DCMA Manual 2303-01, Volume 4
Surveillance: Engineering

Office of Primary Responsibility:	**Contractor Effectiveness Capability Board**
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Purpose: This manual is composed of several volumes, each containing guidance and requirements for surveillance. In accordance with the authority in DoD Directive 5105.64 and DCMA Instruction 2303, "Surveillance," this volume implements policy, assigns responsibilities, and provides procedures for the planning and execution of engineering surveillance.

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SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY.

a. This volume applies to all engineers performing surveillance of contractors' technical management systems, supporting processes, and related work-products. It applies to all engineering roles including industrial engineers (IE) and quality assurance engineers (QAE). For purposes of this manual, engineer and FS will be used interchangeably.

b. Engineers performing software surveillance must follow additional guidance pursuant to Volume 9 of DCMA Manual (DCMA-MAN) 2303-01, "Surveillance: Software."

c. Engineers performing NASA-specific surveillance must follow additional guidance pursuant to Volume 6 of DCMA-MAN 2303-01, "Surveillance: National Aeronautics and Space Administration."

d. Engineers supporting another function (e.g., quality or manufacturing) should refer to the applicable volumes.

1.2. POLICY.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01, "Surveillance."

1.3. SPECIFIED FORMS AND INFORMATION COLLECTION.

In addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01, this volume specifies the following forms, linked on the resource page for this volume:

a. DoD Form (DD Form) 1692, "Engineering Change Proposal (ECP)," January 2018.

A document delivered to the government by the contractor documenting an engineering change proposal (ECP). This document is an output of the contractor's configuration change management process. The requirement to submit this document is typically contractually mandated as a Contract Data Requirements List (CDRL) item.

b. DD Form 1694, "Request for Variance (RFV)," April 2017.

A document delivered to the government by the contractor documenting a request for variance (RFV). This document is an output of the contractor's configuration change management process. The requirement to submit this document is typically contractually mandated as a CDRL item.

1.4. SUMMARY OF CHANGES.

This volume is a new issuance and must be reviewed in its entirety.

SECTION 2: RESPONSIBILITIES

2.1. COMPONENT HEADS AND CAPABILITY BOARDS MANAGERS.

In addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01, DCMA component heads and capability board managers must align surveillance related issuances, engineering-specific agency training, guidance, and tools with this volume.

2.2. OPERATIONAL UNIT COMMANDERS, DIRECTORS, AND CENTER DIRECTORS.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

2.3. CONTRACT MANAGEMENT OFFICE (CMO) COMMANDERS AND DIRECTORS.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

2.4. FUNCTIONAL DIRECTORS, DEPUTY DIRECTORS, AND GROUP LEADERS.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

2.5. SUPERVISORS.

In addition to assigned responsibilities pursuant to Section 2 of Volume 1 of DCMA-MAN 2303-01, supervisors must:

a. Review surveillance plans and document the evaluation in Product Data Reporting and Evaluation Program (PDREP).

b. Perform data integrity reviews of surveillance plans in PDREP and communicate the results to the functional director, deputies, or group leaders.

2.6. FUNCTIONAL SPECIALISTS (FS).

a. FS.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

b. Lead Engineers.

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01. If a lead engineer has been assigned to a team, the lead engineer must:

(1) Provide engineering and cross-functional surveillance coordination as requested by the team supervisor.

(2) When requested, support the supervisor in performing the annual review and data integrity review of the teams' surveillance plans. The supervisor is responsible for documenting this review in PDREP and communicating results of these reviews to CMO senior leadership.

2.7. ADMINISTRATIVE CONTRACTING OFFICERS.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

SECTION 3: SURVEILLANCE OVERVIEW

3.1. SURVEILLANCE OVERVIEW.

a. The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

b. Surveillance is an essential part of the DCMA mission and responsibility. Many of the core technical management systems specifically requiring DCMA engineering surveillance are delineated in Section 42.302(a) (40-49) of the Federal Acquisition Regulation (FAR). Pursuant to Subpart 42.302(a) (40-49) of the FAR, DCMA will perform surveillance to assess compliance with contractual terms for schedule, cost, and technical performance, and perform surveillance of the contractor's engineering efforts and management systems, unless withheld by the procuring contracting officer.

3.2. SURVEILLANCE GUIDANCE.

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

a. Engineering surveillance entails assessing the risk of the contractor’s technical management systems and supporting processes required to execute the contractual requirements. These management systems correspond to key contract requirements (KCR).

b. Engineering-related KCRs are listed to illustrate the alignment between an engineering surveillance requirement imposed by the FAR, contractor management system, and engineering KCR. The contract receipt review (CRR) Integrated Workload Management System KCR list is the most current list of KCRs and takes precedence over the examples provided in this volume. For the most current list of KCRs, additional guidance is in accordance with the resource page of DCMA-MAN 2501-01, “Contract Receipt and Review.”

(1) KCR-EN-0016 - Configuration Management (CM) System.

