AVIATION WEEK NETWORK 2020 Program Excellence Awards

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Thank you for participating,

Gregory Hamilton
President
Aviation Week Network

Acknowledged, agreed, and submitted by

Henry Obering
Nominee's Signature

5/22/2020
Date

Nominee's Name (please print**): Henry Obering**

Title (please print): CIRCM Program Manager

Company (please print): Northrop Grumman Corporation

NOMINATION FORM

Name of Program: **Common Infrared Countermeasure (CIRCM)** _____

Name of Program Leader: **Anthony Obering** _____

Phone Number: **224-625-6786** _____

Email: **henry.obering@ngc.com** _____

Postal Address: **600 Hicks Rd Rolling Meadows, IL U1200** _____

_____

☒ Customer Approved

- Date: 06/17/2020
- Contact (name/title/organization/phone): Amy Lett, Contracting Officer - Team Lead, US Army Contracting Command, 256-876-9467

☐ Supplier Approved (if named in this nomination form)

- Date: _____
- Contact (name/title/organization/phone): _____

CATEGORY ENTERED

Refer to definitions in the document "2020 Program Excellence Directions." You must choose one category that most accurately reflects the work described in this application**. The Evaluation Team reserves the right to move this program to a different category if your program better fits a different category.**

Check one

☐ Special Projects

☐ OEM/Prime Contractor Systems Design and Development

☒ OEM/Prime Contractor Production

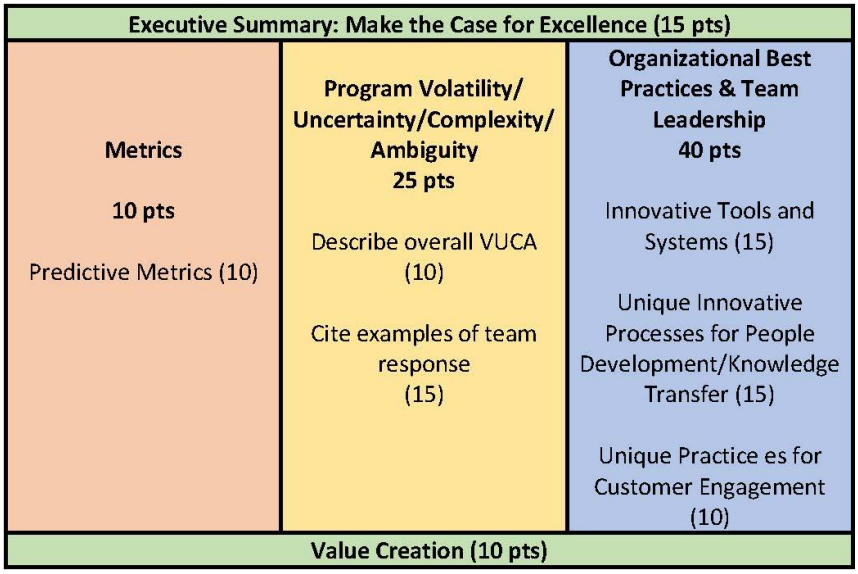
☐ OEM/Prime Contractor Sustainment

☐ Supplier System Design and Development

☐ Supplier System Production

☐ Supplier System Sustainment

Point Distribution



Abstract

In 150 words or less, why is this program excellent in terms of execution?
(12 pt. Times Roman)

The Common Infrared Countermeasures (CIRCM) Program delivers excellent performance through a sharp focus on meeting customer and corporate commitments. The team cadence includes timely financial reviews, proactive risk management, detailed and well-socialized execution plans, and deeply engaged and transparent customer relationships. The results are evident in the recent program milestones:

- Successful completion of Reliability Demonstration Testing (RDT)
- 100% threat defeat during Free Flight Missile testing
- 800+ hours of Initial Operational Testing and Evaluation (IOT&E)
- 96% on-time deliveries of production hardware, in support of the Low Rate Initial Production (LRIP) and Quick Reaction Capability (QRC) 2 programs
- Successful Production Readiness Reviews in Support of Full Rate Production (FRP)

After facing some challenges early in the Engineering, Manufacturing and Development phase of the program, the Northrop Grumman team successfully led the program to achieve these critical milestones, while meeting business financial targets and within United States Government (USG) budgets.

