



U.S. OFFICE OF SPECIAL COUNSEL

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The Special Counsel

October 18, 2004

The President
The White House
Washington, D.C. 20500

Re: OSC File No. DI-04-0756

Dear Mr. President:

In accordance with 5 U.S.C. § 1213(e)(3), I am transmitting a report provided to this office pursuant to 5 U.S.C. § 1213(c) and (d) by the Honorable Michael L. Dominguez, Assistant Secretary of the Air Force (Manpower and Reserve Affairs). The report sets forth the findings and conclusions of the Assistant Secretary upon investigation of a disclosure of information allegedly evidencing a substantial and specific danger to public safety arising out of actions by employees of the Department of the Air Force, Warner Robins Air Logistics Center (WRALC), Robins Air Force Base, Georgia (AFB Robins). The disclosure involves allegations that WRALC employees authorized an improper repair to the aft engine mount bearing on a C-5A Galaxy aircraft which jeopardizes the flight safety of that aircraft.

The whistleblower, Mark Taylor, consented to the release of his name. Mr. Taylor's allegations were transmitted to the Honorable James G. Roche, Secretary of the Air Force, for investigation on March 3, 2004.¹ The Secretary delegated authority to Assistant Secretary Dominguez to conduct an investigation and to review and sign the agency report. The agency sought and this office granted several extensions of time for submission of the agency's report. The agency submitted its report on August 20, 2004.² Mr. Taylor has provided comments on the agency report pursuant to 5 U.S.C. § 1213(e)(1), which I am also transmitting.

¹ On February 10, 2004, Mr. Taylor advised OSC that he wished to withdraw his disclosure. By letter dated March 2, 2004, we acknowledged Mr. Taylor's withdrawal from this matter. However, under 5 U.S.C. § 1213(h), I am authorized to refer allegations involving an imminent danger to public health or safety to the agency head for an investigation and report, despite such withdrawal, and I may release the identity of the whistleblower for that purpose. Accordingly, I referred the matter. Mr. Taylor subsequently requested to reinstate his involvement in the matter, and we granted his request.

² On September 14, 2004, the agency submitted a redacted version of this report for use as the official report, which OSC found unacceptable. In particular, the agency redacted the name of the whistleblower, who consented to the release of his name, and every individual identified in our referral letter and/or during the investigation, citing the Freedom of Information Act and the Privacy Act. Neither Act prohibits the agency's release of the redacted information. After lengthy discussions with agency representatives, the agency advised OSC by letter dated September 17, 2004, that it agreed to release the unredacted version to you, the congressional oversight committees, and the whistleblower.

I have carefully examined the original disclosure and reviewed the agency's report and Mr. Taylor's comments. Pursuant to § 1213(e)(2), I have determined that the agency's conclusion that the repair made to the aft engine mount bearing "represents no measurable increased risk to the C-5 fleet or the public at large" does not appear reasonable. As discussed below, the report reflects that the investigation did not adequately address the concerns that were raised by the WRALC Technological Industries Office and the manufacturer of the bearing in advising against the repair. The report does not include sufficient information to support the conclusion that the repair did not pose a safety risk or that the approval of the request for the repair was proper.

The Whistleblower's Disclosure

Mr. Taylor is an Aerospace Engineer at WRALC. He has more than 25 years of experience in aerospace engineering, and has been employed by WRALC for more than 7 years. At the time of his disclosure, Mr. Taylor served as a technical lead and was responsible for reviewing and recommending the disposition of requests for maintenance and repairs to the C-5A Galaxy aircraft. Mr. Taylor alleged that his supervisors, Albert Lowas, Chief, C-5 Structural Engineering Branch, and Scott Vandersall, then-Chief, C-5 Airlift Directorate, approved a request for repair to a main engine component of a C-5A Galaxy aircraft which was improper and jeopardizes the flight safety of that aircraft.

