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JOINT APPLIED PROJECT REPORT

AMMUNITION INDUSTRIAL BASE ASSESSMENT TOOL IN SUPPORT OF “PUBLIC LAW 105-261, SECTION 806: PROCUREMENT OF CONVENTIONAL AMMUNITION”

June 2019

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“PUBLIC LAW 105-261, SECTION 806: PROCUREMENT OF CONVENTIONAL
AMMUNITION”**

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN PROGRAM MANAGEMENT

from the

**NAVAL POSTGRADUATE SCHOOL
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LIST OF ACRONYMS AND ABBREVIATIONS

AHP	Analytic Hierarchy Process
AMC	Army Materiel Command
ARDEC	Armament Research Development and Engineering Center
ASA(ALT)	Assistant Secretary of the Army (Acquisition, Logistics and Technology)
ASRT	Army Supplier Risk Tracker
CAGE	Commercial and Government Entity
COCO	contractor-owned, contractor-operated
DB	database
DCMA	Defense Contract Management Agency
DFARS	Defense Federal Acquisition Regulations Supplement
DoD	Department of Defense
DoDD	Department of Defense Directive\
DoDI	Department of Defense Instruction
DSI	Decision Sciences, Incorporated
FY	fiscal year
GAO	Government Accountability Office
GOCO	government-owned, contractor-operated
GOGO	government-owned, government-operated
IBA	industrial base analysis
IBAT	Industrial Base Assessment Tool
ICAP	Industrial Committee of Ammunition Producers
JMC	Joint Munitions Command
JOCG	Joint Ordnance Commanders Group
JOCGIBATAA	Joint Ordnance Commanders Group Industrial Base Assessment Tools Assessment Action
JPEO A&A	Joint Program Executive Office Armaments and Ammunition
LMI	Logistics Management Institute
MIBTF	Munitions Industrial Base Task Force
MIPA	Munitions Industrial Production Assessment

NDAA	National Defense Authorization Act
NDIA	National Defense Industrial Association
NIIN	National Item Identification Number
NTIB	National Technology and Industrial Base
OSD	Office of the Secretary of Defense
PEO	Program Executive Office
PD JS	Project Director Joint Services
PM	project manager
PNNL	Pacific Northwest National Laboratories
POCs	Points of Contact
SER	Supplier Evaluation Risk
SMCA	Single Manager for Conventional Ammunition
SOS	Source of Supply
U.S.	United States
USD (A&S)	Under Secretary of Defense (Acquisition and Sustainment)

I. INTRODUCTION

A. PURPOSE

The Joint Program Executive Office, Armaments and Ammunition (JPEO A&A) conducts dozens of industrial base assessments on behalf of the Department of Defense (DoD) annually. These industrial base assessments are performed for every procurement of conventional ammunition as part of the process supporting implementation of Public Law 105-261, Section 806, which within the ammunition community is normally referred to simply as “Section 806.” However, the process for conducting these assessments is not standardized, resulting in inconsistent methodologies, conclusions and quality. This project seeks to establish a standardized analysis approach for use on all Section 806 industrial base assessments.

B. PROBLEMS WITH THE CURRENT PROCESS

Section 806 industrial base assessments are performed by individuals across several organizations, including JPEO A&A, the Joint Munitions Command (JMC), Armament Research, Development and Engineering Center (ARDEC) and support contractors. Individuals across these organizations have their own approaches and priorities, as well as their preferred data sources. These inconsistencies result in a need for reconciliation and rework before being staffed to JPEO A&A for final approval. In recent years, there has been a further concern as fewer individuals are devoted to performing the assessments. While this helps reduce variability, it decreases the available institutional knowledge in the event key personnel are lost. Finally, the assessments’ conclusions are at times controversial and risk impacting program schedules, either to address the assessment’s concerns or to simply resolve conflicting opinions over the existence of a concern.

C. BENEFITS OF A STANDARDIZED APPROACH

A standardized approach could resolve these issues by more consistently linking acquisition details and industrial base concerns to the overall program risk assessment. Doing so will enable leadership to make informed decisions regarding the Section 806

process since concerns can be traced back to an element within the process rather than the opinions of the individual performing the assessment. A standardized approach should also reduce the man-hours required to perform these assessments.

D. METHODOLOGY

The methodology used in this project was to research past guidance, previous studies and available data sources to generate a consistent approach to performing these Section 806 analyses.

E. ORGANIZATION

Chapter I introduces the purpose of this project. Chapter II provides background on the circumstances that led to the need for the Section 806 statute as well as how this responsibility ended up with JPEO A&A. Chapter III presents data to better illustrate the scale of the problem as well as possible contributors to a solution. Chapter IV illustrates an analysis of how to achieve a solution. Chapter V provides conclusions and recommendations for implementing that solution.

II. BACKGROUND

A. PUBLIC LAW 105–261, SECTION 806: PROCUREMENT OF CONVENTIONAL AMMUNITION

In October of 1998, President Bill Clinton signed into law the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, Pub. L. No 105–261 § 806, (Strom Thurmond National Defense Authorization Act [STNDAA], 1998). Section 806 of this law requires the Department of Defense’s (DoD) Single Manager for Conventional Ammunition (SMCA) to limit specific procurements of conventional ammunition to sources within the National Technology and Industrial Base (NTIB) when necessary to maintain suppliers needed in case of national emergency or to achieve industrial mobilization (STNDAA, 1998). This requirement was fully implemented 11 September 2001 with a DoD a rule amending the Defense Federal Acquisition Regulation Supplement (DFARS) requiring all agency heads to submit their acquisition plans to the SMCA for review and instructs them to await written concurrence before proceeding with their procurement (Government of the United States, DoD, 2001). The Army provided further guidance in 2014 through Army Regulation (AR) 700–90.

For each procurement of Class 5 ammunition, an analysis will be performed in accordance with Public Law 105-261. The analysis will identify and make acquisition strategy recommendations for the end item and all components to be acquired that appear on the “Section 806 Watch List” also known as the “Conventional Ammunition End Item and/or component at risk list.” The analysis will also consider the magnitude of the procurement compared to the current capacity utilization, and financial viability of the ammunition production facilities available to produce the items, and the potential impact of the overall acquisition strategy. (United States Army, 2014)

B. CONVENTIONAL AMMUNITION

The Strom Thurmond NDAA for FY99 references the 1995 issuance of DoD Directive 5160.65 for the definition of conventional ammunition (STNDAA, 1998). That directive defines conventional ammunition as a “device charged with explosives, propellants, pyrotechnics, or initiating composition for use in connection with defense or offense, including demolitions. Certain ammunition can be used for training, ceremonial,

or nonoperational purposes” (Department of Defense [DoD], 1995). Because this definition is broad, it includes items that may not be thought of as conventional ammunition, such as smart bombs, guided missiles and explosive armor tiles.

C. DOD’S SINGLE MANAGER FOR CONVENTIONAL AMMUNITION

Prior to creation of the SMCA, ammunition management responsibilities were distributed across DoD (GAO, 1973). Reports by the Logistics Management Institute (Logistics Management Institute, 1970) and the General Accounting Office (GAO, 1973) identified issues with this approach to ammunition management during the Vietnam War and recommended consolidation of these responsibilities under a single DoD entity. In 1975, DoD assigned the role of SMCA to the Secretary of the Army (GAO, U. S. Government Accountability Office, 1999). The Secretary of the Army retains this role today. While some functions have been successfully consolidated under the SMCA, full realization of a single DoD entity being responsible for all aspects of conventional ammunition management was not achieved (GAO, U. S. Government Accountability Office, 1999), resulting in the need for the Section 806 law. If the SMCA managed the acquisition of all conventional ammunition, the SMCA would already be able to limit procurements to the NTIB under existing authority (Contracts: Competition Requirements 10 U.S.C. § 2304(c), 2011).

D. DEFINITION OF THE NATIONAL TECHNOLOGY AND INDUSTRIAL BASE

The 1993 NDAA defined the National Technology and Industrial Base (NTIB) as “the persons and organizations that are engaged in research, development, production, or maintenance activities conducted within the United States and Canada” (National Defense Authorization Act for Fiscal Year 1993, Pub. L. No 102–484, § 4203, 1992). The 2017 NDAA modified this definition to include the United Kingdom and Australia as part of the NTIB (National Defense Authorization Act for Fiscal Year 2017, Pub. L. No 114–328, § 881, 2016).

E. MAKEUP OF THE CONVENTIONAL AMMUNITION INDUSTRIAL BASE

The conventional ammunition industrial base includes hundreds of facilities that are a mix of government-owned, government-operated (GOGO), government-owned contractor-operated (GOCO) and contractor-owned contractor-operated (COCO) facilities located across the globe as illustrated in Figure 1. These facilities produce raw materials, components, sub-assemblies and final products. Many of the facilities were built during the 1940s to support the United States and its allies during World War II (Eaton, 2006).

