

ARMED SERVICES BOARD OF CONTRACT APPEALS

Appeal of -)
)
Lockheed Martin Aeronautics Company) ASBCA No. 62209
)
Under Contract No. FA8625-07-C-6471)

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OPINION BY ADMINISTRATIVE JUDGE PAGE

This appeal involves a contract for Lockheed Martin Aeronautics Company (Lockheed Martin) to modernize and install new engines for 49 C-5 Galaxy aircraft owned by the United States Air Force. Lockheed Martin alleges that the Air Force and the Defense Contract Management Agency (DCMA) directed it to perform excessive and disruptive “over and above” (O&A) work to repair pre-existing (or “legacy”) defects on the aircraft and seeks to recover \$131,888,860 for the additional work. The Air Force asserts Lockheed Martin failed to prove its entitlement to this amount and its calculation of damages is unreasonable. Additionally, the Air Force contends Lockheed Martin’s claim is barred by the Contract Disputes Act’s statute of limitations and releases contained in bilateral modifications to the contract. We sustain the appeal.

FINDINGS OF FACT

The Contract

1. On April 30, 2007, the Air Force awarded Contract No. FA8625-07-C-6471, the Reliability Enhancement and Re-engining Program” (RERP),¹ to Lockheed Martin for the modernization of C-5 Galaxy aircraft. The undefinitized contract required Lockheed Martin to provide a set of upgrades to each of 49 government-owned aircraft. This included the installation of new CF6-80C2 commercial engines and other enhancements to subsystems and major components. (Gov’t br. at 2) The work was primarily conducted under fixed-price contract line item numbers (CLINs) (R4, tab 3 at 3-13). The original total amount of the contract was not to exceed (NTE) \$23,000,000 (*id.* at 4). The C-5 Galaxy aircraft were produced from the mid-1960s through the 1980s (tr. 3/42, 4/30-31).

2. Lockheed Martin modified the 49 C-5 aircraft under the RERP contract, as well as three aircraft under a related, previously awarded Systems Development & Demonstration (SDD) contract (tr. 1/47).² The 49 aircraft to be reworked were informally designated by the parties as P-1 through P-49 (gov’t br. at 2). These aircraft were grouped into seven lots comprised of varying numbers of planes for the RERP work. The 21 aircraft at issue in this appeal are aircraft P-7 through P-27, which were part of Lots 3, 4, and 5. (*Id.*)

3. The contract incorporated by reference Federal Acquisition Regulation (FAR) 52.233-1, DISPUTES (JUL 2002) – ALTERNATE I (DEC 1991) (R4, tab 3 at 35). The contract also incorporated by reference FAR 52.243-1, CHANGES – FIXED-PRICE (AUG 1987) (the Changes Clause), which applied to “Firm-Fixed-Price Incentive (Firm Target) CLIN(s) only,” and FAR 52.243-3, CHANGES – TIME-AND-MATERIALS OR LABOR-HOURS (SEP 2000), which applied to “Time-and-Materials [T&M] CLIN(s) only” (*id.* at 36). The Changes Clause provided that “[t]he Contracting Officer may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract” FAR 52.243-1(a). The Changes Clause also provided that “[i]f any such change causes an increase in the cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, the Contracting Officer [CO] shall make an equitable adjustment in the contract price” FAR 52.243-1(b).

¹ This is the definition for the acronym “RERP” provided in the contract (*see* R4, tab 3 at 86).

² *See* contract clause H101 SDD AND PRODUCTION CONCURRENCY (MAR 2007) (R4, tab 3 at 22-23).

4. The contract included the full text of Clause B036, CONTRACT TYPE: TIME-AND-MATERIALS (FEB 1997) (TAILORED):

(a) The Contractor shall furnish at the hourly rates stated below, all necessary and qualified personnel, managing and directing the same to complete all T&M CLINS within the performance period specified in Section F. In performance of these CLIN(s), Contractor shall be reimbursed for direct labor (exclusive of any work performed in an unpaid overtime status) at the hourly rates listed in Section J as an attachment.

CATEGORIES HOURLY RATE

Rates will be established each year and incorporated into the contract as an attachment.

(b) For the purposes of the clause of this contract entitled “Payments Under Time-and-Material and Labor-Hour Contracts”, the total ceiling price of the CLIN(s) specified in paragraph (a) above is \$0.00.

Applies to Time-and-Materials CLIN(s) only.

(R4, tab 3 at 14) (emphasis in original)

5. The contract incorporated by reference FAR 52.243-7, NOTIFICATION OF CHANGES (APR 1984) and stipulated that the “[n]umber of calendar days is (insert 30 for RDSS/C) ‘30 days.’” (R4, tab 3 at 36). Additionally, FAR 52.243-7 provided in relevant part:

(b) Notice. The primary purpose of this clause is to obtain prompt reporting of Government conduct that the Contractor considers to constitute a change to this contract. Except for changes identified as such in writing and signed by the [CO], the Contractor shall notify the Administrative Contracting Officer [ACO] in writing promptly, within [30] calendar days from the date that the Contractor identifies any Government conduct (including actions,

inactions, and written or oral communications) that the Contractor regards as a change to the contract terms and conditions.

(Id.)

6. Contract clause H100, C-5B AIRCRAFT BASELINE (MAR 2006) set forth criteria for aircraft being provided by the government for RERP modification. Paragraph 1(b) defined the “baseline” at delivery to include “all approved Time Compliance Technical Orders (TCTOs) approved for incorporation as of this contract’s effective date.” (R4, tab 3 at 21-22)

7. Paragraphs 6 and 7 of H100 respectively required the government to ensure the aircraft met the baseline requirements prior to delivery and to negotiate an equitable adjustment with the contractor where it failed to ensure the airplanes met this standard:

6. All scheduled and routine aircraft maintenance required to be accomplished prior to RERP modification will be accomplished prior to delivery of aircraft to the Contractor for RERP modification. If the required maintenance has not been accomplished prior to delivery of the aircraft for RERP modification, the Contractor shall, if tasked by the [Procurement Contracting Officer (PCO)/Administrative Contracting Officer (ACO)], accomplish the required maintenance on an “R3” basis in accordance with the ”R3” clause H106, or other mutually acceptable contractual agreement.

7. If any delay in achieving the baseline configuration impacts this contract, the Government and the Contractor shall negotiate an equitable adjustment to this contract in accordance with the procedures of the “Changes” clause. Notwithstanding any other references in the contract, specifications, or statement of work, or any other document, aircraft delivered to the Contractor for RERP modification shall conform to the aircraft baseline as defined in paragraph 1 above.

(R4, tab 3 at 22)

8. The SDD contract was performed on two C5-B model aircraft and one older C5-A model (*see, e.g.*, tr. 3/41-43, 5/121, 10/54, 58-59; *see also* app. supp. R4, tabs 414 at 2, 415 at 26, 3474 at 9 n.34).

9. The 49 RERP aircraft were expected to be C5-B or C5-C models. The latter were essentially B-models with “minor” configuration “modifications to the cargo bay area.” (Tr. 10/47; *see also* app. supp. R4, tabs 800 at 6, 3474 at 9 n.34; tr. 5/107, 133)

10. Mr. Tom Baxter, Lockheed Martin’s senior manager of business ventures who served as the business lead for the RERP proposal (tr. 3/48), testified that TCTOs were time-sensitive orders:

related to areas of the aircraft that are difficult to access. And so as part of the periodic depot maintenance [PDM]³ this is where you’d go through and remove access panels and do very in-depth inspections in certain areas So our assumption was the U.S. government would have all of these taken care of prior to coming to Lockheed Martin . . .

(Tr. 3/11, 66-67)

11. The contract’s Statement of Work (SOW) for the “Low Rate Initial Production (LRIP)” for the C-5 modification efforts for Lots 1, 2, 3, and 4 provided in relevant part:

3.1.1 Transition to Production

Transition to LRIP is defined by non-recurring activities necessary to bridge the design and development phase of SDD into a production phase. . . .

. . . .

3.1.2 Aircraft Modification

The Contractor shall provide all necessary facilities and services required to modify the C-5 aircraft to the C-5M

³ PDM is variously described as “periodic depot maintenance” (tr. 3/11, 66-67), as well as “planned” and “programmed” depot maintenance (app. supp. R4, tab 413 at 10). PDM is an extensive inspection and maintenance service the government performs on a periodic basis using specialized mechanics and engineers (tr. 3/61-62, 4/50).

configuration in accordance with this Statement of Work. *Systems, processes and staffing requirements used to build the SDD aircraft shall form the baseline for the first production vehicle.* Improvements and changes to systems, processes, and staffing requirements shall be incorporated as required to ensure conformity to the technical baseline as defined in Section H, Clause H100.

The Contractor shall maintain a Manufacturing Plan that reflects the C-5M work flow. *Any work required to bring the aircraft to flight worthiness that is beyond the scope of this contract shall be accomplished on a Rapid Repair Response (R3) basis, in accordance with the R3 clause, H106, or other mutually agreeable contractual arrangement.*

(R4, tab 3 at 73, 75) (emphasis added)

12. SOW § 3.1.2 remained unchanged throughout the duration of performance and applied to each lot of the RERP contract (*see, e.g., tr. 7/129, 10/65-66 (SOW and original technical specifications applied to new aircraft added by Contract Modification (Mod.) P00102), 10/84 (SOW and original technical specifications applied to aircraft added via Mod. P00166)*).

13. O&A work, or repair work to fix legacy defects, was not included in the RERP contract's statement of work (*see R4, tab 3 at 75 ("Any work required to bring the aircraft to flight worthiness that is beyond the scope of this contract shall be accomplished on a Rapid Repair & Response (R3) basis, in accordance with the R3 clause, H106, or other mutually agreeable contractual arrangement."*)). However, contract clause H106, RAPID REPAIR AND RESPONSE (R3) (MAR 2006) (the H106 Clause), created a contractual mechanism to allow the Air Force to direct Lockheed Martin to perform O&A work (*see, e.g., R4, tab 3 at 26-28 (the H106 Clause); see also tr. 3/16, 7/132-33)*).

14. The H106 Clause stated that Lockheed Martin "shall provide all labor and materials necessary to rapidly respond to and repair legacy discrepancies, implement TCTOs, or perform other non-C-5 Modernization work on the aircraft in support of this contract." The H106 Clause further provided:

These R3 efforts shall be accomplished on items that are identified during aircraft inspections, legacy discrepancies identified during flight/ground test phases, and any other work the PCO/ACO or

Government representative deems necessary to complete the modernization effort.

(R4, tab 3 at 26)

15. The H106 Clause required Lockheed Martin to “prepare and submit a work request to notify the ACO or his/her representative of a legacy discrepancy that requires repair” (R4, tab 3 at 26). These work requests were known as manufacturing deficiency reports (MDRs) (*see app. supp R4, tab 1136 at 2*).

16. Lockheed Martin was not authorized to proceed with an R3 effort without approval from the ACO or his/her representative, and such approval was contingent upon “Government determination that it [wa]s appropriate to accomplish the work under the R3 CLIN” (R4, tab 3 at 26; *see also tr. 7/136*).

17. Air Force-directed O&A work performed under the H106 Clause was to be charged on a T&M basis (R4, tab 3 at 26).

18. The H106 Clause affirmed Lockheed Martin’s right to recover for costs or schedule impacts in the RERP modernization effort resulting from O&A work. Specifically, the clause provided:

If an R3 activity(s) causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this contract, the [CO] will make an equitable adjustment in the contract price, the delivery schedule, or both. The Contractor shall assert its right to an adjustment under this paragraph within 90 days from completion of the R3 activity that the Contractor believes causes an increase in cost or schedule. The right to an equitable adjustment shall be the Contractor’s exclusive remedy and the Government shall not be liable to suit for breach of contract for actions accomplished in accordance with the R3 clause. Failure to agree to an adjustment shall be a dispute under the Disputes clause. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.

(R4, tab 3 at 26-27)

19. The H106 Clause established robust tracking and reporting requirements for the O&A work. Lockheed Martin was required to “track and report on the status of R3 work requests and billable actuals at the work order level,” to report this data

monthly to the ACO or his/her designated representative, and to “ensure that adequate funding was available prior to requesting/initiating work.” (R4, tab 3 at 27)

20. Lockheed Martin was also obligated to submit reports on “actual costs charged for completed R3 labor tasks and materials on a quarterly basis” of “all authorized, sold and unsold R3 work request actions . . . and the cumulative direct labor hours and material costs for accomplishing R3 efforts at the work order level” as well as a summary of the “[m]onthly accounting ledger showing actuals billed by work order” (R4, tab 3 at 27-28).

21. A work order is a cost collection account in Lockheed Martin’s accounting system to which labor hours are charged that corresponds to specific categories of work (tr. 3/80-81, 11/88). All mechanics charged their time by clocking in to perform tasks using the program “Shop Floor Manager,” which would transmit this data to the accounting system (tr. 11/88).

Bilateral Contract Modifications Relevant to the Appeal

22. On October 21, 2011, the parties bilaterally executed Mod. P00102 to definitize the price for the Lot 4 RERP installation effort and establish the corresponding CLIN 4004, Installation – Lot 4 (R4, tab 5 at 1, 3).

23. Mod. P00102’s definitized price for the Lot 4 installation effort was \$126,674,272 (R4, tab 5 at 1, 3). This price did not include any costs for O&A work or its impacts (tr. 7/124).

24. On October 19, 2012, the parties bilaterally executed Mod. P00166 to definitize the price for the Lot 5 RERP installation effort and establish the corresponding CLIN 5004, Installation – Lot 5 (R4, tab 6 at 1, 3).

25. Mod. P00166’s definitized price for the Lot 5 installation effort was \$221,758,366 (R4, tab 6 at 1, 3). This price did not include any costs for O&A work or impacts, nor did Mod. P00166 intend to compensate Lockheed Martin for O&A impacts or to change anything related to O&A work (tr. 7/152).