Purpose

Provide a 150-word description of the purpose of this program, spelling out all acronyms and correct acronyms
(12 pt. Times Roman)

The Common Infrared Countermeasures (CIRCM) program provides the United States (U.S.) Army with unprecedented advanced missile protection on rotary wing and future fixed wing platforms. The program includes the design, development, support and production of an infrared (IR) laser-based missile defeat system. Northrop Grumman (NG) based out of Rolling Meadows, IL is the Army's prime contractor and system integrator. The program was awarded Milestone-C in September of 2018 and is currently executing LRIP activities in advance of an expected FRP decision in the summer of 2020. The FRP decision will provide the men and women of the armed services protection on Army platforms for years to come. As the program closes initial LRIP activities and moves into FRP, NG is standing up

sustainment/repair capabilities, field support and engineering services to ensure the capability is always available whenever needed to protect the warfighter.

Executive Summary: Make the Case for Excellence *(Value: 15 pts)*
What is the vision for this program/project? What unique characteristics and properties qualify this program for consideration?
(12 pt. Times New Roman)

The CIRCM program's vision is to produce and deliver next generation protection that saves lives today, and for decades to come, by paving the way for future technical development in aircraft survivability. This is achieved through transparent collaboration between customers and suppliers, a shared team commitment to performance excellence, and a program cadence focused on active management of program risk, opportunity, and performance.

From a technical perspective, CIRCM brings the next generation of platform protection systems to the U.S. Army. The challenging Size, Weight and Power (SWaP) requirements of any rotary wing platform have historically left the Army customer to rely on expendable flare protection systems. CIRCM offers laser-based missile defeat capability to our customer that meets SWaP requirements and has proven to be reliable, repeatable and highly effective against current and future threats. CIRCM's light weight, low power solution creates opportunity to protect a variety of SWaP restrictive platforms for the U.S. and its allies. The system was designed as a hardware defined, software enabled open architecture system to allow technology and capability insertions that will outpace threats for years to come. CIRCM's capability has been proven time and again through U.S. Government (USG) testing, including very successful testing at White Sands Missile Range (WSMR) in 2019 and 100% defeat of all threats during Free Flight Missile testing in 2018.

What truly makes the CIRCM program worthy of this award is the leadership and collaboration between the Army, NG and suppliers. This strong partnership is what has led to the successful delivery of this critical capability to the warfighter.

A few years ago, CIRCM was facing cost, schedule and technical challenges. The complexities of developing missile jamming lasers and optical gimbals to meet the Army requirements for low SWaP in severe environments pushed the envelope of technology and manufacturing. Lines of team communication to manage through issues were challenged by a complex set of team relationships that included international and commercial partners and suppliers. This resulted in strain on program schedules, customer budgets and relationships between all organizations involved. However, born out of this challenging time was a determination to demonstrate to the customer that NG would learn quickly and lead the collective team to meet our commitments to provide this desperately needed capability.

Through a robust program execution rhythm, focus and commitment to meet our obligations, and the hard work and dedication of dozens of team members – the CIRCM program is now on the precipice of a full

> "WE HAVE COLLECTIVELY TAKEN AN IMPORTANT STEP TOWARD GETTING THIS CRITICAL, LIFE-SAVING TECHNOLOGY TO THE WARFIGHTER. THE CIRCM CAPABILITY IS MATURE, RELIABLE AND HAS PROVEN TO BE MISSION-EFFECTIVE."
>
> - BOB GOUGH
> VICE PRESIDENT, NAVIGATION, TARGETING AND SURVIVABILITY DIVISION
> - NORTHROP GRUMMAN

rate production decision that will support the US Army and spring board the technology to adjacent avenues for years to come.

(Do not exceed 10 pages in responding to the following four descriptions; allocate those 10 pages as you deem appropriate, but it is important that you respond to all four sections.)

VALUE CREATION *(Value: 10 pts)*
Please respond to the following prompt:

- **Clearly define the value of this program/project for the corporation beyond profit and revenue**

CIRCM is a key program for Northrop Grumman, as it further solidifies the company's reputation as the industry leader in IR countermeasure systems. NG brings more than 25 years of demonstrated performance in delivering infrared countermeasures capability to the military. CIRCM expands on NG's product line as the first system developed to exclusively use lightweight, low power technologies that can be outfitted on platforms never considered before. Its development opens up new markets, resources and customer bases, all charged with the defense of American interests. Finally, CIRCM has allowed NG to show the Army that our team will do whatever it takes to support their mission. Through all challenges, the team has never wavered on their commitment to bring this critical capability to the warfighter.

