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Gregory Hamilton
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Acknowledged, agreed, and submitted by

LAURA A BEAR

Nominee’s Name (please print): Laura Bear
Title (please print): Ukraine NASAMS Program Manager
Company (please print): Raytheon Technologies

Nominee’s Signature

Date: 5 June 2023
NOMINATION FORM

Name of Program: Ukraine NASAMS Rapid Response 2-Lot Program

Name of Program Leader: Laura Bear

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☑ Customer Approved
  o Date: 5 Jun 2023
  o Customer Contact (name/title/organization/phone): Bill Trainer / Division Chief, International Programs / SHIELD Project Office / 256.348.3053

☑ Supplier Approved (if named in this nomination form)
  o Date: 5 Jun 2023
  o Supplier Contact (name/title/organization/phone): John SB Rist / Project Manager NASAMS Ukraine Programs / Kongsberg Defense & Aerospace (KDA), 0047 99509656

PLEASE REFER TO PROGRAM EXCELLENCE DIRECTIONS AS YOU COMPLETE THIS FORM.
EXECUTIVE SUMMARY: Make the Case for Excellence

Value: 10 points

Use 12 pt. Times Roman typeface.

What is the vision for this program/project? What unique characteristics and properties qualify this program for consideration?

[LIMIT YOUR NARRATIVE TO THIS PAGE.]

The NASAMS™ Ukraine 2-Lot Program was unique in that it was a true partnership between Raytheon Technologies (RTX), PM SHIELD from the US Army’s Program Executive Office (PEO) Missiles and Space, and Raytheon’s subcontractor Kongsberg Defence and Aerospace (KDA) to meet an urgent need. Ukrainian warfighters were desperately defending their country in the current war with Russia, and our vision was to deploy NASAMS capability for Ukraine as fast as possible. With a partnership mindset, the team worked alongside each other with the common goal to redefine the contracting process, set new records and achieve targeted milestones. Processes that typically took months to years were accomplished in days. The entire program schedule from contract award (Aug. 26, 2022) to NASAMS deployment in Ukraine (Nov. 5, 2022) was just 71 days. Ten days later, the system was first used to defend the Ukrainian people and infrastructure, successfully intercepting 10 out of 10 incoming targets. Continued success of the NASAMS Systems in Ukraine further emphasizes the importance of this program and the teamwork that delivered it.

Through the partnership between PM SHIELD, RTX, and KDA, a Statement of Work was jointly written and agreed to within weeks of the first working meeting in early August. Raytheon submitted an unsolicited NTE (not-to-exceed) to the U.S Government (USG) for the scope on August 16, and the USG turned around an Undefinitized Contract award by August 26. In parallel, RTX developed a subcontractor statement of work for KDA and awarded a Letter of Subcontract three days after the prime contract award. All processes were done in parallel with open and transparent conversation wherever possible, and with all parties agreeing that the top priority was deploying capability to Ukraine.

Throughout execution, the USG, RTX, and KDA team continuously identified and communicated challenges that could impact the program schedule and worked together to resolve them. It wasn’t enough to lay out an accelerated program plan and then execute to it, there was a continuous drive to keep improving through innovative ideas and alternative solutions. When radar production was the schedule driver, the USG offered GFE Radars as a solution. When the KDA training academy was booked for the training period, alternative space was secured by them for training. When radars required troubleshooting, RTX flew in SMEs from around the world, and the USG hand carried spare parts to Norway.

In addition to schedule and execution challenges, the team redefined the processes required to keep up with the progression of the hardware. DD-250s for acceptance were signed manually by the USG Program Contracting Officer Representative (COR) versus DCMA and were often done virtually via photographs for spares and kits. This enabled the team to DD-250 hardware the day of contract award and ship it OCONUS for installation. An ITAR exemption was also approved by the USG upon contract award for RTX to ship hardware to and perform services in Norway immediately. Redlines of existing documents versus new document releases for the Ukraine program were also leveraged for test procedures and sell off documentation as well as contract mods and SOW updates in order to expedite processing time.

