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The Honorable Adam Smith
Chairman, HASC
2216 Rayburn House Office Building
Washington, D.C. 20515

Subject: GAO Report: Continuing Failures of F-35 Block 4 Software Development and Agile Methods

Dear Chairman Smith:

Yesterday, GAO issued yet another report on the failures of F-35 Block 4 software development. The report, GAO-21-226, *F-35 JSF, DOD Needs to Update, Schedule, and Improve Data on Software Development*, provides additional evidence that neither DOD nor Lockheed Martin has fixed problems that I have been reporting to DOD, you, and your predecessors (including Chairmen Ike Skelton and John McCain) since 2010. Please take the legislative and oversight actions that I recommended to you in the letter, subj: *NDAA for FY 2021 and Unfinished Oversight and Legislation*, dated Dec. 20, 2020.

GAO Conclusion:

After 3 years of effort, the F-35 program continues to have issues with effectively implementing the C2D2 (Agile) approach to develop and deliver Block 4 capabilities.

- Contractor continues to deliver capabilities late
- Remaining schedule contains significant risk and is not achievable based on the pace of past performance
- Program is likely to continue falling short of its expectations, and the warfighter will have to wait longer for the promised capabilities.

GAO Assessment of Ineffective F-35 Metrics:

GAO reported:

1. Block 4 metrics for software quality, performance, cost, schedule provide limited insight into aspects of software development quality under the Agile software development approach.
2. Current metrics do not include the number of planned features and the number of completed features for each software increment, which would provide insight into progress against the planned schedule and help ensure that all capabilities are delivered as planned in the first increment of each software drop.
3. Our past work highlights the importance of establishing quantifiable and meaningful performance targets for software metrics to ensure that software development efforts are supporting the program's goals and making progress toward those goals

Buy a Product that Works, not a Statement of Work (SOW)

I have been advocating acquisition reforms that would require a Program/Project Management (PPM) standard for use by DOD program managers and contractors based on the ANSI-accepted standards of the Project Management Institute instead of the SAE-accepted Earned Value Management Standard (EVMS), EIA-748. You had similar objectives when sponsoring H. R. Sec. 1745, Requirements Relating to P/PM. Unfortunately, that provision was receded per the NDAA Conference Report.

Passage of that reform would eventually enable DOD to **Buy a Product that Works, not a SOW**. GAO corroborated the need for metrics that focus on the product, not the SOW, in its finding that:

The **SOW** for the Block 4 contract set a target for *staffing* metrics related to planned *workload*. However, (technical) *performance* targets have *not* been set for the critical quality issue: on-time delivery of all capabilities in increment 1 of each software drop.

Without performance targets for critical software quality metrics, the F-35 program office is less able to assess whether the contractor has met acceptable quality performance levels and is more at risk of not meeting its Block 4 goals.

Failure of F-35 Program Officials to Establish Targets for Software Quality Metrics

GAO reported that program officials did *not* establish targets for critical software quality and possibly *linking* those targets to future contractor monetary incentives, I have recommended specific quality metrics to DOD and a process for linking award/incentive fees to those metrics. However, DOD, has failed to implement the recommendations. Thus, DOD and contractors maintain the status quo. Contractors are not incentivized or held *accountable* to achieve technical performance objectives within cost and schedule objectives.

Failure of F-35 Program Officials to Account for Deferred Functionality

GAO also stated that program officials should *measure progress* against the target and forecast the amount of work needed to complete the drop until the increment is complete. By comparing the delivered functionality to the goal, program officials can see how much further the contractor needs to go, and then use that knowledge to help ensure the contractor delivers full functionality in the first increment of a software drop.

But no targets have been established. So, there is no way to measure and report actual vs. planned technical and schedule performance or the derived measure of progress, earned value.

GAO reported that, for a recent software drop, Lockheed Martin delivered only 69% of the planned functionality. I recommend that you request GAO to assess whether the reported earned value for that software drop was consistent with 69% complete. Also, per GAO, program officials need an accurate forecast of the amount of work needed to complete the drop until the deferred increment is complete. Did Lockheed Martin provide an accurate forecast?

This request augments those made to you in my letters dated February 16, May 12, October

6, and December ,2020. They are still operative.

Yours truly,

A handwritten signature in cursive script that reads "Paul J. Solomon". The signature is written in black ink on a light pink rectangular background.

Paul J. Solomon

CC:

Hon. Sen. Joni Ernst, SASC

Mr. Andrew Hunter, Biden-Harris Transition Team

Hon. Kathleen Hicks, Dep. Sec. of Defense