Specifically, Mr. Taylor alleged that on March 11, 2003, field mechanics from Altus AFB, Oklahoma, assigned to the C-5A Galaxy aircraft with tail number 70-0465 submitted a "107 request" to deviate from the Technical Order to repair the aft engine mount spherical bearing for the main engine pylon. Jonathan Despiau, an Aerospace Engineer training under Mr. Taylor, received the request and presented it to Mr. Taylor for assistance in reviewing and recommending a disposition. In the request, the mechanics sought approval to "turn down" the bearing to reduce its diameter so that it would fit into the modified engine mount bearing hole. The request indicates that a bearing was previously turned down to fit this bearing hole, but it had developed corrosion and needed replacement. According to Mr. Taylor, the Technical Order for the bearing mount requires "rounding up" the bearing hole to fit the bearing, rather than turning or shaving down the bearing. However, the request indicates that the mechanics did not have the capability to round up the hole to fit the bearing, as specified.

Mr. Taylor explained that this bearing serves as one of three points that hold the main engine to the pylon. He asserted that it is critical that the bearing fit properly, and that any deviation from a perfect sphere on the bearing increases the possibility of catastrophic failure of the part. He stated that if the bearing were to fail, the engine would lose one third of its holding capacity, which could result in catastrophic failure of the aircraft.

Upon reviewing the Technical Order and drawings for the bearing, Mr. Taylor questioned whether turning down the bearing was appropriate or consistent with industry-wide standards. He contacted the WRALC Technological Industries Office (WRALC TI), which advised against turning down the bearing and stated that they would only recommend following the procedures

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specified in the Technical Order. In addition, under Mr. Taylor's supervision, Mr. Despiau contacted the manufacturer of the bearing, Southwest Products, Inc., to ascertain whether the manufacturer recommended turning down the bearing. Mr. Taylor stated that an engineer for the manufacturer advised Mr. Despiau that they could not recommend turning down the bearing and would not warrant a bearing with such a modification, because it would decrease the strength of the part and there would be no way to ensure quality control.

According to Mr. Taylor, he advised Mr. Lowas that WRALC TI and the manufacturer warned against turning down the bearing, that a WRALC field team was available to perform the repair to the bearing hole in accordance with the Technical Order, and that he did not recommend approval of the request. However, Mr. Taylor alleged that on March 13, 2003, Mr. Lowas, under the supervision of Mr. Vandersall, approved the request, despite the warnings and without conducting any risk assessment. Mr. Taylor stated that a risk assessment was required in this instance, because the modification to the bearing involved a "safety in flight" issue on a primary structure of the aircraft.

Mr. Taylor alleges that, upon approval of the request, the Altus field mechanics performed the turn-down modification to the bearing. Subsequently, Mr. Taylor advised WRALC management of the circumstances surrounding the disposition of this request. However, he stated that management failed to take steps to investigate or address the problem. Mr. Taylor has advised OSC that this aircraft is currently in service.

The Department of the Air Force Investigation and Report

General Gregory S. Martin, Commander, Air Force Materiel Command, appointed Colonel Rebecca L. Beaman to conduct the investigation in this matter. General Martin also designated Vincent S. Spanel, Propulsion Structures Technical Expert, Aeronautical Systems Center, Wright Patterson AFB, Ohio, to assist in the investigation as a technical advisor. According to the agency's report, the investigation was conducted from April 10, 2004, to May 17, 2004. The agency report consists of a summary of the investigation findings, analysis, and conclusion prepared by Colonel Beaman; a chronology of events; a technical report prepared by Mr. Spanel; written statements from Mr. Taylor, Mr. Despiau, and Dennis Whardo, one of the Altus AFB field mechanics who requested authorization for and performed the repair; the transcript of the interview with Albert Lowas; and related documents.

The report reflects that the investigation substantiated Mr. Taylor's allegations regarding the actions and events that took place during the review and disposition process for the 107 request to deviate from the Technical Order in this matter. Specifically, the findings confirm the steps Mr. Taylor and Mr. Despiau took in reviewing the 107 request to turn down the aft engine mount bearing for the main engine pylon – a primary flying structure of the aircraft. The investigators found that, as alleged, Mr. Taylor and Mr. Despiau recommended against approval of the request to turn down the bearing, advising Mr. Lowas and Mr. Vandersall of the warnings from WRALC TI and the bearing manufacturer, Southwest Products. The investigators further

found that, as alleged, Mr. Lowas approved the request, despite the recommendations and warnings against the repair, "because it had been accomplished several times in the past."