26. On November 6, 2012, the parties bilaterally executed Mod. P00178, a supplemental agreement with the primary purpose of re-baselining the RERP production and delivery schedule for Lot 2, aircraft 2 [P-3] through Lot 7, aircraft 11 [P-49]. Mod. P00178 did not change the contract price. (R4, tab 7 at 1, 3)

27. Mod. P00178 contained the following release of claims by Lockheed Martin:

This Supplemental Agreement constitutes a full and equitable adjustment between the Government and the Contractor arising out of or in connection with all C-5 RERP Production Schedule impacts, including the pylon sheer plate, improperly manufactured tower fitting, LM Aero [Lockheed Martin] manufacturing manning needs, etc., to the date of this Supplemental Agreement execution except for the issues associated with the Bucket Engineering Change Proposal (ECP) 12-00012A, that LM Aero is preparing. The “Bucket ECP” will address the cost impact of those issues; however the Contractor will not seek any further adjustments to the C-5 RERP Production Schedule. Once fully executed, the “Bucket ECP” (ECP 12-00012A) effort and this Supplemental Agreement (P00178) will constitute a full and equitable adjustment between the Government and the Contractor and release all parties from liability under the contract for further claims or equitable adjustments arising out of or in connection with any past legacy issues, runway closure, the aircraft cut wire, DCMA flight crew availability, and/or DCMA additional inspection requirements in addition to the issues discussed in Paragraph 1 of this contract modification.

(R4, tab 7 at 20-21) (emphasis added)

28. On April 25, 2013, the parties bilaterally executed Mod. P00182, which increased the contract price by \$45,651,026 and converted work being conducted under the H106 Clause from a T&M basis to a cost-plus-fixed-fee basis (CPFF). Mod. P00182 established new CPFF CLINs for the O&A work, including CLIN 3020 for Lot 3, CLIN 4025 for Lot 4, and CLIN 5021 for Lot 5. (R4, tab 10 at 1, 3-10)

29. Mod. P00182 did not identify any specific O&A repairs or the volume of O&A repair work that Lockheed Martin would ultimately be required to perform for the Air Force nor did it provide entitlement to an equitable adjustment for the impacts of O&A repairs (R4, tab 10 *passim*).

30. Mod. P00182 also amended the contract to “incorporate the revised special contract requirement H106 Clause ‘Rapid Repair and Response (R3) for C-5 Modernization (MAR 2013).’” The modified clause provided in relevant part:

A. The below R3 procedures will be utilized for R3 efforts submitted on or before 28 Apr 2013 and those efforts being completed or reworked associated with those R3 MDR

efforts. New R3 efforts will utilize the procedures in Paragraph B:

....

3. WORK REQUESTS:

a. The Contractor shall prepare and submit a work request to notify the [ACO] or his/her authorized representative of a legacy discrepancy that requires repair. The ACO or his/her authorized representative will review the work request to determine whether the work is within the general scope of the R3 CLIN. The Government reserves the right to question any work request that does not appear to be reasonable. Upon Government determination that it is appropriate to accomplish the work under the R3 CLIN(s), the Contractor shall perform the work described on the work request. The Contractor shall not be bound by individual work request hours, but the cumulative actual cost of labor and materials shall not exceed the NTE amount established in the applicable R3 CLIN(s). Contractor performance of work approved by the ACO or his/her authorized representative is subject to availability of funds on the applicable R3 CLIN.

....

f. If an R3 activity causes an increase or decrease in the cost of, or the time required for, performance of any part of work under this contract, the [CO] will make an equitable adjustment in the contract prices, the delivery schedule, or both. The Contractor shall assert its right to an equitable adjustment under this paragraph within 90 days from completion of the R3 activity that the Contractor believes causes an increase in cost or schedule. The right to an equitable adjustment shall be the Contractor's exclusive remedy and the Government shall not be liable to suit for breach of contract for actions accomplished in accordance with the R3 clause. Failure to agree to an adjustment shall be a dispute under the Disputes clause. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.

(R4, tab 10 at 12-13)

31. This modified version of the H106 Clause allowed Lockheed Martin to begin repairing legacy discrepancies as soon as a modification discrepancy report (MDR) was submitted. However, DCMA reserved the right to reject the MDR at any time and Lockheed Martin took the risk of not being compensated for any rejected work. (R4, tab 10 at 14-15 (H106 Clause (B) (applying to work from 29 April 2013 and onward), ¶¶ (1), (3)(c)-(e)))

32. Pursuant to Mod. P00182, the applicable H106 Clauses for Lots 3, 4, and 5 did not require Lockheed Martin to perform O&A work (labor and materials) beyond the funding obligated in the R3 (O&A) CLIN for each of those three lots (*see, e.g.*, R4, tab 10 at 1-3, 12, 15). Lockheed Martin's performance of O&A work beyond the funding obligated in the applicable R3 CLIN for each of Lots 3, 4, and 5 was "at the Contractor's own risk" (*id.* at 13). When reporting R3 activity, Lockheed Martin was required to "provide the ACO a summary of actual cost charged for completed R3 labor tasks and materials on a monthly basis" (*id.* at 13, 16). Mod. P00182 also incorporated FAR 52.232-20, LIMITATION OF COST, and FAR 52.216-7, ALLOWABLE COST AND PAYMENT (*id.* at 17).

33. Mod. P00182 contained the following release:

This Supplemental Agreement constitutes a full and equitable adjustment and the Contractor releases the Government from any and all liability under the contract for further claims or equitable adjustments arising out of or in connection with the changes effected hereby. All other contract terms and conditions remain unchanged and in full force and effect as a result of this modification.

(R4, tab 10 at 17)

Procedural History

34. On June 22, 2021, the Board granted Lockheed Martin's motion for partial summary judgment, finding that the affirmative defense of laches was unavailable to the Air Force. *Lockheed Martin Aeronautics Co.*, ASBCA No. 62209, 21-1 BCA ¶ 37,891 at 184,028 (*Lockheed Martin I*). The Board reasoned that the Air Force's laches defense was inapplicable due to the Contract Disputes Act's enumerated six-year statutory period for a contractor to file a claim. *Id.* at 184,026-28; *see also* 41 U.S.C. § 7103(a)(4)(A).

35. On October 26, 2021, the Board granted Lockheed Martin's motion to compel more complete interrogatory responses from the Air Force. *Lockheed Martin Aeronautics Co.*, ASBCA No. 62209, 21-1 BCA ¶ 37,954 at 184,329-30 (*Lockheed Martin II*). The Board determined that Lockheed Martin's discovery requests were relevant to its use of the measured mile method⁴ to calculate quantum and that the Air Force failed to demonstrate that the requests were disproportionate. *Id.* at 184,329.

36. On April 13, 2022, the Board denied the Air Force's motion for summary judgment asserting that Lockheed Martin's claim was untimely, and determined that disputes of material fact existed regarding when Lockheed Martin knew or should have known that its claim had accrued. *Lockheed Martin Aeronautics Co.*, ASBCA No. 62209, 22-1 BCA ¶ 38,112 at 185,120-23 (*Lockheed Martin III*). The Board also granted two of Lockheed Martin's cross-motions for summary judgment pertaining to the timeliness of its claim. First, the Board found that Lockheed Martin's claim was timely to the extent that it was based on MDRs approved on or after October 15, 2012. *Id.* at 185,128-29. Second, the Board ruled that each relevant MDR approved on or after October 15, 2012, qualified as a separate and distinct claim event pursuant to the continuing claim doctrine. *Id.* at 185,129-32.

37. On August 3, 2022, the Board denied the Air Force's motion for summary judgment which asserted that (1) Lockheed Martin could not prove liability, causation, and injury using the measured mile approach; (2) Lockheed Martin could not demonstrate entitlement to an equitable adjustment for a constructive change to the contract; and (3) Lockheed Martin's claim that the Air Force breached the implied warranty of good faith and fair dealing failed as a matter of law. The Board found that triable issues of fact existed regarding each of these allegations. *Lockheed Martin Aeronautics Co.*, ASBCA No. 62209, 22-1 BCA ¶ 38,178 at 185,409-16 (*Lockheed Martin IV*). Second, the Board granted Lockheed Martin's cross-motion for summary judgment asserting that Mod. P00301 did not release its claim. *Id.* at 185,420. Finally, the Board granted Lockheed Martin's motion for summary judgment asserting that no other contract modifications released its claim. *Id.* at 185,423.

The C-5 Modernization Program

38. The C-5 Galaxy is the largest military transport aircraft in the U.S. government's fleet and has provided heavy intercontinental strategic airlift capability in military operations since the 1970s. By 2000, the government's C-5 Galaxy fleet was aging and in need of upgrades. (Compl. ¶ 10; tr. 1/28-29, 4/40)

⁴ The measured mile method "provides a comparison of a production period that is impacted by a disruption with a production period that is not impacted." *Bay West, Inc.*, ASBCA No. 54166, 07-1 BCA ¶ 33,569 at 166,302.

39. One objective of the RERP program was to improve the reliability of the aging C-5 systems by modernizing the C-5 Galaxy to improve its mission-capable rate (tr. 3/40). “Mission-capable rate,” also known as “availability rate,” refers to the percentage of aircraft that are available at a given time for missions as opposed to being out of service for maintenance (tr. 1/20-21).

40. Before the RERP program, the C-5 Galaxy had a mission-capable rate between 50 and 60 percent, and the Air Force’s goal for replacing the system was to improve that rate to “the 70 to mid-80s” range (tr. 3/40; *see also* app. supp. R4, tab 799 at 4).

41. The RERP program also sought to increase the C-5 Galaxy fleet’s payload capabilities and throughputs, which included a faster climb rate and the need for less space to take off. Another objective was to create a cleaner and quieter aircraft that would improve access to airfields worldwide and reduce closure time. (App. supp. R4, tab 799 at 4)

The Systems Development & Demonstration Contract

42. Before agreeing to the RERP contract, the parties first entered into the SDD contract for the purpose of allowing Lockheed Martin to demonstrate the concept and capability of its modernization program by initially modifying three C-5 aircraft (tr. 3/40-43, 5/121-22, 7/103-04; *see also* R4, tab 3 at 75).

43. The SDD contract had a “very defined statement of work detailing all of the systems to be replaced [and] what actions would take place” (tr. 3/50). Mr. Baxter described the SDD contract’s objective as follows:

SDD was going to . . . do the design changes to the aircraft and then go and do extensive flight testing to prove out that the software, the integration of the systems, . . . the performance that [was] intended, even the maintainability of the aircraft[,] met all the goals of the design criteria, and [that] you were able to go fly the airplanes

(Tr. 3/41)

44. The three SDD aircraft served as “test articles” for which Lockheed Martin installed new systems and prepared documentation for accomplishing specific tasks during the RERP production phase of the modernization program (tr. 3/43).

45. Lockheed Martin performed the SDD contract on a cost-reimbursement basis because there was not yet an adequate basis for the parties to establish fixed pricing (tr. 3/44).

46. The parties' experience performing the SDD contract served as a baseline for the subsequent negotiations for the RERP contract (*see* tr. 3/50-53, 55-56, 5/124-33, 7/125-28, 10/43-44).

The Concept of Over & Above Work

47. While performing aircraft modification programs, it is not uncommon to discover pre-existing defects in the aircraft, including legacy discrepancies, legacy defects, and legacy conditions (*see* tr. 5/20, 6/120, 11/86-7). The nature and extent of such defects is often unpredictable because each aircraft experiences different wear and tear over time. The Air Force's systems development manager, Ms. Kathryn Sowers, testified:

[E]very aircraft is unique. They all fly unique missions. They all take on . . . different environments. So different things break on different aircraft [W]e might be able to predict that we might have a problem, but we might not know exactly what it's going to be. Or if we saw a trend where every aircraft had a certain legacy issue, then we could possibly expect that in the future. But I am not convinced we would've been able to predict all of the legacy issues we were going to see.

(Tr. 3/16)

48. Lockheed Martin had performed O&A work to repair legacy discrepancies under the SDD contract. The Air Force was aware these discrepancies were arising and it was not possible to anticipate them all. (Tr. 1/24-25)

49. Unlike the initial RERP contract (finding 13), the SDD contract included a CLIN for O&A work (tr. 3/44-45).

50. During the SDD phase, the parties shared an understanding that Lockheed Martin was "modifying an old airplane" and that O&A repairs should only be made if a legacy discrepancy was otherwise going to impede RERP production or if the discrepancy was a safety of flight issue (tr. 1/138-39).

51. During the SDD phase, the parties did not assess the condition of the entire aircraft beyond the scope of what Lockheed Martin intended to interface with during

the RERP phase. Due to the sheer size of the C-5 Galaxy, there were large portions of the aircraft that were left undisturbed by the modification. (Tr. 1/138-39)

Lockheed Martin's RERP Proposal


52. In November 2007, Lockheed Martin submitted a proposal for the RERP contract to the Air Force (app. supp. R4, tab 413; app. br. ¶ 57).

53. Lockheed Martin priced the RERP proposal using a learning curve, which lowered the expected cost of performance for each additional aircraft based on the expectation that repeating a task would lead to improved efficiency and reduced costs for each successive aircraft (*see* tr. 3/127, 4/132-33; app. supp. R4, tab 413 at 2-15).

54. Lockheed Martin's RERP proposal provided information about the expected installation touch labor hours (defined below) and learning curve (app. supp. R4, tab 413).

55. The proposal included the following summary of the information provided:

This Build and Delivery Estimate Volume contains the basis of the estimating rationale and documents the substantiation data supporting the cost estimates for the Build & Delivery IPT labor hours. *These hours are required for the installation and delivery of the RERP modification to the C-5 aircraft as defined by the Statement of Work and as performed in accordance with the LM Aero Manufacturing Plan for the C-5 RERP program.* This Build and Delivery estimate is divided into four distinct sections. **Section I** contains the touch hours required for the installation portion of the program. **Section II** contains the hours required by the Build and Delivery Team to fabricate tubes and perform expected re-work effort for time critical wiring and detailed fabricated parts. **Section III** contains the hours required to provide the support effort for the touch labor. **Section IV** contains the hours required to fulfill the transition to production tasks that are required to perform the work mandated by the RERP program. The detailed analysis and justification for each of these elements is contained within each corresponding section.



[REDACTED]
[REDACTED] which was estimated based on historical performance. (Tr. 3/77-78)

Performance of the RERP Modernization Effort

64. Lockheed Martin performed the C-5 RERP modernization program at its facility in Marietta, Georgia (see tr. 7/36-37; R4, tab 3 at 30-31).

