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Thank you for participating,

A handwritten signature in black ink that reads 'G. Hamilton'.

Gregory Hamilton  
President  
Aviation Week Network

Acknowledged, agreed, and submitted by

Aaron Grierson  
Nominee’s Signature

July 12<sup>th</sup>, 2024  
Date

Nominee’s Name (please print): Aaron Grierson

Title (please print): Program Manager

Company (please print): Honeywell International INC

## NOMINATION FORM

Name of Program: C-130 AMP 2 EGI-M \_\_\_\_\_

Name of Program Leader: Aaron Grierson \_\_\_\_\_

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Customer Approved

- Date: 6/25/2024 \_\_\_\_\_
- Customer Contact (name/title/organization/phone): Michelle Miller, Program Manager, L3 Harris, C-130H Avionics Modernization Program (AMP) Increment II, +1-254-867-4474 \_\_\_\_\_

Supplier Approved (if named in this nomination form)

- Date: \_\_\_\_\_
- Supplier Contact (name/title/organization/phone): \_\_\_\_\_

**PLEASE REFER TO PROGRAM EXCELLENCE DIRECTIONS  
AS YOU COMPLETE THIS FORM.**

## SECTION 1: 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.]

Every day, critical military operations rely on secure and precise global positioning systems (GPS) to navigate and execute missions with utmost accuracy and security. The introduction of the M-Code GPS Receiver marks a significant advancement in military navigation technology, surpassing the capabilities of the receiver it is replacing, the Selective Availability Anti-Spoofing Module (SAASM). Not only does the M-Code Receiver fill the void left by the retirement of the SAASM Receivers, but it also improves upon its Strong Anti-Spoof capabilities, protecting against malicious attempts to manipulate GPS signals, preserving operational security and reliability.

Since 1990 Honeywell Aerospace has been at the forefront of these technological evolutions with the development and fielding of the Embedded GPS/INS (EGI) Navigation Systems with more than 60,000 units fielded worldwide. Honeywell continues driving innovation and setting new standards with the adoption of the M-Code GPS Receiver across its defense systems. The integration of M-Code Receiver into Honeywell's field proven EGI systems enhances data encryption and authentication. This integration is pivotal for safeguarding sensitive military operations, providing military forces with secure and reliable navigation capabilities in any operational scenario.

Honeywell worked with the US Government and the GPS supplier throughout the development of the M-Code receiver to be able to offer this new technology as soon as the receiver was available to Honeywell. This parallel approach not only accelerated product readiness but also ensured robustness and reliability across various aircraft configurations. By synchronizing development and testing phases with the GPS receiver manufacturer, Honeywell optimized product integration, mitigating risks associated with new technology adoption. This collaborative effort not only ensured prompt availability but also expanded market reach, positioning Honeywell as a leader in delivering secure, high-performance navigation solutions.

With this program being a pathfinder for the integration of the M-code Receiver into a fielded GPS system without requiring Aircraft level software updates, the program relied on an agile and adaptable management system through program requirement shifts, unplanned technical issues, and aircraft availability while maintaining a tight schedule and budget. The success of the program allowed the customer to be among the first to field the new M-code receiver during their aircraft modernization effort, completing the project on time and on budget. This program serves as a template for how to continue to integrate the M-Code Receiver into our military fleet to better serve the warfighter.

## DIRECTIONS

- Do not exceed 10 pages in responding to the following four descriptions.
  - Allocate these 10 pages as you deem appropriate, but it is important that you respond to all four sections.
- DO NOT REMOVE THE GUIDANCE PROVIDED FOR EACH SECTION.
- Use 12 pt. Times Roman typeface throughout.
- Include graphics and photos if appropriate; do not change margins.

## SECTION 2: VALUE CREATION

Value: 15 points

Please respond to the following prompt:

- Clearly define the value of this program/project for the corporation; quantify appropriately
- Clearly define the value of this program/project to your customer
- Clearly define the value of this program/project to members of your team; quantify if possible
- Clearly define the contribution of this program/project to the greater good (society, security, etc.)