Despite these findings, the report concludes that the investigation did not substantiate Mr. Taylor's allegation that the non-standard repair to the bearing jeopardizes the safety of the aircraft. Specifically, the investigators concluded that "the repair authorized by WRALC for sizing down the bearing to a dimension matching the pylon fitting on C-5A aircraft tail number 70-0465 represents no measurable increased risk to the C-5 fleet or the public at large." However, the report reveals that in determining the critical issue of whether this non-standard repair was proper or safe, the investigators failed to adequately examine the concerns raised by WRALC TI and Southwest Products in advising against the repair.

Further, the report does not provide sufficient information to establish that these concerns were properly considered by Mr. Lowas when he approved the request for the repair. In particular, the report does not reflect that the investigators interviewed or even attempted to contact anyone at Southwest Products during the investigation. In addition, the report attributes only limited statements to Walter Tanner, the WRALC TI Master Machinist who advised against the repair, which reflect his continued uncertainty regarding the repair. However, the report does not include a full written statement from or transcript of the interview with Mr. Tanner, as it does for other individuals interviewed during the investigation.

The report identifies four primary concerns regarding the repair that were raised during the investigation: (1) the difficulty in properly "fixturing" the bearing in order to machine the part to the proper size; (2) turning down the bearing would reduce the strength of the part; (3) the quality control of the part would be affected, because the required tolerances established for the part could not be met by the non-standard procedure; and 4) a temperature increase during the procedure might change the material properties of the metal. The investigators' analysis and findings with respect to these concerns are provided in the technical report prepared by Mr. Spanel and summarized in the investigation report prepared by Colonel Beaman.

Proper fixture of the bearing. The evidence and findings in the report reflect that during the review of the 107 request, Mr. Taylor and Mr. Despiou discussed the requested non-standard repair with Mr. Tanner and other mechanics at WRALC TI, who "strongly advised against sizing down the bearing" because of concerns regarding the difficulty in properly fixturing the bearing during the procedure. In addition, Mr. Despiou explained in his written statement that he contacted Altus AFB field unit personnel to determine how they would size down the bearing. He stated that they advised him they had done this repair many times in the past, and explained that he still was uncertain how the resizing of the middle portion to machine it down. Mr. Despiou stated damaging the outer portion of the part. The evidence and findings show that Mr. Taylor and Mr. Despiou relayed the concerns of WRALC TI to Mr. Lowas and Mr. Vandersall.

The chronology of events included with the report states that in reviewing the 107 request, Mr. Lowas also "consulted with someone at Altus AFB to learn more about the proposed repair." However, the transcript of the investigators' interview with Mr. Lowas reveals that Mr. Lowas was uncertain regarding his consultation with Altus AFB personnel and the tooling and procedures involved with the repair. Specifically, when asked whether he had spoken with someone at Altus AFB about the available tooling for this repair, he responded that he remembered hearing that Altus had "some tooling," and stated, "I believe I may have talked to Altus on this just because they may have called me directly with one of those 'hey this is - this equipment, can you help us out?'" Regarding his understanding of the tooling and process to be used, he stated,

I cannot tell you . . . whether I remember there being a process to go along with the tooling, or somebody had jury-rigged some tooling or not . . . all I knew, whoever it was that told me, was that somebody had some 'tooling.' I couldn't tell you if that tooling was a two-by-four with a couple of nails in it. That was the reason for putting the tolerances on [the authorization].

The transcript reflects, however, that later in the interview Mr. Lowas was shown the authorization that he had signed, and he acknowledged that tolerance requirements were not included on the authorization. The authorization is included with the report as an attachment to Mr. Taylor's written statement.

In the technical report, Mr. Spanel states that Altus AFB field unit personnel were contacted during the investigation, and that they provided several photographs of the tooling used to turn down the bearing. According to the technical report, these photographs were shown to Mr. Tanner.³ The technical report states that after Mr. Tanner examined the photographs, his "assessment was that it was a viable fixture and could be used to machine the part to the proper dimension." However, the chronology of events states that when Mr. Tanner was shown the photographs of the tooling fixture, he stated that he believed it would be possible to properly hold the part for machining using such a fixture, but "[w]ithout actually examining the fixture first-hand, he said he couldn't say for certain." As mentioned above, the investigation report does not include a written statement or interview transcript for Mr. Tanner. Thus, the report does not provide any further detail regarding his concerns.