CM is a significant focus area for engineering surveillance. One of the five “pillars” of CM is configuration change management. Two of the primary contractor CM work products requiring DCMA surveillance are ECPs and RFVs. Both are contract requirements requiring DCMA review and evaluation, unless withheld, and are work products the contractor delivers to comply with a contractual requirement (e.g., CM-related CDRL items) for making requests for configuration changes or variances. The FS must evaluate these contract-required deliverable work products for adequacy and conformance to a set of requirements utilizing a DD Form 1692 for an ECP, a DD Form 1694 for a RFVs, or other agreed upon format.

(a) The engineer must evaluate ECPs and RFVs in accordance with DCMA-MAN 2301-06, “Discrepancy Processing,” and the Configuration Management and Configuration Change Management Guidebook located on the resource page of this volume.

(b) Compliance with the Configuration Management and Configuration Change Management Guidebook is mandatory in accordance with Paragraphs 3.8.c.(1)(a) and 3.8.e. of DCMA-MAN 4501-01, "Agency Issuance Program," and as prescribed in this volume. The procedures in the guidebook are enforceable and auditable.

(2) KCR-EN-0017 - Data Management System.

(3) KCR-EN-0019 - Human Systems Integration Management System.

(4) KCR-EN-0020 - Product Support Management System.

(5) KCR-EN-0021 - Parts Management System.

(6) KCR-EN-0023 - Quality Management System.

Quality management is typically a significant focus area for QAE surveillance. These requirements may be imposed by a FAR clause on the contract (e.g., Subsection 52.246-11 of the FAR), higher level contract quality requirement, embedded within a statement of work (SOW), performance work statement, or invoked in a CDRL. The engineering KCRs listed in Paragraph 3.2.b. should be used by the QAE to plan surveillance for these requirements. The QAE should consider processes and sub-processes aligned to KCR-EN-0023 to plan, execute, and document details of their surveillance. Further guidance may be found on the resource page of this volume.

(7) KCR-EN-0024 - Reliability & Maintainability Management System.

(8) KCR-EN-0025 - Requirements Management System.

(9) KCR-EN-0026 - Risk Management System.

(10) KCR-EN-0027 - Systems Engineering Management System.

(11) KCR-EN-0028 - Test & Evaluation Management System.

(12) KCR-EN-0029 - Value Engineering Management System.

(13) KCR-EN-0030 - Other Agency – Specific Requirements.

(14) KCR-MFG-0011 - Manufacturing Management Program.

Manufacturing management is typically a significant focus area for IE surveillance. Manufacturing Management System requirements may often be identified by different methods and located in various parts of the contract. For example, the Aerospace Standard AS6500 may be imposed by a FAR clause on the contract (e.g., Subsection 52.246-11 of the FAR), higher level contract quality requirement, within a SOW or performance work statement, or invoked within an approved CDRL such as a manufacturing management plan. FS should use KCR-

MFG-0011 to plan surveillance for these requirements. Apply additional guidance pursuant to Volume 5 of DCMA-MAN 2303-01, "Surveillance: Manufacturing."

c. DCMA engineers will engage in multi-functional teams, as directed by their supervisor, to evaluate the contractors' technical management systems, processes, and work products. The CMO technical teams may be comprised of various engineering roles, including general or interdisciplinary engineers, IEs, and QAEs, all of whom surveil the contractors' technical management systems, processes, and work products. Examples of typical emphasis areas include the:

(1) Interdisciplinary or General Engineering Role.

Emphasizes surveillance of the contractor's technical management systems, processes, and work products including, but not limited to, CM systems, systems engineering management systems, test and evaluation systems, data management systems, risk management systems, requirements management systems, reliability and maintainability management systems, parts management systems, and product support management systems.

(2) IE Role.

Emphasizes and focuses surveillance effort on the contractors' manufacturing and production systems including, but not limited to, manufacturing operations management, manufacturing planning, scheduling and control, manufacturing risk identification, manufacturing or enterprise resource planning and allocation systems, inventory management and control systems, and order fulfilment and delivery management control systems.

(3) QAE Role.

Emphasizes and focuses surveillance effort on the contractors' quality management systems including, but not limited to, inspection systems, which includes measurement system analysis, control of non-conforming material, and counterfeit parts detection and avoidance.

SECTION 4: RISK ASSESSMENT

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

4.1. PREPARING FOR RISK ASSESSMENT.

a. All engineering KCRs validated during CRR have the potential to impact cost, schedule, or technical performance, and the engineer must document them in PDREP. However, there may be cases when, due to low risk or unavailable resources, these KCRs do not proceed beyond the initial surveillance prioritization step.

b. Engineering KCRs are aligned to contractor technical management systems, and each has associated underlying processes, sub-processes and work products the contractor has in place to execute and mitigate risk to the guiding requirement. Throughout the remainder of this volume, these may be referred to as surveillance requirements. Additionally, engineering KCRs are aligned to associated sub-processes or work products in place to track, measure, or document the performance, progress, or output of a specific process to ensure compliance and mitigate risk to the specific contractual requirement. These engineering sub-processes are aligned to contractual requirements such as a CDRL or technical standard. The engineer must select the process associated with the KCR and, depending on surveillance category selected, should consider selecting the associated sub-process or activity to provide detailed risk visibility and executable granularity to their surveillance plan.

c. Engineers may select KCRs from another function (e.g., manufacturing or quality assurance) when the processes associated with those KCRs better define the contractual requirement and contractor's processes. These are referred to as multifunctional or awareness KCRs.

d. In some instances, validated KCRs may have been retained by the procuring contracting officer through contractual withhold of responsibilities in accordance with Section 42.302(a) of the FAR, current memorandum of agreement, or formal written correspondence. These contractual withholds are typically scoped to specific surveillance activities, such as reviewing the contractor's ECP documents. In this example, the DCMA engineer will still determine, based on risk, if a system or process evaluation of the contractor's overall configuration change management process requires surveillance.