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

From a technical perspective, CIRCM brings the next generation of rotary wing platform protection systems to the U.S. Army. The challenging Size, Weight and Power (SWaP) requirements of any such platform has historically been a barrier to entry and our Army customer has relied on basic flare protection systems. CIRCM offers a next generation system to our Army customer that is reliable, repeatable and highly effective. This performance was proven during Free Flight Missile testing at White Sands Missile Range where the CIRCM system successfully defeated 100% of all shots fired against it and also provide itself more than capable at additional successful flight tests at Dugway Proving Grounds (DPG).

CIRCM is also standing up Field Service Support (FSR), Repair and Sustainment contracts which will keep the system protecting platforms that go in harm's way, with quick turn troubleshooting capabilities. CIRCM is designed as an Open Architecture system that supports continuous new technology insertions keeping the program relevant and ahead of the threats for year to come. This would only be possible as a result of NGSC's security infrastructure and all the accreditations that must go with it to perform this type of effort. Additionally, as a result of its need of a strong supply base CIRCM has become a trusted source for the Army in managing our supply base through complex challenges and requirements. This proactive supplier management has in turn led to a reliable and consistent production line and system deliveries. Finally, the CIRCM program team has been a thought leader among programs in Rolling Meadows in the way the team has adopted a framework to continue to drive down production costs and offer increased affordability for our customer. A recent example was a reduction in system cost of nearly 8% from one contract award to the next, even though the follow on contract award was for a slightly lower quantities of systems. This Affordability framework will enable the Army to use their funding as efficiently as possible both in quantity buys of systems and services, but also in the funding of system upgrades and advancements to continue to stay ahead of the threat. This framework has become a part of the culture of CIRCM within the NG team as a whole.

- **Clearly define the value of this program/project to members of your team**

The CIRCM team is charged with developing and producing a system that directly saves lives. Simply put, CIRCM helps bring moms and dads, sons and daughters, and brothers and sisters homes to their

families – and that mission brings a sense of purpose and pride to the NG team. This high level engagement motivates the team throughout the many challenges of a program lifecycle. CIRCM also demands highly technical expertise that keeps motivated and engaged a highly skilled work force. The CIRCM program is exactly the kind of reason one gets into our line of work. This is further proven by the CIRCM team leading the way in employing modern software techniques like Agile software development and Open System Architecture. CIRCM is on the cutting edge technologically and with regard to how the defense industry does business – a highly motivating and enticing opportunity for any employee.

> "CIRCM IS THE CULMINATION OF UNRIVALED TECHNOLOGY, RELENTLESS DEDICATION TO EXCELLENCE, AND A POWERFUL CUSTOMER PARTNERSHIP TO DELIVER LIFE AND MISSION SAVING CAPABILITIES TO THE WARFIGHTER"
>
> \-
>
> \- JEREMY D. KNUPP, DIRECTOR, NAVIGATION, TARGETING, AND SURVIVABILITY DIVISION, NORTHROP GRUMMAN

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

CIRCM protects our military men and women, who put their lives on the line in support of our nation and its allies. CIRCM helps keep safe all that our military members mean to their families, all the economic value and creative value they bring and their ability to inspire and lead the next generation.

This system has pushed the boundaries of technology. Our employees are pioneers, who have discovered an innovative and valuable capability. This will continue to challenge our industry to redefine what is possible and bring about the next generation of systems to protect the U.S. military and our allies.

Additionally, CIRCM is on the verge of a Full Rate Production (FRP) decision that will keep jobs at the Rolling Meadows facility and with all of our supplier partners for years to come. All told, hundreds of people are employed as a result of the CIRCM program.

