Contract Data Requirements List (CDRL) Best Practices

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Abstract

Department of Defense (DoD) contracting and program office teams (PO), to include contracting elements, routinely award sole-source contracts to defense companies to procure capabilities and systems for warfighters. In these acquisitions, the DoD requiring agency, together with the PO team, must decide what contractor derived data products require delivery. Most contracts have several mandatory data delivery requirements. For other data and information, the PO team must evaluate data needs across the program. The spectrum of possible data includes all aspects of the contract's scope. The Contract Data Requirements List (CDRL- pronounced *SEE-drill*) functions as DoD's vehicle to obtain data from defense contractors. Once a DoD PO and a prime contractor agree to the list of deliverables (CDRLs), the list becomes part of a binding contract. CDRLs document the data items and information the PO wants the contractor to provide, aligned with the terms of the contract. A CDRL both assists and protects PO's and contractors in the execution of a defense contract. Managing the use and effectiveness of CDRLs on a contract can be cumbersome and complex. Misunderstandings or mismanagement of CDRLs can lead to schedule delays, cost overruns or system performance disputes (ACQ-1, 2019). This paper examines the best practices and common features a DoD PO and a defense contractor should consider when managing CDRLs. The research identifies common shortcomings in current practices and recommends 'Best Practices' and techniques to improve outcomes.

Introduction

Background

A 2019 Congressional Budget Office (CBO, 2019) report on DoD acquisition estimates the department executes an average of 80 large acquisition programs, spending $200 billion per year. For FY20, DoD requested over $1.5 trillion for the Fiscal Year (FY) Future Years Defense Program (FYDP) to meet contract agreements. CBO indicates that while DoD acquisition has achieved some cost efficiencies over decades of reform, challenges and overruns continue to plague delivery of systems to warfighters. A key challenge for program managers (PM) of large DoD systems is to ensure desired system data and other program deliverables are well-defined and managed to meet DoD requirements (GAO-1, 2019).

DoD acquisition uses CDRLs to document required deliverables to meet contract terms. Although mandated by the Defense Federal Acquisition Regulation Supplement (DFARS), poorly managed CDRLs often contribute to program delays. These shortcomings leave DoD and defense contractors susceptible to misinterpretation and challenges when executing the contract. CDRLs bind a contractor to provide DoD with specific deliverables and program artifacts to meet contractual terms. Contractor delivery of CDRL reports and products address a variety of program needs, including technical data, software development documentation, financial data, studies, test planning and results, quality plans, logistics support data, cyber security, risk and overall program management.

Purpose

This study presents the results of a literature review on the use and management of CDRLs in a sole-source developmental contracting environment. The effort examines DoD's management tools and practices for the delivery of defense contractor data using CDRLs. Findings include recommendations and best practices for program managers (PMs), in the pursuit to understand the value of CDRLs and improve the likelihood of a program's success.

Problem Statement

Given that DoD and defense contractors use CDRLs to manage contract data and other deliverables, conduct a literature review and assessment to identify CDRL best practices, in order to improve a PM's likelihood of program success.

Hypothesis

DoD and defense contractor managers are charged with influencing and actively managing CDRLs from pre-contract award to contract close-out to deliver systems to warfighters. CDRL planning and execution is critical for contracting staff and program managers to prepare for and execute the administration of defense contracts.

Research Objectives

- Explain how a program office manages CDRLs and examine how defense contractors implement and provide data and reports to address contract requirements.

- Identify recurring CDRL challenges. Provide strengths and weaknesses of current practices. Recommend Best Practices for managers to implement, leading to improved prospects for successful program outcomes.

Terms

- The use of the acronym Program Office (PO) includes DoD program management teams, contracting officers and supporting staff across military services and agencies engaged in the acquisition of defense systems. A Program Manager (PM) is the designated leader of a PO team.
- Use of the term 'contractor' and 'offeror' applies to defense companies engaged in contracting with DoD and PO's in the acquisition of military systems and services.

Research Methodology

Literature Review and Approach

This study provides a comprehensive on-line literature search of DoD policies, directives, and journal articles related to CDRL management. The study concludes with several findings and recommended best practices for PMs. The literature review identifies examples of how CDRL management affects the administration and execution of the performance of DoD contracts. The research identifies commonly used techniques and practices, resulting in recommendations to aid PMs.

The literature review pursued insight into all aspects of the use of CDRLs from pre-solicitation to post-contract award for sole-source contracts. The review explored a variety of DoD acquisition web sites, including extensive insight from Defense Acquisition University's (DAU) on-line sources.

Limitations and Recommended Areas of Additional Research

The literature review discovered an abundance of information on the guidance, purpose and format on the use of CDRLs for DoD developmental contracts. The study limited its scope to sole-source DoD contracts. However, the search revealed limited literature regarding actual applied CDRL management from DoD and defense contracts and affiliated program managers. Some program sources were useful to support findings in the areas of technical data, software deliverables and intellectual property.

Future research on CDRLs would benefit by including both interviews and standard surveys with current and recent DoD and defense contractor program managers and respective contracting officers. These additional sources of data would advance the study's findings with greater evidence and robustness in support of recommendations and CDRL best practices.

The literature review focused on representative examples of CDRL use. Time constraints and security issues limited access of actual program CDRL data. The author based conclusions and recommended best practices on available primary and secondary sources as well as personal experience.

Literature Review

Background, Literature Scope

The study's literature review provides a summation of a comprehensive on-line search of DoD policies, directives and journal articles related to use of CDRLs. The review provides examples and best practices on the application of CDRLs found across services and programs. The review reveals the role CDRLs play in influencing and determining successful contract execution and program outcomes. Multiple sources identify and describe techniques for managers to use when handling contract deliverables. Analysis of the literature review led to study conclusions and best practice recommendations to benefit DoD and contractor program managers, while avoiding common problem areas.

The review begins by identifying common terms, definitions, policies and processes DoD managers use to create and administer CDRLs. The review continues by exploring specific uses of CDRLs in a range of program categories. The review follows a sequential solicitation path of pre-contract award activities through post-contract award execution for a typical sole-source DoD contract process.

The literature review includes several sections, beginning with CDRL background and basic information. Follow-on focus topics include pre-contract award, post-contract award, the Integrated Program Management Report (IPMR), acquiring technical data, system sustainment, web-based tools and cyber security. These topics cover common high priority CDRL issues program managers often confront.

DoDs creation of the DFARS provides a unique acquisition environment. Defense contracting differs greatly for Contractors when compared with private transactions and other

non-defense, non-governmental commerce. Under DFARS guidelines, DoD established a unique system to acquire and procure systems in support of military requirements. Unlike private commerce, DoD is willing to fund contractors to conduct research and development. The PO continually seeks to exploit emerging technology solutions to meet or exceed battlefield threats. DoD often requires access to portions of an offeror's intellectual property (IP) or licenses in support of unique military demands and system life cycle planning. National goals and Congressional statues add to DoD's uniqueness.

DoD's acquisition policies reveal an on-going quest to improve contracting for increasingly complex military systems. Efforts to simplify processes for faster, less expensive, yet successful outcomes are evident with each change in defense and executive leadership. A common thread evident throughout DoD's acquisition process is how to define and manage access to contractor generated program data and other deliverables to meet DoD's use (Kobren, 2018).

CDRL Basics

DoD's unique contracting requirements require contractors to report on a myriad of tailored contracting forms, reports and disclosures to comply with contract terms. To meet this need, DoD specifically created Department of Defense (DD) Form 1423 - Contract Data Requirements List. The DD Form 1423 serves as the conveyance of DoD data requirements to the Contractor and is the focus of this report (Figure 1), (ACQ-1, 2019).

DFARS policy requires the use of CDRLs whenever the contract requires delivery of data. CDRLs provide a list of contract data requirements authorized for a specific acquisition.

DoD contracting and program management staff initiate CDRLs early in the contracting process. To coordinate data deliverables, DoD seeks contractor input as early as possible in the acquisition cycle. Through negotiation, the two parties agree to the quantity and content of the CDRLs (DFARS-, 2015).

DD Form 1423 serves as the standard means to document CDRLs. A contract may have a few or dozens of CDRLs placed on contract. The contractor is required to provide the DoD requiring agency information and data as described on the DD Form 1423s. Types and quantities of contract deliverables vary widely based on the type and complexity of the contract and maturity of the system under development. DoD and the contractor propose and exchange CDRL information, eventually including the DD Form 1423's as part of the legal, binding contract. CDRLs are referenced in numerous locations of a contract, however, the complete CDRL list is located in Section J- Attachments, of a DoD contract (ACQ-2, 2019).

