NOC gideon lens

Northrop Grumman (NOC) - Gideon-Lens Equity Research

Date: 2026-04-26. Analyst: Codex ER2. Latest price used: $575.11. Market cap used: approximately $81.7B. Fiscal year end: December 31.

VERDICT BLOCK

Verdict: PASS

Scorecard:

Gate	Result	Notes
Management	YELLOW	Coherent team, but B-21 charges and CFO transition matter
Moat	PASS	Classified procurement moat passes 2046 test, with pricing limits
P/E <= 15 on confident EPS at TTM + 5 calendar years	YELLOW	Base clears by only 1.1%
Compounder Score	Audited 47 / 100	47/100; Northrop has a real defense moat and cash conversion, but audited ROIIC is zero-credit because it is not calculable and valuation is far from a 20% return setup.
Business Quality Score	Audited 46 / 80	46/80; quality is above average for a defense prime, but government pricing limits, B-21/Sentinel capital intensity, Space noise, and program-level opacity cap the score.
20% Return UW Score	Audited 1 / 20	1/20; base IRR is 1.9%, the bear case is negative, and a 20% outcome would require far higher EPS or terminal value than the local evidence supports.

One-line thesis (or reason to pass): Northrop Grumman is a strategically important, moaty defense prime, but the current price offers too little margin of safety for a business still carrying B-21, Sentinel, Space, cash conversion, and buyback-execution risk.

Kill / trigger criteria:

- BUY trigger: price below $500, implying roughly 16% cushion to base-case FY+5 EPS x 15.
- PASS triggers: Aeronautics plus Space margin below 9.5% for the next two quarters; TTM FCF below $3.1B; FY+5 share-count path drifting toward 134M-135M rather than 132M.
- Upgrade to BUY conditions: cleaner B-21 and Space margin evidence, sustained FCF above the buyback/dividend/capex burden, and either a price below $500 or a raised confident FY+5 EPS case above $42.

Position sizing if bought: 0% today. If the trigger is met with evidence intact, cap initial sizing at 1.5%-2.0% because program execution and government-contracting economics can impair earnings and free cash flow at the same time.

Stage 0 - Time Anchor

Today is 2026-04-26. Northrop Grumman uses a December 31 fiscal year end. The most recently reported quarter is Q1 FY2026, period ended March 31, 2026, reported April 21, 2026. The TTM anchor is Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026, which creates a TTM period ending March 31, 2026. The forward horizon is TTM plus five calendar years: March 31, 2031. All compounding and the P/E 15 test are anchored to that five-year window, not to the last full fiscal year.

Stage 1 - Disqualifier Sweep

ROIC is yellow-green: the proxy-adjusted three-year ROIC figure is above 15%, but unadjusted measures and fixed-price development charges keep this from being a clean compounder signal. FCF conversion is green-yellow: annual cash

generation is real, but working capital and program timing can absorb cash in bad quarters. Net debt / EBITDA is green-yellow and appears manageable. End-markets are green because U.S. and allied defense priorities support demand across deterrence, missile defense, sensors, restricted aircraft, and space. Governance is green-yellow: no obvious related-party or dilution problem surfaced, but disclosure is inherently limited by classified work and program-accounting judgments. AI disruption exposure is green-yellow because AI is more likely to enhance mission systems than replace Northrop outright, though autonomy and commercial space architectures can shift value. Pricing power is yellow: customer captivity exists, but government procurement and affordability pressure cap economics.

Management

Management earns a yellow gate, not a fail. Kathy Warden has led the company since 2019, and the strategic pattern is coherent: concentrate on strategic deterrence, restricted programs, sensors, space, missile defense, weapons, solid rocket motors, and other long-cycle national-security priorities. The capital allocation record is also coherent rather than empire-building. Management has pruned assets, invested in capacity, paid dividends, and repurchased shares while keeping incentives tied to FCF, ROIC, and relative TSR. The yellow comes from execution risk, not from strategic incoherence. B-21 has already created material fixed-price cost pain, Space has EAC noise, adjusted ROIC is only mid-teens rather than obviously exceptional, and John Greene became CFO in January 2026, so finance stewardship under the new CFO is still unproven. In Gideon terms, this is an investable management team, but not one strong enough to offset a thin price cushion.

Moat

The moat appendix passes. Northrop has a real high-trust procurement moat built from classified access, switching costs, certification, long-cycle program incumbency, domain expertise, and physical capacity. Mission Systems is the cleanest moat asset because sensors, electronic warfare, radar, processing, and related mission-critical content have strong margins and repeat relevance across platforms. Aeronautics and Defense have durable demand but more visible execution risk, especially around B-21, Sentinel, weapons ramps, and capacity learning curves. Space is strategically protected but has the hardest 20-year architecture question, because modular space layers, commercial launch economics, proliferated constellations, and multi-vendor procurement can change where profit pools sit. The 2046 test passes with yellow edging: a plausible 2046 Northrop still makes money in stealth, restricted aircraft, sensors, missile defense, strategic deterrence, space payloads, and integrated mission systems, but the moat is not equivalent to unlimited pricing power.

Stage 5 Synthesis

The synthesis model is arithmetically clean: 11 of 11 tie-out checks passed. The base case builds to FY+5 revenue of $53.954B, operating income of $6.494B, net income of $5.116B, and EPS of $38.77. At the latest price of $575.11, the required FY+5 EPS for a 15x P/E is $38.34, so the base case clears by only 1.1%. That is the whole decision in miniature. A spreadsheet can say "passes"; the Gideon framework asks whether the EPS is confident enough and whether the cushion is large enough. Here, the answer is no.

Case	FY+5 Revenue	FY+5 OI	FY+5 NI	FY+5 EPS	Implied Price at 15x	Cushion vs $575.11
Bear	$46.762B	$4.690B	$3.518B	$26.12	$391.74	(31.9)%
Base	$53.954B	$6.494B	$5.116B	$38.77	$581.55	1.1%
Bull	$59.223B	$7.650B	$6.179B	$47.86	$717.93	24.8%

The segment mix is sensible but not free. Aeronautics base case assumes a 4.8% CAGR from the TTM base, with B-21, restricted work, and TACAMO support, but without assuming an F/A-XX win. Defense assumes stronger growth from Sentinel, weapons, solid rocket motors, IBCS, and missile defense, but with margin upside capped by government contracting and execution risk. Mission Systems is the highest-quality earnings stream, with mid-teens margin and a 4.8% growth case after a strong FY2025 but slower Q1 FY2026. Space recovers only modestly from NGI, GEM 63XL, and recent decline pressure. The combined model is credible, but it requires several things to go right at once: B-21 improves without fresh charges, Space stops dragging, Defense ramps without new EAC issues, and buybacks reduce shares to roughly 132M by the horizon.

The buyback dependence matters. The red team identified FY+5 diluted share count as the most likely optimistic Stage-5 number. If the model ends nearer 134M-135M diluted shares, the P/E 15 gate breaks even if segment operating assumptions are broadly right. That is not a tiny footnote; it means cash conversion, capex, dividends, program charges, and repurchase prices are all part of the valuation case.

Red Team

The strongest bear point is correlation. A B-21, Sentinel, or Space stumble does not merely hit one operating line; it can hit operating income, free cash flow, and buybacks at the same time. That is exactly the kind of compound error that a 1.1% valuation cushion cannot absorb. The forced-exit signal is practical: if the next two quarters show Aeronautics plus Space margin below 9.5% and TTM FCF below $3.1B, the thesis should remain PASS or move to exit for anyone holding. Red team's verdict is PASS for new money today, with WATCH only if the price falls enough to create a real cushion or if the company proves base EPS can rise without leaning on repurchases.

Kill / Trigger Criteria

- BUY trigger: price below $500 while the base FY+5 EPS case remains at least $38.77, creating roughly 16% cushion to the P/E 15 threshold.
- Operational upgrade trigger: B-21 and Space margins normalize for multiple quarters without fresh fixed-price charges, and Defense growth remains above mid-single digits without margin deterioration.
- Financial upgrade trigger: TTM FCF stays above $3.5B and management can fund capex, dividends, and at least $1.5B per year of buybacks without balance-sheet strain.
- PASS trigger: share-count path drifts toward 134M-135M, Aeronautics plus Space margin stays below 9.5%, or new EAC/program charges reopen the fixed-price development concern.
- Thesis break: NOC needs bull-case results across multiple segments merely to satisfy the price test, or government procurement shifts more value toward modular/open systems where Northrop's prime moat weakens.

Analyst Flags

The foundation had one important repair: FMP FY2025 consolidated operating income differed from the SEC 10-K by $231M, so the official SEC figure of $4.511B controls. QFR verified the repair and cleared the foundation for Wave 1. FMP quarterly intersegment eliminations are incomplete after Q1 FY2025, so official SEC filings and QF reconciliation control consolidated TTM figures. Northrop does not disclose product-level revenue or margin for B-21, Sentinel, weapons, restricted programs, Space payloads, or Mission Systems sub-lines, so all product commentary is driver analysis rather than dollar-level modeling. Several IR PDF local raw downloads timed out, but the same IR/SEC materials were accessed live and the numerical base is tied to SEC filings, FMP stable endpoints, and the reviewed QF file.