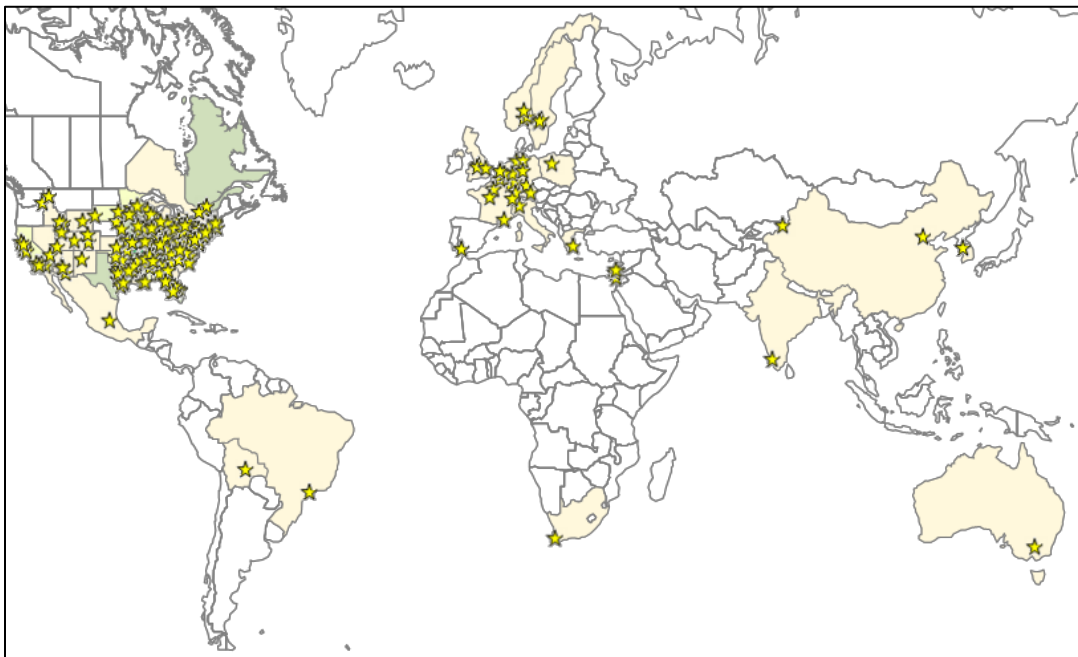


Figure 1. Map of the Ammunition Industrial Base. Source: United States Army (2019).

While the list of COCOs within the ammunition industrial base is too extensive to list, Table 1 contains a list of GOGOs and GOCOs and summary of their products (United States Army, 2019).

Table 1. List of Ammunition Production GOGOs and GOCOs.
Source: United States Army (2019).

Facility Name	Facility Type	Products
Allegany Ballistics Lab	GOCO	Tank Cartridges, Fuzing
Crane Army Ammunition Activity	GOGO	Pyrotechnics
Holston Army Ammunition Plant	GOCO	Explosives
Iowa Army Ammunition Plant	GOCO	Artillery Projectiles, Mortars, Missile Warheads, Demolitions, Salute Rounds
Lake City Army Ammunition Plant	GOCO	Small Caliber Munitions
McAlester Army Ammunition Plant	GOGO	Bombs
Naval Surface Warfare Center Indian Head	GOGO	Rocket Motors
Pine Bluff Arsenal	GOGO	Pyrotechnics
Radford Army Ammunition Plant	GOCO	Propellants
Scranton Army Ammunition Plant	GOCO	Projectile Metal Parts for Artillery, Mortars and Navy Gun

F. CONTRACTION OF THE INDUSTRIAL BASE

According to the Government Accountability Office (GAO), the domestic ammunition industrial base contracted significantly between 1978 and 1999 due in part to the collapse of the Soviet Union and associated decline in requirements (GAO, U. S. Government Accountability Office, 1999). As shown in the Figure 2, the number of firms (businesses), establishments (physical locations) and personnel employed in manufacturing of ammunition within the United States have all increased since the mid-2000s.

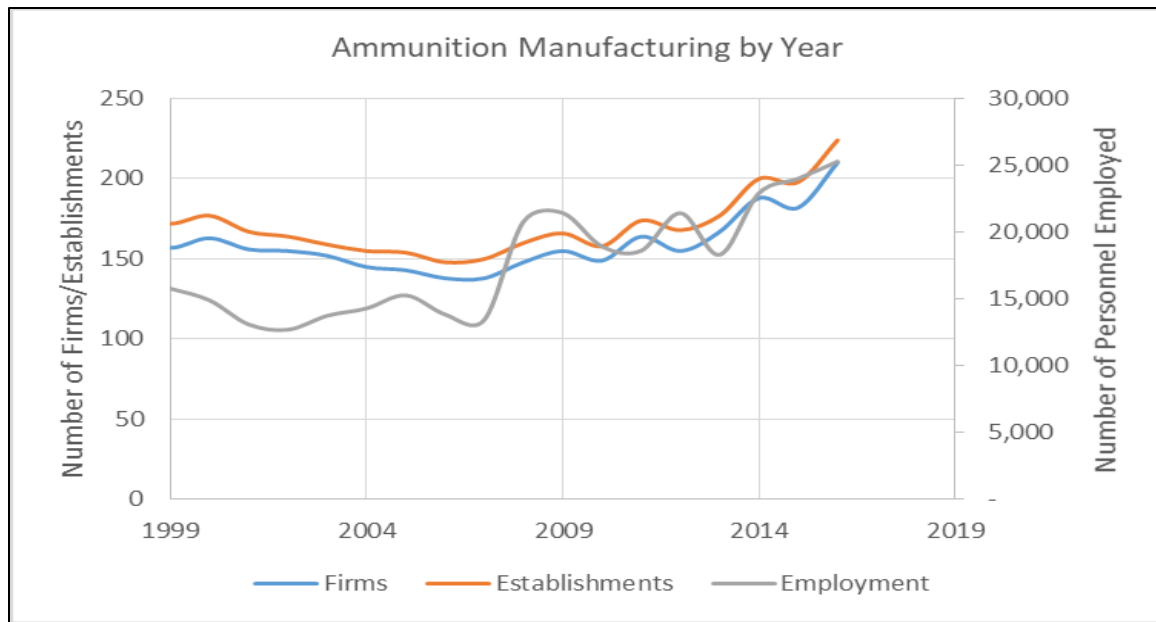


Figure 2. Aggregated U.S. Census Bureau Statistics of U.S. Businesses for Ammunition Manufacturing (North American Industry Classification System Codes 332992 [Small Arms] and 332993 [Other than Small Arms]). Source: U.S. Census Bureau (2019).

G. ESTABLISHMENT OF PEO AMMUNITION IN 2002

In 1986, President Ronald Reagan directed the creation of Program Executive Officers (PEO) (Reagan, 1986) as recommended by the Blue Ribbon Commission on Defense Management (President's Blue Ribbon Commission on Defense Management, 1986). A decade later, there was still no PEO for Ammunition within the Army despite the Secretary of the Army's role as the SMCA. In 1997, the Pacific Northwest National Laboratory released a report for the Army recommending that ammunition be managed as a major program with management responsibilities consolidated under a new PEO (Pacific Northwest National Laboratories (PNNL), 1997). The Government Accountability Office agreed with these findings, but found that by 1999, the Army had not made significant progress in implementing this recommendation (GAO, U. S. Government Accountability Office, 1999). Further need for an ammunition PEO was evidenced in 2001 when the Assistant Secretary of the Army (Acquisition, Logistics and Technology) (ASA(ALT)) required that all Army acquisition programs be managed by an office reporting to a PEO or directly to ASA(ALT) (Oscar, 2001). On 14 January 2002, PEO Ammunition was finally

chartered with responsibility for the life cycle acquisition management of all Army conventional ammunition (Bolton, Assistant Secretary of the Army (Acquisition, Logistics and Technology), 2002). In 2018, PEO Ammunition underwent a name change and is now the Joint Program Executive Office, Armaments and Ammunition (Calloway, 2018).

H. DELEGATION OF SECTION 806 AUTHORITY

At the time of PEO Ammunition's creation, the Secretary of the Army had delegated the SMCA authority, including its Section 806 authority, to the ASA(ALT) (Caldera, 2000). In 2002, ASA(ALT) delegated partial Section 806 authority to PEO Ammunition (Bolton, Assistant Secretary of the Army (Acquisition, Logistics and Technology), 2002). PEO Ammunition was allowed to sign Section 806 determinations, but ASA(ALT) retained the Section 806 authority to unilaterally change the acquisition approach of another DoD component. In 2003 PEO Ammunition was designated the SMCA executor and again delegated partial Section 806 authority (Bolton, Assistant Secretary of the Army (Acquisition, Logistics and Technology), 2003). This arrangement has continued to this day (Shyu, 2014). The Project Director Joint Services (PD JS) is the office within JPEO A&A charged with managing the Section 806 process. Figure 3 illustrates the delegation of authorities from USD(A&S) to PD JS.



Figure 3. Current SMCA Organization

I. DESCRIPTION OF THE SECTION 806 PROCESS TODAY

The Section 806 process is as follows (Meehan, Public Law 105-261 Section 806 Process Overview, 2015):

1. DoD component completes Section 806 request memo based on standard template from PD JS.
2. The PD JS Section 806 coordinator reviews the request memo and assigns an assessor (usually an engineer from PEO Ammunition, JMC or ARDEC) based on expertise and availability.
3. The assessor reviews the request memo and identifies any Section 806 Watch List items within the procurement.
4. The assessor then attempts to identify the risk to the NTIB (normally based on a comparison of the quantity being purchased to the capacity of known suppliers). Other factors such as the number of suppliers or known supplier issues are sometimes used as well. These other factors come through a variety of channels such as project managers, industry

representatives (e.g., Munitions Industrial Base Task Force [MIBTF] or the National Defense Industrial Association's [NDIA] Industrial Committee of Ammunition Producers [ICAP]) as well as from individual companies.

5. The assessor documents this assessment in a report known as an Industrial Base Analysis (IBA) and assigns an overall level of risk which is normally the same as the highest risk determined in the previous step.
6. The assessor drafts a Section 806 Determination memo for JPEO A&A to sign.
7. The IBA and Section 806 Determination memo are staffed through PD JS and JPEO A&A headquarters to be signed by JPEO A&A.