Clear, unambiguous deliverables are critical for contract execution, compliance, auditing and ultimately success or failure of a contract. Whenever possible, a PO allows contractors to submit CDRL data in the contractor's own format. This eliminates additional contractor effort to alter data to a unique DoD format. Occasionally, a unique DoD format is required, which then precludes the need for further PO revision.

DAU's Deskbook defines a CDRL simply as, 'A document that specifically defines the data required of a contractor in terms of content, format, and intended use'. The reference expands to include CDRLs serving as a contractual means to direct the contractor to prepare and deliver data that meets specific approval and acceptance criteria (DAU-1, 2019).

DD Form 1423s contain tailored data requirements and delivery information. The forms specifically define each contract deliverable to the mutual understanding of PO and the prime contractor. Information includes topics such as electronic and mailing addresses, copies required, reviewing and approving authority, acceptable data formats; data item descriptions, other references, frequency of submission and review cycle times (ACQ-3, 2018).

In general, CDRLs will identify all contract data requirements. Occasionally, other requirements without a traceable CDRL may be found in a statement of work (SOW), contract clause or performance specification. One example may be a requirement that identifies a need for a collaborative environment between the PO and a contractor, though without a specific CDRL (DAU-2, 2015).

PO and defense contractors have a responsibility to be familiar with CDRL contents to insure adequate definition and understanding exists prior to committing to the collection of data requirements. Extensive preparation and review of DD Form 1423's are necessary for both parties prior to contract award.

CDRLs provide a wealth of program information useful for managers to measure progress on a contract. Topics may include system reliability, software development progress, cybersecurity status, developmental and operational test data, management assessment, program schedules, system specifications, financial and earned value management metrics, Government Furnished Equipment (GFE), technical manuals, quality reports, and the contractor's Work Breakdown Structure (WBS). While the possibilities are numerous, PO's must determine the types of data required and their intended purpose prior to adding CDRLs to a contract.

CDRLs provide value to managers by grouping all data requirements in a single place within a solicitation. The list of CDRLs provides direction to a contractor, documenting their obligation to meet requirements for data content and format. CDRLs also provide the contractor with a standard format of clear and unambiguous information, identifying and delineating a PO's minimum essential data needs.

When preparing CDRLs, PO and contractors reference the offeror's Statement of Work (SOW) and Work Breakdown Structure (WBS) to align requirements with DD Form 1423's. Quantitative technical requirements are contained in the system specification. There is no need to restate these in other parts of the contract. Work requirements are contained in the SOW. CDRLs document all contract data requirements and format. PO's should avoid redundancy for these contract features, as it may lead to misinterpretation of data deliverables (DoD-1, 1996).

Typical CDRL topics include the defense contractor's program management assessment, financial metrics, engineering topics, including acquiring technical data, and system support (ACQ-3, 2018).

- Program management CDRLs provide an overall assessment of a contractor's progress and outlook on program execution. A contractor's subjective assessment is useful to the PO, as it highlights issues affecting execution. The assessment adds value beyond routine program metrics for cost and schedule. Managers may include information on topics such as personnel recruiting, skill shortages, plant and facility issues, subcontractor performance and other areas not identified in other program CDRLs.

- Financial CDRLs portray all matters pertaining to contract funding, cash flow, work scheduled and accomplished, projected funding requirements, overrun issues and resource concerns. Depending on the value and type of contract, CDRLs may include Earned Value Management (EVM) data. EVM data is required for cost type contracts valued over $100 million. Most major defense contractors have their own DoD compliant EVM system that meets CDRL requirements for displaying financial data (OSD-1, 2008).
- Engineering CDRLs include technical data requirements for software development and testing, developmental and operational test planning and results, cybersecurity compliance and systems engineering documents. Engineering related CDRLs are often the most detailed, lengthy and expensive data products to acquire.
- System support CDRLs provide logistical data, identify sustainment planning, failure modes, spare parts, training manuals and provisioning data. System support CDRLs also cover inventory and use of GFE.

Data Item Descriptions (DIDs) and Acquisition Streamlining and Standardization Information System (ASSIST)

Two frequently referenced terms when discussing CDRLs include the Data Item Description, or DID, and the Acquisition Streamlining and Standardization Information System, or ASSIST. DIDs are explanatory, pre-defined technical documents that defines the data requested from a contractor. Most CDRLs reference a specific DID which serves to clarify the intent and scope of a deliverable item. DIDs use DD Form 1664 to document each data type in support of CDRLs. DID's are particularly useful for technical and specialized data, such as

software development and cybersecurity. DIDs define data content, format, and intended use of the requested data. As an example, an engineering related CDRL might require architectural drawings. In this case, the CDRL will include a DID reference defining drawings, providing the contractor with standards to adhere to and detailed expectations as they plan and prepare to provide the required data.

A PO has the option to tailor DIDs for selected CDRLs. If needed, tailored DID remarks are noted on the DD Form 1423. While the referenced DID itself does not change, tailoring provides relief for specific requirements. This allows the contractor to avoid performing unnecessary work not required by PO, resulting in a cost avoidance. Tailoring is encouraged and assures the contractor only delivers what is relevant, providing minimal data to meet PO needs. In summary, the CDRL identifies the data required and submission information, while a DID provides the 'how-to' instructions for data delivery, (DoD-1, 1996).

The second commonly referenced CDRL term is ASSIST. Defined as the, ASSIST is a robust, comprehensive DoD master database. ASSIST includes all commonly used DIDs. PO staff use ASSIST to initiate CDRL development. ASSIST serves as a reference database and locator for contractors should there be any confusion over what is expected in a CDRL delivery (ASSIST-1, 2019).

ASSIST includes defense and federal specifications and standards, military handbooks, commercial item descriptions and all approved DIDs. ASSIST references a Qualified Products Database, policies and procedures of the Defense Standardization Program (DSP) and numerous other sources to describe data. DSP aids in the use of specifications, as well as International standards and United States ratified North Atlantic Treaty Organization (NATO) standards.

ASSIST is free and available to DoD and approved defense contractor users. ASSIST maintains the most current information and is the official source for specifications and standards. ASSIST's searchable metadata tool includes over 114,000 documents with associated downloadable files. The Defense Logistics Agency (DLA) manages and maintains ASSIST (ASSIST-2, 2019).

CDRLs and DIDs must align with a contract's SOW. The SOW establishes a program requirement for data, such as, 'the contractor shall establish, implement and control a Configuration Management (CM) program'. The associated CDRL orders a CM data item, identifies due dates, distribution and other parameters. The DID provides the format and content requirements for that particular CM item (DoD-1, 1996).

Pre-contract Award

PO's identify CDRLs, including acquiring technical data, as early as possible during pre-solicitation and planning. The PO identifies deliverables initially during pre-solicitation, as part of a program's acquisition strategy (AS). The PO should invite the offeror to comment on CDRLs, including proposed terms and conditions. This reduces risk to both parties, while simultaneously educating the contractor on PO requirements.

The PO should collect an offeror's insight during Requests for Information (RFI), a Statement of Objective (SOO) and Request for Proposal (RFP) activities. Early input simplifies documents and supports forthcoming fact-finding and contract negotiations. A PO often updates CDRL topics and documented DD Form 1423s as a solicitation progresses, leading to negotiation and award.

The offeror may recommend CDRL subjects based on prior PO contract experience. An offeror's proposal will include a SOW, a WBS and proposed CDRLs aligned with the SOW. Data requirements must be traceable to specific tasks defined in the SOW and specified on DD Form 1423s. Once submitted, the PO will conduct a technical review of all CDRLs, assessing the offeror's understanding of the contract scope and work effort to accomplish the effort (DoD-2, 1996).

Over time, there has been an ebb and flow of what the optimal number of CDRLs should be to meet PO data requirements. Few CDRLs reduce cost, however, lacking important data may result in negative program outcomes. Several DoD programs experimented with limited CDRL data. For some programs, outcomes included substantial cost overruns and even several program breaches, requiring costly re-planning. After experimenting with minimal CDRLs for complex development systems, program offices reverted to acquiring comprehensive data with multiple CDRLs (SMC, 2015).

While developing and proposing CDRLs, an offeror may be required to provide cost estimates to gather, assemble, and deliver the requested data as part of the proposal. Contractors will often base CDRL cost estimates on prior work, labor and resource requirements to operate program Integrated Product Teams (IPTs), aligned with their WBS.