By becoming a true badgeless team aligned to the common goal of supporting the Ukrainian warfighter, the combined RTX, KDA, and USG team redefined the contracting process, eliminated boundaries during execution, and delivered a much needed capability to the Ukrainian warfighter in an unprecedented amount of time. Today, five months after deployment, the NASAMS systems continue to successfully defend the Ukrainian People.
VALUE CREATION
Value: 15 points

Please respond to the following prompt:

➢ **Clearly define the value of this program/project for the corporation; quantify appropriately**

The Ukraine NASAMS 2-Lot program is important for Raytheon as the first foreign military sales (FMS) program for NASAMS. The partnership with the USG on a non-program-of-record system opens the door for a $1.1 billion NTE follow on for a 6-Lot Program in Ukraine, a Canadian funded follow-on for 1-Lot in Ukraine, and future FMS opportunities around the world. In addition to this being the first FMS program for NASAMS, this is also the first time the NASAMS system has been used by a warfighter in battle. The success of the system in protecting Ukrainian lives and critical infrastructure has proven the capability of the system, leading to increased demand for the system in both FMS and DCS capacity worldwide.

➢ **Clearly define the value of this program/project to your customer**

This rapid deployment provided critical air defense capability to the war effort in Ukraine. The deployment of NASAMS was a game-changing capability providing reliable effectiveness against the threats the warfighter was facing. The effectiveness of the system was demonstrated upon initial use as being 100% effective with 10 out of 10 targets successfully engaged as reported by the United States Secretary of Defense, Lloyd Austin, and Ukrainian President, Volodymyr Zelensky. From an ancillary standpoint, the strong performance demonstrated a battle-proven solution for our partners across the globe possessing this capability.
News articles quoting United States Secretary of Defense and Ukrainian President on the success of NASAMS after first use in Ukraine

The tele-maintenance capability coupled with the expertise of 24/7 support personnel represented across-industry and government entities providing critical feedback to the end user throughout operations, and maintenance to ensure operational readiness and issue resolution real time. Another demonstration of rapid response and accelerated process implementation are the KDA and RTX engineers’ ongoing and critical technical updates to the user that include lessons learned from war-time conditions.

The world is observing the demands of wear on the system in real time, which helps inform how we design, build and maintain our systems. All customers will benefit from the learning, funding, contracting and implementation strategy in support of the current critical need in Ukraine.

- Clearly define the value of this program/project to members of your team; quantify if possible

This program clearly made our mission to the warfighter real and helped all teammates at all levels and functions of the organizations understand the criticality of each person’s role in this effort. It’s about protecting and saving lives. The experience put a face of a warfighter behind every SOW paragraph, every training module, every dollar spent and every piece of hardware. This program also demonstrated the resilience, creativity and effectiveness that can be achieved when teams, regardless of organizations, rally together towards a common goal to drive solutions and discover the art of the possible. We were not customer and contractor, or contractor and sub-contractor. We were one team, united in planning and execution to ensure success for the program and for the warfighter.

The team members were also impacted by the experience of working with the Ukrainian end user during the three-week training period. Working side by side, listening to their experiences and learning about the situation in Ukraine made the mission personal and real. The end user showed profound appreciation for the work that was done by the team to prepare the hardware, as well as the dedication working alongside the Ukrainians over many 14+ hour days preparing them for the future battle. Through mutual respect and appreciation, despite the significant language barrier, strong personal bonds and friendships were formed. During post-deployment of the two fire units, when the teams were needed for remote tele-maintenance support, the Raytheon and KDA teams were ready and willing to support the Ukrainians at all hours of the day and night 24/7. When recognized internally for their efforts, many team members
stated that picking up the phone for the end user when they had an issue was almost no different than answering the call of a friend stranded with a flat tire or in need of an extra hand.

- Clearly define the contribution of this program/project to the greater good (society, security, etc.)

This program and all the activities that are still ongoing demonstrated that the world will come together and break down barriers to answer a call of support when lives and democracy are threatened. The battle-proven effectiveness of the system provides confidence for our 13 partner nations worldwide. Real-world performance is something no amount of controlled demonstrations can provide. Our united mission materializes in the systems and capabilities we deploy, but it is also demonstrated in our humanitarian missions. We have RTX teammates who are hosting refugees, contributing resources to orphanages and the warfighter. We are truly grateful to be part of a noble cause, to have an opportunity to contribute in our small way to this demonstration of unity in support of the Ukrainian people.

ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP
Value: 35 points
Use 12 pt. Times Roman typeface

Please respond to the following prompts:

- 15 points: Describe the innovative tools and systems used by your team, how they contributed to performance and why

In order to successfully meet the timeline to deploy two NASAMS fire units to Ukraine, several innovative tools and processes were utilized. First, the team requested and was granted an ITAR exemption by the USG in order to eliminate the time that would have been required to submit TAAAs and obtain license approvals to ship hardware. This process can typically take months, but with the exemption in place the day of contract award, the team was able to DD-250 and ship hardware the first business day after contract award. Another key aspect of quickly expediting hardware upon contract award was the collective team agreed to virtual inspections via photographs and manual signing of DD-250 paperwork. The USG also designated the Contracting Officer’s Representative (COR) as the official signee for acceptance of hardware, software, and services instead of working through the traditional DCMA representatives. This allowed for flexibility, immediate coordination, and approval to ship as soon as a manual signature was received. This process not only expedited the ability to deliver hardware, but also ensured that RTX and KDA were constantly coordinating and aligned with the PM SHIELD Program Office.

After the two fire units were deployed, the NASAMS Ukraine Sustainment team faced the challenge of supporting the end user remotely from various locations around the world including the US, Norway and Poland. RTX had an internally developed tool that was initially planned to be used to communicate with the end user and conduct tele-maintenance. However, upon arrival in J-Town for a site survey less than two weeks before system deployment, the USG team at J-Town informed RTX that they would require the use of the Signal App as it was widely used between the USG, contractors, and the end user on previously deployed platforms. The team quickly pivoted their tele-maintenance support plans and worked to get the Signal App approved for use on the program, since it had never been used before within Raytheon. Various “chats” were set up for NASAMS including a radar support chat, a NASAMS Fire Unit support chat, and various coordination and logistics support chats where the RTX deployed Field Support Representatives monitor the chats 24/7. Representatives triage incoming requests from the end user and communicate between the USG, KDA, the end user and RTX reachback engineering support, or
any combination thereof. Certain chats are set up for troubleshooting and problem solving with the end user, others for management of spares between the contractors and government, and others for communicating outlooks for material and shipments with the Ukrainian liaison. Continued close coordination and teamwork between RTX, KDA and the USG have ensured consistent and reliable support for the Ukrainian end user as they continue to use the NASAMS Fire Units to defend their country.

**Current Signal Path: 11 Different Chat Lines: Managed by RDC-U**

Signal Chat Managed by USG’s Remote Maintenance site and is monitored and supported by RTX and KDA

- **10 points:** Define the unique practices and process you used to develop, lead and manage people?

In order for this program to be successful, two key things needed to happen. First, people had to do things faster than ever before; and second, people had to develop creative and innovative ideas to resolve problems. The key to accomplishing both was the motivation of the people supporting the program, where every team member understands the impact of what they are doing. This wasn’t just another purchase order we were asking supply chain to expedite or another packaging order we were asking logistics to rush or another assembly we were asking the factory to build faster. These were parts being ordered, built, and packaged to be immediately shipped to Norway, and within weeks or even days, be deployed in Ukraine to support them in their fight. Program execution meetings and tag ups were held regularly to keep the team informed of the progress, to celebrate the successes of the program with the whole team, and to simply say “thank you” and remind the team that their efforts are appreciated not only by leadership within the company, but also by the end users defending their country.

- **10 points:** How did you leverage skills and technologies of your suppliers?

The primary “supplier” for this program, Kongsberg Defence and Aerospace, is more than just a supplier or subcontractor; they are a true partner throughout all lifecycle phases of the NASAMS system. The
NASAMS system is comprised of a radar developed and built by RTX, a fire distribution system and launcher built by Kongsberg, a hardware kit produced by Raytheon to ensure the KDA launcher and RTX missiles communicate, and missiles produced by Raytheon. It is a true joint effort between RTX and KDA to deploy every NASAMS system around the globe.

For this Ukraine 2-Lot effort, all hardware was shipped to KDA’s facility in Norway where all major end items were integrated and tested. Raytheon provided fly-away engineering and program office support, and the KDA/RTX team worked to jointly execute the program. Upon sell-off to the USG, KDA then managed the transportation of the systems through Norway from their facility to a Norwegian Air Force base where additional testing and training would take place with the Ukrainian end users.