J. PREVIOUS STUDIES

1. Battelle Report

In 2004, the Battelle Memorial Institute produced a report for PEO Ammo with recommendations for standardizing and automating the Section 806 process (Laughlin & Porcella, 2004). The authors advocated for a quantifiable, defensible, repeatable process by applying business metrics. These metrics were as follows:

- Impact of Critical Items List
- % Capacity Utilization of Supply Base
- Corporate Financial Risk of NTIB Supplier
- Business Volume-Minimum Sustaining Rate

Automation was to be achieved using a web-based solution powered by software called TeamTrack by Serena along with Expert Choice Software and Analytic Hierarchy Process (AHP) decision methodology. While this approach appeared promising, it was not implemented. The reason for this is not known to this author, but clearly would have

required a resourcing decision to fund the development, software licenses and maintenance of the system.

2. Joint Ordnance Commanders Group Industrial Base Assessment Tools Assessment Action (JOCGIBATAA)

A 2012 meeting of the Joint Ordnance Commanders Group resulted in an action assigned to the Project Director Joint Services to assess available industrial base assessment tools within OSD, DCMA, ARDEC, JMC, JPEO A&A and AMC to identify opportunities for leveraging capabilities and improving overall industrial base assessments (Meehan, JOCG Action 2012–07 Industrial Base Assessment (IBA) Tools, 2014).

Organizations were solicited for available industrial base assessment tools. The tools were assessed for maturity and conventional ammunition content. Thirteen (13) tools were selected for further analysis. Information Needs for Industrial Base Assessments were gathered based upon Guide to DoDI 5000.60 NOV 2013 and SMCA Industrial Base Assessment processes. Twenty (20) informational needs were identified. A forty-one (41) question survey was constructed to evaluate how well the 13 tools covered the 20 information needs for industrial base assessments. The survey was distributed to primary organizational Points of Contact (POCs). The results were analyzed and an initial “suite” of industrial base assessment tools was determined. This suite was constructed of the tools which received a maximum rating for at least one of the information needs identified in the survey. (Meehan, JOCG Action 2012–07 Industrial Base Assessment (IBA) Tools, 2014).

This effort allowed the ammunition community to gain a joint insight into existing tools at hand. The resulting ratings allow for selection of the most applicable tools for a given application. Of particular interest for an automated tool is the frequency with which the data is refreshed. For instance, both the AMC ASRT and DCMA Financial Viability information sources had the same rating for the “Source provides info regarding a firm’s financial outlook” criteria, but ASRT’s data is refreshed automatically twice per years while DCMA’s requires a specific update effort (Project Director Joint Services, 2014). Results of the JOCGIBATAA assessment are summarized in Table 2 for tools that scored the highest in at least one of the criteria.

Table 2. Aggregated JOCGIBATAA Ratings. Source: Project Director Joint Services (2014).

		Assessment Questions																				
Information Sources		Info source provides Item's relationship to current or future force (FYDP, Pres Bud, DPG,	Info source provides Item's relationship to next generation capabilities (long term S&T	Info source provides Item's relationship to higher level sys or lower level elements (BoM),	Source provides information regarding existence of commercial counterparts for item of	Source provides info regarding # of platforms potentially impacted across services	Source provides info regarding skilled labor requirements associated with item production	Source provides info regarding design intensive activity associated with item	Source provides info regarding availability of alternative qualified suppliers	Source provides info regarding availability of alternative suppliers that are technically	Source provides info regarding availability of direct substitutes for item of interest	Source provides info regarding availability of alternatives for item of interest	Source provides info useful for developing estimates of future demand	Source provides info regarding geo-political climate & impact on non-US sources	Source provides info useful for developing reconstitution cost estimates	Source provides info useful for developing order-to-deliver lead time estimates	Source provides info regarding a firm's financial outlook	Source provides info regarding the # of firms active in a given sector	Source provides info regarding production scalability costs of item	Source provides info regarding a firm's minimum sustaining rate	Source provides info regarding diversity of firm's earnings	Frequency at which info is updated & refreshed
	DCMA Taxonomy DB	25	18	42	36	45	45	27	45	27	27	27	8	18	27	18	0	54	0	0	0	50
	DCMA Financial Viability	13	0	0	12	0	0	0	0	0	0	0	0	0	0	0	54	0	27	27	45	0
	DCMA MIPA	45	38	61	52	63	63	51	77	51	27	27	54	42	45	64	37	37	54	40	45	56
	ARDEC SOS	37	0	75	37	67	37	0	67	45	45	37	37	0	0	0	3	0	0	0	0	100
	SMCA IBAT	76	38	67	59	71	57	47	62	62	62	44	69	42	56	50	41	48	33	51	51	61
	AMC ASRT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54	0	0	0	0	100

III. DATA

A. SECTION 806 ANALYSES PER YEAR

Figure 4 provides a sense of how many Section 806 analyses are actually performed in a given year from FY04 to FY17. Over this timeframe, 1,231 Section 806 analyses were performed by JPEO A&A which equates to an average of 86 analyses per year. More recently, the average has been lower at ~70 analyses per year.

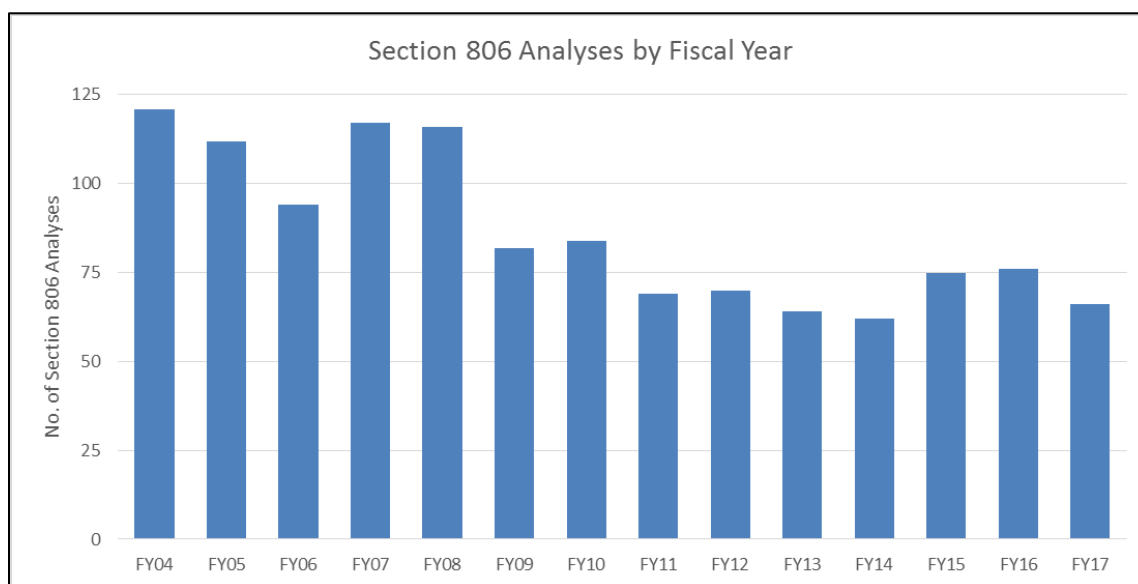


Figure 4. Graph of Section 806 Analyses by Year.
Source: Project Director Joint Services (2019).

The number of individual assessors that this workload has been distributed across has fluctuated greatly over this same timeframe as shown in Figure 5. The number of assessors has tended to be a function of management/policy changes and efficiency efforts rather than the number of analyses needed.

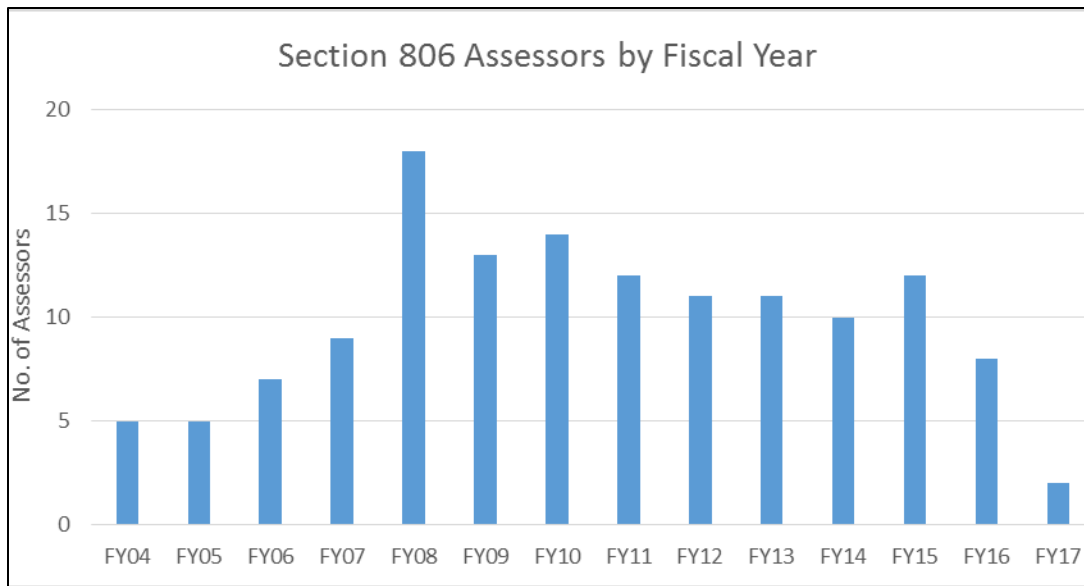


Figure 5. Graph of the Number of Personnel Performing Section 806 Assessments by Year. Source: Project Director Joint Services (2019).

In total, 48 different people performed analyses during this time. Figure 6 shows how these analyses have been distributed across these assessors. During this timeframe, there have been four Section 806 leads who are responsible for the program as a whole and perform the bulk of the analyses. The rest are performed by other subject matter experts or support staff who perform only select analyses when additional insight or manpower is required.