In his written statement, Dennis Whardo, one of the Altus field unit mechanics who submitted the 107 request, stated that they have done similar repairs during the seven years he's worked at Altus, and have asked permission to do this exact repair. With respect to the fixture used to size down the bearing, he stated that he did not know where it came from, that he does not believe it has a part number, and it is not mentioned in the technical data. He stated, however, that it is "exactly tailored to hold the bearing in place." He also stated that he has never

³ Mr. Spanel does not identify by name or position the Altus AFB field unit personnel or the WRALC TI machinist he discusses in the technical report. However, the chronology of events identifies Mr. Tanner as the WRALC TI machinist.

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seen a cracked pylon or bearing, and that he does not believe it would be a problem if a bearing did crack or break into pieces, "because everything is trapped there." In his comments, Mr. Taylor stated that "all tools must be categorized, serialized and tested and approved by an established engineering group." Noting that this tool has not gone through this "control mechanism," he asserted that "the premise that it will perform the required task is presumptuous."

Strength of the Bearing. The evidence and findings in the report reflect that when Mr. Despiou discussed the concerns regarding the non-standard repair with Mr. Lowas and Mr. Vandersall, they recommended that he contact the manufacturer of the bearing for their recommendation. Accordingly, Mr. Despiou called Nicholas Nguyen, an engineer at Southwest Products. Mr. Despiou stated in his written statement that Mr. Nguyen recommended following the Technical Order rather than sizing down the bearing, and advised that "sizing down the bearing would reduce the strength of the part." In his written statement, Mr. Taylor stated that Mr. Nguyen expressed "concerns about the process mainly centered around quality control issues that could affect material properties of the bearing and part dimensional conformance." The report reflects that Mr. Despiou and Mr. Taylor relayed these concerns to Mr. Lowas and Mr. Vandersall.

Despite Mr. Nguyen's concern regarding reducing the strength of the part, Mr. Spanel states in the technical report that Mr. Nguyen's "quality concern was made at a very general level without any particular issue, requirement or sensitive operation being mentioned." He then explains that because the shaved-down bearing would still be larger than the smallest standard-sized bearing, it would be stronger from a dimensional standpoint than that smaller bearing. It is not clear what information Mr. Spanel relied on to conclude that the warning was "very general." The investigation report does not provide any evidence that shows the investigators interviewed or attempted to contact Mr. Nguyen or anyone else at Southwest Products during the investigation.⁴ Further, there is no evidence in the report that suggests the manufacturer's warning was limited to a reduction in the dimensional strength of the part. In his comments, Mr. Taylor strongly refuted Mr. Spanel's characterization of Mr. Nguyen's warning as "very general."

Tolerance Requirements and Temperature. The evidence reflects that the concern regarding the ability to meet the tolerance requirements established for the bearing were initially raised by Mr. Tanner from WRALC TI during his consultation with Mr. Taylor and Mr. Despiou. According to Mr. Taylor's written statement, Mr. Tanner, in addition to raising concerns regarding proper fixturing of the part, expressed concern that the resulting resizing of the bearing

⁴ According to Mr. Lowas' interview transcript, he stated that during a "grip-and-grin" with a representative from Southwest Products after the repair had been performed, the representative "kind of privately" told Mr. Vandersall that they usually do not recommend it, but they know it is done all the time and they know "it's no big deal." The report does not indicate that the investigators took any steps to verify the position of Southwest Products. The findings in the report, however, state that Southwest Products advised against the repair.

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would not meet the "tight tolerances" established for this part. However, the report does not reflect that the investigators addressed the issue of tolerances with Mr. Tanner.

In the technical report, Mr. Spanel states that Mr. Lowas "made a recommendation to allow the repair with some specific limitations on the rework." Mr. Spanel does not state what those specific limitations were. The interview transcript reflects that Mr. Lowas made several statements emphasizing that his concern was not with the tooling, but whether the Altus AFB mechanics could come up with the "right product at the end." For instance, Mr. Lowas acknowledged that there were concerns regarding the tooling, stating, "that was one of the reasons why . . . there were specific requirements for roughness and tolerance on the [authorization]. As mentioned above, however, the transcript reflects that when shown the authorization that he signed, Mr. Lowas acknowledged that it does not include any information regarding tolerance requirements. He stated, "there should have been a comment on there about tolerances." Further, there is no evidence in the report to reflect any follow-up with, or report by, Altus AFB mechanics regarding the outcome of the repair to ensure the quality of the end product.