4.2. RISK ASSESSMENT PROCESS.

The purpose of risk assessment is to evaluate and rate the underlying processes, sub-processes and work products the contractor has in place to execute to the guiding contractual requirements identified and validated for surveillance in the CRR process.

a. Risk assessment determines the likelihood and consequence of a potential noncompliance of the contractor's process or required work product associated with the contractual requirement. More specifically, if a noncompliance to the contractor's process occurs, the engineer will perform risk assessment to determine the consequence (i.e., impact) in terms of cost, schedule, or performance through risk assessment. The likelihood (i.e., probability) of a noncompliance to the contractor's process can also be determined through risk assessment.

b. The results of the risk assessment form the basis for subsequent surveillance planning and prioritization decisions, including whether surveillance is to be performed and the frequency and intensity of the surveillance to be performed. To provide better fidelity of the identified contractual risk, the engineer should further identify underlying processes and sub-processes the contractor has in place to execute and mitigate risk to the contractual requirement. Further evaluation of contractual risk may be performed on the contractor's work products, which are the outputs of executing a specific process related to the contractual requirement.

c. Other potential sources of surveillance that may require risk rating include DCMA-accepted work requirements (e.g., letters of delegation, quality assurance letter of instructions, General Services Administration contracts, memorandums of agreement, or memorandums of understanding) and relevant regulatory requirements (e.g., in accordance with Section 8301-8305 of Title 41, United States Code (also known as the "Buy American Act of 1933").

d. The engineer will not risk-rate or further plan for non-surveillance efforts in PDREP. These activities are addressed in other policies and documented in their respective systems of record. Examples include, but are not limited to:

- Technical Pricing Support (i.e., Technical Support to Negotiations or Technical Support to Indirect Costs).
- CRR.
- Program Support activities (e.g., Program Support Team meetings, writing Risk, Issue, Opportunity, and Observation or Program Assessment Report inputs, program related meetings with contractor or customer).
- Requested technical or analytical support that is not surveillance.

e. To perform risk assessment, the engineer will:

(1) Align a KCR with a process and sub-process if available.

(2) Determine what data will be used as supporting information for the risk assessment. Data sources should include DCMA data, contractor data, and customer data, where available.

(a) Data required to support a consequence analysis.

Risk consequence is driven primarily by the contract requirements, the deliverable product, and its end use. The FS should consider the potential impact of process failure associated with cost, schedule, or technical performance on the overall program, critical and safety requirements, Failure Mode Effects and Criticality Analysis, and Fault Tree Analysis to support consequence analysis.

(b) Data required to support a likelihood analysis.

Risk likelihood is driven primarily by contractor performance history. The FS may utilize defect rates, corrective action requests, the Supplier Risk System, earned value performance, and past surveillance results to support likelihood analysis.

(c) When insufficient or no data is available to support a risk assessment, the FS must:

1. Rate the risk as likelihood three and consequence three for a weighted risk rating of thirteen, or moderate.

2. Add a rationale statement and update the risk rating after surveillance has been performed. Recommended wording for rationale statements: "Due to lack of supporting data, the risk is unknown and rated as moderate."

3. The FS must review the consequence and likelihood ratings and rationale statement after the first planned surveillance associated with the process has been performed and, at a minimum, update the rationale statement.

(3) Assess the consequence (i.e., impact) if a noncompliance to the contractual requirement or process control risk occurs in terms of cost, schedule, or performance. Risk consequence is driven primarily by the contract requirements, the deliverable product, and its end use. Factors to consider may include:

(a) Cost.

Impact on cost of program or contract if the risk event occurred (i.e., dollar value or percentage).

(b) Schedule.

1. Magnitude of potential schedule delay if the risk event occurred (e.g., days, weeks, months).

2. Critical path elements including engineering elements.

(c) Technical Performance.

1. Engineering elements are identified as a critical item (i.e., does not meet key performance indicator or requirements.

2. Engineering elements are associated with a key performance parameter or technical performance measure.

(4) Assess the likelihood (i.e., probability) of a non-compliance to the contractual requirement by the contractor.

(5) Rate the appropriate consequence and likelihood risk level (e.g., numerical score from 1-5) by selecting the rating number in PDREP. A risk rating for consequence may be provided in terms of impact to cost, schedule, or performance, but is only required for one of these criteria.

(a) Since risk assessments are specific to the contractual requirement or KCR, the resulting ratings and rationale statements should be unique to the associated process (i.e., the statements should differ across different processes.) If hours are allocated to a process risk rated as low, the FS must document in the rationale why the surveillance requirement warrants surveillance.