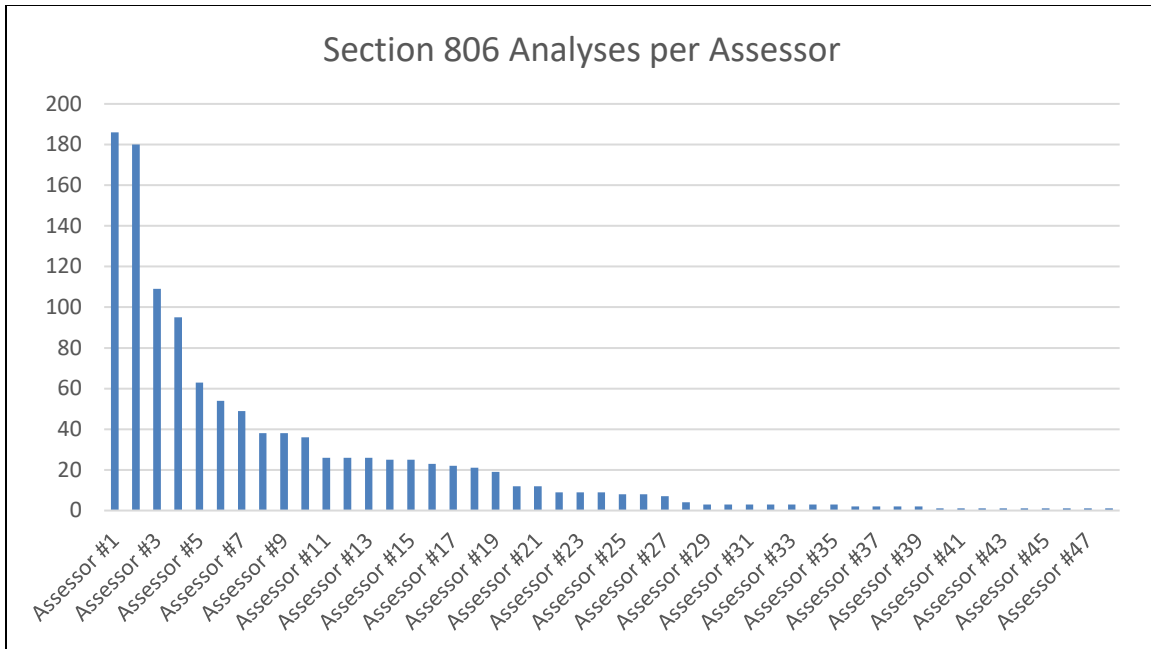


Figure 6. Graph of the number of Section 806 Assessments each Assessor has Performed. Source: Project Director Joint Services (2019).

B. RISK RATINGS

Every Section 806 analysis includes an overall risk rating of Low, Low to Moderate, Moderate, Moderate to High or High. This risk rating is determined qualitatively by the assessor based on their judgment and is specifically meant to identify the risk placed on the NTIB by a given procurement. However, the risk ratings are not defined and are ultimately based on the individual assessor’s experience. As shown in Figure 7, the risk ends up being “Low” nearly every time. While this may simply mean that DoD is routinely making low risk procurements of conventional ammunition, greater stratification of the risks would allow more informed decision making as leadership and risk tolerances change over time.

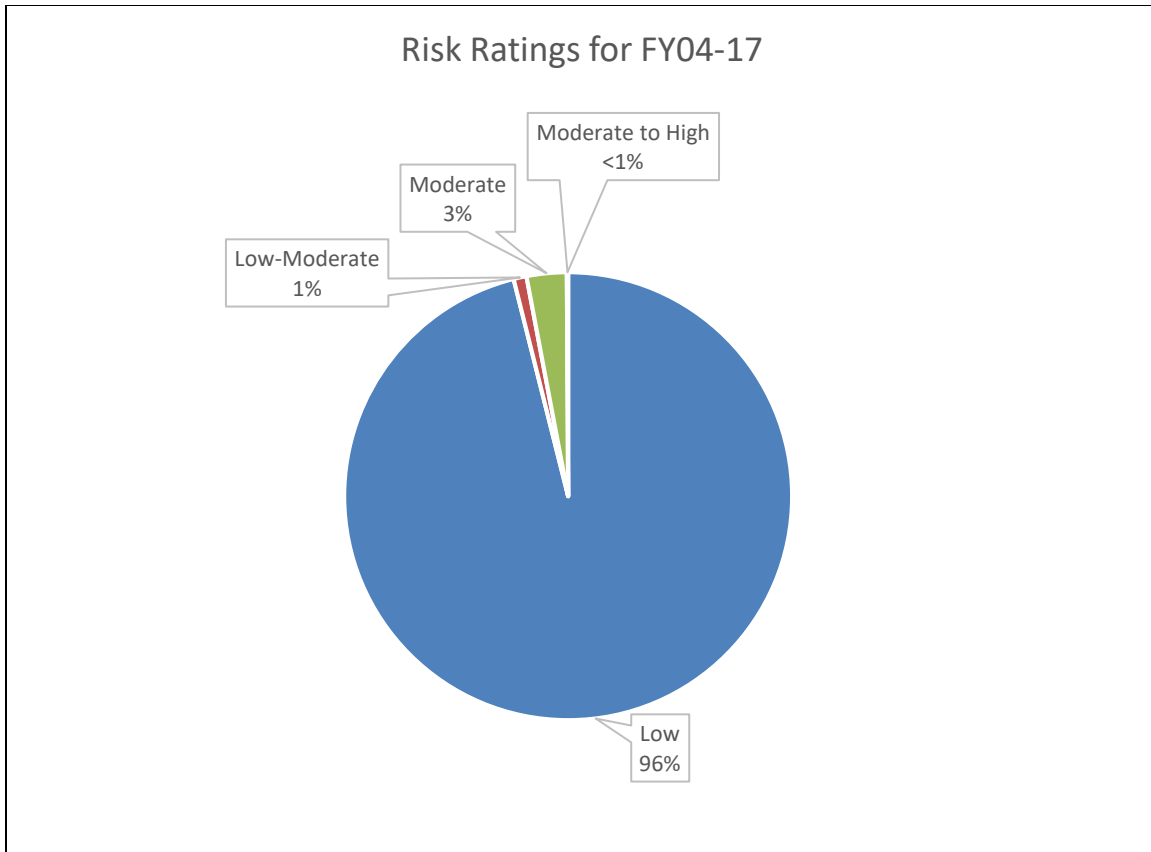


Figure 7. Graph of the Distribution of Overall Risk Ratings Assigned by Section 806 Assessments. Source: Project Director Joint Services (2019).

C. AVAILABLE DATA SOURCES

1. SMCA Industrial Base Assessment Tool (IBAT)

The Industrial Base Assessment Tool (IBAT) is a web-based decision support tool that provides supply chain management and decision support information of critical ammunition components and end items across functional organizations to enhance acquisition planning and industrial base preparedness. The IBAT warehouses information on over 1200 end items, over 290 suppliers and 1300 components (IBAT Executive Summary, 2018).

IBAT is useful for identifying the major components of an item, FYDP demand for those components, where those components are produced, the capacities of those producers and what else those producers make.

Development of this tool was funded by JPEO Armaments & Ammunition and the Joint Munitions Command beginning in FY2002. Decision Sciences Inc. (DSI) designed and developed the application (Decision Sciences Inc., n.d.).

2. Army Supplier Risk Tracker (ASRT)

The ASRT provides information about the financial health of Army suppliers and potential risk in doing business with them. Utilizing information from Dun and Bradstreet financial services, ASRT provides a current risk assessment and risk trends for each supplier. Suppliers in ASRT are associated with the weapon systems they support providing the opportunity to link supplier financial health to risk of availability of materiel items (Army Supplier Risk Tracker, 2018).

ASRT is useful for understanding the current financial stability of company and distills this down to a single numerical value called the Supplier Evaluation Risk Score which indicates the likelihood of a company going into bankruptcy on a scale of one to nine.

3. Section 806 Database

Beginning in October of 2003, PD JS has tracked each request for Section 806 Determination in a database which has evolved from a Microsoft Excel worksheet into a Microsoft Access database that is stored on a JPEO A&A server. This database contains key metrics like signature dates, status of the request, item names and identifiers, Watch List items, overall risk determined, requestor contact information and NTIB limitations.

This database is useful for establishing historical trends such as those shown in Figures 4, 5, 6 and 7.

4. SMCA Section 806 Watch List

The SMCA Section 806 Watch List identifies ammunition end items, components, and/or capabilities that are essential for supplying military ammunition in cases of national emergency or to achieve industrial mobilization and potentially qualify for limited competition within the National Technology and Industrial Base (Program Executive

Office Ammunition, 2015). This list is used by the Section 806 assessors to focus their analyses since a given ammunition item can have over 100 components. The current Watch List contains 28 categories. The list's distribution is limited to DoD and U.S. DoD contractors (Distribution statement D) and so is not shown here.

IV. ANALYSIS

A. OUTPUTS DESIRED

Pub. Law 105–261 Section 806, (b) states that the requirement is for the SMCA to limit procurements of ammunition to the NTIB if it is determined that “such limitation is necessary to maintain a facility, producer, manufacturer, or other supplier available for furnishing an essential item of ammunition or ammunition component in cases of national emergency or to achieve industrial mobilization” (Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, Pub. L. No 105–261 § 806, 1998).

The Section 806 analysis should establish that limitation is necessary to maintain a supplier. In other words, if the facility is expected to be sustained regardless of whether they receive this work, there is no need for the SMCA to use its Section 806 authority to alter the procurement. Since this has to do with impacts in the future, this is a question of risk rather than a binary yes/no assessment. The analysis should provide the SMCA Executor with an indication of the risk associated with approving the proposed acquisition strategy on the NTIB.

To arrive at this conclusion, it is necessary to answer the following key questions:

KEY QUESTIONS

1. Does this procurement include any SMCA Section 806 Watch List items?
1. Which NTIB producers are potential sources of these Watch List items?
2. How many NTIB producers are there?
3. Are these NTIB producers financially viable at this time?
4. Is the quantity being procured significant to these producers?
5. Does this quantity represent a significant proportion of the expected demand these producers can compete for?