65. The modification process, from the time an aircraft arrived at Lockheed Martin's facility until it was flown out, was organized into four major phases: (1) induction, (2) major modification, (3) engines, and (4) functional testing (tr. 1/34).

66. Induction was the initial stage that occurred once Lockheed Martin received an aircraft at its facility (tr. 1/34-35, 6/110).

67. During the induction phase, Lockheed Martin assessed each aircraft's incoming condition, documented how the aircraft was performing systematically, and noted any problems that its mechanics discovered on the aircraft when it arrived (tr. 1/35).

68. The RERP contract's SOW provided the following induction inspection and reporting requirements:

The Contractor shall inspect the GFP C-5 aircraft and perform testing according to existing technical manuals to establish the conformance of the aircraft to the Aircraft Baseline requirements as defined in Section H, Clause H100.

The Contractor shall document all known discrepancies and forward a copy of the discrepancy list to the Government prior to inducting the aircraft for C-5M modification. All other discrepancies shall be documented at discovery and forwarded to the Government for disposition.

(R4, tab 3 at 76)

69. After identifying any known discrepancies, Lockheed Martin prepared the aircraft to enter the hangar where modifications were performed (tr. 1/35).

70. The major modification phase was also known as "L-10" because Lockheed Martin performed it in the L-10 hangar, which could hold a maximum of

four C-5 aircraft at once (tr. 1/37). Major modification involved disassembling and physically modifying the aircraft. This phase took the most time. (Tr. 1/37-38)

71. Disassembly during the major modification phase included removal of each aircraft's engines, pylons, leading edge, and other components necessary to expose the aircraft for modification (tr. 1/37-38).

72. All structural modifications in this stage had to be completed inside the L-10 hangar where the aircraft were protected from the weather. The aircraft needed to be "zero loaded," that is, stabilized, placed on jacks, and cleared of all items weighing the aircraft down, such as fuel in the wings. (Tr. 1/50-51)

73. After major modifications, Lockheed Martin would install new engines on the aircraft (tr. 1/34).

74. For this step, the aircraft were transported from the L-10 hangar to the B-25 building, which could fit up to two aircraft at a time (tr. 1/38, 51).

75. Lockheed Martin would fuel the aircraft after its arrival in the L-10 hangar. This enabled Lockheed Martin to check for leaks, and repair any leaks it discovered. (Tr. 1/38).

76. Functional testing consisted of "a series of functional tests on the ground" and flight testing (tr. 1/38).

77. Functional tests verified whether each aircraft's systems were properly assembled and functioning correctly (tr. 1/38-39, *see also* 6/122).

78. The term "flight line" generally referred to any area outside the L-10 hangar and was often used in reference to the functional testing phase (*see* tr. 1/38, 6/110).

79. To perform functional tests, Lockheed Martin followed a series of procedures called "tech orders" that described how to operate the aircraft that the Air Force developed in conjunction with both Lockheed Martin and Warner Robins Air Force Base (WRAFB) engineering (tr. 1/39).

80. These functional tests had standard criteria for acceptance, which related to the systems' movement, timing, pressure, and other factors (tr. 1/39).

81. Flight tests involved evaluating each aircraft's various systems while in the air (tr. 1/40, 6/122-23).

82. These tests included sequential tests, such as flying with one engine shut off or simulating having to lower the landing gear in emergency situations (tr. 1/40).

83. The process for setting up a test flight, also known as “pre-flight,” was an intensive 12-hour process (tr. 1/40-41).

84. The parties strove to conduct two test flights per aircraft—one performed by Lockheed Martin’s test pilots and another performed by Air Force pilots. Certain aircraft required more than two test flights when issues arose. (Tr. 1/41-43)

85. Due to the C-5 Galaxy’s size, it was easier to perform modification work and O&A repairs inside the L-10 hangar because the custom scaffolding provided immediate access to, and free movement around, areas of the aircraft that were difficult to reach otherwise. Conversely, performing O&A repairs outside of the hangar was more difficult because Lockheed Martin’s mechanics needed to rely on scissor lifts to access certain parts of the aircraft. The lift could not be used during windy weather, and accommodated only a few mechanics at a time. (Tr. 1/49-51) Towing the aircraft in and out of the hangar was done slowly and required a large team of people (*see* tr. 1/53; app. supp. R4, tab 3473 (video showing Lockheed Martin personnel moving C-5 Galaxy in and out of the hangar)).

The Inspection Process

86. Whenever one of Lockheed Martin’s mechanics completed a task, a request was triggered for one of Lockheed Martin’s QA inspectors to inspect the work (tr. 5/16).

87. Once a Lockheed Martin QA inspector approved the job, a request for a DCMA inspection could also be triggered depending on the type of job (tr. 1/67-68, 5/16, 30-31; *see also* tr. 3/12-13). For example, work relating to flight safety would require DCMA verification of the quality of the work (tr. 5/30-31).

88. Lockheed Martin mechanics remained present for inspections to provide support and to resolve any readily correctable issues (*see* tr. 5/16).

The Discovery of Legacy Discrepancies and Related Impacts

89. Lockheed Martin mechanics performing RERP modifications discovered legacy discrepancies as they worked on the aircraft. It was not possible to discover all discrepancies during the induction phase because new discrepancies were revealed after the removal of panels and components during the progression of RERP work, and each aircraft presented unique discrepancies. (Tr. 1/116, 5/31, 6/80-81, 91)

90. The H106 Clause obligated Lockheed Martin to identify and report to the Air Force any legacy discrepancies requiring repair that it encountered while performing RERP modifications. The Air Force was responsible for determining whether Lockheed Martin should proceed with correcting the discrepancy by approving the MDR. (R4, tab 3 at 26 (“The Contractor shall prepare and submit a work request to notify the ACO or his/her representative of a legacy discrepancy that requires repair. . . . [T]he Contractor shall not proceed with an R3 effort until approval has been granted by the ACO or his/her representative.”))

91. When Lockheed Martin’s mechanics discovered legacy discrepancies, they had to stop the modification work they were performing, notify Lockheed Martin’s QA inspectors, and assist with documenting the discrepancy (tr. 1/63-64, 5/33, 6/82).

92. If a legacy discrepancy prevented a mechanic from being able to complete a RERP task, the mechanic would have to be assigned to another task until the discrepancy was resolved, which also interfered with RERP work (tr. 1/64-65, 5/32-34, 6/83-84).

93. Mechanics and engineers also discovered legacy discrepancies while conducting functional and flight tests (tr. 6/120-21, 124). Generally, legacy discrepancies were detected at this stage because they resulted in test failures (tr. 6/121, 124).

94. It was not possible to discover all of an aircraft’s legacy discrepancies before testing because certain discrepancies were present on components that were left undisturbed during modification (tr. 6/124-25).

95. Whenever a legacy discrepancy was discovered during a functional test, the test would be halted so the mechanics could notify Lockheed Martin’s QA inspectors. The inspectors and mechanics would then confirm whether the failure was attributable to a legacy condition. (Tr. 6/125-26)

96. Upon being assigned to a new job, the mechanics had to return the tools and equipment they had been using to the appropriate storage location or tool crib. These mechanics continued to charge their time to the original RERP time card until they were assigned to another job. When the mechanics resumed a RERP task after the legacy discrepancy was resolved, they had to repeat the process of collecting the proper tools and equipment and setting up again for the functional test. (Tr. 6/127-29)

97. Mr. James Greyson Sprouse, C-5 program manager and deputy vice president beginning in November 2011 (tr. 7/5, 8), testified that encountering O&A on the flight line was very disruptive to the contractor’s work (tr. 7/30; *accord* tr. 4/33,

133 (Mr. Gregory Russ, Lockheed Martin's flight line director, said "[t]here was more impact to the learning curve on the flight line . . .").

98. Legacy discrepancies discovered during this phase had to be documented, researched, and dispositioned using an MDR in the same matter as if the discrepancies were discovered during the major modification phase. Mechanics could not proceed with functional testing until the legacy discrepancy was resolved. (Tr. 6/126-27)

99. Lockheed Martin's flight crews often discovered legacy discrepancies while performing a series of functional tests known as profiles (tr. 4/68-70). Certain legacy discrepancies could only be detected when the aircraft was airborne and experiencing the speed and forces that would reveal such conditions (*see* tr. 4/70).

100. Any legacy conditions encountered during a flight test were documented and later transferred to an MDR if appropriate (tr. 4/74).

101. If the discrepancy pertained to safety of flight, or if the flight crew aborted the test flight for some other reason, the test would have to be repeated, including pre-flight preparation, the test flight itself, and the post-flight process (*see* tr. 1/174-75, 4/71-72).

102. At all stages of the RERP program, Lockheed Martin's QA inspectors were responsible for documenting legacy conditions and preparing the MDRs in the Quality Assurance Document (QAD) system (*see* tr. 5/21, 37). The inspectors could also identify legacy discrepancies that mechanics had not reported while inspecting stamped-off RERP jobs (tr. 5/32).

103. Once an inspector submitted an MDR in the QAD, it would be transmitted to DCMA personnel for approval (*see* tr. 1/64, 67). Lockheed Martin did not have the authority to determine whether an MDR had to be worked (tr. 1/66-67).

104. If DCMA approved the work, then the MDR would be transferred to Lockheed Martin's engineering department for an assessment of how to correct the discrepancy. The planning team would then prepare and input work instructions. A mechanic would be assigned the MDR-related job and then follow the same process for performing MDRs. (Tr. 5/37)

105. While Lockheed Martin was generally responsible for preparing MDRs, DCMA inspectors could identify conditions to be documented using MDRs during their inspections (tr. 1/68, 5/21-22). All O&A work required government approval (R4, tab 3 at 26).

Manufacturing Deficiency Reports

106. As discussed above, the parties documented unexpected work items using MDRs (tr. 1/61, 2/25-26, 5/19; R4, tab 12 at 9; finding 15). Legacy discrepancies identified as O&A were called Category 2 (CAT-2) MDRs (tr. 1/61, 2/25-26, 5/19, 6/79-80; R4, tab 12 at 9).

107. The Air Force was financially responsible for all CAT-2 MDRs. Lockheed Martin was financially responsible for all Category 1 (CAT-1) and Category 3 (CAT-3) MDRs. (Tr. 1/61-62, 2/26, 11/87; R4, tab 12 at 9)

108. CAT-1 MDRs were directly related to RERP modifications required by the contract, whereas CAT-3 MDRs covered defects inadvertently caused by Lockheed Martin during performance (R4, tab 12 at 9; tr. 1/61-62, 2/26, 6/119).

109. These MDR categories were used consistently throughout the program, but not expressly memorialized in the H106 procedures until September 2014, when the parties incorporated descriptions of each of the three categories into the H106 Clause (*see* R4, tab 12 at 9).

110. The process of writing up an MDR required hours of research, writing, and potentially taking photographs to document an issue (tr. 2/25).

111. Lockheed Martin's senior quality manager for flight line and flight operations (tr. 2/8), Mr. John Strickland, described DCMA's timeline for reviewing MDRs:

[O]nce [an MDR] got to DCMA, those MDRs might sit for a period of time. It could be a couple of hours. It could be a couple of days because the DCMA team, they always wanted to go do their own research and validate or invalidate the discrepancy as they saw fit.

(Tr. 2/25)

112. The delay in reviewing MDRs was also attributable to the fact that DCMA had challenges with fully staffing the contract from roughly 2012 through 2014/2015 (tr. 7/54-55; *see also* 4/137-39).

Legacy Discrepancies and RERP Inefficiency

113. Lockheed Martin’s lead flight controls engineer, Mr. John Ferentinos, testified that the RERP effort presented “different types and more” O&A work than “what we typically saw in SDD and then some” (tr. 1/15, 138).

114. According to Mr. Ferentinos, this increase was partially attributable to aircraft not arriving in the condition that Lockheed Martin expected (tr. 1/136-37; *see also* tr. 10/7, 20, 137, 11/71 (similar testimony from Lockheed Martin’s vice president of business operations, Mr. Thomas Hungerford); app. supp. R4, tab 938 at 1 (“Aircraft Condition at Receipt” causing disruption)).

115. When the C-5 Galaxy aircraft arrived at Lockheed Martin’s facility, they were often worn, and “the worse these airplanes came in, the more legacy defects [Lockheed Martin] would identify at induction” and during RERP work (tr. 2/111-12).

116. Mr. Ferentinos explained that Lockheed Martin expected the aircraft to come in with fewer issues if they had recently undergone planned PDM:

My understanding was that the aircraft would be coming in shortly after it had gone through the scheduled maintenance that it undergoes. So, the anticipation was that the aircraft would’ve gone through its program scheduled maintenance on the aircraft, and shortly after that, whether it’s three years, two years, or one year, then it would come into RERP. These airplanes get extensive use, and they go under a lot of wear and tear as you can imagine a large cargo plane like this would. And the more flies and it’s used, the more wear and tear it gets. So, knowing that we’re going to modify that airplane, you want to have an airplane that’s as pristine as you can as soon as it came out of PDM would be ideal. Because then you know they’ve resolved a lot of these types of issues that we came across would’ve been identified during the PDM maintenance phase and addressed at that time.

(Tr. 1/136-37)

117. The aircraft arrived with legacy conditions ranging from “functional issues to component issues” including “dents, gouges, cracks, [and] insufficient clearances” (tr. 1/76). The inducted aircraft had suffered from decades of wear and tear, and in some cases, battle damage from flying through combat zones (tr. 1/76, 103).

118. At times, legacy discrepancies required Lockheed Martin to re-sequence work, resulting in inefficiencies (tr. 6/91-92).

119. Another collateral impact of legacy discrepancies was that mechanics would be pulled away from tasks they were particularly skilled at to work on legacy repairs, leaving other, less skilled mechanics to perform RERP work (tr. 1/133-34, 5/42, 6/92).

120. It was less disruptive to the RERP effort if Lockheed Martin discovered a legacy issue in the earlier stages of modification because it was easier to access certain areas of the aircraft while the aircraft was completely exposed (tr. 1/113-14; *see also* tr. 10/31-32).