The technical report states that Altus AFB field unit personnel who performed the repair were contacted during the investigation and that they explained the precautions they took with respect to temperature – by using a slow turning speed, and tolerance – by maintaining tolerances within .0005 inches, within the requirements established for the part. Mr. Spanel further states in the technical report that no personnel contacted were aware of any spherical bearing failures or cracking events in the history of the C-5 Program. In his comments, Mr. Taylor stated that "[a]ircraft parts are manufactured to an exacting controlled quality standard," and stated that this quality standard was not maintained for this repair. He stated that the milling of the part, along with the loading of the aircraft structure, will change the tensile strength, yield strength and ultimate strength of the bearing. He further noted that the agency did not provide a test report that includes the final dimensions (including tolerances), hardness, mechanical or physical properties of the bearing, and he asserted that this test report is the critical factor in the risk assessment for the aircraft, crew and public.

Corrosion. The report does not identify corrosion as a specific concern that was raised during the investigation. However, the evidence reflects that this concern was raised by Mr. Taylor and Mr. Despiau, and the investigators discussed the issue of corrosion with Mr. Lowas during his interview. Specifically, the interview transcript reflects that Mr. Lowas acknowledged that his staff raised the concern regarding corrosion, because turning down the bearing would remove the bearing's coating. He explained that because the non-standard repair would be temporary, he did not consider corrosion to be a problem. He stated that, "given the pressure to keep airplanes from being grounded, I've been pretty well chewed out from a long way away about airplanes being grounded," and considering that the aircraft was "due for [programmed depot maintenance (PDM)] shortly . . . it seemed that the best compromise would be to temporarily go ahead and put in a smaller bearing, then essentially all that would be taken

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off that bearing would be the coating of the bearing.” He further explained that in his judgment, “there would really be no good way to get moisture in there for that corrosion to be a problem. It was just a best judgment call.”

When asked about how he was confident that corrosion would not be a problem, Mr. Lowas responded, “the science of corrosion is not really much of a science.” Regarding the amount of time he expected before corrosion would occur, he explained that based on his experience repairing World War II airplanes on weekends, he “felt comfortable in about another half of a PDM cycle or two thirds of a PDM cycle-ish – [he] wouldn’t make it a full PDM cycle.” He stated he believed the PDM cycle was five years. The technical report states that none of the engineering or maintenance personnel contacted during the investigation were aware of any bearing failures or cracking. The technical report further states that “distress has been limited to corrosion in the mount fitting area. This failure mode (corrosion) would not be impacted by machining of the bearing versus machining the fitting.”

Significantly, however, the 107 request to turn down the bearing states that this repair was necessary to replace the existing bearing, which had previously been turned down in the same manner and had developed corrosion. In addition, the authorization, dated March 13, 2003, states that the aircraft’s next scheduled PDM is July 7, 2005 – more than two years from the date of the temporary repair. In his comments, Mr. Taylor stated that corrosion of bearing surfaces is very common, and explained the different types and causes of bearing corrosion. He explained that corrosion can be caused by a number of factors, including water, moisture or other contaminants, or small amounts of motion between the external surfaces of the bearing and other bearing surfaces.

Widespread Similar Repairs. According to the technical report, the investigation also revealed that the Altus AFB field unit performs this type of non-standard repair to spherical bearings approximately once a year, and that it is likely performed at other bases more frequently. The technical report states that this repair “was not an unusual situation even though no formal technical data existed to control the process.” The evidence also reflects that Mr. Taylor advised the investigators that he learned of another improper repair to the right wing tip of another C-5A Galaxy aircraft with tail number 70-00459, and provided the 107 request and approval documentation for that repair to the investigators. The documents he provided are included in Tab D of the report. The report does not address that repair or indicate whether a separate investigation was initiated.

In addition, according to the technical report, no attempt has been made to review the 107 request historical records to determine where, how frequently, and under what conditions these non-standard repairs are being performed. In light of this, Mr. Spanel recommends a follow-up survey of the C-5 fleet to establish the extent of this particular repair. However, the investigation report prepared by Colonel Beaman does not include this recommendation, and the report does not include any information suggesting that the recommended survey has been implemented.