Program legal support for CDRL issues is essential prior to contract award. Legal reviews protect both parties, providing insight to an offeror, while ensuring the PO comprehends the data deliveries requested. As a solicitation proceeds, fact-finding issues may surface concerning CDRLs. Fact-finding provides opportunities to clarify intent for the use of data and understand the offeror's proposed effort to acquire and provide the information requested (Gregory, 1994).

During pre-contract award, the contractor may flow down portions of the work effort to sub-contractors. For these cases, the prime contractor will propose a sub-contractor data requirements list (SCDRL). Depending on the CDRL topic, a SCDRL may carry equal weight with other deliverables, as sub-contractors often perform critical system work (ACQ-3, 2018).

In conjunction with drafting and issuing a final RFP, the PO should convene a Data Requirements Review Board (DRRB) to support technical data requirements. DRRB participants include CDRL authors, the contracting officer, a program attorney, and the program manager (PM). During a DRRB, CDRL authors explain why the PO needs the data and show linkage to the Statement of Work (SOW). Documenting rational on DD Form 1423s and associated tailored DIDs, provides legal support as these documents become part of the contract (SMC, 2015).

Negotiations can commence once both parties arrive at a common understanding as to each CDRL's content, including the scope of licenses for technical data and where each software application resides in the offeror's proposed software architecture . At this point, the offeror must then provide certified cost or pricing data. The Contracting Officer can then determine the fairness and reasonableness of proposed CDRL prices for the rights to technical data and computer software (SMC, 2015).

Post-contract Award

Typically, within 60-90 days of contract award, the PO team schedules a 'post-contract award' data guidance conference. At this session, the contractor identifies resources, plans and schedules to meet CDRL data tasks. The session also serves to ensure the contractor understands

its CDRL obligations. At this time, the PO should also verify the intended use of the data procured.

As the program begins to execute, recurring and monthly contractor CDRL submissions, aligned with a PO approval process, become an established part of a program's business rhythm. Each delivered CDRL contributes to the program's documented data register. The delivered CDRLs demonstrate the contractor's intent to satisfy contract terms. Tracking CDRL compliance and suspense dates is a critical task for both parties, as they monitor contract execution (OUSD, 2018).

CDRL approvals motivate contractors as these often align with additional contract payments, award fee, milestone approvals, system acceptance and other program goals. The PO leverages CDRLs to monitor and report program progress to senior leaders, track compliance with contract terms and align funding with a program's schedule. Specific CDRL deliveries support program reviews such as a System Requirements Review (SRR), Preliminary and Critical Design Reviews (PDR, CDR), system test and production. Assessing and approving CDRL submissions is often part of the entrance and exit criteria for major program reviews. If properly managed, CDRLs serve as an effective and documented bond between the two parties, leaving little room for dispute regarding delivery of documented data.

The PO and contractor assign system configuration and data managers (CM/DM) to organize and execute contract deliverables. These critical roles require a disciplined and deliberate process throughout a contract's period of performance. PO CM/DM's track, archive and disseminate program data to those with follow-on program actions. CM/DM's create a shared CDRL matrix for all to access, ensuring both parties track to a common set of

deliverables. The matrix includes delivery dates, version number, frequency, points of contact and other information for managers to readily access, (SMC, 2015).

Occasionally, during contract execution, CDRLs may need revisions, additions or removal after contract award. If possible, PO's should avoid these actions, as they involve a bi-lateral modification to a contract, resulting in additional cost and/or schedule delays (SMC, 2015).

During contract execution, a PO assigns a Contracting Officer's Representative (COR) to manage a multitude of contract actions. One key responsibility is the receipt, oversight and management of CDRLs. The contractor delivers CDRLs as specified on the distribution list found on the DD Form 1423s. Once received, a PO lead will staff the CDRL to other program stakeholders for review, comment and approval. DD Form 1423s also indicate the cycle time for CDRL reviews and contractor rebuttal or correction. Normally, the COR or the PO's data manager maintains a master list of CDRL status, providing PO managers with timely contract updates, (DoD-2, 1996).

Early in contract execution, the contractor will deliver numerous, complex reports with required program design and architecture data. These reports provide results of studies, engineering design, the system's architecture, software development plans, and other core topics defining the program. CDRL submissions also contain reports of contract cost and schedule performance, published outcomes and actions of program meetings and status of upcoming deliveries. These data item deliveries are key factors in demonstrating successful performance under the contract. Both the PO and the contractor expeditiously identify and resolve open CDRL issues to preclude negative contract consequences.

A vital team member for evaluating and processing CDRLs is the Defense Contracting Management Agency (DCMA). DCMA has numerous subject matter experts and a Product Support Team (PST) skilled at analyzing and evaluating complex program data. DCMA CDRL expertise may include earned value management, software development and technical data packages. DCMA can provide an on-site assessment of contractor challenges and ease the burden of complex CDRL management, (DCMA, 2014).

Integrated Program Management Report (IPMR)

A major change in defining CDRLs over the past decade entailed a 2012 mandate to deliver an Integrated Program Management Report (IPMR) CDRL. The memo directed the IPMR replace previous CDRLs for Cost Performance Reports (CPR) and Integrated Master Schedules (IMS). The monthly IPMR CDRL intends to simplify and improve cost and schedule visibility and reporting. The single integrated report seeks to establish consistency and promote disciplined program management. The IPMR limits required EVM financial reporting to what is specified- and no more. This feature allows a contractor to tailor financial reporting to high priority issues and provides PO's with an improved integrated picture to assess program status and performance. The IPMR includes a standalone DID (DI-MGMT-81861), providing contractors guidance for CDRL preparation and electronic submission. Since inception, the IPMR has become the primary CDRL available to assess program status.

The IPMR CDRL includes the use of seven (7) formats (Acq 4, 2013).

These include:

1. Cost and schedule performance data by product oriented WBS
2. Cost and schedule performance data by organizational functional structure, or Integrated Product Team (IPT)
3. Changes to the Performance Measurement Baseline (PMB)
4. Staffing forecasts
5. Narrative report using data from formats 1-4 and 6
6. The contractor's Integrated Master Schedule (IMS)
7. Time-phased historical and forecast cost submission

Technical Data Rights, Intellectual Property (IP) and Software

Acquiring contractor technical data, intellectual property (e.g., patents, copyrights, trade secrets) and software related items (e.g., source code, documentation, version descriptions) is complex, requiring experienced team efforts and legal support from both the PO and contractor teams. Extensive preparation, discussions and effort are all essential to ensure the PO gains access to program data. In spite of agreements and documentation, contractors may seek to protect proprietary information that may provide competitive advantages for future defense work. Focusing on technical data CDRLs and their associated DIDs aids to resolve this challenge.

Effectively managing acquired technical data via CDRLs is a unique challenge for complex systems. The challenge encompasses access and open dialogue to understand the

creative value of companies. For commercial (non-DoD) transactions, a contractor has broad legal protections for creative value and products through patents and licenses. These protections often provide a competitive advantage for future business. When DoD procures for military systems, a PO often requires in-depth knowledge and data access for a system. The shared data supports a PO's efforts to later sustain, operate and upgrade systems. For these reasons, special attention is required to manage and acquire technical data on defense contracts (SMC, 2015).

Key data elements of a program's Acquisition Strategy (AS) include technical CDRL cost and schedule estimates, a data management plan, a program's Intellectual Property Strategy (IPS) and system life cycle sustainment. The AS should explain the PO's need to acquire and access program technical data and the degree to which those rights may or may not support future competition. Using CDRLs, the PO should obtain sufficient data rights to examine future competition to sustain the system (SMC, 2015). Acquiring Technical Data Packages (TDPs), with specified levels of data and content, along with other data rights and licenses, requires protracted discussions between the PO's legal representatives and the contractor. CDRL preparation should also consider data license rights, access to intellectual property, distribution and priced options for future deliveries of technical data.

With an approved AS, the PO will issue a Statement of Objective (SOO) or RFP. The PO will reference the program's need to acquire technical data. Major defense contractors are normally well versed and prepared for technical data discussions based on prior defense efforts and a desire to protect IP investments. Specific technical CDRLs align with the IPS, identifying the full spectrum, and contract scope of IP requested, (e.g., technical data and computer software deliverables, patented technologies, and appropriate license rights) (DoD- 2, 2019).

PO's commonly acquire a system's TDP. A TDP defines the physical and functional characteristics of the accepted configuration of a system and all subordinate assemblies, subassemblies, and parts. Standard CDRLs and associated DIDs define TDP levels, type, element and data management products required for delivery. TDP CDRLs also specify software configurations, drawings and system metadata desired.