(b) The outputs of a contractor's internal processes are delivered products such as plans, procedures, reports, specifications, drawings, lists, or manuals and may have insufficient data to risk-rate independently. In this case, initially rate the risk as likelihood three and consequence three for a weighted risk rating of thirteen, or moderate.

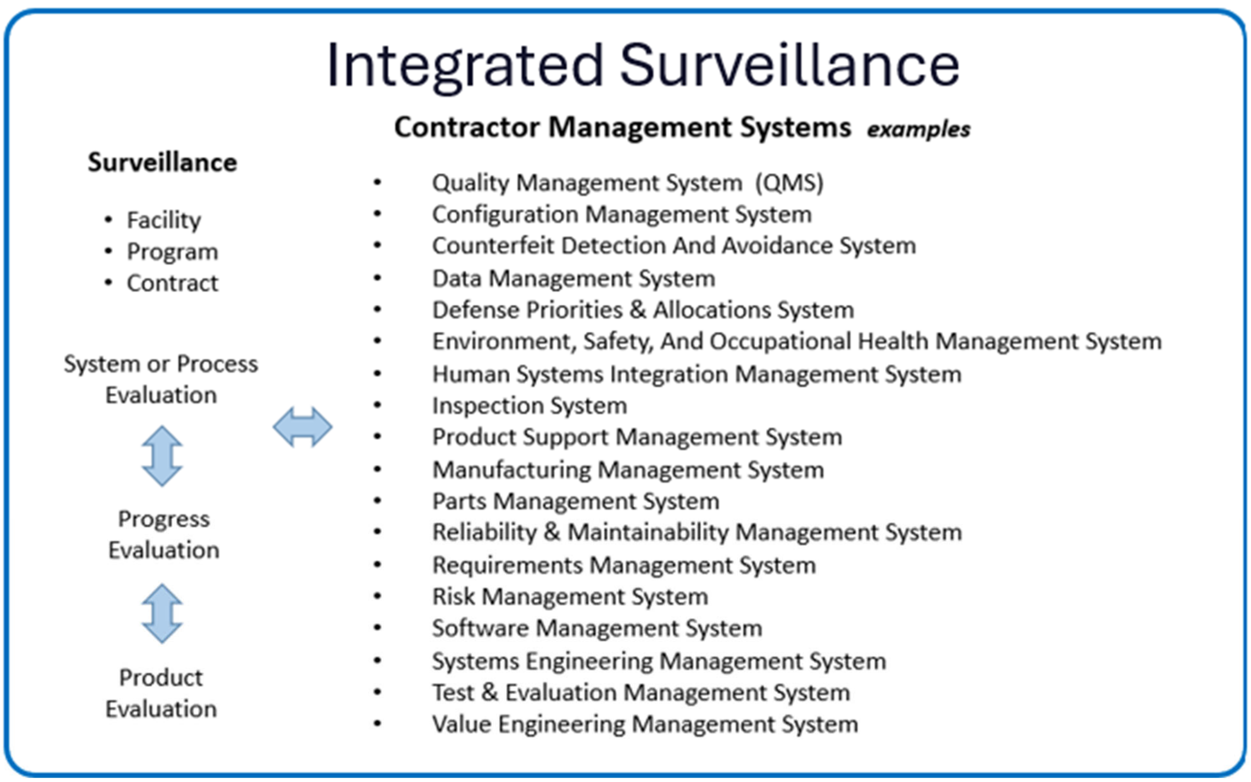
SECTION 5: SURVEILLANCE PLANNING

5.1. SURVEILLANCE PLANNING.

Engineering teams should engage with other teams within the CMO to coordinate surveillance activities, optimize resources, and prevent duplication of efforts during the surveillance planning phases. The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

a. For the most effective surveillance, FS should utilize an integrated approach in which surveillance artifacts, findings, or risk assessments at the work product level can inform process and broader system-level evaluations (See Figure E1.). Likewise, management system evaluations provide and receive insight from routine process and work product surveillance activities, as well as contractor business system surveillance pursuant to DCMA-MAN 2301-01, "Contractor Business Systems."

Figure E1. Integrated Surveillance



b. Contractor management system evaluation (CMSE) is a consideration for surveillance planning and execution. A CMSE methodology enables more thorough and complete evaluation of the contractor's technical management systems. Additionally, CMSE guidance supports quality management systems and other detailed system-level evaluations aligned under the quality management system "umbrella." This is a "system of systems" concept.

c. Sub-system criteria are typically more rigorous than higher level standards and are usually the focus areas for engineers. For example, the CM standards pursuant to the Electronic Industries Alliance (EIA) Standard 649-1 is more rigorous in its detail than a higher–level standard such as AS9100. Risk-based surveillance at the more detailed level results in a more complete and thorough evaluation of the contractor's technical management systems. Additional CMSE guidance can be found on the resource page of this manual.