Since the development of the first embedded GPS/INS (EGI) in the 1990s Honeywell has gone on to field more than 60,000 EGI's across a large variety of air platforms. Our commitment to innovation in the Aerospace Navigation sector continues with the integration of the M-Code Receiver into the EGI to replace the obsolete Selective Availability Anti-Spoofing Module (SAASM) receiver. This new EGI-M will provide all the currently available features while adding additional security and customer requested features allowing Honeywell to support customer through Diminished Manufacturing Source (DMS) of the SAASM Receiver while also integrating more advanced technology into the platform. Honeywell expects this to enable \$300 million in annual revenue between upgrades and new production.

Honeywell has been working with the GPS Supplier since the inception of the M-Code receiver to ensure a robust and future proof navigation source for the war fighter. This has been in the works since the early 2000's at the direction of executive order to close vulnerabilities present in the SAASM receiver. The first M-Code satellites were put in orbit in 2005, and currently the constellation contains 24 satellites offering M-Code Signal in addition to C/A and P(Y) code signals presently available to the SAASM. In addition to the new M-Code signal, it also offered many advantages over the predecessor systems.

## Benefits of the Modernized EGI-M

<p><b>Key Management</b> Reduced burdens, Improved user autonomy</p> 	<p><b>M-Code Power</b> Operate closer to jammer, under trees</p> 	<p><b>Jamming Resistance</b> Initial fix enhanced Anti-Jam extended</p> 	<p><b>Blue Force Electronic Attack</b> Operate near friendly jamming</p> 
<p><b>ASIC Obsolescence</b> Allows for continued fielding of military GPS UE</p> 	<p><b>Anti-Spoof</b> Detect and reject false signals</p>  <p>Satellites: 6 Ave Signal: 15dB</p> <p>Red: False SV Signals</p>	<p><b>M-Code Cryptography</b> More secure</p> 	<p><b>External Augmentations</b> Extend GPS accuracy/ availability in challenged environments</p> 

**M-Code GPS improves operation in Anti Access/Area Denial (A2/AD) environment**

Honeywell worked in cooperation with L3 Harris during their C-130H Avionics Modernization Program (AMP) to integrate the EGI-M into their air frame supporting modernization of aircraft across the US Air Force, Air National Guard, and Air Force Reserve Fleet of C-130H. Through this joint effort we were able to integrate the new feature of the M-Code receiver while maintaining backwards compatibility with the current airframe software. This was critical to L3 to be able to meet their time and budget commitments to their customer. This backwards compatibility was a challenge throughout the life of the program but allowed us to develop many innovative approaches which are being deployed across multiple platforms seeking similar solutions.

In large part due to the importance of this program to Honeywell and the working relationship with L3, this program provided career growth for all members involved and offered many challenges to be overcome as a team. The program faced a variety of volatility, uncertainty, complexity, and ambiguity which challenged both leadership efforts and Honeywell established processes. Through the lessons learned we have been able to share strategies implemented to limit these impacts to other programs, while also laying out the baseline on how we approach this integration effort going forward. This program expanded the program team's knowledge base and their contacts as we worked cross functionally to solve issue and provided growth opportunities. In part due to this program the Program Manager, Project Engineer, and Lead System Engineer have all taken promotions within the organization while other program contributors have stepped into Lead Roles in their follow-on programs. This is a testament to how much of a team effort this was to execute this strategic program.

We are proud to be contributing to Honeywell’s strategic future, creating value for our shareholder, ensuring the longevity of the C-130H airframe for L3 Harris, and excited for the career opportunities provided by this program, the most significant benefactor of this program is the war fighter. The EGI-M brings additional cyber security protections to prevent bad actors from negatively influencing mission outcome while allowing the aircraft to operate near friendly jamming. The EGI-M will provide the warfighter with more accurate and secure navigation solutions to ensure mission success in all kinds of environments.

### SECTION 3: 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
- **10 points:** Define the **unique** practices and process you used to develop, lead, and manage people?
- **10 points:** How did you leverage skills and technologies of your suppliers?