When developing CDRLs, the PO and contracting team use the term, "mapping", to document data details. CDRL DD Form 1423s contain comments to precisely map and track which DoD entities require technical data, along with the purpose and duration of data license agreements (SMC, 2015).

For technical data, the most efficient way to collect information is to initiate a data call required by DoD 5010.12-M: Procedures for the Acquisition and Management of Technical Data. (OUSD, 2018). The data call solicits answers from systems and software engineers, logisticians and cost analysts. Requirements personnel, both internal and external to the PO, may add to the data collection based upon the unique nature of the program and the intended use of the data (SMC, 2015).

At the data call, questions to resolve include:

- What critical technical data and computer software, if any, do program requirements require from the contractor?

- What data (including technical data and computer software) will the PO need to acquire to develop and produce the weapon system? Examples to consider include engineering change proposals, system specifications, architecture and design review data packages, test plans,

procedures and reports, software development plans, software product specifications, system safety program plans, environmental analysis data reports and progress curve reports.

- What technical data and computer software will the PO need to maintain, sustain, and dispose of the weapon system? Product Support Managers (PSMs) and logisticians will likely recommend acquiring interface control documents, technical orders, training manuals, and product drawings.

Managing technical data requires a disciplined, systems engineering approach. Complacency in the execution of the CDRL delivery and review process may result in missed PO or contractor objectives. It is incumbent upon the PO to ensure agreements; licenses, data rights, distribution and documentation meet contract terms, as agreed to in the contract's technical data CDRLs (SMC, 2015).

Another key issue to resolve is to determine who will fund a system's software development. Options include PO only, contractor only, or as is most common, a hybrid of shared expenses. A contractor has the burden to substantiate the use of claiming private funding (SMC, 2015).

A PO may also seek access to limited contractor Intellectual Property (IP). IP may include access to software (SW) source code, architecture plans, engineering drawings, interface control documents, sub-system test results and Technical Data Packages (TDPs). The PO may require a contractor's IP in a limited means, to promote future competition or plan for future system upgrades. However, a PO cannot require a contractor to relinquish proprietary rights if the contractor made the investment with private funding (non-government). The PO is responsible to evaluate an offeror's proposed restrictions on IP rights and require broad licensing. In these cases, the PO normally is funding the contractor's developmental effort.

CDRLs and DIDs may refer to specific contract clauses for technical and software data that allow for deferred ordering and delivery. These clauses provide flexibility for future DoD data access within defined time limits.

As noted, access to technical data rights, as prescribed by CDRLs, is costly and serves as a determining factor for the PO's data acquisition decision. The PO must ensure the data is valuable enough to acquire and understand the intent for its future use. Experience demonstrates that reuse of expensive technical data; including technical data packages (TDPs) and software code, is infrequent. PO managers must address the issue and risk of not possessing contractor data. In many cases, a PO defaults to purchasing technical data at a high program cost, (SMC, 2015).

A PO must consider many factors prior to purchasing technical data. Will the data be relevant five or ten years in the future? Where is technology moving with respect to the system under development? What is the risk of not acquiring the data? To whom is the data going, for what purpose, and for what length of time? Does the PO have security processes in place to limit the data's release and disclosure? These factors all affect a contractor's proposed price and conditions for the use of its technical data.

One method to mitigate early decisions on acquiring data is to include technical data as an unpriced contract option. This prevents committing funds early in a program and aligns technical data with milestones and events later during contract execution. For software and information technology systems, the PO may seek deferred data rights. Deferring allows delaying major funding expenditures early in program development (OUSD, 2018).

Fundamentals to obtain technical data include assessing baseline Government Purpose Rights (GPR). GPR of contractor data is inherent in most DoD contracts, as a routine exchange of PO funded contractor developmental activities. Other data rights categories include Unlimited Rights (UR), Limited Rights (LR) and Restricted Rights (RR). PO's analysis of post contract use of data is important when deciding on appropriate data rights. RR of data permits the contractor to determine what license rights a PO may access. As discussed in the pre-contract award discussion a common method to agree to CDRLs regarding data rights is to convene a DRRB for all CDRL authors (DISA, 2018).

Clarifying Data Deliverables vs. Data Rights

An important issue for technology licensing is to understand the difference between "the deliverable" and the license rights that restrict the PO's use of the deliverable. "Deliverable" is the contractual obligation to provide technical data or computer software with a specified content, format, and delivery mechanism. "License rights" or "data rights" refer to granting of specific legal rights for a PO to use, reproduce, modify, release, disclose, perform, or display the deliverable. In either case, contract CDRLs and associated DIDs serve to clarify the PO's intent.

Acquiring technical data rights is a significant consideration for developmental type contracts. While time consuming and complex, PO teams and contractors have important interests to acquire and protect these unique data products. As a sovereign of the Federal government, DoD enjoys certain privileges with regard to data. This includes choosing both the forum in which liability is resolved and determining remedies for resolution. For contentious issues, DoD has mechanisms to redress both perceived contractual breaches and intellectual property infringement (DAU-2, 2015).

System Support

After delivering a DoD system, the PO evaluates outcomes by measuring a system's operational availability and readiness. Product Support Managers (PSM) and logisticians have this responsibility. The PO, through the PSM, includes numerous program CDRLs to plan for support. PSMs and logisticians need to possess an in-depth knowledge of acquisition developmental and sustainment support CDRLs, with associated DIDs, to gain this insight. Estimates suggest up to 70% of a system's total life cycle cost occurs after delivering and fielding a system. Once delivered, the logistician's field of Integrated Product Support (IPS) is perhaps the most visible aspect of a contract to the PO and to senior leaders, (DAU-4, 2019).

Twelve (12) IPS elements provide a structured and integrated framework to attain product support. Contracted CDRLs align with each IPS element and progress throughout a program's development and life cycle. IPS elements include product support management, design interface, sustaining engineering, supply support, maintenance planning, packaging, handling, storage and transportation (PHS&T), technical data (TD), support equipment, training, manpower/personnel, facilities and infrastructure and computer resources. The PSM for the PO has the lead for some IPS elements, while a contractor executes others with system specific content and data (DAU-4, 2019).

PPSMs often inherit system support CDRLs from an existing contract in support of a fielded system. Managers should review legacy CDRLs to ensure deliveries are adequate for support and seek opportunities to improve future deliverables.

System support CDRLs include numerous topics critical to program success. A PSM is responsible to develop a Life Cycle Support Plan (LCSP). With correct direction to a contractor,

system support CDRL submissions will provide most of the data to create the LCSP. Accountability of Government Furnished Equipment (GFE), information (GFI) and property (GFP) is a key support CDRL. Contractors frequently request and use government furnished products and knowledge as a cost effective and quick approach for system development. Other key support CDRLs include configuration management of a system's hardware and software, Item Unique Identification (IUID), cybersecurity sustainment, and system operator and training manuals. As with other data requirements, logistics and system support managers must align CDRLs with the contract's SOW (US Army, 2019).

One important support CDRL delivered during system development is a Level of Repair Analysis (LORA). A LORA falls under the maintenance planning IPS element. This report informs logistics managers how a contractor plans to source system components, as well as maintenance and repair concepts throughout a system's life cycle. The LORA leads to gathering provisioning and repair parts data, both critical for system sustainment. Inadequate data for the LORA report risks inadequate system support, potentially causing poor operational readiness. Product support CDRL submissions can also track sustainment costs, trends and manage inventories in support of DoD readiness goals (ACQ-5, 2017).

Web Based Tools

A number of web based information technology (IT) tools exist in support of CDRL management. DoD components and individual PO teams have developed and maintained a variety of web based applications. Capabilities include the means to develop, track, review and archive CDRLs across program areas. Managers should seek out these tools in their

organization. Most web-based tools apply across contract types and may be adapted for user preferences.

One complex tool is the Defense Business System (DBS) Acquisition Probability of Success (DAPS) application. DAPS models program outcomes based on probability, statistics and use of an inference network. DAPS incorporates CDRL data, in a format prescribed by the PO, then connects with other networks, generating graphs and models for program managers. DAPS is useful for high-visibility, complex developmental systems often facing cost overruns, delays or performance shortcomings (Tzeng, 2015).

A tool developed by the United States Marine Corps (USMC) Systems Command, is the ”SOW CDRL and Tracking Tool” application, or SCATT. Like DAPS, SCATT takes electronic data input from CDRLs and other contract information, and then organizes it using an interactive database. Program managers use SCATT to track the numerous CDRL actions required on a complex developmental system.