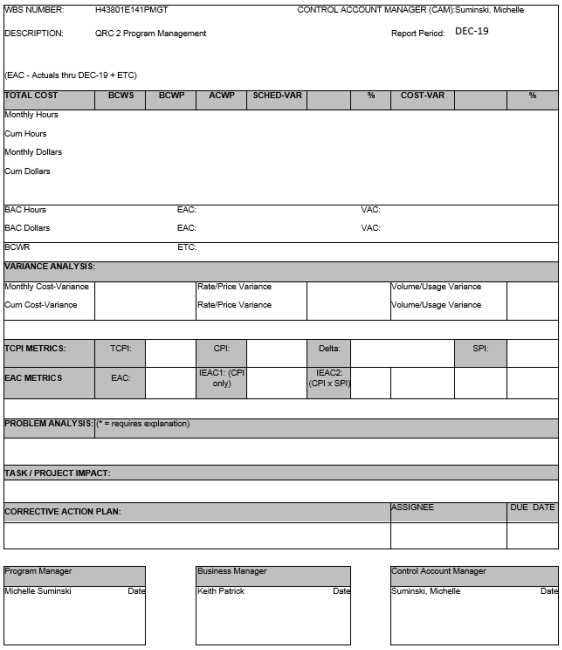
(12 pt. Times Roman)

METRICS *(Value: 10 pts)*

Please respond to the following prompt: (screen grab)

- **How do your predictive metrics drive action toward program excellence?**

One of the key aspects of CIRCM's success is the adherence to reviewing and analyzing predictive metrics. Our team holds monthly financial reviews on variance (VARs), earned value (EV) and page and line (P&L) metrics. In all of these reviews, all Cost Account Managers (CAMs) meet to discuss their account's financials with the larger functional team, business management and the program office. Standard EV metrics like Cost Performance Index (CPI), Schedule Performance Index (SPI), To Complete Performance Index (TCPI) and Estimate To Complete (ETC) are reviewed monthly and provide an accurate picture of financial performance to date, as well as, future looking performance required to hit cost targets. Thresholds are set-up during the base lining of each program that dictate when an excursion outside of the financial boundaries, either positively or negatively, have to be explained and reviewed with the group. Impacts are discussed and, if appropriate, action plans created to help correct the issue. During Page and Line Meetings, Integrated Master Schedules (IMS) are reviewed with all relevant team members to understand how the program is tracking to schedule targets and to review forward looking indicators to ensure the critical path can support all contract requirements.



WBS NUMBER: H43801E141PMGT — CONTROL ACCOUNT MANAGER (CAM):Suminski, Michelle

DESCRIPTION: QRC 2 Program Management — Report Period: DEC-19

(EAC - Actuals thru DEC-19 + ETC)

TOTAL COST	BCWS	BCWP	ACWP	SCHED-VAR		%	COST-VAR		%
Monthly Hours									
Cum Hours									
Monthly Dollars									
Cum Dollars									

BAC Hours		EAC:		VAC:	
BAC Dollars		EAC:		VAC:	
BCWR		ETC:			

VARIANCE ANALYSIS:

Monthly Cost-Variance		Rate/Price Variance		Volume/Usage Variance	
Cum Cost-Variance		Rate/Price Variance		Volume/Usage Variance	

TCPI METRICS:	TCPI:		CPI:		Delta:		SPI:	
EAC METRICS	EAC:		IEAC1: (CPI only)		IEAC2: (CPI x SPI)			

PROBLEM ANALYSIS: (* = requires explanation)

TASK / PROJECT IMPACT:

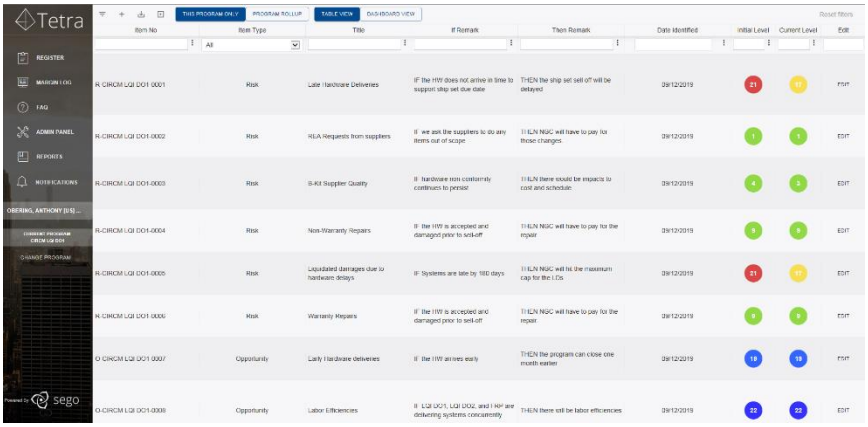
CORRECTIVE ACTION PLAN:	ASSIGNEE	DUE DATE

Program Manager	Business Manager	Control Account Manager
Michelle Suminski Date	Keith Patrick Date	Suminski, Michelle Date

Variance Review Template

All programs at NG that meet certain thresholds are part of an IPRS (Intranet Program Reporting System) review. IPRS is a monthly review that happens across all relevant programs and goes to the highest levels of executive leadership. As part of this monthly cadence, dozens of metrics are statused and discussed to both look at lagging performance, as well as, program forecasts.