121. One legacy discrepancy that Lockheed Martin frequently encountered on the C-5 aircraft was that the slat seal steel hinge accessory was often separated, or “disbonded” (tr. 1/86-87, 91; *see also* app. supp. R4, tab 1068 at 1). A slat seal is a 10-foot-long aluminum surface on the wing that moves to increase aerodynamic lift when the aircraft is flying at slower speeds (tr. 1/86-88).

122. Lockheed Martin personnel found that most of the aircraft had “one or two” slats with this condition, “exhibit[ing] either a disbond or rivets that were coming loose or other types of damage” (tr. 1/89-91; app. supp. R4, tab 1068 at 9, 11 (photographs of slat seal disbond)).

123. Repairing the disbonded slat seals caused delays to the RERP modification effort (tr. 1/93-97). Each time Lockheed Martin discovered a disbonded slat seal, its mechanics had to halt RERP work and would be reassigned to other tasks with which they were less familiar. Lockheed Martin had to task specialized mechanics who were skilled at performing structural repairs to fix the slat seal assemblies, which meant that other mechanics had to be reassigned to complete RERP tasks that the specialized mechanics had been performing. This often resulted in less efficient performance. (Tr. 1/95-97)

124. Another common legacy issue involved the #5 service door, which was an access door connected to the flight deck. This door was primarily used for access by maintenance personnel and for delivery of food service carts. A separate door was used by the flight crew for entry. (Tr. 1/121-22)

125. Lockheed Martin replaced the #5 service door’s seal as part of the RERP program (*see* app. supp. R4, tab 1071 at 2-3 (slides describing work associated with “RERP Contract Tasking [to replace] door seal” for the #5 service door)).

126. During inspection, several legacy issues were discovered that were preventing the door from closing properly (tr. 1/123-26). For example, several of the doors exhibited “steps,” meaning the door was protruding into or out from its frame (tr. 1/123-24; app. supp. R4, tab 1071 at 4 (photographs demonstrating a step in a #5 service door)).

127. Steps did not affect nor were they related to safety of flight (tr. 1/123-24). Nevertheless, DCMA directed Lockheed Martin to repair the steps (tr. 1/124-25).

128. Steps were typically discovered during functional testing and DCMA disrupted the RERP effort by requiring Lockheed Martin to reassign mechanics from other RERP modification tasks for the repairs (tr. 1/127).

129. Another prevalent O&A issue with the aircraft was chafing, which occurred when two components rubbed against each other (tr. 1/131-33). Chafing was problematic because it had the potential to result in “catastrophic failure” depending on which components were rubbing together. For example, if a fuel line or a hydraulic line ruptured from chafing, it could cause a fuel leak or a fire and even possible loss of the aircraft. (Tr. 1/131)

130. Chafing could be corrected by using clamps to keep components in place, installing chafe guard material to reduce friction, repositioning and refastening components, or trimming away the structure causing the chafing (tr. 1/128-34; *see also* app. supp R4, tab 1066 at 1 (photograph of chafe guard)).

131. O&A chafing repairs impacted the RERP effort by requiring Lockheed Martin to stop RERP work and reassign mechanics to address chafing issues (tr. 1/133).

132. Cracked brackets and broken clamps were common legacy discrepancies present on the aircraft (tr. 5/85-87; *see also* app. supp. R4, tab 2047 (CAT-2 repair to MDR repair to cracked bracket)).

133. This issue often required Lockheed Martin to reassign mechanics for repairs and to re-sequence work, resulting in delays to the RERP effort (tr. 5/89-90).

134. The contractor provided illustrative examples of CAT-2 MDRs. On February 27, 2013, Lockheed Martin submitted MDR MA68603, a CAT-2 MDR, to repair corrosion and disbonding on an auxiliary power unit inlet door and its surrounding structure on one particular aircraft (app. supp. R4, tab 3471 at 1; *see also* tr. 5/58-62).

135. The corrosion was so severe that the door's cover panel had allowed corrosion to enter between the layers of sheet metal, which had started to peel apart (app. supp. R4, tab 3471 at 11; tr. 5/59-60). Portions of the metal material had also cracked and broken away from the door (app. supp. R4, tab 3471 at 15; tr. 5/62).

136. Corrosion removal "required somebody that ha[d] pretty significant solid skills in sheet metal work" (tr. 5/62). Corrosion work was quite extensive because it required removing the corrosion as minimally as possible to avoid peeling off excess material from the sheet (tr. 5/61-62).

137. On January 2, 2014, Lockheed Martin submitted MDR MA82417, a CAT-2 MDR, to repair a cargo door that would not open for another aircraft (app. supp. R4, tab 2095 at 1; *see also* tr. 5/65-67). This legacy discrepancy was discovered when the aircraft in question was first brought into the L-10 hangar and Lockheed Martin's mechanics attempted to affix a series of metal stands that electricians used to access work areas in the aircraft's cargo bay (tr. 5/65-66).

138. After several attempts to troubleshoot the problem, Lockheed Martin personnel discovered that the wrong bolt had been installed and had become distorted at some point before the induction phase, thereby preventing the door from unlocking (app. supp. R4, tab 2095 at 4).

139. This issue delayed the RERP effort by stopping mechanics from working, requiring them to await troubleshooting and preparation of the MDR, and necessitating their reassignment to new tasks (tr. 5/72-73).

140. In 2013, Lockheed Martin personnel discovered "extensive corrosion" of the panel necessary for installation of one of an aircraft's latrine door assemblies (*see* app. supp. R4, tabs 2056 at 1, 2057). This issue was worked under MDR MA67258, a CAT-2 MDR, for the removal of the corrosion and the restoration of the structural integrity of the aircraft's outer skin (app. supp. R4, tab 2056 at 1-2; *see also* tr. 5/75-78 (describing the corrosion)).

141. This legacy discrepancy delayed the RERP effort by requiring mechanics to stop work and be reassigned to new tasks. A mechanic specializing in corrosion cleanup also had to be assigned to repair the discrepancy instead of working on a RERP task. (Tr. 5/79)

142. Additionally, Lockheed Martin regularly encountered pre-existing field repairs to aircraft that impacted RERP performance (tr. 1/97-99). Typically, field repairs are performed at remote bases to temporarily correct an issue so the aircraft could fly back to its home station for permanent repairs. Some field repairs, however, were permanent. (Tr. 1/98)

143. The primary issue field repairs imposed on the RERP effort was that these were not performed in a manner consistent with the blueprints or requisite technical specifications. This hindered RERP performance until the issues could be remedied under CAT-2 MDRs. (*See* tr. 1/98-100)

144. One example of such a repair that impacted the RERP effort involved a doubler⁵ that the Air Force had installed on an aircraft's visor, which damaged a newly installed RERP component during a functional test (tr. 1/107-12).

145. As part of the RERP modification, Lockheed Martin replaced the seal around the visor at the front of the aircraft for the purpose of efficiently maintaining cabin pressure and preventing leaks (tr. 1/107, 112-13).

146. During a functional test to confirm that the aircraft's visor could move up and down properly, Lockheed Martin discovered that the new seal had been torn off by the doubler that was also damaging the paint on the aircraft (app. supp. R4, tabs 1062 (photograph showing damage to aircraft caused by doubler), 1064 (photograph of doubler and crack on surface); *see also* tr. 1/108-12).

147. This discrepancy disrupted the RERP effort by requiring Lockheed Martin to reassign mechanics to other tasks and to re-sequence work. Lockheed Martin also had to pull mechanics away from structural work in the L-10 hangar who were skilled with cutting structures to repair this discrepancy, while less familiar mechanics had to fill in to perform their tasks. Additionally, the original functional test for the visor had to be repeated with a different team that was less efficient with performing the test. (Tr. 1/109-12)

148. An additional example of a CAT-2 MDR was brought to the government's attention on November 30, 2012, when Lockheed Martin submitted MDR MA65244 to correct a field repair preventing mechanics from proceeding with the installation of a new RERP component known as the right-hand inboard elevator actuator assembly (app. supp. R4, tab 1750 at 1, 9; tr. 5/46-50).

149. To repair this discrepancy, Lockheed Martin had to fabricate new brackets, remove rivets, increase the diameter of pre-existing holes via drilling, and perform non-destructive inspections on the quality of the legacy materials (app. supp. R4, tab 1750 at 1-7; tr. 5/51-52).

⁵ A doubler is an added layer of material, such as a metal plate, used to help maintain the structural integrity of a damaged aircraft component (tr. 1/103-04).

150. Typically, replacing an elevator actuator assembly was a “fairly simple” RERP task in which the mechanic would remove the original bolts and the actuator, then install the new assembly with new bolts (tr. 5/53, 56). However, in this case, Lockheed Martin not only had to submit the initial MDR and make the repairs in order to proceed with the RERP work, but also resubmit the MDR an additional six times and make further O&A repairs as newly identified issues continued to prevent completion of the RERP work (*see app. supp. R4, tab 1750 at 3-7; tr. 5/49-51*). This was because the new bolts were unable to slide all the way through the component and fully engage because these were larger than the legacy bolts (tr. 5/50).

151. Lockheed Martin assigned skilled mechanics familiar with flight controls and rigging to work in the O&A repairs under MA65244. This meant Lockheed Martin had to reassign other mechanics less familiar with RERP work in their place. (Tr. 5/54-55) MA65244 also required Lockheed Martin to re-sequence work (tr. 5/57).

152. Throughout the program, Lockheed Martin’s contracting personnel and the Air Force’s COs communicated on a daily basis (tr. 7/107). The volume of O&A work Lockheed Martin encountered was a recurring subject between the parties (tr. 3/18-20, 7/138-39, 147-48).

153. Lockheed Martin’s contract negotiator, Mr. Steven Pilcher, regularly discussed O&A impacts and the contract’s baseline assumptions with the COs, and these conversations became more frequent over the course of the program (tr. 7/92, 96, 129-31).

Lockheed Martin’s Tracking of Labor Costs

154. Lockheed Martin tracked performance and costs for RERP and O&A work based on labor hours spent on tasks (tr. 6/69-70, 80, 111, 11/91).

155. A team of industrial engineers oversaw a budget of hours and supported production by identifying opportunities to optimize performance and by monitoring staffing needs (tr. 6/69, 96-97, 114-15).

156. When these industrial engineers observed deviations from the budget’s cost targets, they would investigate the responsible build team to determine the underlying cause of the deviation (tr. 6/73-76, 114-17).

157. Lockheed Martin’s industrial engineers continually discovered that O&A work disrupted performance in a manner that increased the amount of labor hours spent on RERP performance (tr. 6/76-77, 95-96, 115-16).

158. The industrial engineers also provided recommendations to production supervisors on how to re-sequence work to minimize cost and schedule impacts caused by O&A work (tr. 6/77, 117-18).

159. It was not possible for Lockheed Martin to track O&A impacts in a manner connecting each CAT-2 MDR to the resulting RERP touch labor hours (tr. 6/92-93, 13/46). However, Lockheed Martin could track labor hours in terms of how much time a mechanic spent completing a particular task (*see* tr. 6/73, 93).

160. Given the nature of the O&A impacts on the RERP effort and the frequency of having to reassign mechanics to perform O&A work, Lockheed Martin was unable to directly time each hour of inefficiency caused by O&A work (tr. 6/93-96).

DCMA's "Like-New" Standard for the Aircraft

161. DCMA inspectors eventually began imposing a "like-new" standard when inspecting the aircraft, which, according to testimony from numerous Lockheed Martin personnel, resulted in an increase in the amount of O&A work Lockheed Martin was required to perform (*see* tr. 1/141-43, 2/71-72, 3/30-31, 4/66, 5/92-98, 10/27).

162. Mr. Ferentinos testified that initially, Lockheed Martin would inspect the modification work to ensure that it was properly performed and installed per the blueprints and check for foreign object debris (FOD)⁶ (tr. 1/69-70). However, DCMA began inspecting areas of the aircraft that were left undisturbed by RERP modifications and unrelated to safety of flight (tr. 1/69, 169-70, 2/31-32, 4/58, 62-64). By 2011, DCMA employees had imposed a "like new expectation" for the modified aircraft (tr. 1/141-42).

163. The Air Force, including its COs, were aware of DCMA's "like-new" standard (*see* tr. 3/22-23, 26). Ms. Sowers described DCMA's expectations for the aircraft:

I recall there was some members of DCMA that believe the airplane should be returned to air mobility command in a like-new condition. A lot of that, obviously, was related to the FOD. Their opinion was if I opened up the wing and there's FOD or debris back there, we should just clean it out, without a full understanding or comprehension that that's going to impact schedule and cost to the aircraft. So there were discussions from them that some of the

⁶ Trash and any debris or loose items on an aircraft are referred to as FOD (tr. 3/20-21).

airplanes were not being returned like new. *So we just had to inform them that our contract did not require that.*

(Tr. 3/22-23) (emphasis added)

164. DCMA imposed a 100% FOD-free standard for the entire aircraft being repaired by Lockheed Martin, which was DCMA's policy for new aircraft. Sometimes, DCMA would refuse to approve inspections until Lockheed Martin had removed all FOD from the aircraft. (Tr. 3/21)

165. DCMA's chief test pilot and commander of flight operations, Lt Col Robert Griffith, was responsible for performing acceptance flights on DCMA's behalf, conducting inspections, and signing off on work that Lockheed Martin had completed (tr. 3/23).

166. DCMA inspectors, including Lt Col Griffith, frequently aborted test flights when they discovered legacy issues that they deemed Lockheed Martin should have worked. DCMA refused to allow the test flights to proceed until Lockheed Martin corrected the legacy condition. (Tr. 1/163, 173-74, 4/66-71) Aborted test flights impacted the RERP effort by requiring Lockheed Martin to repeat pre-flight, test flight, and post-flight procedures after correcting the legacy condition (tr. 1/174-75, 4/69-72).