SCATT consists of three separate applications; a SOW Questionnaire that helps develop and write CDRLs, an application wizard that permits SOW and CDRL editing and tailoring, and a CDRL tracking tool after contract award. Results indicate SCATT contributes to both time reductions and cost avoidances for some programs. SCATT is a shared resource and available, with permission to both DoD and contractors (USMC, 2011).

The US Air Force Logistics Command adapted an Army tool called Multi-user (Engineering Change Proposals) ECP Automated Review System (MEARS). MEARS is a flexible software application that evaluates the status of CDRLS and the Integrated Program

Schedule (IPS) task to maintain configuration management currency. MEARS brings accountability and traceability to every step of the CDRL management process (USAF, 2018).

The US Naval Aviation uses a CDRL management tool called the Acquisition Management System (AMS). AMS includes applications to monitor program disbursements and costs. This data supports EVM and other financial CDRLs. The tool also has a procurement-tracking device for system components and a CDRL monitoring application. The monitoring feature can create, upload, review, approve and manage CDRL deliverables (US Navy-1, 2018).

The DAU Community of Practice (COP) has an active group that shares CDRL management and tracking tools for PO acquisition managers. There are both Government off the shelf (GOTS) products and Commercial off the shelf (COTS) web based solutions. Some applications require license fees while others are free to DoD organizations (ACQ-6, 2019).

Many PO's and contractors create program specific CDRL tracking spreadsheets. A commercial product is advisable for complex development contracts with dozens of recurring CDRLs across the acquisition spectrum.

CDRLs for Cybersecurity

Cybersecurity threats have emerged as a crucial issue for all complex DoD systems. Most DoD systems rely on networks, connectivity, web-access and interoperability. These architectures pose inherent risk in a developmental and operational environment. In response, DoD implemented numerous contract clauses, combined with specific cybersecurity CDRLs and DIDs to guide contractors in managing this complex and often costly topic (OSD-2, 2019).

Cyber related CDRLs and associated DIDs are required for a system's security and data protection plan, security monitoring compliance and responding to data security breaches. Programs must undergo DoD's cyber Risk Management Framework (RMF) in order to test and eventually operate a system. PO and contractors must work collaboratively to identify system information requiring protection. Cyber CDRLs must demonstrate compliance to meet DoD standards at every step of a developmental program. Cybersecurity compliance assessments occur during system testing and prior to delivery. A contractor must extensively document the security posture of system suppliers and vendors, tracking sources of software and data in support of PO cyber standards (Reed, 2018).

Analysis & Findings

After considering the use of CDRLs on DoD contracts, several recurring themes, methods and findings are evident. Managing CDRLs is a critical part of a program manager's job, whether on the DoD or defense contractor team. PO's must begin work to identify and define CDRLs as early as possible. An early investment in CDRL planning reduces downstream efforts required to manage them. PO's and contractors must plan to staff support personnel and other resources, including funding, to generate CDRL data and manage deliveries and the approval process throughout a contract.

Training is essential within a program management office to understand the CDRL process and the value of contractor-generated data that a PO requires. While contracting officers and contract specialists often have some level of CDRL experience and knowledge, PO staff and functional team members may not. Managers of financial management, logistics, engineering, cybersecurity and other topics must gain a common understanding of a program's plan to manage CDRL data. CDRL submissions are a powerful tool to monitor contract progress.

Initially, all PO staff should be familiar with the organization and scope of the contract each support. Support personnel should invest time to read, discuss and summarize a contract's scope and features, including the relationship between the SOO, SOW, WBS and CDRLs. Contractors and legal staffs will always refer to the written conformed contract, to include CDRL documentation, when seeking to resolve contract disputes.

A PO team must learn how to develop and write CDRLs, including the use of applying DIDs from the ASSIST database. Each needs to understand their role in specified CDRL submissions, staffing, review and approval. A program manager should conduct a final check of

CDRLs prior to contract award, to ensure the PO's intended use of purchased CDRL data is necessary.

Regardless of the effort to create and document processes to manage CDRLs, there is no substitute for direct interaction between key DoD and contractor managers. As a minimum, discussing the IPMR CDRL between program managers on a recurring basis is necessary. Similar efforts between functional PO managers and contractor counterparts in the areas of financial management, logistics and engineering also supports this finding. Often program IPTs establish this interface, which aids in CDRL preparation and submission (US Navy-2, 2019).

If a contract contains multiple, though ill defined CDRLs, negative program outcomes are likely. In these situations, a PO often fails to win a legal battle, as CDRL documentation serves as the basis for resolution. At times, there may be a misunderstanding on certain aspects of program CDRLs. These situations should work toward resolution as quickly as possible to minimize program impacts.

In general, contractors desire to deliver CDRL submissions of high quality with little need for rework. This is a common and useful goal for both parties. A contractor's motivation to deliver quality CDRL submissions includes: award fee, progress payments and progression to other program milestones. The PO team routinely comments on a contractor's ability to manage CDRLs when conducting the annual Contractor Performance Assessment Report (CPAR). If either party does not follow a disciplined and documented CDRL management process, cost overruns, schedule delays or program performance may suffer.

If a contract's CDRLs are weak or not comprehensive across the program, one of two outcomes is likely. Either the PO will realize there is not adequate information to progress to the next program milestone, or program data and associated metrics will convey little meaning.

Another undesirable outcome might require a contract modification to buy data previously overlooked. Contract mods often result in added cost and schedule. Finally, each CDRL should create value and answer important program questions in the execution of a contract.

Conducting a Data Review and Requirements Board (DRRB) is essential prior to negotiating. DRRB's serve to avoid, or at least minimize, misinterpretations of data needs. PO led IPTs are useful to accomplish DRRB tasks. DRRB's are especially useful to clarify complex data rights issues for software and TDPs. Other topics may include CDRL language and administrative issues, tailoring of DIDs, points of contact, and acceptance/rejection criteria.

A PO should tailor DIDs to the greatest extent as possible. Tailoring permits the contractor to avoid unnecessary work, resulting in program cost avoidances.

PO and contractor teams with associated legal support must work together early and often, creating common expectations regarding technical data rights. Detailed discussions of contractor generated technical data are useful to meet the mutual goals of each party. The program will realize benefits once contract execution commences (GAO 2, 2019).

Both PO's and contractors should seek to implement continuous improvement in CDRL management. Often time saving, low cost and easy to implement ideas, tools or shared access to data can reduce the CDRL burden.

PO managers should seek out former program managers, contracting officers and others with CDRL experience. PM's have confronted every imaginable CDRL issue over the years. Seek communities of practice to explore similar situations and outcomes (Garcia, 2017).

PO managers should review DAU Deskbook and community of practice resources for CDRL and DID information and advice. PO managers and contracting need to recognize that

while all contracts have many common features, each also has unique requirements. CDRLs should capture these distinctions.

The review identified that programs often contract for numerous CDRLs at a high price, only to later realize the acquired data is no longer of value. This highlights the need to minimize and justify all CDRLs requested, connecting purpose with program decisions. A program manager must ask, “What if the program does not buy this data?”, and, “What are the risks and consequences?”

Conclusions & Recommendations

Interpretation of Results

The literature review provided insight to the importance of successfully managing CDRLs. PO's and contractors often work in defined, 'stove-pipe' functional areas. A PM may marginalize CDRL management due to other competing program activities. Successful CDRL management requires collaborating with other functional experts.

Several CDRL topics are quite complex and go beyond normal data requirements. These include the complex, expensive and time-consuming issue of acquiring technical data, software code and access to IP. In addition, cybersecurity requires attention and collaboration to define compliant CDRLs. The PO and contractor teams archive CDRL deliverables for use in any contract audits or legal disputes, if needed. CDRLs serve as evidence, supporting the necessity for proper documentation and good program management.

The IPMR CDRL requires significant program information on a monthly basis. PO and contractor managers must share a common understanding of the IPMR data. The IPMR's consolidated approach covers key program topics and serves as a useful reference for senior leaders.

Occasionally, a PO team faces challenges to flow government-designated tools and databases to a contractor. The Performance Based Logistics (PBL) and other examples may not be accessible to contractors and require training if provided. These disconnects encourage allowing contractors to use their own formats on CDRLs whenever possible. As a minimum the PO must explore the cost/benefit/risk trade-offs of using unique government systems driving

additional cost. Managers should discuss these situations in advance and avoid when possible. (DAU-2, 2015).

Recommendations: CDRL Best Practices (BP)

BP 1: Require PO managers and key leaders to take CDRL and contracts related familiarity training (on-line or classroom) once assigned to a program that requires contractor data to execute a program. Training should include linking CDRLs with contract elements, to include the SOO, RFP, SOW, contract incentives, technical data and testing.