Honeywell employs the Integrated Product Delivery & Support (IPDS) process as a cornerstone for managing Aerospace development programs. The leadership team for the C-130 AMP 2 EGI-M program collaborated closely with our customer to discern specific requirements while concurrently working with our IPDS management team to tailor our approach to align with the program's accelerated timeline without compromising on quality. While the IPDS framework provided overarching program oversight, the day-to-day execution was captured in the Integrated Master Schedule. This schedule underwent daily reviews internally and was shared weekly with the customer throughout the program's lifecycle. Given our customer's limited experience with EGI development, they relied heavily on our structured approach, including a sequence of design reviews (PDR, CDR, TRR, FCA) aimed at ensuring requirements were meticulously traced from requirement through testing phases, thereby closing the design loop effectively.

To navigate the diverse challenges encountered during the program's execution, a robust yet adaptable Management Operating System (MOS) was essential. This MOS encompassed daily agile technical standups to synchronize daily efforts, providing a clear example of our commitment to operational agility and collaboration. These standups facilitated quick problem-solving and decision-making, ensuring alignment across teams and prompt resolution of technical issues. These interactions proved critical as functions working in parallel worked with the M-Code Receiver for the first time.

Our customer's adoption of a similar MOS underscores their recognition of the value in our program management framework. This mutual adoption fostered a collaborative environment where feedback was exchanged regularly, ensuring continuous alignment on program direction, and enhancing overall efficiency. Due to this collaborative nature, the larger technical reviews we often reduced in scope and resulted in very few actions for either team as nothing came as surprise.

Beyond these structured meetings, the program necessitated concurrent parallel efforts across various functions to achieve objectives within the accelerated timeline. This parallel execution required technical experts to assume leadership roles within their respective functions, essentially overseeing internal programs that needed to synchronize seamlessly to drive overall program success. This shift allowed technical experts to gain a comprehensive understanding of how their contributions impacted the broader program, thereby enhancing efficiency and collaboration across functional teams. This cross-functional collaboration also uncovered strengths and synergies that extended beyond traditional roles, enabling teams to work collaboratively towards enhancing program outcomes. The integration of IPDS processes, coupled with a rigorous MOS and proactive cross-functional collaboration, enabled the C-130 AMP 2 EGI-M program to navigate challenges effectively while meeting stringent timelines and delivering high-quality results.

The Program leadership adopted a strategic approach centered on empowering their team members to take ownership of tasks, while also fulfilling roles as mentors and coaches, crucially facilitating the removal of obstacles that hindered task completion. This collaborative style not only fostered a supportive environment but also encouraged innovation and efficiency. Throughout the program, our efforts to stay on schedule and within budget necessitated a critical examination of existing processes, focusing intensely on their core objectives. This scrutiny often led us to innovate, discovering novel methods that aligned with these essential goals while ensuring we met all project milestones effectively.

The program further leveraged Honeywell's longstanding partnership with our GPS receiver supplier, fostering continuous and transparent dialogue essential for integrating the latest M-Code Receiver into our EGI. As pioneers in these early adopter initiatives, we identified areas for enhancement within the newly developed GPS receiver, prompting our supplier to issue additional software updates that significantly enhanced functionality. This collaborative approach proved invaluable when encountering challenges with specific program requirements. Through effective cooperation among our customer, Honeywell, and the GPS supplier, we successfully navigated these obstacles, ensuring the program's successful execution.

#### **SECTION 4: 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.)  
Break down each area of VUCA and response to each
- 15 points:** Explain how your team responded to these challenges. What changes did you make, what were the results?

Throughout the life of the C-130 AMP 2 EGI-M program all area of VUCA were encountered and had to be overcome as follows:



**Volatility-** While all programs contain some level of volatility, and this is planned for with risk identification and mitigation during program planning, C-130 experienced more volatility than initially planned. Our customer was not only responsible for upgrade many avionics systems in addition to the EGI-M but also had multiple aircraft configurations we had to account for, which was unknown to Honeywell at the time of program planning. These differences in aircraft configuration would drive a requirement for the EGI to be able to be installed into any configuration and still work seamlessly, which took some additional software effort to implement. In addition to this the ever changing and evolving test schedule for the aircraft testing, often dictating very tight windows where we could get our EGI-M onboard for integration testing. Working hand in hand with our customer we were able to arrange the tests we required, while maintaining key program milestones.