A combined RTX and KDA team developed the training curriculum (typically 3-4 months) to fit into an accelerated three-week period that the Ukrainian end user would complete. In addition, training typically occurs at the KDA Training Academy in Kongsberg, Norway, but due to conflicts and existing program commitments, KDA was required to find an alternative location that would meet the requirements for training and provide a safe and secure location for the end user, instructors, and support personnel because of the sensitivity of the active conflict situation.

KDA led the training efforts in Norway, coordinating all of the accommodations, meals and logistics for the end user once they arrived in Norway. They also coordinated the training schedule, and Raytheon provided radar and systems instructors to compliment the launcher and fire distribution center instructors from KDA. KDA and Raytheon worked together as partners to develop a plan and execute that plan to meet the needs of the USG customer and the Ukraine end user. The effort was a true partnership with coordination and division of scope based on each contractor’s expertise and ability to navigate and manage export/import regulations between the United States and Norway.

DEALING WITH PROGRAM COMPLEXITY (VOLATILITY, UNCERTAINTY, COMPLEXITY, AMBIGUITY, or VUCA)
Value: 25 points
Use 12 pt. Times Roman typeface

Please respond to the following prompts:

10 points: Describe UNIQUE areas of VUCA faced by your program and why. (Please avoid the issues surrounding Covid-19 pandemic, which was faced by all programs.)

Several key factors made this Ukraine NASAMS program unique, complex and constantly changing. The first was the extremely limited timeline of just over two months to deliver two fully operational NASAMS systems. When initially approaching the development of a schedule, there was no defined period of performance (PoP); it was simply to deliver as soon as possible. There was an active war with a Ukrainian end user who needed this equipment yesterday, so there was no PoP that would be soon enough. A typical NASAMS program is approximately 30-36 months. Cutting 90 percent of a typical lead time would have been difficult enough, but in the case of this program, the team also had to navigate through unique challenges. Working across United States export/import control laws, navigating the international aspect of Norwegian import/export control laws, working across nine time zones from California to Norway and Poland, and sending teams to Norway to perform all integration, test and training in Norway was a huge undertaking. In addition, most NASAMS programs perform the final stages of integration and training in the end-user country. The teams were not able to enter Ukraine for this effort, so all scope/hardware had to pass through or be conducted in Norway where the team...
experienced many firsts in importing and exporting defense hardware and performing defense services in a country unfamiliar to the end user.

An additional aspect of the program with complexity and ambiguity was the fact that NASAMS is typically sold via Direct Commercial Sale (DCS) contract and has never been sold in a Foreign Military Sale (FMS) or Foreign Military Funding (FMF) contract before. PM SHIELD, our PEO Missiles and Space, wasn’t assigned as the USG customer until approximately six weeks before contract award. While the PEO worked closely with PM STARE and had extensive knowledge of the Sentinel Radar as an existing program of record, they were not as familiar with the NASAMS system as a whole. Raytheon and KDA had to educate the USG customer and build trust and confidence before sign off and deployment of the NASAMS system for which USG just became the customer.

Requirements for NASAMS were defined as the program proceeded through execution and often changed. On day one, the RTX team was working toward delivery of two fire units with training, technical manuals, and technical assistance, but the specifics were defined along the way. The statement of work allowed for used “as-is” hardware that was in working condition. To accelerate delivery, we changed from production to GFE radars which required a US to international configuration mod. The team pivoted from new prime mover vehicles to donated, used vehicles in excellent condition where we ensured preventative maintenance was completed before shipment.

The team was agile and pivoted quickly when training in the Kongsberg Academy had to be moved to the Norwegian Air Base, or when the internal Raytheon-developed tele-maintenance solution was replaced with one required by the USG and the end user. Based on feedback from the end user during the training period, KDA also developed several configuration changes that allowed for improved communication and surveillance effectiveness of the fire units. These configuration changes required last-minute hand carries of hardware from the United States to Norway for integration as well as software updates during the final stages of integration and test. The sustainment and technical assistance requirements also changed throughout the execution period leading up to deployment. Establishing a team of field service representatives to support the end user in Poland was critical, but at the time of the initial site survey for the facility in Poland, it was a sporting arena borrowed by the USG to act as headquarters for the effort with a recently blacktopped cornfield with temporary tents set up. Wireless networks were limited, office space was unknown, and storage space was non-existent. A site survey of the support site in Poland was conducted the week before the NASAMS systems were set to be shipped from Norway to Poland in preparation to cross the border into Ukraine. After the site survey, the team had a week to adjust their sustainment solutions and be ready to support the Ukrainian end user.