BP 2: PO managers should initiate frequent dialogues with contractor counterparts concerning the delivery of CDRL data. While CDRLs define contract deliverables, misinterpretations are possible and subjective judgement may be the best approach for resolution. Regardless of the level of technical knowledge on a contract, basic program manager and contract officer communication with contractor counterparts is essential for program success.

BP 3: Contract for the right CDRLs. Literature identified the need to justify each CDRL on contract. While some financial CDRLs are mandated, many in the technical and logistics areas are optional. Program managers should know CDRL costs, intended purposes and evaluate outcomes to defer or not acquire.

BP 4: PO managers should work with contractor counterparts to agree on the CDRL submission, review and approval process. The process, together with associated due dates and frequencies should be shared with all program stakeholders. Techniques include color-coding CDRL due dates and automatic email reminders to keep up with CDRL schedules. Complex CDRLs often need their own schedule with knowledge points and milestones to manage status. IPTs are useful for this purpose.

BP 5: PO's and contractors should seek to use GOTS or COTS web-based tools to aid in managing CDRLs. DoD agencies and the services have generated useful tools to simplify CDRL processing.

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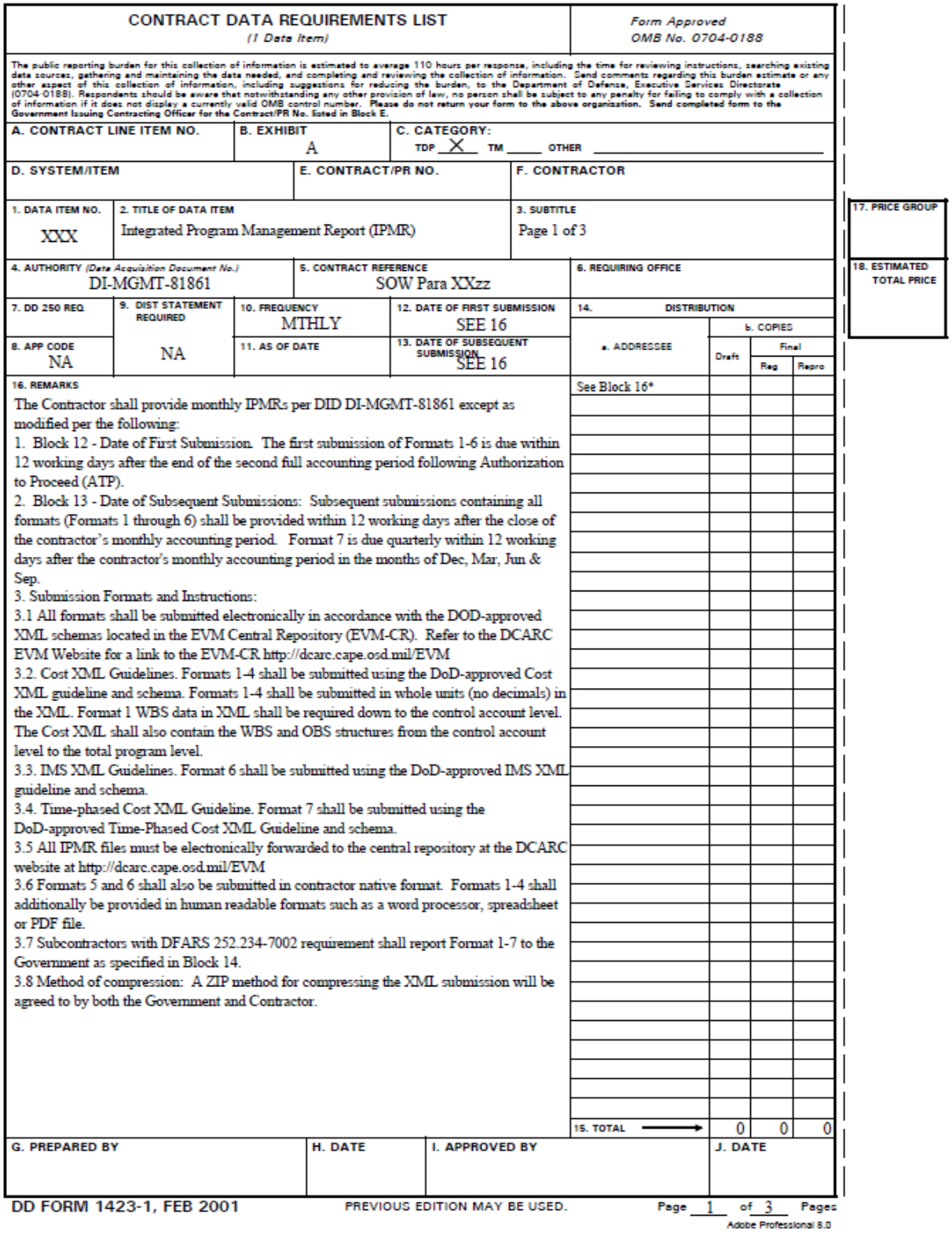


CONTRACT DATA REQUIREMENTS LIST
(1 Data Item)

Form Approved
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO.	B. EXHIBIT	C. CATEGORY:
	A	TDP X TM ____ OTHER ____

D. SYSTEM/ITEM	E. CONTRACT/PR NO.	F. CONTRACTOR

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE
XXX	Integrated Program Management Report (IPMR)	Page 1 of 3

4. AUTHORITY *(Data Acquisition Document No.)*	5. CONTRACT REFERENCE	6. REQUIRING OFFICE
DI-MGMT-81861	SOW Para XXzz	

7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION
		MTHLY	SEE 16
8. APP CODE		**11. AS OF DATE**	**13. DATE OF SUBSEQUENT SUBMISSION**
NA	NA		SEE 16

16. REMARKS

The Contractor shall provide monthly IPMRs per DID DI-MGMT-81861 except as modified per the following:

1. Block 12 - Date of First Submission. The first submission of Formats 1-6 is due within 12 working days after the end of the second full accounting period following Authorization to Proceed (ATP).
2. Block 13 - Date of Subsequent Submissions: Subsequent submissions containing all formats (Formats 1 through 6) shall be provided within 12 working days after the close of the contractor's monthly accounting period. Format 7 is due quarterly within 12 working days after the contractor's monthly accounting period in the months of Dec, Mar, Jun & Sep.
3. Submission Formats and Instructions:

3.1 All formats shall be submitted electronically in accordance with the DOD-approved XML schemas located in the EVM Central Repository (EVM-CR). Refer to the DCARC EVM Website for a link to the EVM-CR http://dcarc.cape.osd.mil/EVM

3.2. Cost XML Guidelines. Formats 1-4 shall be submitted using the DoD-approved Cost XML guideline and schema. Formats 1-4 shall be submitted in whole units (no decimals) in the XML. Format 1 WBS data in XML shall be required down to the control account level. The Cost XML shall also contain the WBS and OBS structures from the control account level to the total program level.

3.3. IMS XML Guidelines. Format 6 shall be submitted using the DoD-approved IMS XML guideline and schema.

3.4. Time-phased Cost XML Guideline. Format 7 shall be submitted using the DoD-approved Time-Phased Cost XML Guideline and schema.

3.5 All IPMR files must be electronically forwarded to the central repository at the DCARC website at http://dcarc.cape.osd.mil/EVM

3.6 Formats 5 and 6 shall also be submitted in contractor native format. Formats 1-4 shall additionally be provided in human readable formats such as a word processor, spreadsheet or PDF file.

3.7 Subcontractors with DFARS 252.234-7002 requirement shall report Format 1-7 to the Government as specified in Block 14.

3.8 Method of compression: A ZIP method for compressing the XML submission will be agreed to by both the Government and Contractor.