6. Is the procuring PM sourcing this item and/or its components from the NTIB?

B. INPUTS NEEDED

Answering the key questions will require some basic inputs to be gathered from the procuring PM or available data sources. A listing of these inputs is presented here.

1. Item being procured
1. Quantity being procured
2. Proposed acquisition approach
3. Acquisition timeframe
4. Number of NTIB producers
5. Financial viability
6. SMCA Section 806 Watch List
7. Producer capacities
8. DoD demand
9. Bills of Materials

C. SELECTION OF DATA SOURCES FOR INPUTS

The JOCGIBATAA effort did a thorough job of rating various data sources. The SMCA IBAT had the highest score in 12 of the 20 informational needs measured. No other tool came close. This makes sense since SMCA IBAT was developed specifically to support SMCA analysis needs (including Section 806 analyses) so will be used as a primary data source here. Specifically, IBAT links items to their producers (Input #5), capacities (Input #8), POM demand (Input #9) and bills of materials (Input #10).

JOCGIBATAA assessed tools' content regarding firm's financial outlook (Input #6). The DCMA Financial Viability and AMC ASRT tied for the highest score. However, AMC ASRT got the highest possible score for update frequency (100) while DCMA Financial Viability received the lowest (0). This is due to the fact that ASRT is updated twice per year while DCMA Financial Viability is an as-requested service. One criteria not used in the JOCGIBATAA effort, but applied here, is the ease of linking the data sources together as this will be important for automating data acquisition and calculation. In this case, both SMCA IBAT and ASRT identify producers by CAGE code. Since ASRT was rated highest for Financial Viability, is updated regularly and is compatible, with SMCA IBAT, it will be used for Financial Viability (Input #6).

JOCGIBATAA did not assess this whether information sources identified SMCA Section 806 Watch List items (Input #7). However, the SMCA Section 806 Watch List is readily listed as items and their National Item Identification Number (NIIN). NIINs are the primary unique identifier for items within SMCA IBAT. This effort will produce this list as its own input. SMCA IBAT has a field for this, but it is not currently used. While easily remedied, it is recommended that future updates to the Watch List include lists of items by NIIN and that SMCA IBAT use the Watch List indicator field.

Inputs 1, 2, 3 and 4 (Item being procured, Quantity being procured, Proposed acquisition approach and Acquisition timeframe) are details specific to the procurement and must be supplied by the requesting PM office. PD JS uses a standard Section 806 Request form to collect this information already. Included in the request form is a field for the item's NIIN which allows for use with both the Watch List and SMCA IBAT. Table 3 illustrates that all of the required inputs can be gathered using the four data sources identified in this section.

Table 3. Crosswalk of Inputs Needed and Sources Available

		Sources			
		Section 806 Request	SMCA IBAT	ASRT	SMCA Section 806 Watch List
Inputs	1. Item being procured	X	-	-	-
	2. Quantity being procured	X	-	-	-
	3. Proposed acquisition approach	X	-	-	-
	4. Acquisition timeframe	X	-	-	-
	5. No. of NTIB Producers	-	X	-	-
	6. Financial Viability	-	-	X	-
	7. Watch List	-	-	-	X
	8. Capacities	-	X	-	-
	9. Demand	-	X	-	-
	10. Bills of Materials	-	X	-	-

D. LINKING DATA ACROSS SOURCES

The SMCA Section 806 Watch List and Section 806 Request contain item information arranged by NIIN, but no producer information. The ASRT contains producer information arranged by Commercial and Government Entity (CAGE) code, but no item information. The SMCA IBAT contains both item information arranged by NIIN and producer information arranged by CAGE code. As such, the SMCA IBAT can be used to link the three data sources together with NIINs as the item unique identifier and CAGE code as the Producer unique identifier. Figure 8 illustrates the manner in which information can be linked across data sources using NIINs and CAGE codes.

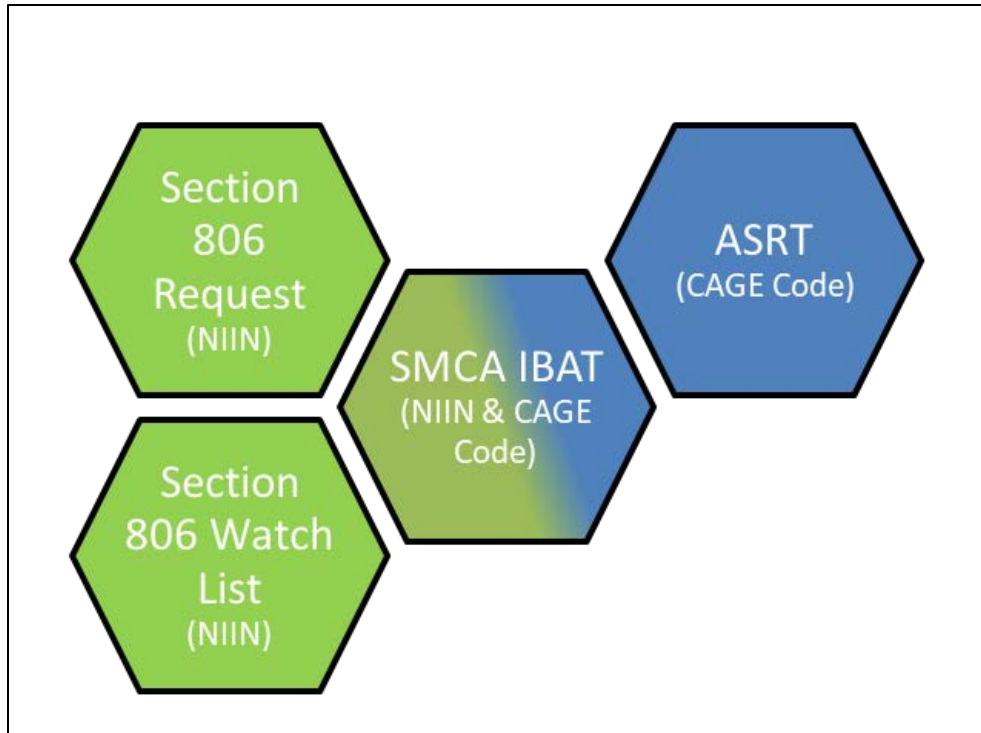


Figure 8. Crosslinking Data Sources

E. ANSWERING KEY QUESTIONS

Using the inputs from the sources listed Table 3, all of the key questions can be answered in a consistent fashion.

1. The procuring PM provides end item NIIN, quantity, timeframe and acquisition approach.
2. The bill of materials is pulled from SMCA IBAT as a list of component NIINs and production factors.
3. Component NIINs are checked against the Watch List to filter out non-Watch List items which will not need further analysis.
-Answers “Does this procurement include any SMCA Section 806 Watch List items?”
4. The acquisition approach is then used to mark components that the procuring PM is already requiring to be procured from the NTIB. These

components will not need further analysis.

-Answers “Is the procuring PM sourcing this item and/or its components from the NTIB?”

5. NTIB producers of the components are then pulled from SMCA IBAT along with their associated CAGE codes and monthly maximum capacities.

-Answers “Which NTIB producers are potential sources of these Watch List items?”

6. Producers of each component are counted.

-Answers “How many NTIB producers are there?”

7. Supplier Evaluation Risk ratings are pulled from ASRT using producer CAGE codes to identify the financial viability of each producer.

-Answers “Are these NTIB producers financially viable at this time?”

8. End item quantity is multiplied by the component production factors to determine component quantities in the procurement.

9. DoD demand is pulled from SMCA IBAT using component NIINs and the acquisition timeframe.

10. Component quantities are divided by DoD demand for those components.

-Answers “Does this quantity represent a significant proportion of the expected demand these producers can compete for?”

11. Producer capacities are summed to determine the overall NTIB capacity to produce each component.

12. Component quantities are then divided by the NTIB capacity.

-Answers “Is the quantity being procured significant to these producers?”

Figure 9 illustrates the flow of the inputs from the data sources to derive interim information and ultimately answer the key questions.