5.2. PRIORITIZE SURVEILLANCE.

Prioritizing surveillance involves determining which aspects of a system, process, or product require more attention or monitoring as a result of the risk assessment. Surveillance should be prioritized based on risk assessment and resource availability. The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

a. The prioritization of all the surveillance requirements (e.g., risk rated processes or CDRL items) will enable the FS to identify which processes require surveillance based on risk. Not all surveillance requirements may warrant surveillance, such as low risk rated processes.

b. All surveillance requirements with a risk-rating of high should have hours allocated before moderate risk-rated processes. Low risk surveillance requirements should have minimal hours. If hours are allocated to a process risk rated as low, the FS must include a rationale in PDREP of why the surveillance requirement warrants surveillance.

c. If an FS is not able to perform all the required surveillance due to limited resources, the FS must document in PDREP the total unallocated hours.

5.3. DETERMINE TYPE OF SURVEILLANCE.

Utilizing the three surveillance approaches (i.e., contract, facility, or program), the FS will consider factors such as risk, schedule, resourcing constraints, and available contractor objective evidence to determine the engineering surveillance category: system or process evaluation, progress evaluation, deliverable product evaluation (DPE), and deliverable service evaluation. The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

a. System or Process Evaluation.

(1) System evaluation is used to evaluate how the contractor will execute a technical management system, such as CM, data management, or requirements management throughout the applicable phases of the product's life cycle or duration of the contract. A system evaluation is a larger scale surveillance effort evaluating the various sub-elements within that management system. If planning system-level surveillance, the engineer must break down the effort into the constituent process evaluations and create a separate surveillance event for each in PDREP.

(2) Process evaluation surveillance evaluates the adequacy of the contractor's processes and related procedures capability to satisfy contractual requirements, evaluates the compliance of

the contractor adhering to their documented processes and related procedures, or evaluates the overall effectiveness to provide outputs that meet requirements. The evaluation criteria, as required in a surveillance record pursuant to Section 7 of Volume 1 of DCMA-MAN 2303-01, is typically the DoD-adopted industry standard reference on contract(s). For example, the requirement could be the SOW paragraph, and the evaluation criteria is the military or industry standard, CDRL, or data item description that the engineer assesses compliance against.

b. Progress Evaluation.

A progress evaluation evaluates the contractor's progress towards defining, tracking, and reporting of objective criteria that enables the assessment of overall technical achievement. Engineers typically only perform progress evaluations in relation to entry and exit criteria of contractual milestones (e.g., system requirements review, preliminary design review, critical design review, production readiness review). FS may also utilize progress evaluations to track incremental progress in accomplishing items such as technical performance measures or key performance parameters.

c. DPE.

A DPE evaluates and determines if the contractor's delivered work product conforms to the contract requirements. The contractually required outputs of a contractor's internal processes are delivered products. Examples include DD Form 1692 documenting a contractor's ECP; DD Form 1694 documenting a contractor's RFV; Qualification Test Plan; or Requirements Traceability Verification Matrix.

d. Deliverable Service Evaluation.

Engineering surveillance efforts typically do not include deliverable service evaluation.

5.4. DEVELOP SCHEDULE.

Scheduling of surveillance ensures resources can be allocated to processes requiring surveillance at the appropriate times. If documented correctly, the surveillance plan ensures planned hours can be performed with current resources. The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01. Surveillance scheduling recommendations to consider are:

a. Frequency for completing surveillance is monthly or quarterly for high-risk, quarterly or semi-annually for moderate-risk, and annually or not scheduled for low risk. The frequency for a recurring DPE may initially be commensurate with the contractual delivery, but frequency should be reduced where risk allows. The engineer should also consider resource availability when determining surveillance frequency. When scheduling surveillance of DPE, such as CDRL items, which may not have a specific delivery date, the engineer should schedule DPEs in accordance with the "ECP-RFV DPE in PDREP" job aid, located on the resource page of this volume.

b. Typically, engineers do not use acceptable quality level as a surveillance intensity. Engineering DPEs, such as CDRL requirements, are not subject to sampling and should have "100 percent mandatory" selected in PDREP for intensity. Exceptions may include ECP validation sampling.

c. The engineer should ensure the developed schedule is executable (e.g., total hours less than a full time equivalent or the maximum number of hours an employee can work in one calendar year) to allow for activities outside of surveillance. If surveillance requirements exist beyond the capacity of available resources, the engineer should plan them as unallocated hours.

d. When multiple engineers are assigned to a single surveillance event, the allocated hours are planned at the event level, regardless of how many FS are assigned to that event. For example, if an event is planned for 15 hours and three engineers are assigned to the event, the allocated hours in the plan would be 15 hours. When documenting actual hours spent in the surveillance record, if multiple FS are identified on the record, the hours would be the total hours for the execution, not for each FS.

e. Ensure allocated hours account for the preparation, execution, analysis, to include re-assessment of risk after execution, documenting, and reporting associated with the process.