14. DISTRIBUTION	b. COPIES		
a. ADDRESSEE	Draft	Final	
		Reg	Repro
See Block 16*			
15. TOTAL →	0	0	0

G. PREPARED BY	H. DATE	I. APPROVED BY	J. DATE

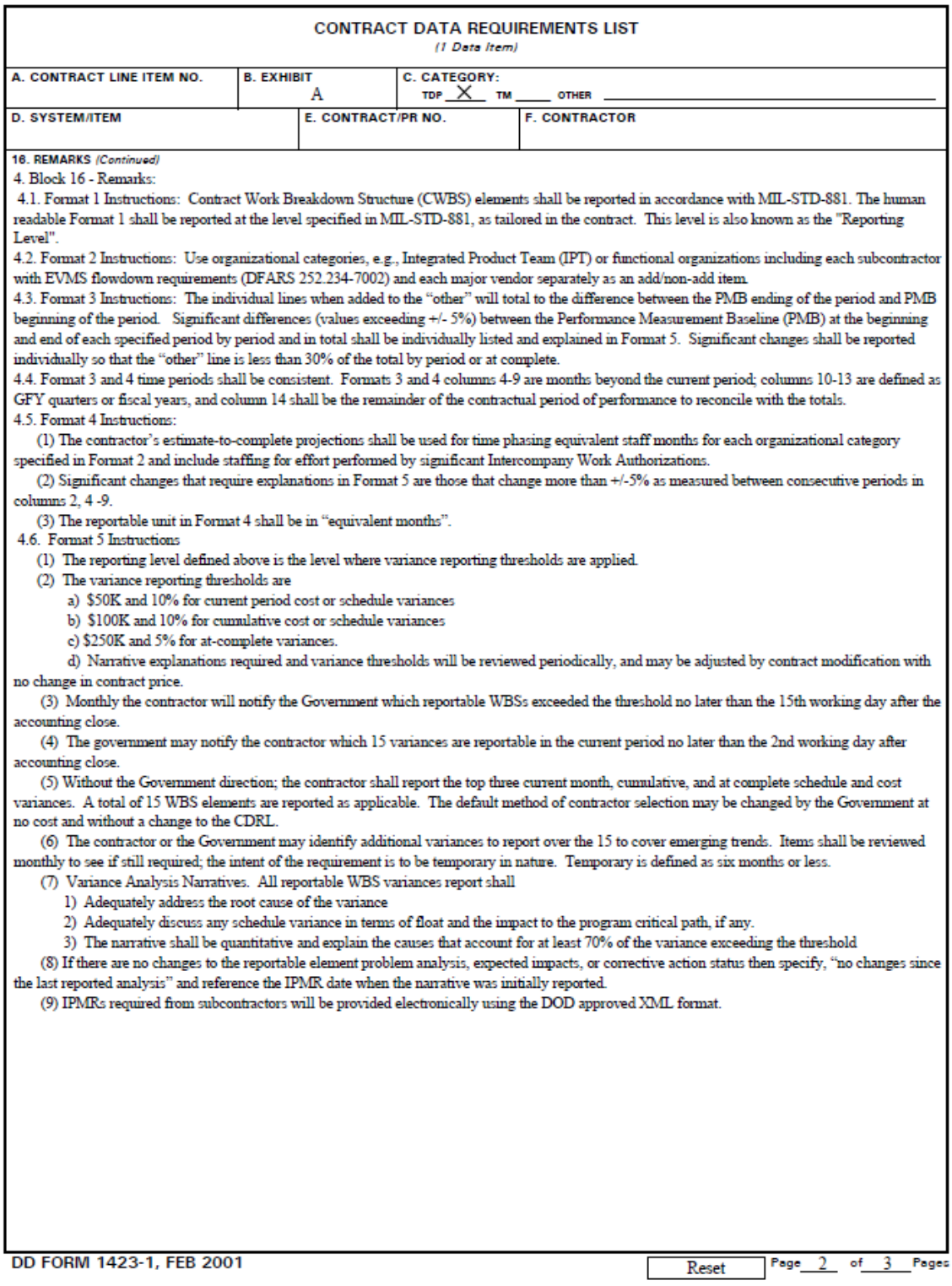
17. PRICE GROUP

18. ESTIMATED TOTAL PRICE

DD FORM 1423-1, FEB 2001 PREVIOUS EDITION MAY BE USED. Page 1 of 3 Pages

Adobe Professional 8.0

Figure 1, Page 1/3: DD Form 1423-1, Contract Deliverable Requirements List (CDRL)



CONTRACT DATA REQUIREMENTS LIST
(1 Data Item)

A. CONTRACT LINE ITEM NO.	B. EXHIBIT	C. CATEGORY:
	A	TDP X TM ____ OTHER ____

D. SYSTEM/ITEM	E. CONTRACT/PR NO.	F. CONTRACTOR

16. REMARKS *(Continued)*

4. Block 16 - Remarks:

4.1. Format 1 Instructions: Contract Work Breakdown Structure (CWBS) elements shall be reported in accordance with MIL-STD-881. The human readable Format 1 shall be reported at the level specified in MIL-STD-881, as tailored in the contract. This level is also known as the "Reporting Level".

4.2. Format 2 Instructions: Use organizational categories, e.g., Integrated Product Team (IPT) or functional organizations including each subcontractor with EVMS flowdown requirements (DFARS 252.234-7002) and each major vendor separately as an add/non-add item.

4.3. Format 3 Instructions: The individual lines when added to the "other" will total to the difference between the PMB ending of the period and PMB beginning of the period. Significant differences (values exceeding +/- 5%) between the Performance Measurement Baseline (PMB) at the beginning and end of each specified period by period and in total shall be individually listed and explained in Format 5. Significant changes shall be reported individually so that the "other" line is less than 30% of the total by period or at complete.

4.4. Format 3 and 4 time periods shall be consistent. Formats 3 and 4 columns 4-9 are months beyond the current period; columns 10-13 are defined as GFY quarters or fiscal years, and column 14 shall be the remainder of the contractual period of performance to reconcile with the totals.

4.5. Format 4 Instructions:

(1) The contractor's estimate-to-complete projections shall be used for time phasing equivalent staff months for each organizational category specified in Format 2 and include staffing for effort performed by significant Intercompany Work Authorizations.

(2) Significant changes that require explanations in Format 5 are those that change more than +/-5% as measured between consecutive periods in columns 2, 4 -9.

(3) The reportable unit in Format 4 shall be in "equivalent months".

4.6. Format 5 Instructions

(1) The reporting level defined above is the level where variance reporting thresholds are applied.

(2) The variance reporting thresholds are

a) $50K and 10% for current period cost or schedule variances

b) $100K and 10% for cumulative cost or schedule variances

c) $250K and 5% for at-complete variances.

d) Narrative explanations required and variance thresholds will be reviewed periodically, and may be adjusted by contract modification with no change in contract price.

(3) Monthly the contractor will notify the Government which reportable WBSs exceeded the threshold no later than the 15th working day after the accounting close.

(4) The government may notify the contractor which 15 variances are reportable in the current period no later than the 2nd working day after accounting close.

(5) Without the Government direction; the contractor shall report the top three current month, cumulative, and at complete schedule and cost variances. A total of 15 WBS elements are reported as applicable. The default method of contractor selection may be changed by the Government at no cost and without a change to the CDRL.

(6) The contractor or the Government may identify additional variances to report over the 15 to cover emerging trends. Items shall be reviewed monthly to see if still required; the intent of the requirement is to be temporary in nature. Temporary is defined as six months or less.

(7) Variance Analysis Narratives. All reportable WBS variances report shall

1) Adequately address the root cause of the variance

2) Adequately discuss any schedule variance in terms of float and the impact to the program critical path, if any.