Every month all relevant team members update their risk and opportunities in the Tetra Risk Tool. These updates consist of changes in potential cost and schedule impacts, probability of occurrence or changes in mitigation action plans. The team then meets collectively to review all risks and ensures the team is in agreement on the path forward and potential impacts across all functional areas. These risk reviews help to set a program financial reserves and inform additional costs that may be required to close the scope of the program and/or, affect corporate bottom lines or customer budgets. The reviews also inform mitigation action plans to ensure risks do not become real issues that affect program commitments. Finally, opportunities for underruns are understood far earlier and therefore NG can work with the customer on proactively using those additional funds. All of these scenarios have occurred on CIRCM. Risk reviews helped inform quality improvement initiatives across the supply base, specifically with regard to paint and foreign object debris improvements, key items in an optical system. This resulted in more clear specifications and requirements and less churn addressing quality items that had no impact on end item performance. Relative to potential opportunities, one Cost Plus

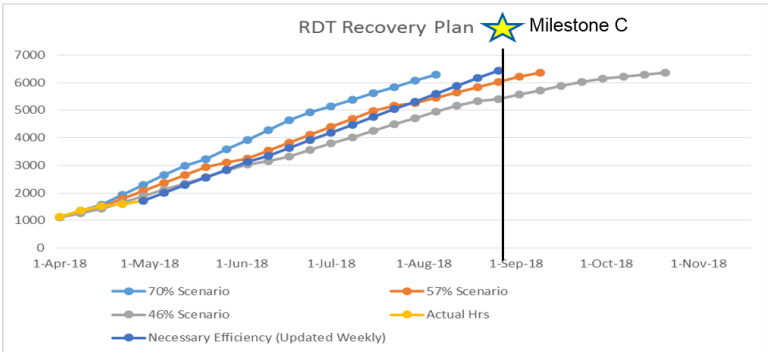


Tetra Tool Risk & Opportunity Register Report

program was tracking to complete under budget and realized a labor underrun opportunity. NG worked with the USG on allocating this funding back into the product and was able to embody additional automation and software improvements resulting in overall system improvements.

The next predictive metrics that are important to highlight are those that are focused on specific aspects of program execution. CIRCM is a program that during the relevant period for this award was performing testing, design updates and production. As such, metrics were tracked against all relevant execution targets in those areas.

CIRCM went through a reliability demonstration testing (RDT) program which entails testing the system for thousands of hours to uncover any issues with the design and ensure ability to meet reliability requirements. Schedule was very important during RDT and therefore the team substantiated a daily RDT tracker metric that would take the latest performance and based on historical RDT performance (hours between failures, severity of failures, etc.) would predict, based on confidence intervals, the date of closure of the RDT activities. This in turn could help inform ETCs, IMS updates and communications and messaging to the Army. This metric also was a key contributor in altering the CIRCM program's execution approach for the closure of RDT. During testing, what was becoming apparent after reviewing the metrics, was the same known issues were driving continued delays in the RDT activities and preventing the program's ability to close that section of the program successfully. This was in turn delaying the entire program as it could not move pass Milestone-C. Therefore, NG and the Army worked together to develop a RDT Phase II. Phase II allowed the CIRCM system hardware to be updated to fix the known issues and then re-enter testing with a smaller subset of hours but with more representative and robust hardware. RDT Phase II was successful and as a result the program was able to move past Milestone-C. However, what really kicked off the idea for that approach was the predictive metric stood up that clearly showed if we continued on the same path we were doomed to fail.



RDT Tracking Tool

During the relevant time period, CIRCM was also charged with delivering systems through a production arm of the program. The program team stood up a variety of metrics to help predict the ability to meet all contractual commitments through hardware deliveries. CIRCM is a program dependent on 3 main suppliers – 1 in particular is often times on the critical path. Each supplier provides a load board that demonstrates their forecasted dates for completing their deliveries.