5.5. SURVEILLANCE PLAN MODIFICATIONS.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

5.6. DELEGATE SURVEILLANCE DECISION.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

SECTION 6: EXECUTE SURVEILLANCE

6.1. PREPARE FOR SURVEILLANCE.

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

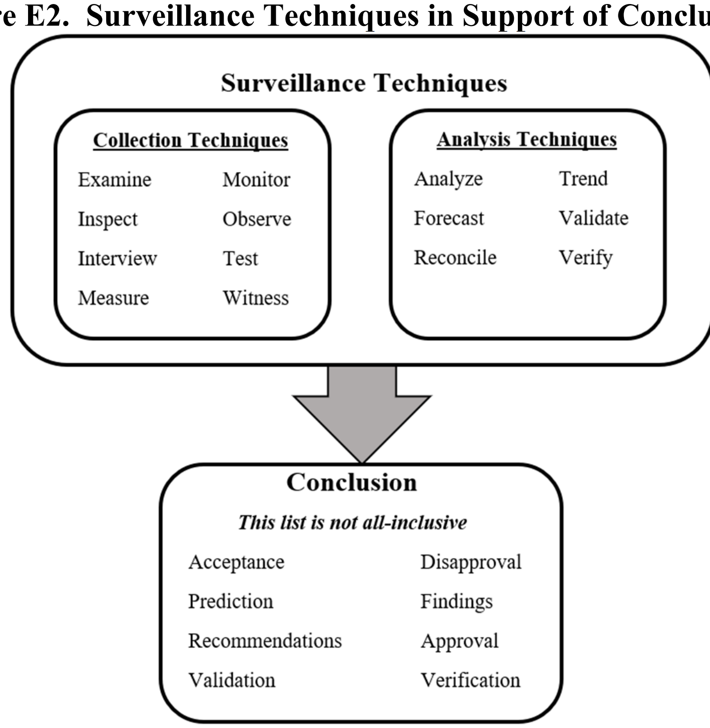
a. Determine Surveillance Logistics.

The FS may perform engineering surveillance within many key areas to analyze and assess the contractor's adequacy, compliance, and effectiveness with contractual terms for schedule, cost, and technical performance in the areas of design, development, and production. Examples of data sets that the FS may use to evaluate the contractor's technical management systems and related processes might include contractual requirement details, criteria and standards, the SOW, data item description, CDRL, contractor procedures, contractor reports, historical performance data, or other data sources identified.

b. Determine Surveillance Techniques.

Surveillance techniques are actions that describe collecting and analyzing information to determine the conclusions through the evaluation of processes, sub-processes, or work products the contractor has in place to execute and mitigate risk to the guiding requirement. DCMA engineers can utilize various surveillance techniques (See Figure E2.). The FS is not required to document surveillance techniques, but they should consider the techniques appropriate for the planned surveillance. Surveillance techniques are a recommended entry in surveillance records.

Figure E2. Surveillance Techniques in Support of Conclusion(s)



(1) Surveillance techniques for data collection are:

(a) Examine.

Examine is used to review non-deliverable contractor process outputs or artifacts, material, equipment, tooling, and policies or procedures for features or characteristics that will be evaluated against requirements using other analysis techniques (e.g., analyze, verify). It can also be used to examine government-furnished property, equipment, or material.

(b) Inspect.

Inspect is typically a data collection technique associated with DPEs. Inspect is used to determine conformity or compliance of a product in accordance with the contract, specifications, data item description, or other defined requirements.

(c) Interview.

Interview technique can be used during personal interaction, to include virtual, to gather information. As an example, the engineer may interview a contractor's engineers to assess their knowledge and understanding of the documentation required in a technical report, and whether this complies with contractual requirements and contractor command media.

(d) Measure.

Measure is used to identify a quantity, percentage, or dimension. It can be performed over time and is used to convert raw data into quantifiable, comparable information or metrics.

(e) Monitor.

Monitor is used for periodic or ongoing observations and reviews of data or of a process. Data can be collected through direct observations, e-mail, or data repositories, and then evaluated over time for adequacy and compliance.

(f) Observe.

Observe is used for instances of noticing or perceiving.

(g) Test.

DCMA engineers may observe, witness, monitor, or verify the test, results, and documentation but typically do not perform the actual test. Test is used to support product acceptance when DCMA is mandated or required to conduct all or portions of a contractually required test through physical operation of the product, system, subsystem, or test equipment. It also applies when DCMA records test data for the official test record.

(h) Witness.

Witness is used for 100 percent oversight of an entire event to confirm the occurrence of the event and adherence to requirements. This can be a very labor-intensive technique. This technique can be required by a procuring activity or self-imposed when the risk is high. It is not one of the preferred techniques.

(2) Surveillance techniques for data analysis are:

(a) Analyze.

Analyze is used to review and evaluate collected, created, or observed data or information. The technique provides a basis for problem solving, explanation, interpretation, and decision making or to assess data for compliance or progress. This technique can include statistical methods.

(b) Forecast.

Forecast is used to compare historical trends, issues, and risks against future requirements to make a projection. Forecasting analysis techniques are typically used to inform a predictive determination and risk mitigating recommendations (i.e., predictive analysis). For example, the IE may observe excessive out of station work in the contractor's manufacturing line and forecast delivery delays.

(c) Reconcile.

Reconcile is used for comparison using related data sets obtained from different sources to determine accuracy and identify errors.

(d) Trend.

Trend is used for evaluating a data set over time to assess the rate of change and trajectory. For example, trend analysis is often used to assess the contractor's CM and manufacturing management process performance based on their submitted RFV data.

(e) Validate.