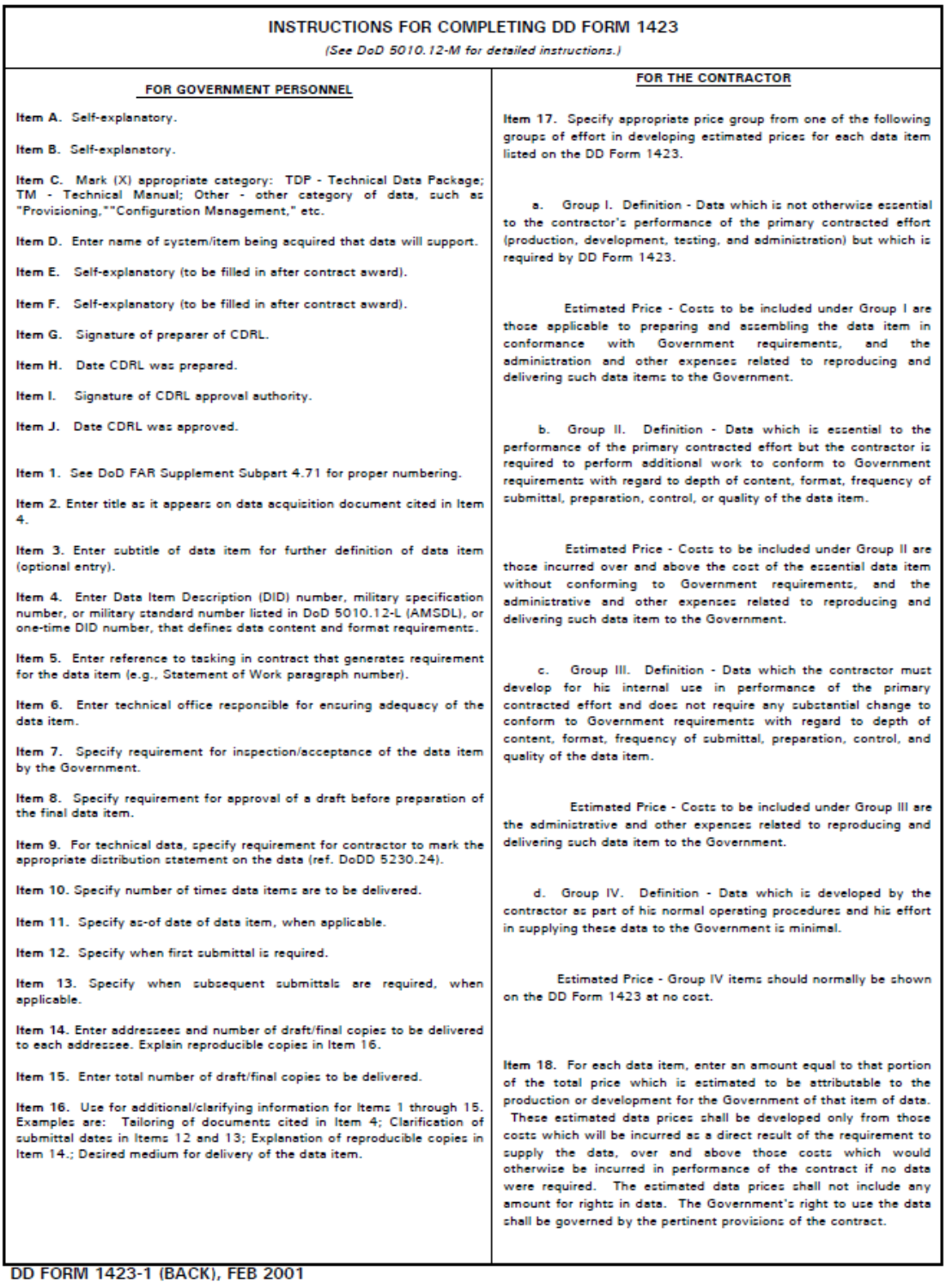
3) The narrative shall be quantitative and explain the causes that account for at least 70% of the variance exceeding the threshold

(8) If there are no changes to the reportable element problem analysis, expected impacts, or corrective action status then specify, "no changes since the last reported analysis" and reference the IPMR date when the narrative was initially reported.

(9) IPMRs required from subcontractors will be provided electronically using the DOD approved XML format.

DD FORM 1423-1, FEB 2001 Reset Page 2 of 3 Pages

Figure 1, Page 2/3: DD Form 1423-1, Contract Deliverable Requirements List (CDRL)



INSTRUCTIONS FOR COMPLETING DD FORM 1423

(See DoD 5010.12-M for detailed instructions.)

FOR GOVERNMENT PERSONNEL

Item A. Self-explanatory.

Item B. Self-explanatory.

Item C. Mark (X) appropriate category: TDP - Technical Data Package; TM - Technical Manual; Other - other category of data, such as "Provisioning,""Configuration Management," etc.

Item D. Enter name of system/item being acquired that data will support.

Item E. Self-explanatory (to be filled in after contract award).

Item F. Self-explanatory (to be filled in after contract award).

Item G. Signature of preparer of CDRL.

Item H. Date CDRL was prepared.

Item I. Signature of CDRL approval authority.

Item J. Date CDRL was approved.

Item 1. See DoD FAR Supplement Subpart 4.71 for proper numbering.

Item 2. Enter title as it appears on data acquisition document cited in Item 4.

Item 3. Enter subtitle of data item for further definition of data item (optional entry).

Item 4. Enter Data Item Description (DID) number, military specification number, or military standard number listed in DoD 5010.12-L (AMSDL), or one-time DID number, that defines data content and format requirements.

Item 5. Enter reference to tasking in contract that generates requirement for the data item (e.g., Statement of Work paragraph number).

Item 6. Enter technical office responsible for ensuring adequacy of the data item.

Item 7. Specify requirement for inspection/acceptance of the data item by the Government.

Item 8. Specify requirement for approval of a draft before preparation of the final data item.

Item 9. For technical data, specify requirement for contractor to mark the appropriate distribution statement on the data (ref. DoDD 5230.24).

Item 10. Specify number of times data items are to be delivered.

Item 11. Specify as-of date of data item, when applicable.

Item 12. Specify when first submittal is required.

Item 13. Specify when subsequent submittals are required, when applicable.

Item 14. Enter addressees and number of draft/final copies to be delivered to each addressee. Explain reproducible copies in Item 16.

Item 15. Enter total number of draft/final copies to be delivered.

Item 16. Use for additional/clarifying information for Items 1 through 15. Examples are: Tailoring of documents cited in Item 4; Clarification of submittal dates in Items 12 and 13; Explanation of reproducible copies in Item 14.; Desired medium for delivery of the data item.

FOR THE CONTRACTOR

Item 17. Specify appropriate price group from one of the following groups of effort in developing estimated prices for each data item listed on the DD Form 1423.

a. Group I. Definition - Data which is not otherwise essential to the contractor's performance of the primary contracted effort (production, development, testing, and administration) but which is required by DD Form 1423.

Estimated Price - Costs to be included under Group I are those applicable to preparing and assembling the data item in conformance with Government requirements, and the administration and other expenses related to reproducing and delivering such data items to the Government.

b. Group II. Definition - Data which is essential to the performance of the primary contracted effort but the contractor is required to perform additional work to conform to Government requirements with regard to depth of content, format, frequency of submittal, preparation, control, or quality of the data item.

Estimated Price - Costs to be included under Group II are those incurred over and above the cost of the essential data item without conforming to Government requirements, and the administrative and other expenses related to reproducing and delivering such data item to the Government.

c. Group III. Definition - Data which the contractor must develop for his internal use in performance of the primary contracted effort and does not require any substantial change to conform to Government requirements with regard to depth of content, format, frequency of submittal, preparation, control, and quality of the data item.

Estimated Price - Costs to be included under Group III are the administrative and other expenses related to reproducing and delivering such data item to the Government.

d. Group IV. Definition - Data which is developed by the contractor as part of his normal operating procedures and his effort in supplying these data to the Government is minimal.

Estimated Price - Group IV items should normally be shown on the DD Form 1423 at no cost.

Item 18. For each data item, enter an amount equal to that portion of the total price which is estimated to be attributable to the production or development for the Government of that item of data. These estimated data prices shall be developed only from those costs which will be incurred as a direct result of the requirement to supply the data, over and above those costs which would otherwise be incurred in performance of the contract if no data were required. The estimated data prices shall not include any amount for rights in data. The Government's right to use the data shall be governed by the pertinent provisions of the contract.

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Figure 1, Page 3/3: DD Form 1423-1, Contract Deliverable Requirements List (CDRL)

Acronyms

ASSIST	Acquisition Streamlining and Standardization Information System
CDA	Contract Disputes Act
CICA	Competition in Contracting Act
CDRL	Contract Data Requirements List
CLIN	Contract Line Item Number
COR	Contracting Officer Representative
DAPS	Defense Business System (DBS) Acquisition Probability of Success
DID	Data Item Description
DFARS	Defense Federal Acquisition Regulation Supplement
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DRRB	Data Requirements Review Board
DSP	Defense Standardization Program
EVM	Earned Value Management
EVMS	Earned Value Management Systems
FAR	Federal Acquisition Regulation
GAO	Government Accountability Office
GFE	Government Furnished Equipment
GFI	Government Furnished Information
IPMR	Integrated Program Management Report
IP	Intellectual Property
IPT	Integrated Product Team
IT	Information Technology
IUID	Item Unique Identification
LCSP	Life Cycle Support Plan
LORA	Level of Repair Analysis
NATO	North Atlantic Treaty Organization
PM	Program Manager
PO	Program Office
PSM	Product Support Managers
RDTE	Research, Development, Test, and Evaluation
RFI / P	Request for Information / Proposal
SCATT	SOW CDRL and Tracking Tool
SCDRL	Sub-contractor Data Requirements List
SOO	Statement of Objective
SOW	Statement of Work
SW	Software
TDP	Technical Data Package
USD(ATL)	Undersecretary of Defense for Acquisition, Technology and Logistics
WBS	Work Breakdown Structure
XML	Extensible Mark-up Language