Leonardo Material Summary Report

With regards to the critical path supplier, NG worked with the supplier and the Army to add additional leading indicator metrics to ensure their ability to meet contractual commitments. New metrics tracking was added to their weekly status reports including Material Summary information, which provided a forecast into their material availability position. Across all suppliers monthly metrics were also added that track supplier's Environmental Stress Screening (ESS) and Acceptance Test Procedure (ATP) yields and other big ticket items that hinder production progress. All of this information is collected from the supply base to help provide predictive metrics and drive improvement actions if needed.

In addition to what the suppliers present to NG, we have also spent time developing our own historical data based model to predict performance of our most critical supplier. The NG Global Supply Chain team was able to use data provided from our main supplier and narrow down on 3 key parameters that directly affect their ability to hit production rates – namely build time, units in work, and defects per unit. NG continually updates that model based on new information and projects forward using it to inform recovery plans, improvement discussions, forecasting and financials. Finally, CIRCM has moved towards milestone payments tied to material receipts for the supply base. This is also a predictive metric in that it ensures that suppliers are getting their necessary material in time to support NG system builds. Any delay in milestone receipts, presents a potential red flag in NG's ability to meet customer commitments. Suppliers prefer the milestone payments as it puts them in a more favorable cash position and is therefore a win-win for all parties. Predictive metric reviews are a cornerstone of the CIRCM program and one of the reasons the program has been able to reach the milestones it has to date.
(12 pt. Times Roman)

DEALING WITH PROGRAM CHALLENGES (VOLATILITY, UNCERTAINTY, COMPLEXITY, AMBIGUITY, OR VUCA) *(Value: 25 pts)*
Please respond to the following prompts:

- *10 pts:* **Describe overall VUCA faced by your project/program.**

During the relevant period for this award, the CIRCM program certainly experienced a fair amount of complexity and volatility. The scope of CIRCM was to deliver a next generation threat defeat system that is able to meet the strict SWaP requirements of the Army customer. In addition to the complex technical challenges on the system to perform, reliability was a key requirement for the Army. CIRCM not only had to defeat advanced threats, but had to do so in a smaller package than had ever been developed and do so reliably every time – when people's lives depend on it, there is no alternative.

To add to that complexity was the dependency on an international supplier partner. Anytime a program is working with an international supplier time zone, cultural and legislation/regulation issues will always add complexity to program execution. In this case specifically, our international partner was also the design authority for their hardware, making collaboration and information sharing at times even more restrictive. Having an international partner on a program as complex as CIRCM increased these challenges tenfold.

Moving from complexity into volatility, CIRCM was a program that was undergoing development and testing while also attempting to produce systems through a Quick Reaction Capability (QRC) Production arm of the program. This often led to situations in which hardware was put on order through the QRC branch of the program; however design updates or improvements were uncovered during development and/or testing that needed to be embodied in hardware that had already been put on contract or potentially even delivered. This created challenges that the program team, the USG, and the suppliers had to work through together to ensure the systems provided, and those tested, met the customer's expectations.

Configuration management was a challenge at this time and was not managed as robustly or proactively as needed.

Multiple customer communities were also interested and on contract to test and use the CIRCM system. The Program of Record CIRCM customer is PM-ASE based out of Huntsville, AL. However, an internal customer to PM-ASE was TAPO (Technical Acceptance Program Office) community. The TAPO community had a different contracting vehicle with NG to support aircraft integration activities then the base Program of Record CIRCM contract. Often times different/branched software loads, firmware loads, test scripts, etc. were needed to support the TAPO community. As a result of this activity, NG often had two customer communities using development hardware at the same time but under different contracts all with feedback and thoughts on how to improve it going forward. NG and the Army worked together to ensure all stakeholders were being heard and satisfied, but it added a certain amount of volatility that needed to be proactively managed. The CIRCM program had its share of challenges and a layer of complexity and volatility that makes it even more impressive that the program is where it is today. This progress is evidence of excellent program execution and collaboration.