**Uncertainty-** One of the biggest challenges faced by the C-130 AMP 2 EGI-M program was being among the first to integrate the new M-code receiver into a customer aircraft. While Honeywell had conducted advanced Design Verification Testing (DVT) on the M-Code receiver, full integration into an aircraft system had not been performed prior. During initial integration testing with the aircraft, an unforeseen issue arose between the EGI and the aircraft antenna. This engineering challenge emerged at a critical juncture in the program, where significant software changes could have jeopardized the schedule.

Thanks to Honeywell's close partnership with the end user, the issue was identified early in program execution vs at program completion. This tight collaboration enabled proactive problem-solving and scope management, ensuring that any necessary changes were mutually agreed upon and did not disrupt mission dates. The engineering team quickly grasped the nature of the issue and devised a creative solution: integrating the resolution into the existing software's inputs, which automatically adjusted based on customer inputs when installing the EGI in the airframe. This approach effectively resolved the issue across all C-130 variations without impacting customer requirements or preflight procedures as the software handled the conversion from currently existing inputs to determine the C-130 variant, EGI position, and technical information required between the EGI and the Aircraft antenna.

Furthermore, Honeywell promptly updated the contract to reflect these adjustments, maintaining transparency and alignment with customer expectations. This proactive approach minimized potential delays and ensured that the program remained on track. As a result, this solution has been successfully implemented across Honeywell Aerospace and is currently benefiting multiple other ongoing programs.

**Complexity-** One of the most challenging phases of the C-130 AMP 2 EGI-M program occurred when the US Government decided not to proceed with funding Phase 2 of the program. Initially, the program was structured into two phases: Phase 1 involved software updates to integrate the EGI-M into the airframe, while Phase 2 encompassed essential support functions and certification activities necessary before formal production. However, due to a shift in priorities, the USG opted out of pursuing the certification activities and chose to eliminate Phase 2 entirely, despite its broader scope beyond certification.

In response, Honeywell collaborated closely with L3 Technologies to reassess the program's structure. Together with our end user, we identified which elements from Phase 2 needed to be integrated into Phase 1 to support EGI-M production effectively. Concurrently, we evaluated Phase 1 activities to identify non-value-added components that could be descoped, allowing us to incorporate critical Phase 2 elements while adhering to program budget and schedule constraints.



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Our longstanding partnership with L3 Technologies and our close relationship with the end user proved instrumental during this transition. This collaborative approach enabled us to adapt collectively to meet the end user's evolving requirements while ensuring the overall business case for the EGI-M remained robust. By aligning priorities and streamlining efforts, we successfully completed these adjustments on budget and ahead of schedule, effectively supporting both present program needs and future objectives.

**Ambiguity-** One of the recurring complexities in the C-130 AMP 2 EGI-M program was ensuring the backwards compatibility of the EGI-M with the existing aircraft flight software. A critical requirement from our customer was to achieve these upgrades without necessitating costly updates to the aircraft's primary flight software, which would have been prohibitively expensive and risked canceling the entire C-130 AMP 2 upgrade program. This challenge was compounded by inherent differences between the new EGI-M and the legacy receiver, such as extended start-up times due to enhanced security measures. Many potential issues that could typically be addressed at the airframe level had to be resolved within the EGI-M software, further complicated by limited access to the customer airframe during integration.

Through collaborative teamwork with our customer, we proactively identified potential compatibility issues and devised mitigation strategies well before formal software testing commenced. This proactive approach not only allowed us to meet the unique customer requirement of maintaining backwards compatibility but also enabled us to leverage existing messaging options and internal timers ingeniously to circumvent integration challenges.