167. Some of these legacy issues were not related to safety of flight (*see, e.g.,* tr. 4/69-70). For example, DCMA kept returning one of the aircraft because an indicator was showing that a door was unlocked after the pilots opened and closed the aft (rear) cargo door. Instead of initiating a bypass mode and proceeding with the test flight, DCMA repeatedly returned the aircraft and aborted the remaining tests in the profile, even though the issue was unrelated to safety of flight. (Tr. 4/27-28, 70)

168. In one instance, the parties discovered an oil leak while the DCMA flight crew was conducting pre-flight preparations. Typically, this was an issue that could have been repaired before the test flight, but Lt Col Griffith stopped Lockheed Martin personnel from repairing the leak and rejected the aircraft. (Tr. 4/58)

169. DCMA began inserting additional inspection points, which included areas that were undisturbed by RERP modifications (tr. 4/58, 10/20). This resulted in additional stoppages to the RERP effort and an increase in O&A work (tr. 10/20).

170. As part of the RERP modification effort, Lockheed Martin replaced the C-5 aircrafts' throttle quadrants and part of the flight controls (tr. 1/146, 156; app. supp. R4, tab 1058 at 9 (slide depicting RERP flight control changes)). DCMA inspectors identified a condition called a "spoiler bump" in which an aircraft's spoiler handle would move when the aircraft's yoke (steering wheel) was rotated to the left or

right (tr. 1/146-48; *see also* app. supp. R4, tabs 1088 (video showing spoiler bump present during induction phase), 1093 (video showing spoiler bump after modification)).

171. A spoiler bump is an inherent condition, known as “hysteresis,” that occurs when flight controls interact with each other, and was documented in both the flight manual and the tech orders (tr. 1/147, 151, 156). The C-5 was safe to fly with a spoiler bump and the engineering authority at WRAFB ultimately agreed with Lockheed Martin that it was an acceptable condition (tr. 1/159, 161).

172. Nevertheless, DCMA continually rejected aircraft exhibiting spoiler bumps and would issue a corrective action request (CAR) when Lockheed Martin was unable to repair the spoiler bump while keeping the flight controls within the defined tech order requirements (tr. 1/160-65; app. supp. R4, tab 1092 (video showing DCMA flight crew jerking yoke roughly to cause feedback)).

173. DCMA’s requirement that Lockheed Martin correct these spoiler bumps impacted the RERP effort by causing stoppages to work (tr. 1/164).

174. The Air Force’s leadership and its COs were aware of Lt Col Griffith’s approach toward the RERP program and repeatedly spoke to him regarding his “misperceptions” about the scope of the RERP contract. Air Force personnel also had internal meetings to discuss whether Lt Col Griffith’s position was valid and if items he was identifying were within the scope of the RERP contract. (Tr. 3/23-27)

175. Ms. Sowers described Lt Col Griffith’s “like-new” expectation as follows:

He just basically felt . . . that we needed to return the aircraft . . . in the best condition, which meant all the FOD needed to be removed, things needed to be fixed when we identified them. If we identified something that was broken on the aircraft that wasn’t a part of our contract and it was not safety of flight, we were not required to fix it. [Lt Col] Griffith felt like we should fix it anyway. So, you know, [the Air Force] needed to just have an education with him that we have a contract with Lockheed Martin. It has a prescribed scope. If it’s not safety of flight, they’re not required to fix it and just make sure that Colonel Drohan⁷ had those conversations with [Lt Col Griffith] so

⁷ Ms. Sowers identified Col Drohan as her “counterpart” at DCMA (tr. 3/14).

he understood, whenever he would deal with or talk with the Lockheed Martin team.

(Tr. 3/24-25)

176. DCMA's flight crew continued to adhere to Lt Col Griffith's "like-new" standard even after he left the program (tr. 4/72-73).

Corrective Action Requests

177. While DCMA inspectors could not submit MDRs themselves, they would identify items for Lockheed Martin to repair and issue CARs for the contractor's failure to work legacy discrepancies (*see* tr. 1/178-79, 182-83, 5/92-93).

178. CARs typically posed serious disciplinary actions for Lockheed Martin employees up to and including termination, and a CAR remained on a mechanic's record permanently (*see* app. supp. R4, tab 982 at 7).

179. Generally, DCMA could issue a CAR if Lockheed Martin did not follow a specific process or adhere to a specific item. Lockheed Martin would then have to correct the issue, explain why the process was not followed, and propose a plan to mitigate any systemic issues. (Tr. 1/70-71, 178-79, 2/66-67, 83-84, 4/22-24, 5/93)

180. There were four levels of CARs ranging from a Level 1 CAR, which consisted of a verbal warning, to a Level 4 CAR, which could result in cancellation of the program (tr. 1/182, 4/23).

181. Responding to a Level 2 CAR or higher required Lockheed Martin to prepare a response for DCMA known as a corrective action plan (CAP) (tr. 4/23).

182. The general rule was that DCMA would "write a CAR for a systemic issue, an issue that is obviously a problem and has been a problem . . . multiple times" or if the issue was related to safety of flight (tr. 2/66).

183. At times, a CAR could halt performance on certain tasks because DCMA would refuse to accept work until Lockheed Martin submitted a satisfactory CAP (*see, e.g.*, tr. 2/84-85).

184. At the beginning of the program, DCMA issued very few CARs. However, DCMA began issuing significantly more CARs for Lots 3, 4, and 5. (Tr. 4/23) At one point, DCMA had issued more than 60 outstanding CARs (tr. 2/76).

185. DCMA would issue CARs for the presence of legacy FOD or for Lockheed Martin's failure to identify legacy discrepancies that DCMA discovered during inspections (tr. 4/24-25).

186. For example, on January 10, 2013, DCMA issued a Level 2 CAR for Lockheed Martin's failure to detect a legacy discrepancy and thus presenting a non-conforming product for DCMA inspection (*see* app. supp. R4, tab 873 at 1). Lockheed Martin responded that the discrepancy was a legacy condition located on a component that was undisturbed by RERP modification (*id.* at 1-2).

187. In another instance, DCMA issued a CAR after observing a failure indicator go off during a functional test of an aircraft's engines. Mr. Russ testified that the purpose of the test was to intentionally induce a failure in order to ensure that the system would issue a proper safety warning in the event of an emergency (tr. 4/26, 33-34).

The Bucket Engineering Change Proposal

188. During the course of the RERP program, the parties identified various production tasks that the Air Force wished to add or remove from the RERP work scope (tr. 7/157).

189. Instead of resolving each task under a separate engineering change proposal (ECP), the parties agreed to resolve them all as a "give-and-take of several items" in a consolidated ECP known as the "Bucket ECP." Discussions about resolving the O&A cost impacts under the Bucket ECP began no later than December 2011. (Tr. 7/157, 159-60; *see also* finding 27).

190. The parties agreed to address the cost impacts caused by O&A work as part of the Bucket ECP (tr. 7/157-58, 10/70-73; *see also* app. supp. R4, tab 869 at 44 (Lockheed Martin's draft technical volume for its Bucket ECP proposal)).

191. On October 3, 2012, Lockheed Martin submitted a draft technical volume for the Bucket ECP (app. supp. R4, tab 869; tr. 10/70). Box 13 of the submission identified the title of the change as "Production Bucket ECP – Incorporation of Misc RERP CRs" (app. supp. R4, tab 869 at 2).

192. This draft included Task Number 13, "Excessive Over and Above (O&A)," which addressed cost impacts caused by O&A work (app. supp. R4, tab 869 at 44).

193. Lockheed Martin's draft ECP indicated substantial impact would continue through Lot 7 if these levels of O&A continued. It provided, in part:

When developing the C-5 RERP proposal, O&A was expected to be 3% of the initial RERP Production Unit. However, LM is experiencing roughly 2.5 times that amount of O&A compared to the baseline production touch estimate.

The increase to O&A activity is driving a disruption cost to the RERP contract beyond cost captured on MDR and [Legacy Condition Log] work orders.

Incorporation of this change includes the following tasks:

Production Tasks:

1. Research- Determine if O&A non-conformance, review technical order, legacy blueprint and part numbers, request inspection support, assist quality with statement of condition for non-standard document.
2. Reassignment- locate supervisor for new assignment, clean work area to FOD requirements, replace tools for current job, acquire tools for new assignment, relocate to new assignment, review status and documentation.
3. Standard Sequence Disruption- After O&A action is complete, restart work or work around O&A condition.

(App. supp. R4, tab 869 at 44)

194. On December 18, 2012, Lockheed Martin submitted its proposal for the Bucket ECP to the Air Force's CO, Mr. Jeffrey Joseph. Lockheed Martin's proposal included both a cost volume and a technical volume. (App. supp. R4, tab 871 at 1)

195. This proposal sought to resolve the same O&A impacts included in Lockheed Martin's October 3, 2012 draft ECP (*see* tr. 7/169-70).

196. The proposal's cost volume included Lockheed Martin's pricing methodology, which summarized various credits and debits for the addition and deletion of various tasks, including a total price increase of \$33,525,817 for estimated O&A impacts (app. supp. R4, tab 871 at 20; *see also* tr. 7/160-62).

197. In requesting this price increase, Lockheed sought recovery for impacts to the RERP program resulting from the O&A work it performed on the aircraft (tr. 7/162).

198. Section E of the cost volume included 14 distinct BOE sheets for “Excessive Over and Above (O&A).” Each of the seven lots had one sheet for “Department 3007” (major modification) and another for “Department 3017” (flight line). (App. supp. R4, tab 871 at 384-411)

199. The task description and basis of estimate/rationale for each BOE sheet stated:

When developing the C-5 RERP proposal, O&A was expected to be 3% of the initial RERP Production Unit. However, [Lockheed Martin] is experiencing roughly 2.5 times that amount of O&A compared to the baseline production touch estimate.

The increase to O&A activity is driving a disruption cost to the RERP contract beyond the cost captured on MDR and [Legacy Condition Log] work orders.

(App. supp. R4, tab 871 at 384; *see also* finding 193 regarding Lockheed Martin’s draft ECP)

200. The rationale for each sheet also provided in relevant part:

Incorporation of this change includes the following tasks:

Production Tasks:

1. Research- Determine if O&A non-conformance, review technical order, legacy blue print and part numbers, request inspection support, assist quality with statement of condition for non-standard document. ()

2. Reassignment- locate supervisor for new assignment, clean work area to FOD requirements, replace tools for current job, acquire tools for new assignment, relocate to new assignment, review status and documentation. ()

3. Standard Sequence Disruption- After O&A action is complete, restart work or work around O&A condition.

(App. supp. R4, tab 871 at 384-85)

201. The proposal's technical volume included Task Number 13, "Excessive Over and Above (O&A)," which addressed the cost impacts resulting from O&A work (app. supp. R4, tab 892 at 48).

202. The Description of Change section explained Lockheed Martin's position that the RERP cost impacts were not captured in the amounts paid directly for the performance of O&A work itself and described how it believed its production costs were impacted (app. supp. R4, tab 892 at 48).

203. Lockheed Martin submitted revised Bucket ECP proposals in the months that followed (*see, e.g.*, app. supp. R4, tab 887). For example, on March 12, 2013, Lockheed Martin submitted an updated technical volume including an "Excessive Over and Above (O&A)" task as well as the same Description of Change for the O&A impacts included in the original Bucket ECP proposal that Lockheed Martin submitted (*compare id.* at 48, *with* app. supp. R4, tab 869 at 44).

204. The Air Force's COs eventually requested that Lockheed Martin remove the O&A impacts from the Bucket ECP and that Lockheed Martin instead address the issue separately at a later date (tr. 7/171-72, 10/76).

205. On June 27, 2013, Lockheed Martin submitted an updated cost volume proposal that removed O&A impact costs (app. supp. R4, tab 919 at 1, 4; *see also* tr. 7/174-75).

206. On July 10, 2013, Mr. Pilcher and CO Joseph met to discuss re-inserting the O&A impact costs for Lots 1 through 3 into the Bucket ECP proposal (*see* app. supp. R4, tab 921 at 1-2).

207. On July 16, 2013, Lockheed Martin submitted an updated Bucket ECP proposal removing only the O&A impact costs for Lots 4 through 7 while including costs for Lots 1 through 3 (app. supp. R4, tab 923 at 1).

208. On December 18, 2013, CO Joseph requested that Lockheed Martin remove all O&A costs for Lots 1 through 7 from the Bucket ECP (*see* app. supp. R4, tab 967 at 1, 968 ("Recommended for Removal" Excel tab, Row 53)).

209. Ultimately, Lockheed Martin agreed to remove the costs from the Bucket ECP with the expectation that it retained the right to seek an equitable adjustment for the O&A impacts (tr. 7/186-88).

210. Years later, on June 7, 2016, the parties bilaterally executed Mod. P00219, incorporating the Bucket ECP into the contract. Mod. P00219 did not address O&A impacts for any of the lots. (App. supp. R4, tab 342)

Negotiations and Cost Summit for Lots 6 and 7

211. On October 18, 2013, Lockheed Martin submitted an offer to the Air Force for the Lot 6 installation effort that provided two options. Option #1 priced the Lot 6 installation effort at \$181,300,000 under the condition that the Air Force agreed to incorporate measures limiting O&A impacts and allowing Lockheed Martin to achieve performance in line with its SDD-based expectations. Option #2 priced the Lot 6 installation effort at \$289,873,312 and did not require incorporation of Option #1's O&A-limiting clauses. (App. supp. R4, tab 946)

212. On October 21, 2013, the NTE price for Lots 6 and 7 installation efforts discussed during negotiations expired (app. supp. R4, tab 415 at 72).

213. In the ensuing months, the parties exchanged counteroffers for Lots 6 and 7 that explored various approaches to packaging CLINs and memorializing the parties' efforts to improve efficiency (*see* app. supp. R4, tab 981).

214. On December 9, 2013, representatives from both parties met in person for a "cost summit" at Wright-Patterson Air Force Base (WPAFB) in Dayton, Ohio (tr. 10/131-32; app. supp. R4, tab 415 (Lockheed Martin's slides for the summit)).

215. The purpose of the cost summit was to discuss the convergence between the proposed prices for Lots 6 and 7 and Lockheed Martin's O&A impact hours and costs (tr. 10/132, 136). Due to the expiration of the NTEs for Lots 6 and 7, the parties were pricing Lots 6 and 7 on a clean slate (*see* tr. 10/134-36; app. supp. R4, tab 415 at 72 (stating that NTEs expired on October 21, 2013)).