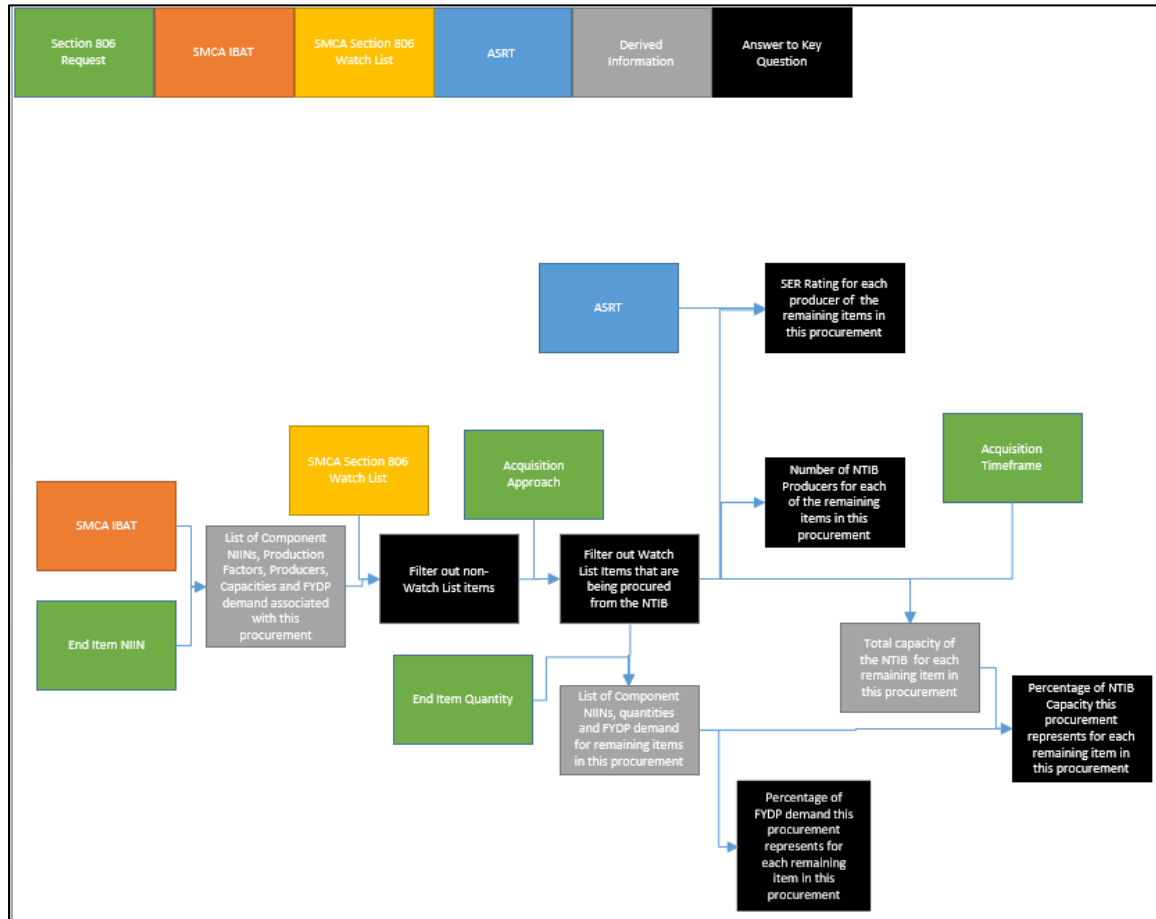


Figure 9. Flow Chart of Information Flow from Data Sources

F. GENERATING OUTPUT

With key questions answered, the next step is to frame the procurement in terms of risk which is the desired output of this process.

1. Risk Statement

The DoD Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs states that “A good risk statement contains two elements: the potential event and the associated consequences” (Office of the Deputy Assistant Secretary of Defense for

Systems Engineering, 2017). The “potential event” is the procurement of an item from outside the NTIB. The “associated consequence” is loss of work to NTIB producers. Converting this to a risk statement, it can be phrased as “Item is not procured from an NTIB producer resulting in lost work to the NTIB.”

2. Likelihood

The likelihood of an end item or component being procured outside of the NTIB is most directly affected by the procuring PM’s acquisition approach. The procuring PM can make sourcing from within the NTIB nearly a guarantee (e.g., limiting competition to NTIB sources). They can also make sourcing from outside of the NTIB nearly a guarantee (e.g., by awarding sole source to company outside of the NTIB). In the event that the procuring PM allows for full and open worldwide competition, determining the likelihood is more difficult. One indicator available is the number of NTIB producers. Assuming each producer has a greater than zero chance of winning work awarded through competition, likelihood that none of them wins the work decreases as the number of NTIB producers increases. For near-term implementation, the author suggests the following likelihood scoring methodology. Refinements can then be made by keeping a record of how frequently NTIB sources are able to win work awarded competitively.

Table 4. Likelihood Scoring

Acquisition Approach	No. of NTIB Suppliers	Likelihood
Requires NTIB Source	Any	1
Allows for NTIB and Non-NTIB Sources	>2	2
Allows for NTIB and Non-NTIB Sources	2	3
Allows for NTIB and Non-NTIB Sources	1	4
Allows for NTIB and Non-NTIB Sources	0	5
Requires non-NTIB Source	Any	5

3. Consequence

The consequence of an item being procured outside of the NTIB is dependent on how financially viable NTIB producers are and how significant the procurement is.

Financial viability is readily available as the Supplier Evaluation Risk (SER) rating from ASRT. In the event there is more than one NTIB producer, the highest rating will be used. This rating will be converted from its 1 to 9 scale into a percentage allow for commonality with the significance component of the rating. This is done by simply dividing by the maximum value (i.e., 9).

Significance of the procurement has two components (Percentage of DoD demand and percentage of NTIB capacity) as notionally shown in Figure 10.

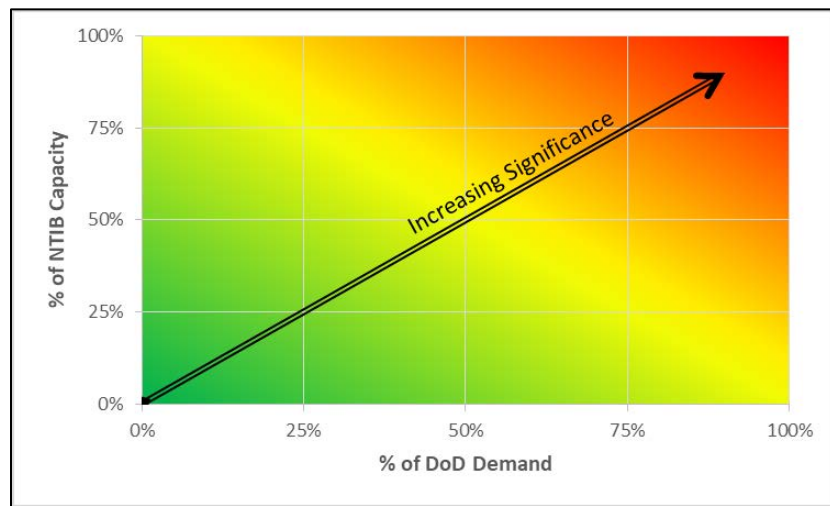


Figure 10. Notional Significance Relationship

For initial implementation, it will be assumed that significance can be taken as the average of the two percentages. Once enough real data is collected, this can be refined further. The same approach will be taken to combine the resulting Significance value with the SER value. This three-dimensional relationship is depicted in Table 5.

Table 5. Consequence Values As a Function of the Significance and SER Rating

SER Rating	100%	3	3	4	4	4	4	5	5	5	5	5
	90%	3	3	3	4	4	4	4	5	5	5	5
	80%	3	3	3	3	4	4	4	4	5	5	5
	70%	2	3	3	3	3	4	4	4	4	5	5
	60%	2	2	3	3	3	3	4	4	4	4	5
	50%	2	2	2	3	3	3	3	4	4	4	4
	40%	2	2	2	2	3	3	3	3	4	4	4
	30%	1	2	2	2	2	3	3	3	3	4	4
	20%	1	1	2	2	2	2	3	3	3	3	4
	10%	1	1	1	2	2	2	2	3	3	3	3
	0%	1	1	1	1	2	2	2	2	3	3	3
		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	Significance											

4. Risk Matrix

With likelihood and consequence now represented on scales of 1 to 5, the risk for each Watch List component in the procurement can be represented on a standard risk matrix. Overall risk can be reported as the number of high risks and medium risks with all of the individual risks shown on the risk matrix to give JPEO A&A a quick indication of the type of risks associated with the procuring PM's acquisition approach.

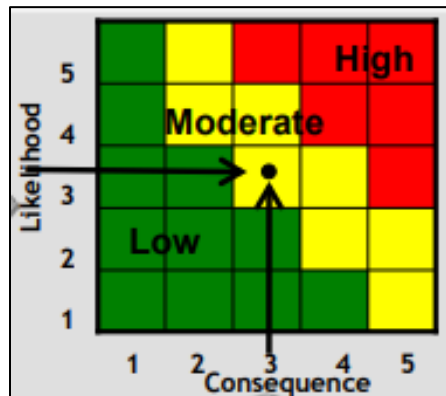


Figure 11. Standard Risk Matrix. Source: Office of the Deputy Assistant Secretary of Defense for Systems Engineering (2017).

V. CONCLUSIONS AND RECOMMENDATIONS

Based on analysis of the purpose of the Section 806 statute and available data sources and formats, this project has shown that it is possible to create a standardized, automated tool for conducting Section 806 analyses. Benefits are expected to come in the form of reduced processing time, reduced subjectivity, increased consistency and greater resiliency in the event of staff turnover.

It is recommended that this tool be implemented in a phased approach. During the first phase, the tool would be used in parallel with the existing Section 806 process. Parallel processing allows for detection of underlying flaws in the tool's logic allowing for correction without impacting the normal Section 806 approval process. This approach also allows for Section 806 assessors and their leadership to become incrementally familiar with what the tool offers and what future Section 806 analyses are expected to contain (e.g., risk matrix in every assessment). The immediate benefit would be that the tool allows assessors a quick check on their own analyses to make sure they have identified all of the Watch List items, producers, capacities, etc. Four to six months of this parallel processing should be sufficient since that would cover 20 to 30 assessments ensuring a wide breadth of procurement scenarios. If supported by stakeholders, implementation would enter the second phase. Successful implementation will require support from Section 806 assessors, JPEO A&A leadership and procuring PMs.

The second phase would end the parallel processing and rely on the tool as the primary approach to conducting Section 806 analyses. During this phase, the tool may continue to evolve as unexpected scenarios are experienced. Each assessment would allow for greater refinement of the tool and updates may be frequent. The immediate benefits would be reduced workload for the Section 806 assessor and quicker turnaround time for the procuring PM. Up to 12 months should be sufficient for this phase as the tool will have been used to assess approximately 100 procurements across the first two phases, generating an extensive amount of data with which to optimize for. Once again, stakeholder support would be needed to enter the next phase.

The third and final phase would codify use of the tool with non-critical updates made more methodically (e.g., scheduled to coincide with the start of the FY) to limit retraining and more strictly ensure version control. This phase fully realizes the expected benefits of reduced processing time, reduced subjectivity, increased consistency and greater resiliency in the event of staff turnover.