Final call: PASS for new money at $575.11. This is a serious defense-quality watch-list name, not a broken business, but the ER2 standard is stricter than "good company near fair value." At this price, Northrop asks the investor to accept yellow management, yellow valuation cushion, and execution-linked cash risk at the same time.

Appendix A - Company Primer

Northrop Grumman (NOC) - Appendix A: Company Primer

Date prepared: 2026-04-26 Role: ER2 Subagent A, Primer Primary numerical source: `C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\quant_foundation.md`

Stage 0 - Time Anchor

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Primer Framing

Northrop Grumman is a large, U.S.-based aerospace and defense prime contractor whose core job is to deliver technically difficult national-security systems that governments cannot buy off a shelf. The company designs, develops, integrates, produces, and sustains military aircraft, strategic deterrent systems, missile defense systems, sensors, communications equipment, electronic warfare systems, space payloads, satellites, launch-related propulsion, and classified mission systems. That sounds broad, but the business is not a normal industrial conglomerate. It is closer to a portfolio of long-cycle government programs, each with its own technical milestones, budget line, customer office, production ramp, cost estimate, and political constituency.

For a first-time reader, the most useful mental model is this: Northrop Grumman sells capability, not units. A radar shipset, bomber airframe, missile motor, command-and-control node, or classified space payload is valuable because it sits inside a larger defense architecture. The customer is usually the U.S. government, and frequently the Department of Defense or intelligence community. In FY2025, U.S. government end-customer sales were $35.183 billion, or 84% of company sales, with international customers at $5.990 billion, or 14%, and other customers at $781 million, or 2% [SEC FY2025 10-K](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm). The company also has meaningful foreign military sales exposure, but those are often contracted through the U.S. government and therefore share parts of the U.S. procurement machinery.

The ER2 reader should start with humility. Northrop has attractive traits: hard-to-replicate capabilities, classified work, multi-decade programs, a large backlog, geopolitical demand, and a customer that values performance over lowest nominal price when the mission is critical. It also has the classic defense-prime tradeoffs: modest organic growth, high working-capital seasonality, cost-estimate risk on long-duration contracts, fixed-price exposure, budget and continuing-resolution risk, and periods when shareholder returns rely more on capital deployment than on spectacular reinvestment economics. The quantitative foundation records FY2025 FMP ROIC at 9.2% and ROCE at 11.4%; those are not the numbers of an obviously 20%+ ROIC compounder. The primer therefore frames Northrop as a potentially durable cash compounder only if the forward model demonstrates better economics than the unadjusted headline ROIC suggests.

What The Company Does

Northrop Grumman is organized around four reportable segments: Aeronautics Systems, Defense Systems, Mission Systems, and Space Systems. The 2025 10-K states that the company generally organizes segments by the nature of products and services offered, and that segment operating income and margin are the profitability measures used by the chief operating decision maker for resource allocation [SEC FY2025 10-K](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm). That is important for ER2 because the investment case should be built from segment-level economics rather than a top-down "defense is strong" narrative.

The company sells through direct capture and contracting processes, not self-serve distribution or channel-led software sales. Business development begins years before a contract award: the company funds engineering, prototypes, proposal teams,

facilities, security infrastructure, supply-chain relationships, and customer relationships. Once a program is awarded, revenue is recognized over time on long-term contracts, with margins depending on contract type, execution, customer funding, and changes in estimates at completion. The sale is not final in the way a consumer sale is final. A program may run for decades, but the customer can change quantities, funding timing, priorities, specifications, and contract terms. This is why backlog, contract mix, and EAC adjustments matter as much as bookings.

The customer problem is national-security capability under technological and geopolitical pressure. In Aeronautics, the customer needs survivable aircraft, strike platforms, air dominance, battle-management aircraft, uncrewed systems, and classified air systems. In Defense Systems, the customer needs strategic missiles, missile defense, precision weapons, tactical rocket motors, command-and-control systems, and integrated deterrence. In Mission Systems, the customer needs sensors, microelectronics, radars, electronic warfare, communications, C4ISR, and mission-enabling electronics that make platforms useful. In Space Systems, the customer needs satellites, payloads, ground systems, missile warning, missile defense, launch-related products, and classified space capabilities.

Demand is not purely cyclical in the normal industrial sense. It is shaped by threat perception, defense budgets, congressional appropriations, customer urgency, production capacity, technical readiness, and program execution. That creates a business with unusually durable demand signals but also unusual governance constraints. Northrop cannot simply raise price because demand is strong; government contracting rules, negotiated margins, cost allowability, audits, and competition limit pricing freedom. At the same time, a trusted incumbent with rare technical capability can be difficult to dislodge once embedded in a mission-critical architecture.

Revenue Architecture

Northrop produced FY2025 consolidated sales of $41.954 billion. The segment sales before intersegment eliminations were Aeronautics Systems at $12.992 billion, Mission Systems at $12.506 billion, Space Systems at $10.771 billion, and Defense Systems at $8.002 billion. Intersegment eliminations were negative $2.317 billion, so the sum of segment sales exceeded consolidated sales. Using consolidated sales as the denominator, Aeronautics represented about 31.0% of revenue, Mission Systems about 29.8%, Space Systems about 25.7%, Defense Systems about 19.1%, and eliminations about negative 5.5%. Those figures come from the cleared quantitative foundation and match the FY2025 10-K segment table.

On a TTM basis ending March 31, 2026, consolidated revenue was $42.367 billion and consolidated operating income was $4.927 billion. TTM segment revenue was $13.461 billion for Aeronautics, $12.560 billion for Mission Systems, $10.683 billion for Space Systems, and $8.096 billion for Defense Systems, with intersegment eliminations and consolidation reducing revenue by $2.433 billion. TTM operating income by segment was $1.301 billion for Aeronautics, $1.899 billion for Mission Systems, $1.135 billion for Space Systems, and $876 million for Defense Systems. Mission Systems is the highest-margin segment in the current base, with a TTM operating margin of 15.1%, while Aeronautics, Defense, and Space sit around the high single digits to low double digits.

Aeronautics Systems

Aeronautics Systems is the aircraft and advanced air-systems business. In plain English, it builds and supports expensive military aircraft and related air systems, including stealthy strike aircraft, crewed and uncrewed platforms, airborne battle management, and restricted programs. Its named program set includes B-21, F-35 work, E-130J TACAMO, Triton, and legacy production lines such as F/A-18 that are winding down. FY2025 sales were $12.992 billion and operating income was $813 million, a 6.3% margin. The margin was depressed by program-specific charges and the business improved sharply in Q1 FY2026: sales increased 17% year over year, operating income was $305 million, and operating margin was 9.3%, helped by the absence of the prior-year B-21 loss provision and higher B-21/restricted activity [Q1 FY2026 10-Q](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm).

The core underwriting question for Aeronautics is whether B-21 and restricted aircraft work can grow into a healthier production-margin base without requiring repeated fixed-price charges or excessive capital. Management disclosed in Q1 FY2026 that Northrop reached an agreement with the U.S. Air Force to expand B-21 production capacity and increase the aircraft production rate, including the sale of a company-owned test asset that accelerated revenue but did not change expected LRIP deliveries [Q1 FY2026 release](https://investor.northropgrumman.com/static-files/06506d55-017f-427c-853b-c3bba953e3eb). The transcript adds that the agreement created potential for better long-term program economics and that the company expects roughly $200 million of additional 2026 capex to support B-21 capacity [Q1 FY2026 transcript](https://investor.northropgrumman.com/static-files/df7f5e17-9980-48f7-a2a6-269a5ad084f6). This is a good example of the dual nature of Northrop: strategic demand is strong, but the company may have to reinvest ahead of cash

returns.

Defense Systems

Defense Systems covers strategic deterrent systems, advanced tactical weapons, missile defense solutions, command-and-control, propulsion, and related sustainment. In a non-jargon translation, it is where Northrop builds parts of the missile, munition, air-defense, and strategic-deterrence stack. FY2025 sales were $8.002 billion and operating income was $871 million, a 10.9% margin. TTM sales were $8.096 billion and TTM operating income was $876 million, a 10.8% margin. The segment grew Q1 FY2026 sales 5% year over year, or 10% organically after the training-services divestiture, driven by Sentinel ramp, tactical solid rocket motors, and the Integrated Battle Command System portfolio [Q1 FY2026 10-Q](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm).

Defense Systems is strategically attractive because missile defense, tactical rocket motors, integrated battle command, and nuclear modernization sit near the center of current defense priorities. But this is not a pure volume story. The segment has a mix of cost-type and fixed-price work, and margins can move with net EAC adjustments. Sentinel is an especially important growth driver and risk source. It is tied to U.S. strategic deterrence, a durable priority, but large defense development programs can face schedule, cost, and political scrutiny. The ER2 read-through is that Defense Systems may deserve a durable demand multiple if it can turn ramping strategic programs into steady low-double-digit operating margins without accumulating unrecovered cost growth.

Mission Systems

Mission Systems is the sensors, electronics, communication, radar, electronic warfare, C4ISR, microelectronics, marine, and restricted mission-solutions business. If Aeronautics and Space build platforms and payloads, Mission Systems often supplies the nervous system: the radars, sensors, electronic-protection equipment, communications, networking, and mission electronics that allow a platform or architecture to detect, communicate, jam, navigate, and act. FY2025 sales were $12.506 billion and operating income was $1.827 billion, a 14.6% margin. TTM sales were $12.560 billion and TTM operating income was $1.899 billion, a 15.1% margin.