- *15 pts:* **Cite specific example(s) and how your team responded.**

When our critical international supplier was struggling to get the design over the finish line, we took proactive measures to help them address their issues, including sending Engineering and Quality personnel to the supplier's site to organize and lead root cause and corrective action teams. They discovered adhesion issues throughout the design, which has large ramifications to performance of the system due to the importance of optical path alignment. In response, NG sent one of our best adhesion technical experts to address and correct the supplier's issue. We also sent a senior systems Engineer for over six months to help the supplier drive down the defects per unit to an acceptable level for production. All of these proactive partnerships and relationships not only helped improve the design of the system but also set the foundation for our international supplier partner to be able to produce the hardware at a rate that would support the customer needs. The results speak for themselves as the 96% on-time delivery rating for the CIRCM system in support of the Low Rate Initial Production 2 and Quick Rate Capability 2 programs as of month end December 2019 demonstrates.

In partnership with the USG, we also identified the need for an altered approach to Reliability Demonstration Testing. It is common as a program moves through RDT to uncover reliability items even on the best design, in the case of CIRCM, testing activity continued to be interrupted by failures in which the fix was already well understood and could be addressed. As a result, NG worked with the Army and our supplier to develop a proactive approach for the betterment of the program. By agreeing to pause RDT and embody several of the known fixes, the Army could get a testing activity that more directly demonstrated the future systems' true performance.

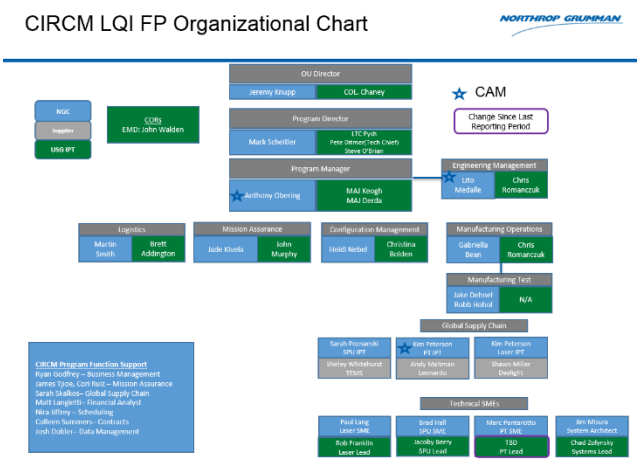
NG also began to institute our Configuration Management process to the design to better capture and understand all configurations being tested and delivered. NG moved to our more robust configuration management process, which applied intelligent part numbering schemes backed up by drawings and parts list stored in a Team center repository. This allowed all parties involved to properly track exactly which configuration was being used in all events and deliveries.
(12 pt. Times Roman)

ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP *(Value: 40 pts)*
Please respond to the following prompts:

- *15 pts:* **In executing the program, what unique and innovative practices, tools and systems frame your program and help you achieve program excellence**?

The CIRCM program has employed several unique and innovative, practices, tool and systems to achieve program excellence. For CIRCM, it all started with a commitment to a robust business rhythm.

One of the unique review processes unique to CIRCM is known as the Production Corrective Action Board (PCAB). The PCAB is a monthly review of a production program for all relevant metrics and topics to discuss with the broader team. The focus of the meeting is to look at how the program has been performing to date and what initiatives we can take to improve it in the future. Representatives from Program Office, Quality, Manufacturing, Engineering and Supply Chain are all invited to help improve our production lifecycle. This is a new process for Northrop Grumman that was substantiated on CIRCM and has helped drive down several quality issues. The PCAB reviews have also help embody additional production process improvements like enhanced automation and more robust testing to help drive down production issues that have helped us reach an improved on-time delivery percentage.



Organization Chart

With regard to interactions with the customer, CIRCM employs two practices that have helped ensure program excellence. The first and most basic of which is holding weekly or bi-weekly integrated program team meetings with the customer on the call or in the room. It is simple, but having these recurring conversations with the relevant NG and USG team members present allows for conversations to be had real time and keeps everyone on the same page. Transparency and clear communication has been key to CIRCM with the basic understanding that the need for this capability is critical. Additionally, while simple, at the start of every program NG puts an organization chart together with direct customer alignments and communicates these alignments to the customer to ensure buy-in.

- *15 pts:* **What unique and innovative processes and practices are you using to develop people and transfer knowledge and how do you know they are working?**

People development has been a core focus for CIRCM and has greatly helped improve program performance. Most of the unique and innovative processes or practices in this arena focus on the culture and the expectations put forth on the program team. The proof has been in the pudding with regard to consistent program performance despite some significant turnover in the team as a result of positive career movements.