216. During the cost summit, Lockheed Martin presented slide 26, which demonstrated how the parties originally calculated the pre-award [REDACTED]-hour O&A baseline expectation for the RERP program by using adjusted SDD actuals from two similar SDD B-model aircraft (app. supp. R4, tab 415 at 26; tr. 10/139-40). Lockheed Martin presented several slides reflecting the [REDACTED]-hour O&A baseline expectation to assess and calculate the costs of the O&A impacts (app. supp. R4, tab 415 at 34, 41; *see also* tr. 10/140-41).

217. No participant from either the Air Force or DCMA expressed any disagreement with the [REDACTED]-hour O&A baseline for touch hours (tr. 10/153).

218. Lockheed Martin presented data alleging that the RERP program experienced “significant increases” of actual O&A hours and CAT-2 MDRs since the RERP contract was awarded and that the O&A hours were “staying up and staying at that high sustained level” (tr. 10/142; app. supp. R4, tab 415 at 27-29).

219. Lockheed Martin used statistical analyses of the data to demonstrate how the increased O&A hours were impacting Lockheed Martin’s installation touch labor hours and, consequently, the fixed-price installation CLINs (app. supp. R4, tab 415 at 36-43; tr. 10/146-51).

220. Lockheed Martin’s slides 36 through 41 demonstrated a correlation analysis which determined that “the more non-standard events you have on an aircraft, the greater the likelihood that that aircraft is going to overrun” on production and installation touch labor hours (app. supp. R4, tab 415 at 36-41; tr. 10/148). This analysis demonstrated a correlation greater than 92%, which Mr. Hungerford testified was an “excellent correlation” on an active production line (app. supp. R4, tab 415 at 36-37; tr. 10/147).

221. Lockheed Martin also presented forecasted trends of legacy CAT-2 MDRs and O&A hours projected for Lots 6 and 7 (app. supp. R4, tab 415 at 31; tr. 10/144-45). Mr. Hungerford described the purpose of these forecasts as “a way to show the Government that we were continuing to trend in a really, frankly, from a production perspective, a really bad direction with over and above” (tr. 10/145).

222. Lockheed Martin alleged that its projected costs and proposed prices for Lots 6 and 7 had increased significantly above its original NTE expectation due to the forecasted Lots 6 and 7 production and installation touch labor hours being affected by anticipated high sustained levels of legacy impacts (tr. 10/144-45, 149-51, 153; *see also* app. supp. R4, tab 415 at 41, 43, 57, 65). Slide 57, for example, used learning curves to demonstrate Lockheed Martin’s cost projections and alleged that there were “about [REDACTED] of disconnect between the previous NTE and where the current pricing was” (app. supp. R4, tab 415 at 57; tr. 10/153).

223. Lockheed Martin projected that the Lot 6 installation work would cost the Air Force approximately \$152 million more than the original NTE expectation if the Air Force did not take steps to mitigate O&A impacts (tr. 10/134 (“Lockheed’s current proposal was . . . total price of \$333 million against the previous NTE price of [\$]181.3 [million].”); *see also* app. supp. R4, tab 415 at 12). For Lot 7, Lockheed Martin also projected that installation work would cost the Air Force approximately \$152 million more than the original NTE expectation (tr. 10/134 (“[T]otal price of

\$350 million essentially against an NTE price of just over [(\$)198 million.”); *see also* app. supp. R4, tab 415 at 12).

224. Lockheed Martin described various processes the Air Force could consider implementing in order to mitigate legacy impacts, such as placing a cap on CAT-2 MDRs, creating a permanent government advisory team (GAT), and revising DCMA’s “like-new” standard (*see* tr. 10/151-52; app. supp. R4, tab 415 at 12).

225. Lockheed Martin also presented statistical analyses and forecasts to demonstrate how the implementation of these processes could reduce touch labor hours and costs for Lots 6 and 7 (tr. 10/151; app. supp. R4, tab 415 at 57, 62). Lockheed Martin emphasized that these mitigation processes would help the parties close the gap between Air Force funding and Lockheed Martin’s proposed prices for Lots 6 and 7 if implemented (tr. 10/153-54).

226. On January 30, 2014, Lockheed Martin submitted a revised offer for Lots 6 and 7 installation efforts, again providing two alternative options. Option #1 priced the Lot 6 installation effort NTE \$269,000,000 and the Lot 7 installation effort NTE at \$304,000,000 under the condition that the Air Force agreed to implement actions to reduce O&A impacts. Option #2 proposed an NTE of \$324,000,000 for the Lot 6 installation effort and an NTE of \$377,000,000 for the Lot 7 installation effort and did not require incorporation of Option #1’s O&A-limiting clauses. (App. supp. R4, tab 979)

227. By email dated January 31, 2014, the Air Force presented a counteroffer. In the email, CO Joseph stated that the Air Force was willing to limit “Government Safety of Flight Inspections . . . to 158 for any RERP modified aircraft inducted [after] 12/23/2013” and that “[t]he Government commits to supporting Lockheed Martin to develop an Aero Code that will be used to guide DCMA with respect to quality inspections in recognition of legacy issues associated with a modification program.” (App. supp. R4, tab 981 at 1)

228. On February 14, 2014, the parties held another meeting at WPAFB to discuss the pricing for Lots 6 and 7 (*see* tr. 7/207; app. supp. R4, tab 982 at 1).

229. Lockheed Martin once again presented data demonstrating how non-standard O&A work impacted the RERP modification effort (app. supp. R4, tab 982 at 2-6).

230. Lockheed Martin explained that its estimates for Lots 6 and 7 were based on historic RERP actuals for aircraft P-1 through P-13 and were adjusted to account for potential improvements to efficiency resulting from the implementation of

improvements such as reductions to the volume of MDRs and inspections (app. supp. R4, tab 982 at 8-24).

The H139 Clause and the Parties' Efforts to Mitigate O&A Impacts

231. By letter dated February 18, 2014, Ms. Michelle Pickel, one of the Air Force's COs, appointed an on-site representative (OSR) for a trial period beginning that day through the induction of the first Lot 6 aircraft (estimated to be July 30, 2014) (app. supp. R4, tab 984 at 1-2).

232. The letter stated that "[t]he intent of the OSR is to quickly disposition legacy discrepancies identified by Lockheed in order to significantly reduce the amount of legacy rework accomplished during RERP modifications" (app. supp. R4, tab 984 at 1).

233. CO Pickel's letter also informed Lockheed Martin that the Air Force was temporarily modifying the H106 Clause during the trial period "to allow for adjustments to the process of how legacy defects are determined to be worked" and that "the H106 clause may be permanently revised" at the end of the trial period "to include agreed upon improvements to the process" (app. supp. R4, tab 984 at 1).

234. On September 30, 2014, the parties executed Mod. P00301 (R4, tab 12 at 1). This modification incorporated Contract Clause H139, Joint USAF [United States Air Force] and LM Action Plan Implementation (AUG 2014) (the H139 Clause), which implemented a plan of action to minimize the impact of O&A work on the RERP modification (*id.* at 12-15). Mod. P00301 also updated the H106 Clause by inserting revisions related to the H139 Clause's initiatives (*id.* at 9-12).

235. The H139 Clause required the implementation of certain processes and set limits on Air Force and DCMA actions to reduce the volume of O&A work and its impacts on the RERP installation effort (app. supp. R4, tab 261 at 10-12; *see also* tr. 7/214). These improvements included limiting the number of CAT-2 MDRs to "a total of 400 occurrences per aircraft average per lot" for Lots 6 and 7, full implementation of the OSR "across all aspects of RERP," maintaining the GAT, and limiting inspections to "required Safety of Flight (SOF) and Government Contract Quality Assurance (GCQA) surveillance inspections" as defined in certain contract attachments (R4, tab 12 at 12-15).

236. The H139 Clause also provided that Lots 6 and 7 installation NTE pricing could become null and void if the "Government fail[ed] to implement the On Site Representative, the Government Advisory Team, and/or the Safety of Flight Inspection limitation" (R4, tab 12 at 12).

237. An OSR was defined as “the direct/on-site representative of USAF/Procuring Contracting Officer (PCO) cognizant for all legacy technical issues required for Safety of Flight, Validation of the RERP Modification Installation, and the Minimum Equipment List” (app. supp. R4, tab 261 at 10).

238. One of the OSR’s primary responsibilities was to “provide a rapid response to the Contractor of the discrepancies presented for disposition decisions” (app. supp. R4, tab 261 at 10).

239. OSRs were responsible for determining “all legacy work/no work decisions, and serv[ing] as the primary focal point for all Over & Above (O&A)/Legacy Condition Log (LCL) decisions, and defect classification” (app. supp. R4, tab 261 at 10).

240. The H139 Clause included language stipulating that “[t]he parties agree to revise the R3 clause (H106) to accommodate the role of the OSR in the approval of O&A work prior to the award of Lot 6 install effort” (app. supp. R4, tab 261 at 10).

241. The GAT was comprised of uniformed Air Force personnel from the Air Mobility Command (AMC) who possessed “relevant skill/specialty levels to render technical input to the Contractor’s Modification personnel” (app. supp. R4, tab 261 at 11; tr. 1/185, 2/77-78; *see also* tr. 7/199-200).

242. The H139 Clause defined the GAT’s responsibilities to include:

- a. Provide the OSR(s) any necessary field perspective and experience to support OSR(s) rapid determination of legacy content not to be documented and/or worked by LM.
- b. Provide LM and USG [United States Government] fleet operational feedback to attenuate program focus on conditions and practices that are acceptable from a fleet perspective (mod[ification] program) vs. an original equipment manufacturer (OEM) perspective. If direction to LM or USG is required to adopt recommendations, this direction shall be from the OSR(s).
- c. Provide LM personnel relevant informal training with respect to legacy content, systems, troubleshooting, and processing of the C-5 aircraft in the context of fleet operational experience and USAF technical data.

d. Provide LM relevant lessons learned on fleet practices and equipment that can improve execution of aircraft operations in terms of legacy systems operations and content.

e. GAT lead shall periodically provide USG and LM leadership independent feedback with respect to operations and environment.

(App. supp. R4, tab 261 at 11)

243. Lockheed Martin and DCMA would bring the GAT members into discussions and OSR meetings for input on whether a legacy condition needed to be repaired (tr. 2/78).

244. Mr. Strickland testified that “the experience that the GAT team brought and the insight that they were able to provide during those meetings, which included DCMA . . . was very valuable to us being able to move forward” (tr. 2/79).

245. The GAT also observed Lockheed Martin’s mechanics while they were performing modifications and acted as a “buffer” to assure that Lockheed Martin was performing tasks properly (tr. 1/185-86).

246. Mr. Strickland testified that the implementation of the GAT reduced DMCA inspection requirements because “their expertise help[ed] shed some light on why some of those items on the safety of flight list were invalid” (tr. 2/127-28) and that the GAT “helped drive the overall MDR Category 2 count down” (tr. 2/79).

247. The H139 Clause defined the scope of DCMA’s inspections by tying them to specific lists in order to limit inspections (app. supp. R4, tab 261 at 11; tr. 7/215-16). SOF contractor inspection points (CIPs) were limited to SOF inspections identified in attachment 37, “SOF Inspection List,” which the clause incorporated by reference. GCQA surveillance and inspections were required to be consistent with the GCQA surveillance plan. (App. supp. R4, tab 261 at 11-12)

248. The H139 Clause explicitly required DCMA inspectors to limit final product inspections for safety of flight to “RERP modified or disturbed areas of the contract” (app. supp. R4, tab 261 at 11).

249. The parties also agreed to meet monthly to “evaluate performance of Lockheed Martin and DCMA inspections” to “identify the opportunity to adjust levels of inspections based on performance” and to “review DCMA inspector response times” (app. supp. R4, tab 261 at 11).

250. The revised H106 Clause included updates to the processes for all work initiated on or after September 30, 2014, reflecting the new initiatives promulgated under the H139 Clause (*see* R4, tab 12 at 1, 9-12).

251. This version of the H106 Clause redefined the qualifications of O&A work by restating the previous criteria and recognizing other categories of O&A. Specifically, the revised version enumerated new types of work qualifying as O&A, including the “cannibalization” of parts from other production aircraft when government-furnished property was unavailable and for the correction of “point and fix” legacy conditions during the L-10 and flight line phases. (R4, tab 12 at 9)

252. The revised H106 Clause also provided the following definitions for the three MDR categories:

- 1) Category 1 - Within scope of the RERP contract and is the responsibility of the Contractor under the FFP CLIN.
- 2) Category 2 - Legacy condition repairs meeting the criteria of the scope of the H106 Clause and charged against the O&A CLIN.
- 3) Category 3 - The discrepancy is deemed to have been caused by the Contractor and to be the responsibility of the Contractor under the FFP CLIN until value of the repair exceeds the limit stipulated by the Ground and Flight Risk Clause of the contract.

(R4, tab 12 at 9)

253. The modified H106 Clause adjusted the pre-approval process by requiring Lockheed Martin to first seek approval from an OSR, or alternatively the Legacy Defect Item Board, who would then “make [a] final determination as to whether the discrepancy will be repaired or used ‘as-is’” (R4, tab 12 at 10). If an OSR was not available, Lockheed Martin had discretion to submit a “fast track” MDR and begin working immediately (*id.*).

254. Fast track MDRs were specific to legacy discrepancies and submitted with the understanding that Lockheed Martin was “under the assumption that the condition will meet Category 2 criteria and receive OSR approval afterwards” (R4, tab 12 at 10). The government retained the right to reject a fast track MDR that did not meet the criteria for a CAT-2 MDR, and Lockheed Martin would be liable for the cost and schedule burden for any work already completed (*id.* at 10-11).

255. On November 6, 2014, the parties executed Mod. P00305 to amend the H139 Clause's description of OSRs (app. supp. R4, tab 289). The new version stated:

For the purposes of this contract provision an OSR is a qualified DCMA representative(s) with appropriate level of C-5 experience that is cognizant of all legacy technical issues required for Safety of Flight, Validation of the RERP Modification Installation, and the Minimum Equipment List (MEL). The designated OSR DCMA individuals will make recommendations to the ACO/PCO of all legacy work/no work decisions and serve as the SME [Subject Matter Expert] for all Over & Above (O&A)/Legacy Condition Log (LCL) work/no work recommendations. In addition to these duties the OSR will also make recommendations for defect classification. Any disagreements between the Contractor and the OSR will be forwarded to the resolution board as defined in the R3 clause (H-106).