While a fully working version of this tool has been developed and included in the appendix, greater gains could be achieved by embedding the underlying logic into an on-line platform. Doing so would allow for procuring PMs to enter their acquisition details directly rather than filling out the Section 806 Request Form and emailing to PD JS for entry into the assessment tool. Eliminating this step would reduce transcription errors and allow for immediate feedback to the procuring PM. Feedback could range from simply informing the PM of any missing information up to providing the actual risk ratings. Reducing barriers to informing the PMs of potential risks in their acquisitions would allow the PMs to do so during early acquisition planning in an iterative process without overly tasking PD JS personnel. Potential platforms where this tool could be integrated are the SMCA IBAT or the Ammunition Enterprise Portal. Both platforms are CAC-enabled allowing for controlled access and are already used by the ammunition community.

The Section 806 Watch List had to be converted into a NIIN-based list for this project. It is recommended that creating a NIIN-based Watch List be standard practice. Doing so helps both implementation of this project and for indicating Watch List items in SMCA IBAT since that system is NIIN-based.

Finally, since no model can fully cover the endless complexities of reality, this tool should continue to be paired with subject matter expertise. This allows the assessment tool to handle the repetitive tasks of pulling information and calculation while enabling the subject matter expert to focus on unforeseen details and the overall intent of the Section 806 statute to ensure the NTIB will be able to supply the necessary conventional ammunition when called upon.

APPENDIX A. SECTION 806 ASSESSMENT TOOL AS IMPLEMENTED IN MICROSOFT EXCEL.

A. INPUT TAB

Figure 12 is a screenshot of the Input Tab worksheet. Real data was used to generate the results, but the NIIN, Nomenclature and Watch List Category fields have been replaced with dummy data due to potential sensitivity.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	This assessment is for the Bullet XYZ																			
2		Enter End Item NIIN	XXXXXXXXXX								Overall Risk Level	High								
3		Enter End Item Quantity	79,220																	
4		Enter Timeframe Start (YYYY)	FY2018																	
5		Enter Timeframe End (YYYY)	FY2020																	
6																				
7																				
8																				
9	Acquisition Approach	Nomenclature	Watch List Category	Max of At-risk Suppliers Warning	Sum of % of Demand	Sum of Number of NTIB Producers	Sum of Years of NTIB Work as Percentage of Years of the Contract	Likelihood	Consequence	Risk Level	11	12	13	14	15	21	22	23	24	25
10	Requires NTIB Source	Component 1	WL Cat 4	4	100%	1	48%	1	3	Low	-	-	1	-	-	-	-	-	-	-
11	Requires NTIB Source	Component 2	WL Cat 2	8	100%	1	73%	1	5	Moderate	-	-	-	-	1	-	-	-	-	-
12	Requires Non-NTIB Source	Component 3	WL Cat 12	4	100%	2	71%	5	4	High	-	-	-	-	-	-	-	-	-	-
13	Allows for NTIB and Non	Component 4	WL Cat 3	4	100%	2	9%	3	3	Moderate	-	-	-	-	-	-	-	-	-	-
14	Requires NTIB Source	Component 5	WL Cat 3	2	0%	1	100%	1	2	Low	-	-	1	-	-	-	-	-	-	-
15	Allows for NTIB and Non	Component 6	WL Cat 1	4	100%	1	59%	4	4	High	-	-	-	-	-	-	-	-	-	-
16	Requires Non-NTIB Source	Component 7	WL Cat 5	4	100%	0	0%	5	1	Low	-	-	-	-	-	-	-	-	-	-
17	Requires NTIB Source	Component 8	WL Cat 3	7	3%	1	0%	1	2	Low	-	-	1	-	-	-	-	-	-	-
18																				
19																				
20																				
21																				
22																				
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27																				
28																				
29																				

Figure 12. Screenshot of Input Tab Worksheet

Table 6 identifies the formulas used in the construction of the Input Tab worksheet. Formulas in row 10 are repeated through row 50, but not shown here for brevity.

Table 6. Formulas Used in Input Tab Worksheet

Cell	Entry
A1	=CONCATENATE("This assessment is for the ",VLOOKUP(C2,'Item Info'!A:B,2,FALSE))
L2	=IF(SUM(Q2:S2,R3:S3,S4)>0,"High",IF(SUM(S5:S6,R4:R5,Q3:Q4,P2:P3)>0,"Moderate","low"))
O2	=SUM(AE10:AE50)
P2	=SUM(AF10:AF50)
Q2	=SUM(AG10:AG50)
R2	=SUM(AH10:AH50)
S2	=SUM(AI10:AI50)
O3	=SUM(Z10:Z50)
P3	=SUM(AA10:AA50)
Q3	=SUM(AB10:AB50)
R3	=SUM(AC10:AC50)
S3	=SUM(AD10:AD50)
O4	=SUM(U10:U50)
P4	=SUM(V10:V50)
Q4	=SUM(W10:W50)
R4	=SUM(X10:X50)
S4	=SUM(Y10:Y50)
O5	=SUM(P10:P50)
P5	=SUM(Q10:Q50)
Q5	=SUM(R10:R50)
R5	=SUM(S10:S50)
S5	=SUM(T10:T50)
O6	=SUM(K10:K50)
P6	=SUM(L10:L50)
Q6	=SUM(M10:M50)

Cell	Entry
R6	=SUM(N10:N50)
S6	=SUM(O10:O50)
H10	=IF(B10="","",IF(A10="*Select Value", "Awaiting Acquisition Approach", IF(A10="Requires NTIB Source", 1, IF(A10="Requires non-NTIB Source", 5, IF(F10=0, 5, IF(F10=1, 4, IF(F10=2, 3, IF(F10>2, 2, "?"))))))))
I10	=IF(B10="","",IF(A10="*Select a value", "Awaiting Acquisition Approach", IF(F10=0, 1, ROUNDUP(5*(2*D10/9+E10+G10)/4, 0))))
J10	=IF(B10="","",IF(SUM(AI10,AH10,AD10,AG10,AC10,Y10)=1, "High", IF(SUM(AF10,T10,O10,AB10,X10,AA10,S10,W10)=1, "Moderate", "Low")))
K10	=IF(\$B10="","",IF(10*\$H10+\$I10=K\$9, 1, "-"))
L10	=IF(\$B10="","",IF(10*\$H10+\$I10=L\$9, 1, "-"))
M10	=IF(\$B10="","",IF(10*\$H10+\$I10=M\$9, 1, "-"))
N10	=IF(\$B10="","",IF(10*\$H10+\$I10=N\$9, 1, "-"))
O10	=IF(\$B10="","",IF(10*\$H10+\$I10=O\$9, 1, "-"))
P10	=IF(\$B10="","",IF(10*\$H10+\$I10=P\$9, 1, "-"))
Q10	=IF(\$B10="","",IF(10*\$H10+\$I10=Q\$9, 1, "-"))
R10	=IF(\$B10="","",IF(10*\$H10+\$I10=R\$9, 1, "-"))
S10	=IF(\$B10="","",IF(10*\$H10+\$I10=S\$9, 1, "-"))
T10	=IF(\$B10="","",IF(10*\$H10+\$I10=T\$9, 1, "-"))
U10	=IF(\$B10="","",IF(10*\$H10+\$I10=U\$9, 1, "-"))
V10	=IF(\$B10="","",IF(10*\$H10+\$I10=V\$9, 1, "-"))
W10	=IF(\$B10="","",IF(10*\$H10+\$I10=W\$9, 1, "-"))
X10	=IF(\$B10="","",IF(10*\$H10+\$I10=X\$9, 1, "-"))
Y10	=IF(\$B10="","",IF(10*\$H10+\$I10=Y\$9, 1, "-"))
Z10	=IF(\$B10="","",IF(10*\$H10+\$I10=Z\$9, 1, "-"))
AA10	=IF(\$B10="","",IF(10*\$H10+\$I10=AA\$9, 1, "-"))
AB10	=IF(\$B10="","",IF(10*\$H10+\$I10=AB\$9, 1, "-"))
AC10	=IF(\$B10="","",IF(10*\$H10+\$I10=AC\$9, 1, "-"))

Cell	Entry
AD10	=IF(\$B10="","",IF(10*\$H10+\$I10=AD\$9,1,"-"))
AE10	=IF(\$B10="","",IF(10*\$H10+\$I10=AE\$9,1,"-"))
AF10	=IF(\$B10="","",IF(10*\$H10+\$I10=AF\$9,1,"-"))
AG10	=IF(\$B10="","",IF(10*\$H10+\$I10=AG\$9,1,"-"))
AH10	=IF(\$B10="","",IF(10*\$H10+\$I10=AH\$9,1,"-"))
AI10	=IF(\$B10="","",IF(10*\$H10+\$I10=AI\$9,1,"-"))
B9	Contains pivot table. Data source is "CalculationTab!\$B\$9:\$AK\$80." Row fields are "Nomenclature" and "Watch List Category." Values fields are "Max of At-risk Suppliers Warning," "Sum of % of Demand," "Sum of Number of NTIB Producers" and "Sum of Years of NTIB Work as Percentage of Years of the Contract." Watch List Category filter is used to hide "-" values.

B. CALCULATION TAB

Table 7 identifies the formulas used in the construction of the Calculation Tab worksheet. Formulas in row 10 are repeated through row 81, but not shown here for brevity.