The term "train your replacement" has become an expectation of our team members. The intent is that as program managers are executing, we are also bringing along someone less experienced. If done correctly, the training and teaching of the employee allows a smooth and easy transition should we rotate out of the role. This fosters people development and knowledge transfer.

Additionally, all program managers (PM) are expected to have mentee and mentor relationships. The expectations are very clear, an M1 must have one mentee, an M2 must have two mentees and an M3 must

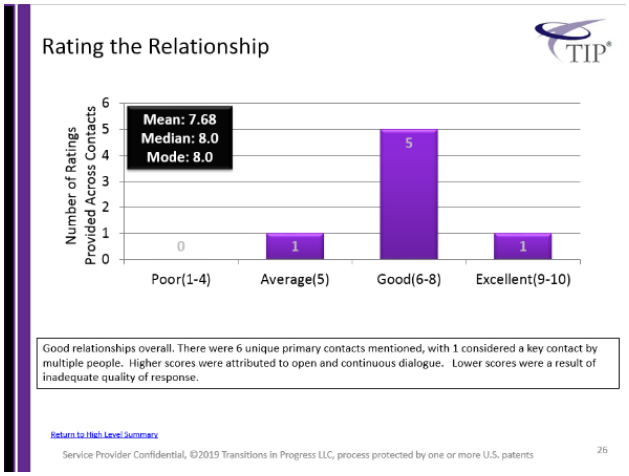
have three mentees. The number of mentors can be whatever the employee is comfortable with, but must be at least one. Again, this helps ensure that we as PMs are disseminating knowledge and helping to train our replacement and develop people.

Finally, the CIRCM team has also taken proactive steps to encourage and stand-up a deputy program rotation program. Pulling from several groups within the corporation, the intent is to provide deputy PM support from newer employees who may be interested in a career in program management. They are then able to support PMs so that the base PM can maintain a better work life balance while also learning and transferring knowledge to up and coming personnel.

How do we know this all works? The proof is in the results. During the relevant time period the CIRCM team has had to replace several prominent and high performing team members, the vast majority of which have been promoted into bigger and better opportunities as a result of their good work on CIRCM. The list includes, but is not limited to, a former Senior Program Director being promoted to Vice President, two former Program Directors, promoted to Senior Program Directors, one of which was also made a site director, and the CIRCM Business Manager being promoted to Business Director. Throughout all of these transitions the program has continued to move forward and execute at the same high levels. The process is the driver for program performance, a process that focuses on people development and knowledge transfer, not the individuals themselves.

- *10 pts:* **What unique practices are you using to engage customers and how do you know?**

When it comes to customer engagement, the CIRCM team believes what matters most and what works best isn't a completely unique or evolutionary process, rather the simple ability to communicate often, openly and build a relationship of trust. We are in a business industry but one that is responsible for the protection of men and women of the armed services. On CIRCM, the customer knows that we all care deeply about the mission. We engage in very transparent discussions and talk openly about our issues and how we can work through them as a team. This is often seen through the attendance of the customer in several of our internal meetings or meetings with our suppliers to ensure alignment. NG also seeks feedback often on our performance and what we can do better. NG recently hired a third party organization to interview both the customer and employees to solicit feedback on performance. The results showed that there was great progress made from some of the earlier program challenges, but also demonstrated areas for improvement, where we have since taken significant actions. We know these processes are working because of the positive improvement we have seen in our customer reviews, because of the continued business, and most importantly because we hear it directly from the customer.



Voice of the Customer Results

The CIRCM program signed up for a tough task but one that was desperately needed. Through difficult times and challenging requirements, Northrop Grumman, in partnership with the Army and our supplier partners, has moved the program forward to where we are today. The results again speak for themselves when it comes to the system's performance in official USG testing, as well as, recent production deliveries nearing 100% on-time rate as of the end of 2019. All of these successes have led to the

Common Infrared Countermeasures (CIRCM) Program being the precipice of a Full Rate Production decision that will deliver this much needed capability to the men and women of the armed services for years to come. This is only possible through the robust business rhythm set by Northrop Grumman and the transparent and trusting relationships built between us, the Army and our supplier partners.
(12 pt. Times Roman)