(*Id.* at 3)

256. DCMA was selective when choosing which of its inspectors would serve as OSRs (tr. 5/101). DCMA appointed personnel with "extensive backgrounds," "C-5 experience through the Air Force," and "intimate knowledge of safety of flight items" in order to adjust away from the "like-new" standard (tr. 5/101-02; *see also* tr. 2/76-77).

257. The OSRs met with Lockheed Martin personnel daily to discuss discrepancies and each party had the opportunity to present its position as to whether a CAT-2 MDR was warranted (tr. 2/39, 5/91-92, 99).

258. If the parties could not reach an agreement as to whether a legacy condition needed to be repaired, they would submit the discrepancy to the WRAFB Engineering Board for a decision (tr. 5/99).

259. According to testimony from various Lockheed Martin personnel, the OSRs' input streamlined the review process and helped reduce the impacts from O&A work on the RERP program (tr. 1/188, 5/41-43, 104-05).

260. Mr. Ferentinos testified that limitations on DCMA inspections reduced the volume of O&A work and its impacts by preventing DCMA from identifying discrepancies unrelated to RERP, which realigned the scope of inspections within Lockheed Martin's baseline inspections from the SDD contract (tr. 1/192-94).

Mr. Strickland testified that capping the total amount of CAT-2 MDRs to an average of 400 per aircraft further reduced O&A impacts (tr. 2/80-81).

261. The implementation of the OSRs, the GAT, and the 400-MDR cap reduced O&A hours to roughly [REDACTED] hours per aircraft, which was significantly lower than the sustained height of O&A impacts for earlier lots (approximately [REDACTED] hours per aircraft) (tr. 11/12-13, 16-19, 26).

262. However, this amount was still significantly higher than Lockheed Martin's baseline expectation of [REDACTED] hours per aircraft (*see* finding 216) and the actual number of O&A hours spent on aircraft P-1 through P-3 (approximately [REDACTED] hours per aircraft) (tr. 11/8-9, 16-19, 21).

Lockheed Martin's Request for Equitable Adjustment

263. On September 26, 2017, Lockheed Martin submitted a request for equitable adjustment (REA) for the impacts of O&A work on the fixed-price installation CLINs for Lots 3 through 5 (app. supp. R4, tab 1123; R4, tabs 48-49).

264. The REA's adjustments to the labor hour data alleged that legacy CAT-2 MDRs and the associated O&A work were responsible for approximately 50% of the excessive installation touch labor hours (app. supp. R4, tab 1123 at 23-25; tr. 10/212).

265. Lockheed Martin's disruption expert, Mr. Neil Gaudion, concluded that the CAT-2 MDRs and the resulting O&A hours disrupted the RERP fixed-price installation work (app. supp. R4, tab 1472 at 133; tr. 12/54, 13/44).

266. Mr. Gaudion provided an expert report to support Lockheed Martin's claim as part of the appeal. The appendices to his report identified and analyzed each CAT-2 MDR for aircraft P-7 through P-27 (app. supp. R4, tabs 1519-1560). Mr. Gaudion testified at the hearing that "the disruption I've calculated is the cumulative effect of these thousands of MDRs that occurred for P-7 to P-27" (tr. 13/45-46). Mr. Gaudion also testified that one could not "determine disruption on an MDR by MDR individual basis in my view" (tr. 13/46).

Lockheed Martin's Claim

267. On October 15, 2018, Lockheed Martin converted its REA into a certified claim in the amount of \$143,529,290 and requested a final decision from the Air Force's CO (R4, tab 2 at 2-3, 26; app. supp. R4, tab 3474 at 1, 25 (annotated claim)). The claim asserted entitlement under the Changes Clause and the H106 Clause relating to legacy O&A impacts to the fixed-price installation CLINs for Lots 3 through 5 (R4, tab 2 at 3-5). We find the CO received appellant's claim dated

October 15, 2018, as the government does not controvert that it did so (gov't brief, *passim*; gov't reply br., *passim*).

268. Lockheed Martin's claim alleged that "excessive O&A work changes resulted in an additional, constructive change in the form of cumulative impacts to the performance of the fixed-price RERP effort" (R4, tab 2 at 21). The claim alleged "a total of [REDACTED] production hours attributable to the cumulative disruptive impacts of O&A changes" (*id.* at 25).

269. Lockheed Martin's claim only sought to recover for impacts associated with O&A work and MDRs that occurred after Mod. P00178 was executed on November 6, 2012 (app. supp. R4, tabs 408 at 9, 436 at 9, 12-13); *see also Lockheed Martin III*, 22-1 BCA ¶ 38,112 at 185,120.

270. The claim alleged that the RERP contract required Lockheed Martin to perform RERP installation work at a fixed price (app. supp. R4, tab 3474 at 2, 4 n.9, 8 n.31, 9, 20). While the claim asserted that O&A work was outside the scope of the RERP contract, it acknowledged that the H106 Clause permitted the Air Force to add legacy O&A work to the contract scope via change orders (*id.* at 3-4).

271. While Lockheed Martin was compensated for labor hours spent directly performing O&A work, its claim asserted entitlement to an equitable adjustment under the Changes Clause for indirect impacts to work under the fixed-price installation CLINs allegedly caused by the additional O&A work (app. supp. R4, tab 3474 at 4-8).

272. Lockheed Martin claimed that for the first three aircraft, the level of O&A work and pre- and post-induction standards was comparable to the parties' experience under the SDD contract (app. supp. R4, tab 3474 at 10, 12, 21). The claim alleged that as the RERP program progressed, however, the Air Force deviated from Lockheed Martin's contractual baseline expectations via DCMA's "like-new" inspection and acceptance standard and the resulting high volume of CAT-2 MDRs and associated legacy O&A work (*id.* at 8-10).

273. To measure the impact to the fixed-price installation CLINs for Lots 3 through 5, Lockheed Martin used actual RERP touch labor hour data, the measured mile method to compare an achieved learning curve during the less-impacted aircraft P-1 through P-3 period with the Lot 3 through Lot 5 period, and adjustments to the actual data to remove hours that were not attributable to O&A impacts (app. supp. R4, tab 3474 at 20-24; *see also* app. supp. R4, tabs 434, 436 at 8-15).

274. In his report, Mr. Gaudion explained that as a general matter, "the measured mile is considered the most reliable approach to quantifying disruption because it eliminates any impacts associated with a contractor's bid assumptions and

performance issues” (app. supp. R4, tab 1472 at 56-57). He added that “it is my opinion that the measured mile method is the most appropriate and reliable method to analyze and quantify the additional touch labor hours incurred by [Lockheed Martin] on the Base Scope RERP work as a result of the disruption from Over and Above work” (*id.* at 59).

275. The [REDACTED] touch labor hours attributable to O&A impacts were converted into dollar amounts using Lockheed Martin’s approved pricing and accounting systems, resulting in a claimed sum certain of \$143,529,290 (app. supp. R4, tab 3474 at 24).

276. Lockheed Martin reduced its sum certain to \$131,888,860 following the Board’s summary judgment decision in *Lockheed Martin III* (app. supp. R4, tabs 1819 at 17, 1826 at 3).

277. Lockheed Martin selected a claim period during the Lot 3 RERP modifications through the end of the Lot 5 modifications comprised of aircraft P-7 through P-27 (*see* app. supp. R4, tab 3474 at 10-15; tr. 11/10). Lockheed Martin chose this period because of the high volume of CAT-2 MDRs, O&A hours, and fixed-price installation touch labor hours (*see* app. supp. R4, tabs 1472 at 63, 3474 at 10-15; tr. 11/9-11).

278. The actual RERP touch labor hour data used to calculate Lockheed Martin’s labor costs are contained in a native Excel spreadsheet file (app. supp. R4, tab 434).

279. To calculate actual labor data for its original REA, Lockheed Martin extracted raw labor hour data from its approved accounting system (tr. 6/20, 11/36-37). Upon converting the REA into a certified claim, a team of Lockheed Martin finance personnel made additional adjustments to the data, validated all of the formulas and calculations Lockheed Martin used, and confirmed that the numbers used in the claim tied back to the raw source data in Lockheed Martin’s accounting system (tr. 6/26-27, 30, 53-54, 11/40; *see also* app. supp. R4, tab 434 (“Data” Excel tab)).

280. The Defense Contract Audit Agency (DCAA) performed an audit and validated the extracted data (app. supp. R4, tab 1277 (“OPN” Excel tab); *see also* tr. 9/21).

281. Lockheed Martin selected aircraft P-1 through P-3 as the learning curve baseline for its claim for several reasons. First, aircraft P-1 through P-3 achieved an actual learning curve of [REDACTED], which was comparable to the [REDACTED] learning curve achieved during the SDD contract. (App. supp. R4, tabs 436 at 6-7, 3474 at 21-22; *see also* app. supp. R4, tab 434 (“LC Calculations” Excel tab))

282. Second, aircraft P-1 through P-3 reflected a learning curve with relatively low disruption compared to both SDD aircraft and later RERP aircraft (app. supp. R4, tab 3474 at 21-23).

283. Subsequently, DCAA's data analytics technical specialist, Ms. Stacey Jones, re-performed and validated the claim's [REDACTED] learning curve baseline calculation and determined that Lockheed Martin's use of aircraft P-1 through P-3 was statistically sufficient and statistically superior to including additional aircraft in the learning curve baseline (app. supp. R4, tab 1277 ("OPN" Excel tab); tr. 9/29-30, 33).

284. Later, Mr. Gaudion analyzed the claim's use of aircraft P-1 through P-3 as a baseline and determined that those aircraft formed a reasonable learning curve baseline (tr. 12/46, 89, 13/43).

285. Lockheed Martin adjusted the data to account for inefficiencies not attributable to O&A work by removing all RERP touch labor hours that were caused by factors other than legacy defects (app. supp. R4, tabs 436 at 8-9, 3474 at 24; *see also* app. supp. R4, tab 434 ("Data" excel tab, columns B, E-H, K-N, Q-T, and X-Z)).

286. Mr. Gaudion analyzed these adjustments and determined that in his opinion, these were properly performed (tr. 12/81).

287. Using the [REDACTED] touch labor hours directly attributable to legacy disruption, Lockheed Martin applied government-audited and approved rates and factors to the data. First, the claim applied a factored allocation of [REDACTED] "Other Hours (Factored/Rate Based)" to the O&A-related touch labor hours. (App. supp. R4, tab 3474 at 24)

288. Next, Lockheed Martin converted the cost of these labor hours to dollar amounts (app. supp. R4, tab 1821; *see also* app. supp. R4, tab 1819 at 12-13). DCAA audited and took no exception to this aspect of Lockheed Martin's claim (*see* app. supp. R4, tab 1819 at 11-16).

289. Mr. Hungerford tasked two of Lockheed Martin's finance analysts, Ms. Kaitlin Hill and Mr. John Greer, with collecting the data for Lockheed Martin's claim (tr. 9/53, 11/91-92).

290. Ms. Hill compiled all of the production labor hour data and Mr. Greer compiled all of the CAT-2 MDR labor hour data (tr. 9/50, 53, 11/91-92).

291. Ms. Hill pulled the production labor hour data from Lockheed Martin's system applications and products (SAP) database, which contains all of Lockheed Martin's accounting reports (tr. 9/50-51).

292. Ms. Hill used Lockheed Martin's accounting data and analysis reporting (ADAR) tool to acquire information from SAP and from three other databases (tr. 9/50-51).

293. The data pulled by Ms. Hill made it possible for Lockheed Martin to segregate standard and non-standard work in a manner that allowed it to differentiate between quality assurance reports and the three MDR categories (tr. 9/52-53).

294. Standard work consisted of anything that Lockheed Martin was contracted to perform, such as the installation of engines under the RERP contract. Non-standard work consisted of work that "would be out of the ordinary," such as re-work resulting from a manufacturing or quality defect. (Tr. 9/52)

295. Similarly, Mr. Greer pulled the CAT-2 MDR labor data from the SAP database using the ADAR tool (tr. 11/91-92).

296. After compiling the data, Mr. Greer summarized the data by CLIN, lot, and shift (tr. 11/92). We find that Lockheed Martin complied with the requirements of the H106 Clause for reporting costs associated with O&A work (*see, e.g.*, findings 19-21, 160, 192-99, 273, 275, 278-79).

297. Mr. Greer provided the same certified claim data to Mr. Gaudion in a manner that allowed Mr. Gaudion to differentiate between L-10 and flight line hours. Mr. Greer also provided Mr. Gaudion with MDR documentation from Lockheed Martin's QAD system. (Tr. 11/92-93)

298. By letter dated December 7, 2018, the Air Force's CO declined to issue a final decision on Lockheed Martin's October 15, 2018 claim, stating that he had to wait until the completion of a fraud investigation (R4, tab 1).⁸

299. On October 3, 2019, Lockheed Martin appealed the CO's deemed denial of its claim to the Board. On October 7, 2019, the Board docketed Lockheed Martin's appeal as ASBCA No. 62209.

⁸ The Air Force did not assert fraud as a defense to this appeal, and provided no evidence thereof.

DECISION

I. The Parties' Contentions

Lockheed Martin argues that each MDR constitutes a written change order entitling it to recovery under the H106 and Changes Clauses (app. br. at 180-83); deviations from its baseline expectations regarding staffing and inspection processes constitute constructive changes to the contract (*id.* at 183-86); and the Air Force breached its implied duty of good faith and fair dealing by directing Lockheed Martin to perform excessive O&A work and by failing to mitigate O&A impacts to the RERP effort (*id.* at 186-93). The Air Force contends that Lockheed Martin has failed to demonstrate its claim by a preponderance of the evidence (gov't br. at 16-17) and that its claimed disruption costs were unreasonable (*id.* at 18-21). Additionally, the Air Force asserts that Lockheed Martin's claim was released via bilateral contract modifications and is barred by the Contract Dispute Act's statute of limitations (*id.* at 21-24; gov't reply br. at 24-28).