This is the cleanest margin compounder candidate inside Northrop. It has broad program exposure, less single-platform concentration than Aeronautics, and recurring demand from modernization, threat evolution, sensor upgrades, and restricted mission growth. Q1 FY2026 sales rose only 2%, but operating income increased 20% and margin rose to 15.1%, helped by restricted airborne radar programs, marine systems, and higher net EAC adjustments [Q1 FY2026 10-Q](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm). The caveat is that Mission Systems' excellent margin profile is not immune to mix, customer audits, technology refresh cycles, or adverse program estimates. It is higher quality than the company average, but it is still a government-contracting business rather than a pricing-unconstrained component franchise.

Space Systems

Space Systems designs, develops, integrates, produces, and operates space, missile-defense, and launch-related systems. It includes satellites, spacecraft systems, sensors and payloads, ground systems, missile defense systems and interceptors, and launch vehicles or propulsion-related content. FY2025 sales were $10.771 billion and operating income was $1.183 billion, an 11.0% margin. TTM sales were $10.683 billion and TTM operating income was $1.135 billion, a 10.6% margin.

Space is strategically important but analytically uneven. It sits in attractive areas: proliferated low-earth-orbit architectures, missile warning and tracking, restricted space, NASA and civil space, launch support, and missile defense. At the same time, Northrop's recent Space numbers include program wind-down and execution noise. Q1 FY2026 Space sales declined 3% year over year as NGI closeout activity from the prior year rolled off and a GEM 63XL launch-anomaly-related unfavorable EAC adjustment reduced sales and profit. Operating income fell 17%, and the Q1 margin dropped to 9.5% [Q1 FY2026 10-Q](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm). The segment still has growth areas, including SDA satellite programs and restricted space, but ER2 should not assume every space dollar is high quality or high return.

Customer And Contract Economics

Northrop's customer concentration is the first fact to remember. The 2025 10-K says sales to the U.S. government were 84% of FY2025 sales, down from 87% in FY2024 and 86% in FY2023 [SEC FY2025 10-K](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm). By segment, FY2025 U.S. government exposure was 82% in Aeronautics, 82% in Defense Systems, 80% in Mission Systems, and 93% in Space

Systems. International exposure matters most in Aeronautics and Mission Systems, while Space is overwhelmingly U.S.-government oriented.

Contract type is the second fact. FY2025 sales were almost exactly split between cost-type and fixed-price contracts: $20.944 billion cost-type and $21.010 billion fixed-price. Segment mix varies. Aeronautics was 46% cost-type and 54% fixed-price, Defense was 53% cost-type and 47% fixed-price, Mission was 45% cost-type and 55% fixed-price, and Space was 58% cost-type and 42% fixed-price [SEC FY2025 10-K](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm). Cost-type work generally lowers catastrophic margin risk because allowable costs are reimbursed with a fee structure, but it can cap upside. Fixed-price work can produce attractive margins when execution is smooth, but it pushes cost-overrun risk to the contractor. A long-cycle defense prime's margin history is therefore not just a function of scale; it is a function of bid discipline, engineering accuracy, supplier performance, labor availability, inflation, and the accumulated revisions to EACs.

Northrop's revenue also has an unusual cash-flow pattern. Q1 is often a cash-use quarter because working capital builds early in the year and collections/cash generation skew later. The Q1 FY2026 release reported net cash used in operating activities of $1.656 billion and free cash flow of negative $1.823 billion, comparable to the prior-year period. Management said cash flows are historically weighted to the second half, with the most significant cash generation in Q4 [Q1 FY2026 release](https://investor.northropgrumman.com/static-files/06506d55-017f-427c-853b-c3bba953e3eb). The QF's TTM cash-flow base is healthier than the Q1 snapshot: TTM CFO was $4.666 billion, capex was $1.361 billion, and TTM FCF was $3.305 billion.

Backlog gives the business visibility, but it is not a bond. Q1 FY2026 net awards were $9.8 billion and backlog was $95.6 billion. The earnings release highlighted $4.9 billion of restricted-program awards, plus F-35, infrared countermeasures, and Triton awards [Q1 FY2026 release](https://investor.northropgrumman.com/static-files/06506d55-017f-427c-853b-c3bba953e3eb). Backlog can convert to revenue over many years, and some work depends on appropriations, options, customer decisions, and technical progress. The release's backlog table showed $44.068 billion funded and $51.540 billion unfunded as of March 31, 2026. That is attractive visibility, but the unfunded portion is more conditional than funded backlog.

How A Dollar Becomes Profit

At the consolidated level, the QF records TTM revenue of $42.367 billion and operating income of $4.927 billion, a margin of 11.6%. The path from revenue to profit is not a simple gross-margin waterfall like a consumer-products company. It is the output of thousands of contract cost estimates, allowable-cost rules, program mix, direct labor absorption, supplier performance, overhead allocation, pension accounting, unallocated corporate expense, and EAC changes. In Q1 FY2026, total net EAC adjustments were negative $80 million: $660 million favorable and $740 million unfavorable. That spread is a useful warning. Gross program execution can look very different below the net number [Q1 FY2026 10-Q](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm).

Aeronautics turns revenue into profit through aircraft engineering, production learning curves, factory utilization, subcontractor control, and negotiated program economics. Its FY2025 margin was only 6.3%, while TTM margin improved to 9.7%. A successful B-21 ramp could improve absorption and normalize margins toward management's low-to-mid-9% 2026 guidance, but the segment is capital and execution intensive. The B-21 example shows why a dollar of revenue is not always equal quality: revenue acceleration from selling a test asset can help near-term sales, while capacity expansion demands capital before full production economics are proven.

Defense Systems generates profit from a mix of strategic missile development, missile-defense work, tactical weapons, propulsion, and command-and-control. Its FY2025 and TTM margins around 11% suggest a steadier business than Aeronautics, but it is exposed to development-program risk and procurement ramps. A strong deterrence and missile-defense demand environment is valuable only if Northrop can execute ramps without margin leakage.

Mission Systems has the most attractive current profit conversion. TTM margin was 15.1%, and FY2025 margin was 14.6%. This is consistent with a business that sells mission electronics, sensors, software-enabled systems, microelectronics, and classified capabilities across many platforms. It likely benefits from technical specialization, installed relationships, and less single-platform concentration. But even here, EAC timing and restricted-program investment can move margins. It should be treated as a high-quality segment, not as an annuity.

Space Systems earns profit through payloads, satellites, missile-defense work, restricted programs, launch-related systems, and ground architecture. Its TTM margin of 10.6% is respectable, but the Q1 GEM 63XL unfavorable adjustment and NGI

wind-down show that space work can be lumpy and exposed to launch, development, and technical risk. Space can be a growth market while still producing uneven quarterly economics for the prime contractor.

Why The Business Might Compound

The bull case starts with demand durability. The world has become more contested across air, space, missile defense, nuclear deterrence, electronic warfare, and autonomy. Northrop's portfolio maps well to those priorities. B-21 addresses long-range strike and survivability. Sentinel addresses strategic deterrence. Missile defense and tactical rocket motors benefit from renewed demand for interceptors, precision fires, and layered defenses. Mission Systems benefits from the need to sense, connect, jam, protect, and process across platforms. Space Systems benefits from proliferated satellite architectures, missile warning, tracking, and classified space missions.

The second compounding argument is backlog and incumbency. A $95.6 billion backlog as of March 31, 2026 provides multi-year revenue visibility. Restricted programs, while opaque, may also signal customer trust and technical barriers. If a defense customer awards a classified or mission-critical program to Northrop, switching suppliers midstream can be difficult because the contractor has unique knowledge, facilities, cleared labor, and integration history. The company is not immune to competition, but incumbency can matter more in defense than in many commercial markets.

The third argument is capacity and scale. Management is investing to support demand, including expected B-21 capacity capex. In a constrained defense industrial base, the ability to produce at speed can become a competitive advantage. If customer urgency rises faster than industry capacity, contractors that already own the right facilities, suppliers, and engineering talent may win more awards and negotiate better economics on follow-on work. That does not mean unbounded pricing power, but it can support volume growth and more stable overhead absorption.

The fourth argument is portfolio balance. Northrop is not a one-program company. Aeronautics, Defense, Mission, and Space each has different demand drivers, margin profiles, and program cycles. Mission Systems' high margins can offset lower-margin aircraft or space periods. Defense Systems' strategic deterrence and missile-defense ramps can offset legacy aircraft wind-downs. Restricted programs can provide growth where public program names do not reveal the full opportunity set. This balance does not eliminate risk, but it can reduce dependence on any single program.

The fifth argument is capital return discipline. At Q1 FY2026, the QF records cash of $2.090 billion, total debt of $17.074 billion, net debt of $14.984 billion, TTM EBITDA of $7.495 billion, and net debt/TTM EBITDA of about 2.0x. That is not a distressed balance sheet. If Northrop can produce $3 billion-plus of annual free cash flow while maintaining investment-grade financial flexibility, shareholders can receive dividends and buybacks alongside growth investment. The catch is valuation: ER2 does not reward capital returns at any price. The final decision still has to clear the P/E at or below 15 on the March 31, 2031 EPS base.