Our close partnership with the customer played a crucial role in this process. By fostering a robust Management Operating System (MOS) and maintaining open lines of communication, we ensured that potential issues were addressed swiftly and effectively. This collaborative effort not only solved technical challenges but also strengthened our relationship with the customer, demonstrating our commitment to delivering solutions that align closely with their operational needs.

The success in achieving backwards compatibility for the EGI-M underscores the effectiveness of our collaborative approach and rigorous process management. By leveraging teamwork, proactive problem-solving, and strategic use of existing resources, we navigated complex technical requirements while safeguarding the integrity of the C-130 AMP 2 upgrade program ensuring future collaboration between us and the customer on this airframe into the future.

## SECTION 5: METRICS

Value: 15 points

Use 12 pt. Times Roman typeface

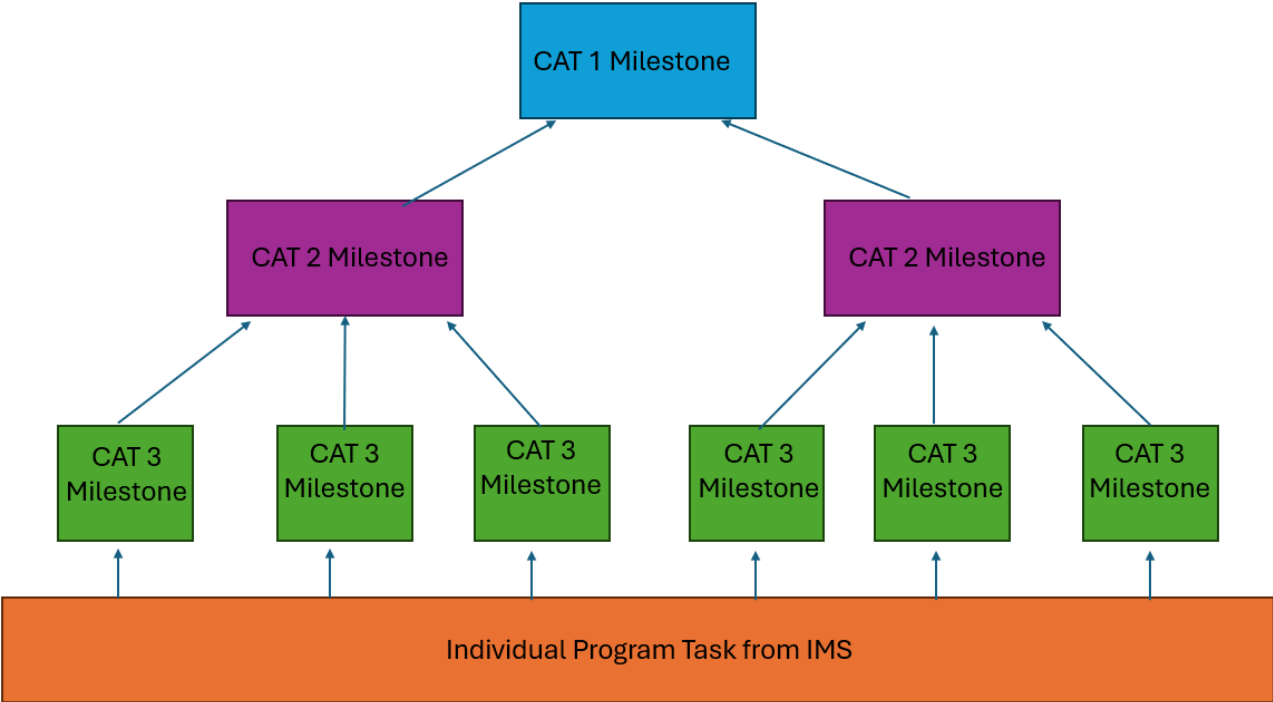
Please respond to the following prompts, where predictive metrics indicate items that provide a view of how yesterday's actions and today's actions will affect the future timeline, cost or other requirement.

