and condition of assets. (Memorandum, CECW-CO, Implementation of Facilities and Equipment Maintenance for Asset Management, dated 26 September 2007)

Operational Condition

A component's ability to meet its feature mission requirements, within the operational circumstances for which the feature is designed to perform.

Operational Condition Assessment (OCA)

A HQUSACE AM-directed assessment of USACE components in which the assessment occurs no less frequently than every five years and produces an Operational Condition Assessment Rating that incorporates an assessment of the component's physical condition, performance, and likelihood of failure.

Operational Condition Assessment (OCA) Infrastructure Hierarchy

The three-layer HQ USACE AM framework that aligns components to systems to facilities and that HQ AM uses for asset condition awareness and informing AM decisions.

Performance

A measure of a component's current ability to execute the function for which it was designed.

Physical Condition

The observed state of a component with respect to its material parts.

Quality Assurance (QA)

A systematic process of checking whether a product or service in development meets specified requirements, especially one where the process is applied by an independent party that did not perform the work and is not part of the organization that performed the work.

Quality Control (QC)

A process through which an organization seeks to ensure that product quality is maintained or improved and that errors are reduced or eliminated. QC is a first-line verification performed by the team and/or organization that performed the work.

Risk

The measure of the probability and severity of undesirable consequences; the relationship between the consequences resulting from an adverse event and its probability of occurrence. Risk is measured as (Probability of an Event) x (Probability of Adverse Response to the Event) x (Consequences of the Event).

System

A USACE asset that is part of a facility and that consists of regularly interacting or interdependent groups of components that perform defined functions. (Note that a system can consist of other systems, which are typically referred to as "sub-systems.")