Why It Might Not Compound

The bear case starts with return on capital. The QF records FY2025 FMP ROIC at 9.2% and ROCE at 11.4%. Even allowing for accounting distortions, pension effects, goodwill, and program timing, these numbers are not obviously high enough for Gideon's preferred >20% ROIC for 20+ years. A defense prime can be durable and strategically essential without being an exceptional compounder. The ER2 process should be strict here: mission importance is not the same as shareholder value creation.

The second concern is fixed-price and EAC risk. FY2025 sales were evenly split between cost-type and fixed-price. Fixed-price work can be fine when inflation, labor, engineering, supplier, and schedule assumptions are accurate. It can be painful when they are not. The B-21 loss provision in 2025 and the GEM 63XL unfavorable adjustment in Q1 FY2026 are reminders that even elite contractors can underprice or underperform complex programs. A few adverse EACs can consume the margin benefit of a lot of volume growth.

The third concern is customer power. Northrop's largest customer is the U.S. government, and the government has legal and practical leverage. The 10-K discusses termination for convenience, stop-work orders, audits, allowable-cost rules, appropriations risk, and continuing resolutions [SEC FY2025 10-K](https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm). That is not a normal commercial bargaining environment. The same customer concentration that creates stable demand also limits pricing freedom and can delay cash collections, new starts, and production ramps.

The fourth concern is growth quality. A portfolio can grow because the threat environment is strong, but if growth requires heavy capex, working capital, low-margin development contracts, or risk-sharing on production lots, incremental returns may

be only adequate. Northrop's Q1 2026 guidance reaffirmed sales of $43.5 billion to $44.0 billion, segment operating income of $4.85 billion to $5.0 billion, MTM-adjusted EPS of $27.40 to $27.90, and free cash flow of $3.1 billion to $3.5 billion [Q1 FY2026 release](https://investor.northropgrumman.com/static-files/06506d55-017f-427c-853b-c3bba953e3eb). Those are good industrial numbers, but the guidance does not itself prove a 20% ROIC compounding runway.

The fifth concern is opacity. Restricted programs can be a source of moat, but they reduce investor visibility. The reader can see revenue, margin, awards, backlog, and broad commentary, but not all program details, contract terms, or execution issues. Opacity should not be treated as automatically bullish. It can hide attractive classified growth, but it can also delay recognition of cost pressure until EAC adjustments appear.

How To Read The ER2 Decision Tree

The primer should make the rest of the ER2 report easier to read. The decision tree is not "Is Northrop a good company?" It is "Can Northrop, from the TTM base ending March 31, 2026, produce a credible March 31, 2031 EPS level that makes today's price a P/E of 15 or less, while also meeting Gideon's quality and durability standards?" The first question may be yes. The second is harder.

For the segment appendices, the reader should separate demand from economics. Aeronautics may have powerful demand from B-21 and restricted programs, but the key is whether margins normalize and capex intensity is acceptable. Defense Systems may benefit from Sentinel, missile defense, and tactical motors, but the key is whether ramps are profitable and funded. Mission Systems may be the highest-quality earnings engine, but the key is how much growth can be sustained from a high-margin base. Space Systems may have attractive strategic exposure, but the key is whether NGI wind-downs, launch anomalies, and development adjustments are exceptions or a recurring feature of the mix.

For the management appendix, the reader should focus on bid discipline, program risk management, capital allocation, and candor around charges. A defense prime's management quality is less about charismatic storytelling and more about avoiding bad contracts, maintaining customer trust, investing before bottlenecks become disqualifying, and returning capital without starving capacity.

For the moat appendix, the reader should distinguish technical barriers from pricing power. Northrop clearly has technical depth, clearance infrastructure, customer trust, and hard-to-replicate capabilities. But government contracting converts many of those advantages into win probability and durability, not necessarily into software-like margins. The moat is real if it protects program positions and follow-on awards; it is weaker if execution risk and customer bargaining power absorb the economic surplus.

For the synthesis, the reader should watch four variables: revenue CAGR from the $42.367 billion TTM base, consolidated operating margin from the 11.6% TTM base, free cash conversion after capex and working capital, and share count reduction. The P/E test can be flattered by buybacks, but buybacks are only value-accretive if the company repurchases below intrinsic value and does not over-lever. The balance sheet is manageable at roughly 2.0x net debt/TTM EBITDA, but it is not unlimited.

The default ER2 stance remains PASS unless the numbers earn a better verdict. Northrop has a strong strategic position and a visible demand runway. That does not automatically make it a BUY. The company must show that the next five years convert backlog and national-security urgency into durable earnings per share, high enough returns, and a valuation that leaves margin of safety. The primer's conclusion is therefore deliberately balanced: this is a real business with real moats and real demand, but the investment case must be proven bottom-up rather than assumed from the defense theme.

Source Notes And Caveats

All historical financial figures in this primer use the cleared quantitative foundation rather than model memory or cached data-warehouse files. The data package file existed at production time but contained only an in-progress placeholder, so qualitative context came from live SEC EDGAR filings, Northrop investor materials accessed live through the web tool, and FMP helper pulls saved under the raw folder. Live FMP helper files created for this appendix include primer-prefixed profile, quote, annual revenue segmentation, and quarterly income-statement JSON files. Live SEC EDGAR source files created for this appendix include primer-prefixed FY2025 10-K and Q1 FY2026 10-Q HTML files.

Two Northrop IR raw-file downloads through PowerShell timed out and were retried once on the same URLs, then flagged. The same IR earnings release and transcript URLs were successfully opened live through the web tool and are cited above, but the primer-specific raw folder does not contain those two IR PDF downloads. The QF and QFR raw folders already contain other Northrop IR and SEC files, but this appendix does not rely on cached data-warehouse files.

Key numerical caveats from QF carry through: FMP's FY2025 annual income statement reports consolidated operating income $231 million below the SEC 10-K value, so official SEC operating income controls; FMP quarterly segment revenue omits or nulls intersegment eliminations after Q1 FY2025, so SEC filings control consolidated and TTM bridges; and TTM EPS is a supporting metric because weighted-average diluted share counts are not additive across quarters. These caveats do not block the primer, but they matter for downstream modeling discipline.

Appendix M - Management Assessment

Northrop Grumman - Management Assessment

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Stage 0 time anchor

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Source base

This appendix uses the cleared ER2 quantitative foundation and data package as source of truth for financial history, capital allocation, segment results, and the Stage 0 anchor. Management-specific primary sources were fetched live on 2026-04-26: the 2026 DEF 14A filed April 3, 2026; the FY2025 10-K; the Q1 FY2026 10-Q; Northrop Grumman's live leadership pages; FMP stable earnings-call transcripts for Q2 FY2024 through Q1 FY2026; FMP stable insider-trading data; and selected SEC Form 4 files for CEO sale footnotes. Raw files created for this management run are saved under the same workdir with `management_` prefixes.

1. Who is running the company

Northrop Grumman is led by Kathy J. Warden, chair, chief executive officer, and president. The company biography says she has served as CEO and president since January 1, 2019, was elected board chair in 2019, and joined the board in 2018. Before taking the CEO role, she was president and chief operating officer with responsibility for the four sectors and enterprise services, and she led integration of the Orbital ATK acquisition. Earlier Northrop roles included president of Mission Systems and Information Systems. This is not a newly arrived CEO learning the asset base. Warden has owned the post-Orbital ATK portfolio, the B-21 production ramp, the Sentinel posture, the move toward weapons and solid rocket motor capacity, and the recent capacity buildout.

The CFO transition is the most important leadership change. The proxy and November 2025 8-K state that Kenneth B. Crews was CFO during 2025, stepped down effective January 7, 2026, and left the company February 20, 2026. John T. Greene was elected corporate vice president and chief financial officer effective January 7, 2026. Northrop's leadership page describes Greene as responsible for finance, treasury, pricing, financial strategy and planning, M&A, tax, internal audit, investor relations, trust administration and investments, and sector business management. He joined Northrop in 2026 after CFO roles at Discover Financial Services, Bioverativ, Willis Group, HSBC units, and GE. This is a seasoned finance executive but a new Northrop insider; the market should not yet give him full credit for defense-program cost discipline.

Current sector leadership is experienced and mostly internally developed. Thomas H. Jones leads Aeronautics Systems; before that he held senior roles in Mission Systems, Advanced Concepts and Technologies, and undersea systems, after joining Northrop in 2011 from Boeing. Benjamin R. Davies leads Defense Systems and previously ran Strategic Deterrent Systems, including Sentinel; he also led Networked Information Solutions and earlier managed the B-2 program. Roshan S. Roeder leads Mission Systems after previously leading Defense Systems and has been with Northrop since 2002 across engineering, manufacturing, program management, and business development. Dr. Robert Fleming leads Space Systems and previously ran Strategic Space Systems, strategy and business development, and multiple vice-president-level businesses across the company. The segment bench is credible and operationally relevant to current growth drivers.

Board oversight is good but not perfect. The 2026 proxy lists 11 director nominees and reports a 92% independent board, fully independent committees, a lead independent director with robust responsibilities, annual elections, majority voting in uncontested elections, proxy access, a 15% special-meeting threshold, written-consent rights, and no supermajority voting requirements. The combined chair/CEO structure is the main governance compromise. The board recommends against a shareholder proposal for an independent chair, relying instead on the lead independent director. Given the classified and

program-risk-heavy nature of the portfolio, the separation of chair and CEO would be cleaner. That said, the lead independent director framework, board refreshment, and military/industrial expertise reduce the concern.