Validate is used to confirm or determine that a process, product, or service meets the requirements. It is a measure of effectiveness; it is not the same as verify.

(f) Verify.

Verify is used to confirm or determine the level of conformity or compliance to requirements through objective evidence. Verify is often used after techniques such as analyze, examine, observe, or test.

6.2. EXECUTE SURVEILLANCE.

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

a. While performing surveillance, coordination with the contractor, other award management team FSs, and relevant stakeholders is crucial to ensure the surveillance process is conducted as efficiently as possible (e.g., joint assessments, status meetings, multifunctional assessments).

b. As the engineer executes surveillance, it is important to track the time spent. The total time will be required when a surveillance record is completed.

c. To ensure the surveillance plan can be supported by allocated resources, it is recommended that a review of the surveillance planned for the next month, week, or process-dependent cycle, is done to identify if resources need to be reallocated.

d. Performing surveillance in real time with the contractor while in a virtual setting is considered executing virtual surveillance. If the FS is performing the surveillance off-site and accessing the contractor's systems, this is considered remote surveillance.

6.3. RESCHEDULE OR CANCEL SURVEILLANCE.

This paragraph requires no additional details beyond the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

SECTION 7: DOCUMENT RESULTS

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

7.1. DOCUMENT SURVEILLANCE RESULTS.

Documenting surveillance results enables a closed loop approach to determine if the surveillance performed is influencing the risk-rated process. It is important surveillance results are clear, include associated data, and outline what impact the surveillance had on the process risk. The administrative contracting officer may request the engineer to assist or provide related surveillance documentation to support contractor business systems surveillance such as Contractor Purchasing System review or Material Management and Accounting System review. To ensure a closed loop approach for surveillance, the FS must include the following in the results section of the surveillance record:

a. Documentation if the evaluation was successful or unsuccessful. If there are multiple items evaluated, it must be clear which criteria was found unsuccessful.

b. The impact surveillance had on the overall risk of the process.

(1) A recommended statement is: "The surveillance performed [did not impact; identified an increase in; identified a decrease in] the risk associated with this process."

(2) If the risk is increased or decreased, the FS must include what influenced the change in risk, such as items that were found unsuccessful.

c. Conclusions, to include recommendations, prediction, acceptance, concurrence, validation, or verification, support decision-making by stakeholders, (e.g., administrative contracting officer, program integrator, cost and pricing team, award management team).

(1) Systems are comprised of constituent processes. For example, a Test and Evaluation Management System is comprised of sub-processes to include acceptance testing, environmental testing, integration testing, qualification testing, and verification and validation testing. Collectively analyzing results of associated process evaluations can lead to a conclusion or determination of system compliance to the contract requirement.

(2) Engineers may be requested to provide technical conclusions supporting the administrative contracting officer's recommendation of system approval or disapproval when supporting a business system review for contract administrative service-covered contracts pursuant to Subsection 252.246-7007 of the Defense Federal Acquisition Regulation Supplement and DCMA-MAN 2301-01.

7.2. MULTIFUNCTIONAL COMMUNICATION AND REPORTING.

a. Timely exchange of surveillance results is critical to providing insight to a contractor's processes and management systems. Results from an integrated surveillance provide an overall picture of the contractor's management system health and support predictive analysis.

b. All results should be shared multi-functionally, as appropriate. The engineer who performed the surveillance should communicate the results amongst the award management team to enhance multifunctional surveillance documentation and records, situational awareness, and customer insight. The reporting must be accurate, relevant, and timely.

SECTION 8: DATA COLLECTION AND ANALYSIS (DC&A)

The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

8.1. DC&A.

a. The FS will assess various artifacts during surveillance using surveillance techniques (See Paragraph 6.2.). Analysis can be used to make determinations or identify trends to inform any changes in risk or potential need to adjust surveillance.

b. To meet requirements for surveillance of the contractor's management systems in accordance with Paragraph 42.302(a)(41) of the FAR, the engineer should aggregate the results of surveillance of the contractor's processes, sub-processes, and delivered CDRL work products into an overall risk rating of the contractor's technical management systems. For example, the engineer can utilize the risk assessments and surveillance results developed for CM sub-elements configuration planning, configuration identification, configuration change, configuration status accounting, and configuration verification and audits processes to derive an overall risk assessment and conclusion of the contractor's CM system.

8.2. DATA COLLECTION.

DC&A is an integral part of surveillance. The data collected to support surveillance may come from government, contractor, or customer sources. The data collection requirement can be accomplished by:

a. Risk Assessment.

Collecting data to evaluate risk and support the risk rating.

b. Executing Surveillance.

Collecting data to support the planned surveillance.

c. Evaluating Surveillance Plans.

Gathering the data needed to evaluate the surveillance plan.

8.3. DATA ANALYSIS.

Data analysis is the action by which the FS evaluates collected data. This data may come from government, contractor, or customer sources. The analysis can be accomplished by:

a. Risk Assessment.

Analyzing the data to determine the risk rating.

b. Surveillance Planning.

Analyzing the data to support decisions related to surveillance planning.

c. Executing Surveillance.

Analyzing the data collected during surveillance.

d. Evaluating Surveillance Plans.