Provide charts/graphs that illustrate performance to these metrics:

- **What are your predictive metrics?**
- **How did you perform against these metrics?**
- **How do your predictive metrics drive action toward program excellence? Please provide examples.**

The C-130 AMP 2 EGI-M program used a variety of Metrics to control the program and monitor the two key program metrics of budget and schedule performance. The metrics are fundamental to any program but with the tight budget and timeline these metrics were elevated even further, being tracked on a weekly basis during both internal and external meetings. In addition to monitoring budget/schedule performance on a weekly basis it is also evaluated on a 30-60-90 day forecast to evaluate upcoming milestone and proactively mitigate risks to the budget or schedule.

Honeywell uses our internal tracking tool Honeywell Milestone Reporter to track milestones from program inception through completion. These Milestones are broken into three categories dependent on the criticality of the task to the program budget/schedule. The highest level of these is Category (CAT) 1 Milestone, with CAT 2 supporting these CAT 1, which in turn includes CAT 3 Milestones to support the CAT 2s. CAT 1 milestones are critical to execution of the program and impacts to CAT 1s would negatively impact the program. To have insight into these CAT 1's Honeywell targets between two to five CAT 2 Milestones per CAT 1. This completion of these CAT 2 milestones flow into completion of the CAT 1. Similarly with CAT 2, for CAT 3 Milestone we target two to five CAT 3 milestones in direct support of each CAT 2 and these Flow into the CAT 2 the same way the CAT 2 flows into the CAT 1. This system gives us the ability to track progress on Milestones and detect risk early to allow us to mitigate as any missed CAT 3 serves as a warning flag to its subsequent CAT 2 and CAT 1 milestones and a corrective action plan is required. These milestones along with the program task to complete them are all included and link in the Integrated Master Scheudle (IMS)



Milestone Break Down

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The C-130 AMP2 EGI-M program Had the following milestones.

Number of CAT 1 Milestones- 5

Number of CAT 2 Milestones- 11

Number of CAT 3 Milestones- 16

Honeywell has an overall organizational goal to achieve >96% for CAT 1 and CAT 2 milestones and >90% for CAT 3 milestones. C-130 AMP 2 completed with the below milestone fidelity exceeding our organizational goals.

CAT 1 Milestone Fidelity- 100% (5 out of 5 delivered on time)

CAT 2 Milestone Fidelity- 100% (11 out of 11 delivered on time)

CAT 3 Milestone Fidelity- 94% (15 out of 16 delivered on time)

As an example of how this milestone structure was used to drive program schedule, we set delivery of the Operational Flight Software to the customer as a CAT 1 Milestone. The CAT 1 Milestone was supported by three CAT 2 milestones consisting of Completion of the Software Test Plan, Formal Qualification Testing for the software and Software Test Report. Accordingly, each of the CAT 2's had multiple CAT 3's supporting them such as Completion of Design Spec, Release of Software Requirements Spec, and Completion of Peer Review for the Software Test Plan.

Throughout the program lifecycle, Honeywell implemented an effective Management Operating System (MOS) that leveraged these metrics to adjust focus and mitigate emerging challenges. For instance, when early indicators showed potential schedule risks due to a missed CAT 3 milestone, the MOS facilitated swift action and adjustment of team resources to prevent impacts on CAT 2 and CAT 1 milestones. This proactive approach ensured that the program stayed on track while meeting customer expectations and maintaining alignment with program goals.

In addition to milestone tracking, the program utilized an Earned Value Management System (EVMS) to monitor costs against the baseline. Monthly evaluations of Estimate at Completion (EAC) against Budget at Completion (BAC), using tools like the Estimate to Completion (ETC) Manager, provided insights into program execution compared to the initial plan. Furthermore, metrics such as Schedule Performance Index (SPI) and Cost Performance Index (CPI) were monitored weekly by the Integrated Program Management Team, guiding Root Cause Corrective Actions (RCCA) to mitigate any potential cost growth.

C-130 AMP 2 successfully completed the program with zero EAC growth by effectively managing risks and driving program efficiency, preserving Management Reserve (MR) for return as profit. This outcome underscores the effectiveness of our proactive MOS and predictive metrics in managing complex programmatic challenges while delivering on time and within budget while maintaining the highest quality for our customer and the end user.