2. Tenure and track record

Warden has been CEO for more than seven years as of the Stage 0 date and has been in senior Northrop leadership long enough to own both the attractive and unattractive parts of the record. Revenue grew from $35.667 billion in FY2021 to $41.954 billion in FY2025. TTM sales through March 31, 2026 were $42.367 billion. Backlog reached $95.7 billion at FY2025 year-end and approximately $95.6 billion at Q1 FY2026. The company has compounded through a period of geopolitical demand growth, but it has not done so with software-like economics. FY2025 FMP ROIC was 9.2%; the proxy-adjusted ROIC measure was 15.4% for 2025, and the QF adjusted check implies a point estimate nearer 11.7%. The correct reading is acceptable-to-good defense-contractor returns, not a pristine high-ROIC compounder.

Three strategic decisions define Warden's tenure. First, she doubled down on strategic deterrence and advanced aircraft, especially B-21 and Sentinel. Aeronautics Systems revenue rose from $11.164 billion in FY2023 to $12.992 billion in FY2025 and reached $13.461 billion TTM, but the margin record is scarred: Aeronautics operating income was negative $416 million in FY2023, recovered to $1.236 billion in FY2024, and fell to $813 million in FY2025. Q1 FY2025 included a $477 million pretax B-21 LRIP loss provision. The company has been candid about this, but the charges are real evidence of imperfect execution.

Second, management built capacity around weapons, solid rocket motors, missile defense, and integrated battle command. Defense Systems revenue rose from $7.185 billion in FY2023 to $8.002 billion in FY2025, with Q1 FY2026 organic growth of 10%. On the Q1 FY2026 call, Warden said weapons were nearing 10% of company sales and positioned to grow faster than the company average. This strategy is coherent with demand and with capex/R&D direction: Northrop invested more than $1 billion over several years in solid rocket motor and munitions capacity, and Q1 FY2026 commentary says tactical SRM capacity has already doubled with further expansion targeted by 2027.

Third, Warden has kept a shareholder-return discipline while pruning the portfolio. FY2021-FY2025 capex averaged roughly 3.5% to 4.5% of sales, R&D stayed around $1.1-$1.2 billion per year, dividends rose, and buybacks reduced diluted share count from 160.9 million in FY2021 to 143.8 million in FY2025. The company also sold IT services earlier in the period and divested training services in 2025, simplifying exposure toward core defense technology and mission systems. The risk is that buybacks have been steady rather than obviously opportunistic, and the next several years of B-21 capex will absorb cash before the full production benefit is visible.

3. Capital allocation behavior

The five-year capital allocation pattern is consistent with management's stated strategy. From the data package, capex was $1.415 billion in FY2021, $1.435 billion in FY2022, $1.775 billion in FY2023, $1.767 billion in FY2024, and $1.450 billion in FY2025. R&D was roughly $1.1-$1.2 billion annually. Buybacks were $3.705 billion in FY2021, $1.504 billion in FY2022, $1.500 billion in FY2023, $2.514 billion in FY2024, and $1.624 billion in FY2025. Dividends rose from $983 million in FY2021 to $1.293 billion in FY2025.

This is not empire-building M&A behavior. The company is not currently a serial acquirer trying to manufacture growth through goodwill. The balance sheet has roughly 2.0x net debt to TTM EBITDA and is manageable, although goodwill and intangibles exceed common equity and tangible book is slightly negative. The main capital allocation question is internal investment risk, not acquisition risk. Management is asking shareholders to accept a multi-year B-21 capacity spend, including about $2.5 billion of company-funded investment over multiple years and an incremental roughly $200 million of 2026 capex. Warden and Greene maintained 2026 FCF guidance despite higher 2026 capex, which is positive, but the lion's share of B-21 spending sits in 2027-2029. This must be monitored.

Buybacks look disciplined in the mechanical sense but not demonstrably price-sensitive. Share count came down meaningfully, and returning capital after funding capex and dividends is reasonable for a mature defense prime. However, the repurchase program appears more like ongoing capital return than a clear value-timing framework. The better mark goes to portfolio pruning and core capacity investment; the weaker mark goes to buying stock while ROIC is only mid-teens on the company's adjusted measure and while large fixed-price execution risk remains live.

4. Incentives and alignment

The proxy compensation structure is broadly aligned. For 2025, the proxy reports that 92% of CEO compensation and 84% of average other NEO compensation was variable. Annual incentives were 90% financial and 10% non-financial. The financial

metrics were adjusted cash flow from operations at 35%, adjusted segment operating income growth at 35%, and adjusted operating margin rate at 20%. The non-financial metrics included customer quality, customer satisfaction, people inclusion and belonging, and environmental sustainability.

Long-term incentives are better than average because 70% of the annual LTIP grant is restricted performance stock rights with a three-year period, and those performance rights are tied equally to adjusted cumulative free cash flow, ROIC, and relative TSR. The remaining 30% is restricted stock rights with three-year cliff vesting. The rTSR payout is capped at target if absolute TSR is negative. Ownership guidelines are CEO 7x salary and other NEOs 3x, with a three-year mandatory holding period for 50% of vested shares, recoupment policy for cash and equity incentive payouts, and no hedging or pledging of company stock.

Actual ownership is meaningful for Warden but light for most other named executives. The proxy reports Warden beneficially owned 196,681 shares as of March 20, 2026. Former CFO Crews owned 3,479 including equivalents; Fleming 2,619; Jones 11,205; and Roeder 2,472. All directors and executive officers as a group owned or had equivalents for 303,538 shares, about 0.21% of shares outstanding. This is normal for a large-cap defense contractor, but it is not founder-like ownership.

Insider sales are a mild yellow flag, not a thesis breaker. FMP insider data showed last-12-month sale transactions totaling about 38,445 shares and $26.3 million of value, including Warden selling 30,000 shares for about $20.2 million across January and February 2026. Her January 2026 Form 4 states the sales were under a Rule 10b5-1 trading plan adopted September 2, 2025; the February 2026 Form 4 had the 10b5-1 flag set to zero in the XML. Because she still owned 196,681 shares at the proxy date, this does not look like abandonment. It does, however, keep the alignment grade below excellent.

5. Disclosure quality and candor

The last eight earnings calls show above-average candor for a classified defense prime. Management does use the expected defense-contractor boundaries around restricted programs, but when the issue is financial, they usually answer with numbers. The most important example is B-21. In Q1 FY2025, management quantified a $477 million pretax LRIP loss provision and reaffirmed sales and FCF guidance while reducing earnings. In Q1 FY2026, Greene explained that the B-21 asset sale accelerated revenue into the quarter but did not change total LRIP deliveries, and that the updated LRIP EAC had no significant change because early-lot cost increases were offset by later-program profitability. Analysts asked directly whether B-21 ROIC is meaningfully above cost of capital; Warden answered yes.

Space disclosures are similarly specific. Q1 FY2026 management identified a $98 million NGI year-over-year sales headwind and a $71 million GEM 63XL unfavorable EAC adjustment. In prior calls, management had already flagged wind-down pressure from NGI and another restricted program. That is not evasive. It is also not a clean record; Space revenue declined 8.2% in FY2025 and fell 3% in Q1 FY2026.

Guidance discipline is good. Across the eight-quarter transcript window, management generally reaffirmed annual targets when early-year working capital or program timing was weak, raised 2025 segment operating income/EPS/FCF guidance after Q2 FY2025, and reaffirmed 2026 sales, earnings, and cash guidance in Q1 FY2026 despite higher B-21 capex. The language does contain "headwinds," "offset," "limited," and "classified" markers in most quarters, but those markers often came with quantified dollars or named programs. The real disclosure limit is product-level opacity: B-21, Sentinel, weapons, restricted radar, SDA, GPI, and other programs are not disclosed as standalone revenue and margin series. For a defense prime, this is normal; for a compounder underwriting exercise, it reduces visibility.

6. Strategic coherence and culture

Management's stated strategy is clear: align Northrop's portfolio with national-security priorities, invest in capacity and technology, and deliver capability with speed and scale. The investment pattern supports the words. The company is spending on B-21 production capacity, Sentinel acceleration, solid rocket motors, munitions, missile defense, radar, microelectronics, and restricted programs. These are not random pivots. They map to disclosed backlog, Q1 awards, segment growth, and global defense demand.

Culture signals are mostly favorable. The proxy's stated values emphasize ethics, delivery, shared success, and pioneering; the compensation system includes customer quality and satisfaction; and the calls repeatedly frame execution around commitments to the customer. The concern is that "do what we promise" must be judged by fixed-price program outcomes. B-21 LRIP provisions and GEM 63XL EAC adjustments show the culture has not eliminated cost and schedule risk. Management deserves credit for naming the problems; it does not deserve a free pass for creating or inheriting them.

7. Governance flags

No dual-class share structure was identified. The 2026 proxy reports related-person transaction procedures and discloses ordinary-course plan-trust and investment-management payments to State Street subsidiaries of about $5.3 million and to a BlackRock subsidiary of about $255,000, tied to their status as greater-than-5% shareholders. These do not appear to be problematic related-party operating arrangements.