Analyzing the documentation collected.

8.4. COMMUNICATION.

Timely exchange of DC&A results is critical to providing insight to a contractor's processes and management systems. Results provide an overall picture of the contractor's management system health and support predictive analysis. All results should be shared multi-functionally, as appropriate. The engineer who performed the DC&A should communicate the results amongst the award management team to enhance multifunctional surveillance documentation and records, situational awareness, and customer insight. The reporting must be accurate, relevant, and timely.

SECTION 9: EVALUATE SURVEILLANCE PLAN

Evaluating surveillance plans requires a review of past surveillance performance to include surveillance records and future planned surveillance. Both the supervisor and FS evaluate surveillance plans and records, but these evaluations are performed for different purposes. The FS reviews and updates the surveillance plan, as appropriate, to ensure risk rationale and ratings are current, hours are allocated appropriately, and that it complies with policy requirements. The supervisor reviews their team's surveillance plans for compliance, adequacy, and team resource considerations. The following requirements, information, and guidance are in addition to the requirements, information, and guidance in accordance with Volume 1 of DCMA-MAN 2303-01.

9.1. FS EVALUATE SURVEILLANCE PLAN.

The engineer must evaluate their assigned surveillance plans at a minimum of every 12 months. Based on the review, the engineer will update the surveillance plan as appropriate and must document results of evaluation or adjustments made in PDREP. When reviewing their surveillance plan, the engineer should consider:

- Completed and not completed scheduled surveillance.
- Risk assessment updates.
- Surveillance frequency, intensity, and hours (i.e., allocated and unallocated).
- What impacts surveillance had on contractor processes and risk associated.
- Corrective action request(s) issued.
- Cost, schedule, and performance trends.
- Customer data sources (e.g., risks, feedback).
- Relevant letters of delegation or memorandums of agreement.
- Related surveillance results from other functions such as product quality deficiency reports, corrective action requests, and non-conforming material data.

9.2. SUPERVISOR EVALUATE SURVEILLANCE PLAN.

The supervisor or supervisor's delegate (e.g., lead) must perform an annual adequacy review of the surveillance plan and document their review. The supervisor is responsible for documenting this review even if a delegate performed the review. The supervisor should conduct surveillance plan evaluations after their assigned FSs have updated their associated surveillance plans.

a. The supervisor review ensures the surveillance plans are compliant with this volume, surveillance is executable, and the engineer completed a review of the surveillance plan as required.

b. The annual requirement is based on the creation date of the individual risk rated surveillance activity (i.e., KCR process or sub-process). The supervisor review can be documented at the appropriate level (e.g., commercial and government entity or facility) to ensure coverage of the entire surveillance plan for their team in an efficient manner. For example, the supervisor will ensure that:

(1) The assigned functional area in PDREP indicates engineering.

(2) Annual allocated hours planned, and actual hours recorded in PDREP do not exceed the capacity of available resources.

(3) Team resources are prioritized and allocated based on surveillance risks.

(4) Assigned engineers and team assignments in the surveillance plan are valid (e.g., remove team members no longer assigned).

(5) Required start dates and end dates, when used, are appropriate.

(6) Active surveillance plans are listed as "Active" in the status field.

(7) Risk rationale statements are consistent with risk ratings.

(8) Unallocated hours are properly annotated and identified.

(9) Planned activities are executed and documented in PDREP.

GLOSSARY

G.1. ABBREVIATIONS AND ACRONYMS.

ACRONYM	MEANING
AS	Aerospace Standard
CDRL	Contract Data Requirements List
CM	configuration management
CMO	contract management office
CMSE	contractor management system evaluation
CRR	contract receipt review
DC&A	data collection and analysis
DCMA-MAN	DCMA Manual
DD Form	DoD Form
DD Form 1692	Engineering Change Proposal (ECP)
DD Form 1694	Request for Variance (RFV)
DPE	deliverable product evaluation
ECP	engineering change proposal
EIA	Electronic Industries Alliance Standard
FAR	Federal Acquisition Regulation
FS	functional specialist
IE	industrial engineer
KCR	key contract requirement
NASA	National Aeronautics and Space Administration
PDREP	Product Data Reporting and Evaluation Program
QAE	quality assurance engineer
RFV	request for variance
SOW	statement of work

GLOSSARY

G.2. DEFINITIONS.

Unless otherwise noted, these terms and their definitions are for the purpose of this issuance.

TERM	MEANING
artifacts	Engineering artifacts are documents, models, and other outputs that are created during the engineering process. They can be physical or digital and they serve as a record of the decisions made and progress made during a project.
contractor management systems	Contractor management systems refer to interrelated and interacting processes used by the contractor to define, create, manage, and control product realization from start to finish.
conclusion	A decision made after completing one or multiple surveillance techniques. The conclusion provides information used to adjust surveillance, such as update risk assessment or surveillance frequency and intensity, influence contractor performance and report as appropriate.
full time equivalent	Defined in Section 20 of the Office of Management and Budget Circular No. A-11. For surveillance calculations, DCMA defines a manpower availability factor of 1,476 hours per one full time equivalent or 1,290 for international.

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