II. Legal Analysis Regarding Entitlement

A. Lockheed Martin is Entitled to Recovery Under the H106 and Changes Clauses

We address first whether Lockheed Martin is entitled to recovery under the H106 and Changes Clauses for legacy O&A impacts caused by CAT-2 MDR change orders and by the Air Force's deviations from and constructive changes to Lockheed Martin's contractual baseline expectations regarding staffing and inspection (app. br. at 180), and the Air Force's counterargument that Lockheed Martin has failed to prove its claim by a preponderance of the evidence (gov't br. at 16-17).

In order to prevail on its claim, Lockheed Martin must demonstrate entitlement by a preponderance of the evidence, which the Board defines as proof by a party establishing that its position is more probable than not. *See Ortiz v. Principi*, 274 F.3d 1361, 1365 (Fed. Cir. 2001); *Trade West Constr., Inc.*, ASBCA No. 61068, 22-1 BCA ¶ 38,214 at 185,596 (citing *Jack Heller, Inc.*, ASBCA Nos. 14300, 14376, 72-2 BCA ¶ 9,477 at 44,147). We agree with Lockheed Martin's contention that each CAT-2 MDR within the relevant period constitutes an individual written change order entitling it to recovery in the form of an equitable adjustment under the H106 and Changes Clauses (*see* app. br. at 180-82; app. reply br. at 11).

O&A work was outside the scope of the RERP contract's SOW; however, the Air Force was permitted to direct Lockheed Martin to perform work to repair legacy defects via the H106 Clause (finding 13). The H106 Clause provided in relevant part: "If an R3 activity causes an increase or decrease in the cost of, or the time required

for, performance of any part of the work under this contract, the [CO] will make an equitable adjustment in the contract price, the delivery schedule, or both” (finding 18) (emphasis added). Similarly, the Changes Clause stipulated: “If any such change *causes an increase in the cost of, or the time required for, performance of any part of the work* under this contract, *whether or not changed by the order*, the [CO] shall make an equitable adjustment in the contract price” (finding 3) (emphasis added).

Paragraph (a) of the Changes Clause provided that the CO “may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract” (finding 3). There is no dispute that the government, whether acting through the Air Force or through DCMA, directed Lockheed Martin to perform the extra O&A work—and thus ordered changes to the contract—via CAT-2 MDRs. Each CAT-2 MDR (1) was authorized by DCMA; (2) was in writing; and (3) made changes to the contract by adding O&A tasks to the RERP contract’s work scope (findings 104-06). Nor does the Air Force refute that the extra O&A work caused disruptions to the RERP effort (*see* findings 118-19, 121-53). This is further evidenced by the significant reduction in disruptions to the RERP effort after the parties implemented the H139 Clause’s methods to mitigate O&A impacts for Lots 6 and 7 (findings 234-62). Accordingly, we conclude that Lockheed Martin has met its burden of demonstrating entitlement. *See Trade West Constr.*, 22-1 BCA ¶ 38,214 at 185,596.

B. The Air Force’s Duty of Good Faith and Fair Dealing

Lockheed Martin also alleges that the Air Force violated its implied warranty of good faith and fair dealing by ordering Lockheed Martin to perform excessive O&A work and by failing to take steps to mitigate impacts to the RERP effort caused by O&A work (app. br. at 186-93; app. reply br. at 11). As held by the Federal Circuit, and adhered to by the ASBCA:

The covenant of good faith and fair dealing is an implied duty that each party to a contract owes to its contracting partner. The covenant imposes obligations on both contracting parties that include the duty not to interfere with the other party’s performance and not to act so as to destroy the reasonable expectations of the other party regarding the fruits of the contract.

Centex Corp. v. United States, 395 F.3d 1283, 1304 (Fed. Cir. 2005); *see also WSP USA Solutions, Inc.*, ASBCA No. 62674, 22-1 BCA ¶ 38,219 at 185,629.

This duty applies to the government no differently than it does to private parties. *Centex*, 395 F.3d at 1304. A party’s failure to honor the implied covenant of good faith and fair dealing constitutes a breach of the contract. *Metcalf Constr. Co., Inc. v. United States*, 742 F.3d 984, 990 (Fed. Cir. 2014); *WSP USA Solutions*, 22-1 BCA ¶ 38,219 at 185,629. Because we have already determined that Lockheed Martin is entitled to recovery for impacts caused by O&A work under the H106 and Changes Clauses, we need not address whether the Air Force breached the covenant of good faith and fair dealing.

C. *The Air Force’s Affirmative Defenses are Inapplicable*

The Air Force contends that its affirmative defenses of release and untimeliness bar Lockheed Martin’s claim.⁹ In *Lockheed Martin IV*, the Board determined that none of the contract’s bilateral modifications released Lockheed Martin’s claim. *Lockheed Martin IV*, 22-1 BCA ¶ 38,178 at 185,423; *see also* finding 37. Puzzlingly, the Air Force nevertheless continues to argue that Lockheed Martin’s claim is barred by releases contained in Mod. P00178 and Mod. P00219 (gov’t br. at 21-23; gov’t reply br. at 24-28). The Air Force also persists with its assertion that the Contract Disputes Act’s six-year statute of limitations bars Lockheed Martin’s claim (gov’t br. at 23-24; gov’t reply br. at 27-28). Specifically, the Air Force contends that Mr. Gaudion’s learning-curve-based report was not based on an individual MDR-by-MDR basis and thus Lockheed Martin’s claim accrued no later than July 2012—more than six years before Lockheed Martin’s October 15, 2018 claim was filed (gov’t br. at 24)—despite the Board’s prior ruling that Lockheed Martin’s claim is timely to the extent that it is based on MDRs approved on or after October 15, 2012. *Lockheed Martin III*, 22-1 BCA ¶ 38,112 at 185,128-29; *see also* finding 36. As discussed in the Findings of Fact, Lockheed Martin’s claim only seeks recovery for O&A work associated with MDRs issued after Mod. P00178 was executed on November 6, 2012 (finding 269). The Board has held: “We agree with appellant that Lockheed Martin’s claim must not have accrued on or before November 6, 2012 to be timely due to its retrospective release of claims in Modification No. P000178” *Lockheed Martin III*, 22-1 BCA ¶ 38,112 at 185,120.

⁹ The Air Force also presented Lockheed Martin’s alleged failure to comply with the contract’s notice requirements as an affirmative defense in its answer (answer at 41-42). However, since the Air Force never raised this defense during the hearing or in its post-hearing briefs, we find that the Air Force has waived it. *See SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1319 (Fed. Cir. 2006); *Johnson & Son Erector Co.*, ASBCA No. 23689, 86-2 BCA ¶ 18,931 at 95,610 (“It is well-established that matters not argued in a brief are determined to be waived.”).

Board Rule 20 allows either party to file a motion for reconsideration within 30 days of receipt of a copy of a Board decision. Reconsideration is appropriate where the Board “made mistakes in the findings of fact or conclusions of law, or by failing to consider an appropriate matter” *Relyant, LLC*, ASBCA No. 59809, 18-1 BCA ¶ 37,146 at 180,841. However, “[i]t is well established that a motion for reconsideration is not the place to present arguments previously made and rejected.” *Id.* (citing *Dixon v. Shinseki*, 741 F.3d 1367, 1378 (Fed. Cir. 2014)). Not only did the Air Force fail to file a timely motion for reconsideration to address these decisions, but it also has failed to identify any mistakes of law or fact made by the Board; instead, it simply rehashes prior arguments. Accordingly, the Air Force’s contentions in support of these affirmative defenses are improperly raised at this point and, in any event, no more persuasive now than they were when we earlier rejected them.

III. Legal Analysis Regarding Quantum

Having found that Lockheed Martin is entitled to recover for impacts caused by O&A work under the H106 and Changes Clauses, the next step in our analysis is to determine quantum. After amending its sum certain following the Board’s summary judgment decision in *Lockheed Martin III*, Lockheed Martin now seeks to recover \$131,888,860 (finding 276). The Board “previously has ‘accepted the measured mile approach as an appropriate method of determining impact to productivity’” *Lockheed Martin IV*, 22-1 BCA ¶ 38,178 at 185,411. Claims alleging disrupted work require the contractor to prove government responsibility for the additional costs and that it was impracticable to prove its losses directly. *See, e.g., States Roofing Corp.*, ASBCA No. 54860 *et al.*, 10-1 BCA ¶ 34,356 at 169,668 (citing *Propellex Corp. v. Brownlee*, 342 F.3d 1335, 1339 (Fed. Cir. 2003) and *Servidone Constr. Corp. v. United States*, 931 F.2d 860, 861 (Fed. Cir. 1991)).¹⁰ We conclude that Lockheed Martin has met these requirements here.

¹⁰ *States Roofing* articulates four elements of proof necessary to recover using the modified total cost approach. These are: “(1) the impracticability of proving its actual losses directly; (2) the reasonableness of its bid; (3) the reasonableness of its costs; and (4) its lack of responsibility for the added costs.” *States Roofing Corp.*, 10-1 BCA ¶ 34,356 at 169,668. It is unnecessary that we consider element two, as the work in question was extracontractual. Nor must the Board address element three, the reasonableness of costs asserted by Lockheed Martin, as the government adduced no expert or percipient witness testimony/evidence (other than making the argument) that the added costs were not reasonable.

As the party seeking damages in this appeal, Lockheed Martin bears the burden of establishing quantum by a preponderance of the evidence. *BAE Sys. San Francisco Ship Repair*, ASBCA Nos. 58810, 59642, 16-1 BCA ¶ 36,404 at 177,506-07; *Arrow, Inc.*, ASBCA Nos. 41330, 41338, 94-1 BCA ¶ 26,353 at 131,072. However, a contractor is not required to prove its damages with absolute certainty or mathematical exactitude; it is sufficient if the contractor provides a reasonable basis for its computation, even if the result is an approximation. *BAE Sys.*, 16-1 BCA ¶ 36,404 at 177,503-04 (citing *Wunderlich Contracting Co. v. United States*, 351 F.2d 956, 968 (Ct. Cl. 1965)); *see also Parsons Evergreen, LLC*, ASBCA No. 58634, 18-1 BCA ¶ 37,137 at 180,821, *partially overturned in non-relevant part, Parsons Evergreen, LLC v. Sec’y of Air Force*, 968 F.3d 1359 (Fed. Cir. 2020) (costs incurred must be proved with “sufficient certainty” and be “more than mere speculation”). After the contractor makes a prima facie showing of quantum recovery, the burden shifts to the government to contest the contractor’s case. *BAE Sys.*, 16-1 BCA ¶ 36,404 at 177,507. Should the government fail to adequately do so, the contractor’s prima facie case stands uncontroverted, and the contractor is deemed to have met its burden of proof. *Id.*

To calculate its damages resulting from O&A impacts for Lots 3 through 5, Lockheed Martin used actual RERP touch labor hour data, the measured mile method, and adjustments to the actual data to remove hours that were not attributable to O&A impacts (findings 273, 296). The measured mile method “provides a comparison of a production period that is impacted by a disruption with a production period that is not impacted.” *Bay West, Inc.*, ASBCA No. 54166, 07-1 BCA ¶ 33,569 at 166,302. Mr. Gaudion explained in his report that in cases of disruption, “the measured mile is considered the most reliable approach . . . because it eliminates any impacts associated with a contractor’s bid assumptions and performance issues.” He added, “it is my opinion that the measured mile method is the most appropriate and reliable method to analyze and quantify the additional touch labor hours incurred by [Lockheed Martin] on the Base Scope RERP work as a result of the disruption from Over and Above work.” (Finding 274)

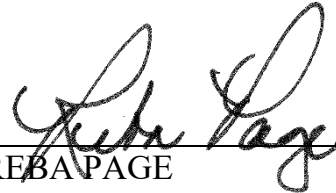
Using the measured mile method and its government-audited and approved labor rates and factors, Lockheed Martin calculated its damages to be \$131,888,860 (findings 275-97). Lockheed Martin’s data and methods were corroborated by Mr. Gaudion’s report (findings 274, 284, 286), a DCAA audit (findings 280, 283), and unrebutted witness testimony from Lockheed Martin finance personnel (*see* findings 289-97). Based on the record and the aforementioned findings, Lockheed Martin has met its burden of establishing a prima facie case with respect to quantum. While the Air Force contends that Lockheed Martin has failed to prove quantum by a preponderance of the evidence (gov’t br. at 16-21), it does not provide any valid basis refuting the evidence presented by Lockheed Martin, and thus it has failed to defeat Lockheed Martin’s prima facie case of quantum recovery. *BAE Sys.*, 16-1 BCA ¶ 36,404 at 177,507. In fact, during the course of the 13-day hearing, the Air Force

never even called a single expert witness to contest any of Lockheed Martin's quantum evidence, including Mr. Gaudion's report. Accordingly, we hold that Lockheed Martin is entitled to recover \$131,888,860 for impacts to the RERP effort for Lots 3 through 5 caused by O&A work.

CONCLUSION

For the foregoing reasons, Lockheed Martin has met its burden of demonstrating that it is entitled to recovery under the H106 and Changes Clauses and that the quantum it seeks is reasonable. Accordingly, the appeal is sustained. In accordance with finding 267, interest on the claim shall run from October 15, 2018 until paid.

Dated: April 22, 2024



REBA PAGE
Administrative Judge
Armed Services Board
of Contract Appeals

I concur



OWEN C. WILSON
Administrative Judge
Acting Chairman
Armed Services Board
of Contract Appeals

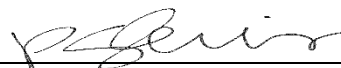
I concur



J. REID PROUTY
Administrative Judge
Vice Chairman
Armed Services Board
of Contract Appeals

I certify that the foregoing is a true copy of the Opinion and Decision of the Armed Services Board of Contract Appeals in ASBCA No. 62209, Appeal of Lockheed Martin Aeronautics Company, rendered in conformance with the Board's Charter.

Dated: April 23, 2024



PAULLA K. GATES-LEWIS
Recorder, Armed Services
Board of Contract Appeals