I found no current evidence in the reviewed filings of a recent SEC enforcement action, restatement, or material weakness in internal control. The FY2025 10-K includes the expected certifications by Warden and Greene. The board added Admiral Christopher W. Grady in February 2026, increasing recent military expertise. The main governance concerns are structural rather than acute: combined chair/CEO, high government/program-accounting dependence, new CFO, and a heavy classified/restricted mix that limits outside verification.

8. Peer comparison

Against Lockheed Martin under Jim Taiclet, Northrop looks somewhat more candid on specific program economics, partly because recent B-21 issues forced the conversation. Lockheed remains larger and has broader F-35 scale, but its 2025 classified-program charge history means Taiclet does not obviously outrank Warden on program-risk stewardship. Warden's portfolio may be narrower, but her messaging around B-21, Sentinel, and weapons is more directly tied to capacity and contract economics.

Against RTX under Chris Calio, Northrop has cleaner strategic focus but lower diversification. RTX's current CEO is also dealing with large operational cleanup and supply-chain issues across commercial aerospace and defense. Northrop's management has fewer moving pieces, which should help execution, but RTX has a deeper commercial aftermarket engine. On disclosure clarity, Warden is competitive; on per-dollar capital allocation, Northrop's lower adjusted ROIC keeps it from clearly beating RTX.

Against General Dynamics under Phebe Novakovic, Northrop ranks lower on long-term stewardship. Novakovic has a longer CEO record, a famously disciplined capital allocation style, and a simpler reputation for cash and execution. Warden is credible and strategically coherent, but the B-21 provisions and recent CFO handoff make Northrop less proven than GD on a decade-long management gate. Among realistic alternatives, Warden is above average, not best in class.

9. Management gate verdict

Management gate: YELLOW.

This is a high-quality, experienced management team with a coherent strategy, aligned compensation, strong backlog conversion opportunities, and better-than-average disclosure for a classified defense contractor. Warden has earned credit for portfolio focus, capacity investment, and direct handling of difficult analyst questions. The gate does not clear to PASS because the same team owns material B-21 fixed-price cost problems, Space EAC noise, only mid-teens adjusted ROIC, a new external CFO, and insider-sale optics that are not severe but not pristine. For ER2 purposes, management is investable but should be monitored closely; the position cannot rely on flawless execution.

Appendix W - Moat and 2046 Durability

Northrop Grumman - Moat and 2046 Durability

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Stage 0 time anchor used verbatim: Today: 2026-04-26. Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end. Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026. TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026. Forward horizon: TTM + 5 calendar years = March 31, 2031.

Primary source stack: `data_package.md`, `quant_foundation.md`, live FMP stable pulls saved under `raw\moat_*`, SEC FY2025 10-K at https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm, SEC Q1 FY2026 10-Q at https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm, and Northrop's Q1 FY2026 earnings release / 8-K at https://investor.northropgrumman.com/static-files/50bb4c80-e273-4ed4-92bb-f1653b8b1156. The local IR PDF download timed out twice and is flagged; the same IR URL opened live through the web tool.

1. Moat Taxonomy Applied

Network effects are not the moat. Northrop does not own a many-sided commercial network where each incremental user increases the value of the product. Its C2, missile-defense, sensor-fusion, and battle-management systems can create local network effects inside a defense architecture, especially IBCS, Golden Dome C2 work, radar/sensor integration, and classified command systems, but those effects belong to the customer mission architecture more than to a self-reinforcing commercial platform. The investable moat should not be described as "network effects" except in this narrow programmatic sense: once a Northrop system is embedded as a node in an air-defense or strategic-deterrence architecture, replacement requires retesting interfaces, data flows, cyber accreditation, operator training, and mission assurance.

Switching costs are the strongest moat element. They are program, certification, classified access, integration, and mission-risk costs, not subscription churn costs. Northrop's FY2025 10-K describes long-term U.S. government contracts governed by FAR and CAS, and discloses that 84% of FY2025 sales were to the U.S. government. For B-21, Sentinel, restricted airborne radar, missile defense, and space systems, switching suppliers midstream means rebidding a national-security program, transferring classified design knowledge, qualifying new factories and suppliers, and accepting schedule risk. The erosion signal would be the government deliberately splitting future increments to nontraditional vendors after a cost breach or schedule miss.

Scale economies are real, but imperfect. Northrop is large enough to support cleared workforces, classified facilities, engineering depth, supplier qualification, microelectronics, strategic-aircraft manufacturing, missile propulsion, and space integration. The Q1 FY2026 call noted more than 20 new facilities and over 2 million square feet of added manufacturing space in the prior two years, while tactical solid rocket motor capacity has doubled. This is physical and security-constrained scale, not software gross-margin scale; the customer captures part of the benefit through negotiated pricing.

Brand is present only as trust. The brand is a record of delivering stealth aircraft, sensors, strategic deterrent systems, missile defense, space payloads, and classified programs under government oversight. The trust premium matters where the customer cannot tolerate failure: B-21, Sentinel, restricted programs, missile defense, space sensors, EW, and nuclear command-and-control adjacent work. It is weakest in lower-complexity work competed around price and schedule.

Regulatory and procurement barriers are central. Defense contracting requires clearances, export-control compliance, cybersecurity, facility security, program accounting, DCAA auditability, and government-approved systems. The FY2025 10-K notes that restricted programs cannot be publicly discussed and that their financial results are included in company results. This opacity is not automatically a moat, but it signals that some work sits behind classified-access and mission-need barriers. New entrants can win pieces of defense work, especially software, autonomy, and lower-cost drones, but they do not quickly replicate the approvals, facilities, interfaces, and historical performance record required for the hardest Northrop work.

IP and patents are supporting moats, not the core moat. Northrop has proprietary engineering, manufacturing know-how, architectures, software, sensors, microelectronics, and integration experience. But U.S. government contracting often gives the customer data rights, technical-data access, or enough leverage to avoid permanent vendor captivity. The durable IP advantage is therefore embedded know-how and classified learning curves, not patent exclusivity. This matters for AI disruption: a model may assist design, coding, test planning, and sustainment, but it does not automatically obtain classified

data, production qualification, flight-test history, cleared people, or trusted mission acceptance.

High-trust procurement is the best summary. Northrop wins because government customers need mission-critical systems that take years to specify, fund, build, test, field, and sustain. The moat is strongest where high-trust procurement overlaps with switching costs, restricted work, physical capacity, and program incumbency. It is weakest where work becomes modular, open-architecture, and price-competed.

2. Per-Segment Moat

Aeronautics Systems has a strong but execution-sensitive moat. FY2025 revenue was $12.992B, 31.0% of consolidated sales, and TTM revenue was $13.461B with a 9.7% margin. The moat is strategic aircraft design, integration, production, stealth and survivability know-how, restricted aircraft work, airborne battle management, and sustainment. B-21 is nearing 10% of company revenue, and Q1 FY2026 Aeronautics sales rose 17% on B-21, restricted programs, and TACAMO. Durability is high over 5 and 10 years. The 20-year view is credible but not automatic: a B-2-style truncation, F/A-XX loss, production cost overruns, or autonomy-first airpower shift could reduce scale. Warning signs are B-21 EAC charges, production delays, or a major future air-dominance award shifting away from Northrop.

Defense Systems has a durable deterrence and weapons-production moat, but the customer can pressure economics. FY2025 revenue was $8.002B, 19.1% of sales, and TTM revenue was $8.096B with a 10.8% margin. The moat is Sentinel incumbency, strategic missile engineering, solid rocket motor and munition capacity, missile defense, propulsion, IBCS, and all-domain C2. Sentinel is about 6%-7% of company revenue today and should move toward 10%; weapons are near 10% of sales and positioned to grow above the company average. The 5- and 10-year moat is strong. The 20-year moat depends on Northrop remaining relevant as deterrence evolves toward mixed nuclear, hypersonic, directed-energy, and autonomous systems. Warning signs are Sentinel restructuring, Nunn-McCurdy style pressure, second-sourcing, or SRM commoditization.

Mission Systems is the cleanest segment-level moat. FY2025 revenue was $12.506B, 29.8% of consolidated sales, and TTM revenue was $12.560B with a 15.1% margin, the highest TTM segment margin. The moat is mission-critical content: radar, EO/IR and acoustic sensors, electronic warfare, C4ISR, advanced communications, networks, microelectronics, and mission processing. These products sit inside aircraft, ships, ground systems, space systems, and classified architectures. Mission Systems has the strongest evidence of durable economics because margins stayed in a tight high-teens-minus band: 15.6% in FY2021, 15.6% in FY2022, 14.8% in FY2023, 14.0% in FY2024, 14.6% in FY2025, and 15.1% TTM. The 20-year moat is credible because sensor, EW, secure communications, and mission-processing complexity should grow as AI, autonomy, cyber, and electronic attack make the battlefield more data-dense. The break signal would be open-architecture procurement that turns Northrop's sensors or processors into replaceable modules, or a new entrant winning major radar/EW content on cost and cycle time.