Table 7. Formulas Used in Calculation Tab Worksheet

Cell	Entry
E9	=‘Input Tab’!C2
G9	=‘Input Tab’!C3
I9	=Demand!E\$1
J9	=Demand!F\$1
K9	=Demand!G\$1
L9	=Demand!H\$1
M9	=Demand!I\$1
N9	=Demand!J\$1
O9	=Demand!K\$1
P9	=O9+1
Q9	=P9+1
R9	=Q9+1
S9	=R9+1
C10	=IFERROR(VLOOKUP(E10,’Watch List’!\$A\$1:\$C\$65525,3,FALSE),”-”)
D10	=IFERROR(VLOOKUP(E10,’Item Info’!\$A:\$B,2,FALSE),”-”)
E10	{=IF(E9=”-”,”-”,IFERROR(INDEX(BoM!\$B:\$G,SMALL(IF(BoM!\$B:\$B=\$E\$9,ROW(BoM!\$B:\$B)),ROW(1:1)),4),”-”))}
F10	{=IF(F9=”-”,”-”,IFERROR(INDEX(BoM!\$B:\$G,SMALL(IF(BoM!\$B:\$B=\$E\$9,ROW(BoM!\$B:\$B)),ROW(1:1)),5),”-”))}
G10	=IFERROR(F10*\$G\$9,”-”)
H10	=IF(C10=”-”,”-”,IFERROR(IF(MAX(AH10:AK10)>0,MAX(AH10:AK10),3.78),”-”))
I10	=IF(C10=”-”,”-”,IFERROR(IF(OR(I\$9<‘Input Tab’!\$C\$4,I\$9>‘Input Tab’!\$C\$5),0,VLOOKUP(\$E10,’Demand Pivot’!\$A\$1:\$I\$65536,3,FALSE)),”-”))
J10	=IF(C10=”-”,”-”,IFERROR(IF(OR(J\$9<‘Input Tab’!\$C\$4,J\$9>‘Input Tab’!\$C\$5),0,VLOOKUP(\$E10,’Demand Pivot’!\$A\$1:\$I\$65536,4,FALSE)),”-”))
K10	=IF(C10=”-”,”-”,IFERROR(IF(OR(K\$9<‘Input Tab’!\$C\$4,K\$9>‘Input Tab’!\$C\$5),0,VLOOKUP(\$E10,’Demand Pivot’!\$A\$1:\$I\$65536,5,FALSE)),”-”))
L10	=IF(C10=”-”,”-”,IFERROR(IF(OR(L\$9<‘Input Tab’!\$C\$4,L\$9>‘Input Tab’!\$C\$5),0,VLOOKUP(\$E10,’Demand Pivot’!\$A\$1:\$I\$65536,6,FALSE)),”-”))

Cell	Entry
M10	=IF(C10="","-",IFERROR(IF(OR(M\$9<'Input Tab'!\$C\$4,M\$9>'Input Tab'!\$C\$5),0,VLOOKUP(\$E10,'Demand Pivot'!\$A\$1:\$I\$65536,7,FALSE)),"-"))
N10	=IF(C10="","-",IFERROR(IF(OR(N\$9<'Input Tab'!\$C\$4,N\$9>'Input Tab'!\$C\$5),0,VLOOKUP(\$E10,'Demand Pivot'!\$A\$1:\$I\$65536,8,FALSE)),"-"))
O10	=IF(C10="","-",IFERROR(IF(OR(O\$9<'Input Tab'!\$C\$4,O\$9>'Input Tab'!\$C\$5),0,VLOOKUP(\$E10,'Demand Pivot'!\$A\$1:\$I\$65536,9,FALSE)),"-"))
P10	=IF(OR(P\$9<'Input Tab'!\$C\$4,P\$9>'Input Tab'!\$C\$5),0,O10)
Q10	=IF(OR(Q\$9<'Input Tab'!\$C\$4,Q\$9>'Input Tab'!\$C\$5),0,P10)
R10	=IF(OR(R\$9<'Input Tab'!\$C\$4,R\$9>'Input Tab'!\$C\$5),0,Q10)
S10	=IF(OR(S\$9<'Input Tab'!\$C\$4,S\$9>'Input Tab'!\$C\$5),0,R10)
T10	=SUM(I10:S10)
U10	=IFERROR(IF(G10/T10>1,1,G10/T10),"")
V10	{=IF(C10="","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$1:\$1)),2),""))}
W10	{=IF(C10="","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$2:\$2)),2),""))}
X10	{=IF(C10="","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$3:\$3)),2),""))}
Y10	=IF(C10="","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$4:\$4)),2),""))
Z10	=IF(C10="","-",COUNTIF(V10:Y10,"<>-"))
AA10	{=IF(C10="","-",IF(V10="","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$1:\$1)),9),0)))}
AB10	{=IF(C10="","-",IF(W10="","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$2:\$2)),9),0)))}

Cell	Entry
AC10	{=IF(C10="-","-",IF(X10="-","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$3:\$3)),9),0))))}
AD10	{=IF(C10="-","-",IF(Y10="-","-",IFERROR(INDEX(Capacities!\$A\$1:\$J\$65536,SMALL(IF(Capacities!\$A\$1:\$J\$65536=\$E10,ROW(Capacities!\$A\$1:\$A\$65536)),ROW(\$4:\$4)),9),0))))}
AE10	=SUM(AA10:AD10)
AF10	=IFERROR(G10/AE10,"-")
AG10	=IFERROR(IF(AF10/('Input Tab'!\$C\$5-'Input Tab'!\$C\$4+1)>1,1,AF10/('Input Tab'!\$C\$5-'Input Tab'!\$C\$4+1)),"-")
AH10	=IFERROR(VLOOKUP(V10,ASRT!\$B\$1:\$C\$65536,2,FALSE),"-")
AI10	=IFERROR(VLOOKUP(W10,ASRT!\$B\$1:\$C\$65536,2,FALSE),"-")
AJ10	=IFERROR(VLOOKUP(X10,ASRT!\$B\$1:\$C\$65536,2,FALSE),"-")
AK10	=IFERROR(VLOOKUP(Y10,ASRT!\$B\$1:\$C\$65536,2,FALSE),"-")

C. DEMAND PIVOT

Table 8 provides the details of the pivot table used in the Demand Pivot worksheet.

Table 8. Formulas Used in Demand Pivot Worksheet

Cell	Entry
A3	Contains pivot table. Data source is “Demand’!\$A\$1:\$K\$65536.” Row fields are “NIIN” and “Nomenclature.” Values fields are “Sum of 2017,” “Sum of 2018,” “Sum of 2019,” “Sum of 2020,” “Sum of 20121,” “Sum of 2022” and “Sum of 2023”.

D. STATIC DATA

The remaining worksheets contain static data fields that provide the underlying data used in this tool (i.e., these worksheets do not contain formulas or pivot tables). Table 9 identifies the data fields contained on each static worksheet. Row one of each worksheet contains the field name shown in Table 9 while subsequent rows contain the actual data.

Table 9. Data Fields in Static Data Worksheets

Worksheet	Column	Field
Capacities	A	NIIN
Capacities	B	CAGE
Capacities	C	NOMEN
Capacities	D	FACILITY_NAME
Capacities	E	LINE
Capacities	F	STAND_ALONE_1
Capacities	G	STAND_ALONE_MAX
Capacities	H	Annualized 1-shift Capacity
Capacities	I	Annualized Max Capacity
Capacities	J	WARM_COLD
ASRT	A	Supplier
ASRT	B	CAGE
ASRT	C	SERS
BoM	A	Family
BoM	B	End Item NIIN
BoM	C	Nomenclature
BoM	D	DODIC
BoM	E	NIIN
BoM	F	Production Factor
BoM	G	Unit of Issue
BoM	H	Watch List Category
Demand	A	Family Name
Demand	B	NOMENCLATURE
Demand	C	NIIN
Demand	D	Service
Demand	E	2017
Demand	F	2018
Demand	G	2019
Demand	H	2020

Worksheet	Column	Field
Demand	I	2021
Demand	J	2022
Demand	K	2023
Item Info	A	NIIN
Item Info	B	Nomenclature
Item Info	C	Family
Item Info	D	DODIC
Item Info	E	Program Name
Item Info	F	Part No.
Item Info	G	EndItem/Comp
Item Info	H	PM Sub
Item Info	I	POM
Watch List	A	NIIN
Watch List	B	Nomenclature
Watch List	C	WL Category
NTIB Percentage	A	NIIN
NTIB Percentage	B	NOMEN
NTIB Percentage	C	Number of NTIB Facilities
NTIB Percentage	D	Number of Non-NTIB Facilities
NTIB Percentage	E	% NTIB Facilities

APPENDIX B. USER GUIDE

What follows is an initial user guide for the Microsoft Excel-based Section 806 Assessment Tool.

1. Upon receipt of a Section 806 Request form, open a new copy of 'Section 806 Assessment Tool.xlsx'
2. Save as a unique file name to avoid overwriting previous analyses.
3. Enter inputs from Section 806 Request form into the Input Tab
 - i) Type the 9-digit NIIN of the item being procured from the Section 806 Request form into Input Tab cell C2 of the assessment tool. Do not include any hyphens.
 - ii) Type the quantity being procured into Input Tab C4. Ensure the number represents units rather than thousands or millions.
 - iii) Type the first year of the procurement into Input Tab C5. Use four-digit year.
 - iv) Type the final year of the procurement into Input Tab C6. Use four-digit year.
4. Update the Input Tab pivot table
 - i) Left-click on Input Tab cell B9 (the pivot table) to reveal the 'PivotTable Tools' in the menu ribbon.
 - ii) Left-click on 'Analyze' under 'PivotTable Tools'.
 - iii) Left-click 'Refresh' in the 'Data' group. All Watch List items included in this procurement should now be shown in column C starting in row 10.

5. For each Watch List item, review the Section 806 Request form to determine whether the requestor intends to require an NTIB source, require a non-NTIB source or will allow either.
6. Cell L2 now provides the calculated 'Overall Risk Level' for this procurement along side the risk matrix illustrating the likelihood and consequence risk ratings for each individual Watch List item
7. Save file and proceed according to Section 806 lead's guidance (e.g., begin staffing to JPEO A&A for approval or engage with requestor to address high risk Watch List items).

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