15 points: Explain how your team responded to these challenges. What changes did you make, what were the results?

The Ukraine NASAMS team worked to develop several creative solutions to meet the accelerated schedule. First, we worked with the USG to craft the statement of work (SOW) language to allow for used assets in working condition. This allowed KDA to leverage their training academy assets and Raytheon to leverage capital assets if required. In addition, the SOW allowed for any paint color, which allowed Raytheon and KDA to pull excess or manufacturing allowance assets from other previous or ongoing programs even if the hardware was in a different color. Green is typically the preferred color for European countries, but the tan launcher deployed benefitted the end user in the winter months when the ground was covered in snow. To avoid delays or the need for teams to travel around the world for every DD-250 sign-off, the radar conversion kit and spares that needed to be sold off on day one of the contract were virtually accepted through photographs and manual DD-250s via email between RTX contracts and
the PM SHIELD COR. For the system sell-off, RTX deployed a fly-away support team to Norway to ensure that all functions were represented on the ground to mitigate any delays. When the day ended in Norway, the fly-away team handed off paperwork to the team stateside, including the west coast contracts team which enabled 24/7 coverage of Contracts support to the program when required. To resolve last-minute material needs between RTX and KDA, a full-coverage schedule was developed for potential material hand-carry needs. Several team members across engineering, logistics, and even contracts were trained in material hand carries, and a schedule was developed for who would perform the hand carry at any given time should the need arise. Ultimately, four team members performed hand carries to meet critical deadlines. Throughout the training period, engineering teams often worked late into the night or overnight shifts to ensure the equipment was maintained and operational for the next day to prevent delays. Teams also continued integration and test activities throughout the training period in overnight shifts to ensure that the system was fully ready for deployment and to mitigate any risks of infant mortality on the hardware. To successfully meet the accelerated schedule for this program, all team members across RTX, KDA, and the USG were aligned during execution and completion of the mission. The impact and importance of this program is emphasized by those who signed up to be on fly-away teams, or work weekends in the factories or in packaging and shipping departments. Engineering teams worked in shifts to allow 24/7 coverage and progress. Resources were allocated as needed and put on standby. Back up plans to back up plans were established to ensure that if a roadblock or challenge popped up, there were multiple paths forward for resolution. Collectively, the RTX/KDA/USG team agreed that there was nothing that would stop us from completing this mission. There was only challenges to overcome and solutions to develop to make it happen.

This alignment to the goal of successful deployment of NASAMS is what made this first FMS case for NASAMS successful. KDA and many members of the RTX NASAMS team had never worked with the USG on an FMS contract before and needed to be educated on the processes and paperwork required. Contracts and program management team members with FMS experience were brought in to support the RTX team, and the RTX Quality & Mission Assurance teams were transparent with KDA on the requirements needed at the prime level to sell off equipment. Once again, KDA and RTX were partners in the sense that KDA supported RTX through the sale of equipment to the USG, and RTX ensured KDA understood the requirements to prevent rework down the line. The USG also partnered with KDA and RTX during sell-off to explain the expectations, but also patiently offer guidance when expectations were not met and there was a need to develop workaround solutions. To gain confidence with the USG on a system that was less familiar, KDA and RTX explained the technical baseline and walked the USG through the capabilities and performance throughout the execution period and demonstrated these capabilities during the system demo. Working closely as a team, a sense of trust and transparency was established that all parties recognized and respected.

To overcome international logistics challenges, Raytheon was granted an ITAR exemption for 12 months to get through initial system and spares deliveries for the first several month of technical assistance while Raytheon applied for a license to cover the remainder of the program. To expedite classified software deliveries, the USG hand carried the classified software to Norway, and RTX Security teams worked with DCAA on a transportation plan and waiver to the NISPOM to allow Raytheon to accept the classified system in Norway and transfer it to KDA for custodianship during the System Test and Training periods.