Space Systems has strategic moat but less clean growth evidence. FY2025 revenue was $10.771B, 25.7% of sales, and TTM revenue was $10.683B with a 10.6% margin. Its moat is classified and national-security space integration, sensors and payloads, ground systems, missile defense, launch/propulsion content, and mission assurance. Space is the most U.S.-government-heavy segment, with FY2025 U.S. government sales of $9.510B, or 93% of external Space sales; Q1 FY2026 geographic data showed 98% U.S. exposure. The 5-year moat is credible because restricted space, SDA, GPI, Golden Dome, and missile defense demand are relevant. The 10- and 20-year moat is more contested because commercial space entrants, proliferated constellations, reusable launch, and software-defined payloads can shift value away from traditional prime integration. Warning signs are continued revenue decline after NGI headwinds fade, repeated launch/propulsion EAC charges, or awards moving to lower-cost constellation providers.

The blended company moat is weaker than the best segment but stronger than an ordinary contractor. Mission Systems and classified strategic programs carry the clearest durability. Aeronautics and Defense have very strong program captivity but visible margin and execution constraints. Space has strategic relevance but mixed recent growth. Since every segment is substantially U.S. government exposed and 50% of FY2025 sales were fixed-price contracts, the blended moat is not a free-pricing compounder moat. It is a high-trust, mission-critical procurement moat with capped but persistent economics.

3. Margin Persistence Evidence

Consolidated operating margin is evidence of durability, but not a clean high-quality compounder profile. QF controls the official data: FY2021 operating margin was 15.8%, FY2022 9.8%, FY2023 6.5%, FY2024 10.6%, FY2025 10.8%, and TTM ending March 31, 2026 11.6%. The company recovered from FY2023, but B-21 provisions and contract accounting show the downside of fixed-price development and EAC risk. The moat shows up less as steadily rising margin and more as backlog, program continuity, customer trust, and recovery after charges.

Segment margin persistence is better, especially outside Aeronautics. Defense Systems moved from 12.0% in FY2021 and 11.9% in FY2022 to 9.5%, 9.7%, 10.9%, and 10.8% TTM. Mission Systems stayed strongest, as noted above, with roughly mid-teens margins through the cycle. Space Systems moved 10.6%, 9.4%, 9.5%, 10.7%, 11.0%, and 10.6% TTM despite FY2025 revenue decline, which supports the view that Space is not economically broken even while growth is mixed. Aeronautics is the outlier: 9.7%, 10.6%, negative 3.7%, 10.0%, 6.3%, and 9.7% TTM. The moat held customer demand, but not accounting margin, when B-21 cost estimates moved against the company.

Backlog adds durability evidence. Northrop ended Q1 FY2026 with total backlog of $95.608B, including $44.068B funded and $51.540B unfunded. Segment backlog was $24.271B in Aeronautics, $27.729B in Defense, $17.803B in Mission, and $25.805B in Space. That backlog is more than two years of FY2025 sales. It is not the same as guaranteed profit, because contracts can be modified, delayed, stopped, or terminated, but it is strong evidence that the customer still needs Northrop's capabilities.

4. AI Disruption Stress Test

Aeronautics is not a prompt-to-output workflow. AI will change design, simulation, autonomy, production planning, software, and sustainment, but the moat resides in aircraft certification, classified design data, stealth/manufacturing know-how, test infrastructure, cleared teams, and the customer's mission-risk tolerance. The AI risk is that uncrewed collaborative combat aircraft and modular autonomy shift value away from exquisite crewed platforms. Northrop is already participating in CCA-related opportunities, but the risk is real. The protected portion is B-21/restricted strategic aircraft; the exposed portion is any future aircraft work where autonomy and open systems let the government avoid prime-contractor captivity.

Defense Systems is mostly chokepoint economics. Sentinel, solid rocket motors, precision weapons, missile defense, and battle command require qualified production, energetics safety, material supply, testing, integration, and government acceptance. AI can improve design and manufacturing yield, but cannot conjure qualified SRM capacity or nuclear-deterrent program trust. The main AI-adjacent threat is lower-cost autonomous weapons and software-defined targeting loops that pressure traditional missile economics. Northrop's defense moat survives if it owns propulsion, integration, C2, and mission assurance in that new stack.

Mission Systems is both AI-exposed and AI-enhanced. Sensors, radar, EW, mission processing, communications, microelectronics, and C4ISR sense, classify, fuse, transmit, and act. But the moat is not a generic analytic workflow; it is classified data, hardened hardware, RF expertise, cyber accreditation, electromagnetic performance, and integration into aircraft, ships, missiles, and space assets. AI likely raises the segment's value because autonomy and faster kill chains need better sensing, secure comms, edge processing, and EW resilience.

Space Systems faces the hardest platform shift. AI itself does not destroy space economics, but AI-enabled autonomy, commercial constellation management, commoditized satellite buses, reusable launch, and software-defined payloads can shift value to faster, cheaper architectures. Restricted payloads, missile warning, missile defense, and ground integration remain protected, but traditional bespoke prime integration is more vulnerable. Space is therefore the segment most exposed to nontraditional competition, even though its classified and missile-defense work remains protected.

The most exposed segment is Space Systems because commercial and defense space architectures are changing fastest. The most protected economics sit in restricted strategic programs and Mission Systems content because those combine classified access, integration risk, and high-trust procurement with persistent technical need.

5. The 2046 Test

Today is 2026-04-26. Twenty years forward is 2046-04-26. A credible 2046 Northrop still sells national-security systems to the U.S. government and allies: stealthy or uncrewed penetrating aircraft, strategic deterrent systems, advanced weapons and propulsion, missile-defense interceptors and C2, secure sensors, electronic warfare, mission processors, microelectronics, resilient space payloads, and classified command architectures. The buyers are still the U.S. Department of Defense, intelligence community, NASA and civil-space agencies in selected areas, and allied governments through direct and foreign-military-sales channels. Aeronautics still exists but likely has more uncrewed and autonomy-heavy work; Defense is larger in weapons, propulsion, deterrence, and missile defense; Mission Systems is at least as important because every platform needs sensing, EW, edge AI, secure networking, and hardened processing; Space survives, but more as restricted payloads, missile warning/defense, resilient constellations, and ground systems than as generic bespoke satellite prime work.

The 2046 operating margin should be stable to modestly higher versus today's 11.6% TTM consolidated operating margin if B-21 and Sentinel mature out of development, weapons move into production, and Mission Systems remains mix-positive. It

should not be modeled as software-like. Government procurement will still cap pricing, and periodic program charges will still occur. A reasonable 2046 margin picture is low-double-digit consolidated operating margin.

Why does this company still make money in 2046? Because the surviving moat is not a particular aircraft or missile; it is the ability to deliver mission-critical systems under classified, regulated, integrated, long-cycle procurement where failure has national consequences. The United States and allies will still need deterrence, missile defense, EW, resilient sensing, secure communications, space awareness, and weapons at scale. If Northrop remains inside those architectures, replacement cost is measured in years, billions of dollars, and mission risk.

The bear-case 2046 description is different. Northrop remains a large contractor but loses economic quality as the customer breaks prime bundles into modular open systems, uses AI-native vendors for autonomy and mission software, buys low-cost drones and commercial space services in volume, and second-sources propulsion. B-21 or Sentinel economics disappoint, Space loses share to faster constellation players, and Mission Systems content becomes competed at the module level. Northrop still has revenue, but returns compress.

That bear case is plausible but not the base case. Probability is moderate because the Pentagon is focused on speed, affordability, and competition, and the FY2025 10-K flags increased competition in core markets. But full erosion requires the customer to modularize and de-risk sensitive missions faster than history suggests. The 2046 test passes with yellow edging: the future business can be described specifically and profitably, yet Northrop must adapt to autonomy, AI-enabled sensing, proliferated space, and low-cost weapons.

6. Competitive Threat Inventory

Threat	Mechanism	Segment(s) affected	Earliest observable signal	Plausibility
Government affordability and competition push	Customer splits awards, uses open architectures, adds nontraditional vendors, pressures profit rates	All, especially Space, Mission modules, future aircraft	Major awards to newer vendors; lower recompete win rates; contract terms limiting returns	High
Program execution and EAC charges	Fixed-price development, production learning, supplier delays, launch anomaly, inflation, schedule slips	Aeronautics, Space, Defense	B-21/Sentinel/GEM-style charges; margin guide cuts; delayed milestones	High
Platform shift to AI/autonomy/commercial space	Value moves from exquisite prime-integrated systems to modular autonomous systems, cheaper constellations, software-defined payloads	Space, Aeronautics, Mission Systems	Budget reallocations toward CCA, low-cost drones, commercial space, AI-native C2 vendors	Medium-high
Capacity and cleared labor constraints	Demand exists but suppliers, energetics, microelectronics, test ranges, and cleared workforce do not scale fast enough	Defense, Aeronautics, Mission Systems	Backlog grows while revenue growth lags; rising working capital; missed delivery cadence	Medium
Budget or appropriation disruption	Continuing resolutions, shutdowns, debt-ceiling fights, program cancellations, Nunn-McCurdy restructures	All	New-start delays; stop-work orders; lower funded backlog conversion	Medium

7. Pricing Power Verification

Pricing power is real but constrained. Northrop has customer captivity on programs where switching risk is high, but the customer is a sophisticated monopsony with audit rights, cost-accounting rules, contract-type choice, and termination rights. The FY2025 10-K reported 50% of sales on cost-type contracts and 50% on fixed-price contracts. Cost-type work protects recoverability and supports long-cycle development, but caps upside. Fixed-price work offers more margin upside if execution is strong, but B-21 and GEM 63XL show the downside when estimates move.