Special Counsel's Comments and Conclusion

The agency's report reveals significant unresolved questions regarding the safety of the non-standard repair performed on the aft engine mount bearing of the main engine pylon of the C-5A Galaxy aircraft in this matter. The evidence in the report confirms that in reviewing the 107 request to deviate from the Technical Order, Mr. Taylor and Mr. Despiau consulted with WRALC TI and the manufacturer of the bearing. Both WRALC TI and the manufacturer advised against turning down the bearing, citing concerns regarding fixturing of the part during that process, a reduction in strength of the bearing, quality control issues relating to the ability to maintain the required tolerances established for the part. Critically, however, the report does not indicate that the investigators contacted the manufacturer during the investigation. Instead, the investigators characterized the manufacturer's concerns as "very general," without obtaining any additional information regarding the details and/or extent of those concerns, and left unanswered questions regarding the strength and quality of the bearing after the non-standard repair.

Further, the report includes only limited statements attributed to Mr. Tanner from WRALC TI after he reviewed photographs of the tooling, which reflect his continued uncertainty regarding the tooling used to turn down the bearing, and does not address his concern regarding maintaining required tolerances. Oddly, the report does not include a written statement or interview transcript for Mr. Tanner, so it is unclear whether the investigators conducted a full interview with Mr. Tanner, or asked only limited questions regarding his opinion after observing the photographs of the tooling. In any event, the report fails to include sufficient information to resolve the concerns that Mr. Tanner raised.

In addition, the evidence establishes that Mr. Taylor and Mr. Despiau raised concerns regarding corrosion of the bearing. The 107 request states that the repair was necessary to replace the existing bearing, which had developed corrosion after having been turned down in the same manner. Despite this, and the fact that the aircraft was not due for PDM until July 2005 – more than two years from the date of the repair, Mr. Lowas determined, based on his apparently limited experience, that corrosion would not be a problem. The report reflects that the investigators did not further examine this issue, as well. Instead, the report draws conclusions regarding these concerns that are not supported by the evidence, and based on insufficient information, concludes that the repair "represents no measurable increased risk to the C-5 fleet or the public at large."

In addition to these issues regarding the safety of the repair, the report reveals unresolved concerns regarding the approval determination process for this repair. Specifically, the evidence presented in the report establishes that Mr. Lowas, concerned with pressure not to ground airplanes, approved the 107 request on the basis that this repair had been done in the past. He approved the request despite the warnings from WRALC TI and the manufacturer of the bearing, and with little knowledge of the tooling to be used or the effects the repair would have on the part. The report reflects that Mr. Lowas did not ensure that the tolerance requirements that he stated were so important were included on the authorization, and there is no evidence of any

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follow-up with or report from Altus AFB after the repair to ensure quality control was maintained. Despite this evidence, the report does not include any findings of wrongdoing with respect to the approval process.

Finally, the report reveals unresolved questions regarding similar non-standard repairs performed at Altus AFB and other facilities. The investigators found that this type of non-standard repair "is not an unusual situation even though no formal technical data existed to control the process." However, despite the recommendation in the May 14, 2004, technical report for a survey of the C-5 fleet to establish the extent of this particular repair, the report submitted to OSC three months later does not include this recommendation in the summary of findings and conclusions, or include any information reflecting that this recommendation has been implemented.

For the reasons discussed, I have determined, pursuant to 5 U.S.C. § 1213(e)(2), that the agency's conclusion that the repair made to the aft engine mount bearing "represents no measurable increased risk to the C-5 fleet or the public at large" does not appear reasonable. In light of this determination, and because this matter involves the safety of a military aircraft currently in use, I respectfully urge that you direct an independent investigation into the particular repair at issue in this matter. In addition, I recommend further inquiry regarding the steps, if any, the agency has taken to survey the C-5 fleet as recommended in the technical report.

As required by 5 U.S.C. § 1213(e)(3), I have sent a copy of the report and Mr. Taylor's comments to the Chairmen of the Senate and House Committees on the Armed Services. We have also filed copies of the report and Mr. Taylor's comments in our public file and closed the matter.

Respectfully,

A handwritten signature in black ink, appearing to read 'S. Bloch', written in a cursive style.

Scott J. Bloch

Enclosures