Within the SOW between the USG and RTX And RTX and KDA, it was agreed that redlines to previous program documents could be leveraged to remain flexible and work through requirements creation and changes as execution progressed. Formal release of internal documents was not required, only engineering release of the agreed to redlines. Bi-weekly standing meetings were set up with the USG, RTX, and KDA so that all issues and changes could be discussed and agreed to prior to proceeding.
Instead of formal contracts letters or contract mods for every change, the program teams developed solutions, redlined the prime SOW, and got authorization for that redline from the USG contracting officer. RTX would then flow those changes to KDA in a redlined subcontractor SOW.

Throughout the system integration and test, and training periods, RTX, KDA, and the USG continued to work together to overcome obstacles. RTX flew in field service representatives (FSRs) and engineering support for the radar from all over the world as needed to ensure appropriate coverage and representation in Norway. When the radars faced GFE failures on sub-assemblies, the USG hand carried parts to Norway and authorized RTX to ship parts from the US sustainment program to support. The end user and USG provided translators for the training period, but with small group training and small group troubleshooting lessons, and all documentation in English, it was quickly determined that additional support was needed. RTX found employees available to fly in and provide support over the course of training. The program continued to operate at an “all hands on deck” status for several weeks to not only ensure all requirements were met, but also to prepare the Ukrainian end user in every way possible to take the NASAMS system back home for use in their war against Russia.

After the site survey in Poland and discussions with the USG team on the ground in Poland, it was determined that Raytheon and KDA should reconfigure their entire telemaintenance plan. To be successful, the teams remained focused on the Ukrainian end user and those solutions that could be put in place on day one and those that could be incrementally improved from there. Both KDA and RTX worked to get corporate approval to use the Signal App for official business use and then developed a solution for 24/7 coverage. KDA purchased one phone that gets passed between team members who are “on call” each week. RTX deployed FSRs immediately as fly away support to Poland while long-term agreements were being finalized. The team of four FSRs monitored the signal chat 24/7 and developed a call tree for SMEs stateside in case more in-depth technical expertise was required. The FSRs work closely with the translators on the ground in Poland who are there to translate the Signal App content between the Ukrainians and KDA/RTX personnel. The translators work with the FSRs to understand key commonly used words and concepts to be more effective and expedient. As the USG team in Poland consistently changes and commanders rotate in and out, the FSR team works to understand changes to the CONOPS and capabilities at the Poland site and communicates back stateside so the greater RTX team is aware and can adapt longer-term sustainment plans as necessary.
Joint KDA/RTX/USG Team Photo after DD-250 of MEIs in Norway

Raytheon Team Visit to J-Town in Poland to visit FSRs at Tele-maintenance Cell
METRICS
Value: 15 points
Use 12 pt. Times Roman typeface

Please respond to the following prompts, where predictive metrics indicate items that provide a view of how yesterday’s actions and today’s actions will affect the future timeline, cost or other requirement.

Provide charts/graphs that illustrate performance to these metrics:

➢ What are your predictive metrics?

To predict and proactively address material lead time variability, the supply chain program team developed a tool that leverages supplier lead time variability data to identify sub-tier suppliers and material components with the greatest risk of impacting program execution.

➢ How did you perform against these metrics?

The launcher Kit bill of material includes several hundred procured parts. The lead time variability metric indicated that approximately 25% of those parts would require mitigation activity. This metric allowed the team to refine the most likely schedule and material outliers during the planning process and allowed the team to focus and prioritize based on the indicators for an overall accelerated and improved hardware procurement schedule.

➢ How do your predictive metrics drive action toward program excellence? Please provide examples.

As a result of the material lead time variability metrics, the team prioritized lead time risk mitigation activity into three (3) “sprints” with the first two sprints being high risk (80 parts mentioned above)

- Sprint 1: Long Lead Time / High Complexity Parts – 50+ Purchase Parts
- Sprint 2: High Volume Suppliers – 30+ Purchase Parts
- Sprint 3: All Remaining Suppliers – 330+ Purchase Parts

These sprints were executed collaboratively with cross functional representation to ensure prioritization of supply chain, engineering, and quality resources. As a result, higher lead time risk material was ordered on an accelerated pace and in a highly dynamic macro-environment, Raytheon was able to commit to an accelerated Ukraine Program.