Observable pricing evidence is therefore indirect. First, margins persisted in Mission Systems and Space despite cost inflation and supply-chain pressure. Second, management described a more favorable contracting environment in Q1 FY2026, including long-term demand signals, nontraditional contracting mechanisms, and incentives for early delivery. Third, B-21 capacity agreements included customer funding plus company investment and management said the deal improved life-of-program ROIC. Fourth, backlog remains near $96B, suggesting Northrop continues to win work at acceptable terms.

The negative evidence matters. There is no broad disclosed commercial-style price increase or churn metric. The government can delay, modify, stop, or terminate programs, and can introduce terms affecting capital deployment if it sees

underperformance or insufficient speed. International demand can improve mix, but export approvals and local-content preferences limit pricing freedom. Pricing power should be rated yellow: strong in high-trust sole/principal-source contexts, weak in generic production or modular work, and always bounded by procurement politics.

8. Moat Verdict

Moat gate: PASS. Northrop has a concrete moat in high-trust procurement, classified/restricted access, switching costs, physical and cleared capacity, and mission-critical integration. The best evidence is the $95.608B Q1 FY2026 backlog, sustained Mission Systems margins around 14%-15%, strong U.S. government embeddedness, and program-specific captivity in B-21, Sentinel, weapons, missile defense, restricted radar, and restricted space. The moat is not a pure pricing moat and not a software moat; it is a durable defense-prime moat with capped economics.

2046 test: PASS with yellow edging. A specific 2046 Northrop can be described: a strategic aircraft, deterrence, missile defense, weapons, sensors, EW, mission-processing, microelectronics, and restricted-space contractor serving the U.S. and allies. The business should still earn low-double-digit operating margins if production learning and Mission Systems mix offset government pricing limits. The yellow edge is that space architectures, autonomy, AI-native mission software, and low-cost weapons can reallocate value. The moat passes because Northrop's hardest work sits behind classified integration and mission assurance barriers, but the equity should be underwritten as a strong defense compounder with execution and procurement constraints, not as an unconstrained high-ROIC platform.

Appendix B1 - Aeronautics Systems

Aeronautics Systems - Segment Deep Dive

Stage 0 time anchor

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Source-control note

This appendix uses `data_package.md` as the source of truth for Northrop Grumman historical segment dollars, historical margins, recent-quarter data, and management commentary. The numerical controls are from `quant_foundation.md`, which reports `RECONCILIATION: 8/8 checks PASSED`. I do not re-derive Northrop historical dollars from FMP or filings in this appendix. Live support pulls made for this Aeronautics appendix were saved under `raw\` with an `aeronautics_` prefix: an FMP quote control file and a live SEC FY2025 10-K HTML copy were saved successfully; the Northrop Q1 FY2026 IR release download timed out twice through local `Invoke-WebRequest`, which is carried below as a source flag rather than silently replaced.

0. Segment boundary + taxonomy note

Aeronautics Systems is one of Northrop Grumman's four current reportable segments. The composition is not fully stable across the five-year lookback because Northrop realigned the Strike and Surveillance Aircraft Solutions business unit from Defense Systems to Aeronautics Systems effective January 1, 2025. The data package states that FY2023-FY2025 segment tables use the FY2025 10-K latest-restated basis, while FY2021-FY2022 use earlier official 10-K history and are less comparable. This appendix therefore treats FY2023-FY2025 and the Q2 FY2025 through Q1 FY2026 TTM build as the main modeling base, and it avoids silently comparing old-taxonomy and new-taxonomy Aeronautics dollar totals. The segment boundary is military aircraft design, development, production, integration, sustainment, and modernization, with major products including strategic long-range strike aircraft, tactical fighter and air dominance aircraft, airborne battle management and command-and-control systems, and uncrewed autonomous aircraft systems [data_package.md Section 1, Aeronautics row; quant_foundation.md P-Taxonomy].

1. What this segment actually is

Aeronautics Systems is Northrop's manned and uncrewed military-aircraft segment. In plain language, it is the part of Northrop that builds, integrates, modernizes, and supports aircraft and aircraft mission systems rather than satellites, shipboard sensors, missile-defense interceptors, or strategic missiles. It sells primarily to the U.S. government and allied customers through U.S. defense procurement channels. The work is program-based, not a short-cycle product catalog. A customer commits to a development, production, modernization, or sustainment contract; Northrop records sales as costs are incurred and performance obligations are satisfied; margins depend on contract type, execution, estimate-at-completion updates, supply-chain performance, and negotiated fee structures.

The key economic difference versus a commercial aerospace OEM is the customer and contract architecture. Aeronautics is not trying to maximize unit pricing to airlines. It is delivering military capability to the Department of War, the Air Force, Navy, and related agencies under cost-type, fixed-price, incentive, and sustainment arrangements. The products are long-cycle platforms and subsystems. Design and integration capability matter as much as assembly. Security clearances, classified work, test infrastructure, production quality, and mission-domain knowledge form part of the product.

The largest named growth driver is the B-21 Raider. The data package says management commentary is dominated by B-21, restricted programs, TACAMO, F/A-18 wind-down, and optionality around F/A-XX [data_package.md Section 6, Aeronautics Systems]. It also says product-level dollars are not separately disclosed for B-21, F-35, E-2, TACAMO, F/A-18, restricted aircraft, or F/A-XX [data_package.md Section 4]. That creates an important modeling constraint: the segment can be analyzed

by drivers, but the forecast must not pretend that the company has disclosed a B-21 revenue series or a TACAMO revenue series.

The B-21 itself is strategically central. The Air Force describes the B-21 as a dual-capable penetrating strike bomber intended to form the backbone of the future bomber force with the B-52, and it lists a minimum inventory of 100 aircraft on its official fact sheet (Air Force B-21 fact sheet, https://www.af.mil/About-Us/Fact-Sheets/Display/Article/2682973/b-21-raider/). The Air Force also describes open systems architecture as a design feature intended to reduce integration risk and allow future modernization. That matters for Aeronautics because production revenue is only one layer; modernization, sustainment, mission-system refresh, and classified follow-on work can extend the revenue tail if the platform performs.

TACAMO is a second named growth contributor. The data package says Q1 FY2026 Aeronautics growth was helped by TACAMO, and the Navy/Air Force public release identifies the new TACAMO aircraft as the E-130J, a C-130J-30-derived aircraft intended to replace the E-6B Mercury in the Take Charge and Move Out nuclear command-and-control mission (Tinker AFB E-130J article, https://www.tinker.af.mil/News/Article-Display/Article/3956451/tacamo-community-announces-name-for-new-mission-aircraft-e-130j/). This is a good example of Aeronautics' work: the airframe may be government-furnished or partner-supplied, but the value is integration, mission systems, certification, and survivable communications.

Tactical fighter and air dominance content is another layer, but the trajectory is mixed. The data package includes F-35, E-2, F/A-18, restricted aircraft, and fighter/radar content in the Aeronautics product/program driver list, but it also states there is no separate dollar disclosure in the fetched sources. Q1 FY2026 commentary says lower F/A-18 volume after final production deliveries was an offset to the B-21, restricted-program, and TACAMO growth. F/A-XX is option value: management expected a Q3 2026 selection and said a win would be upside to sales and earnings, but the data package explicitly tells downstream modelers not to include F/A-XX in base case until awarded.

2. Current economics (FY2025 and TTM)

FY2025 Aeronautics Systems revenue was $12.992 billion, or 31.0% of Northrop's consolidated sales. FY2025 operating income was $0.813 billion, and operating margin was 6.3% [data_package.md Section 1 and Section 3, Aeronautics Systems; quant_foundation.md P2]. The segment was the largest Northrop reportable segment by FY2025 revenue. The margin, however, was below Northrop's other technology-heavy segments and below Aeronautics' own normalized-looking FY2024 margin because B-21 loss provisions and estimate-at-completion changes distorted the year.

The TTM base is cleaner for forward modeling because it includes Q2 FY2025, Q3 FY2025, Q4 FY2025, and Q1 FY2026. Quant foundation P4 gives Aeronautics TTM revenue of $13.461 billion, TTM operating income of $1.301 billion, and TTM margin of 9.7%. The quarter-by-quarter revenue bridge is $3.114 billion in Q2 FY2025, $3.142 billion in Q3 FY2025, $3.922 billion in Q4 FY2025, and $3.283 billion in Q1 FY2026 [quant_foundation.md P4]. That TTM margin is the right current economics anchor for this appendix: it reflects the latest reported quarter and removes some, but not all, of the FY2025 B-21 accounting noise.

Recent momentum is strong but not fully repeatable. The data package says official Q1 FY2026 Aeronautics sales were $3.283 billion, up 17% year over year, with operating income of $0.305 billion and margin of 9.3%. The official explanation in the package is B-21, restricted programs, and TACAMO ramp, partly offset by lower F/A-18 final production deliveries [data_package.md Section 5, Q1 FY2026 segment YoY table]. The same package warns that Q1 included a sale of a company-owned B-21 test asset to the Air Force, accelerating revenue into the quarter without changing the total number of low-rate initial production deliveries expected in the phase [data_package.md Section 6, Aeronautics Systems]. That means Q1's 17% growth cannot be annualized mechanically.

The most relevant current sub-products are therefore best understood as drivers, not disclosed product lines:

Program / driver	Current economics treatment	Disclosure status
B-21 Raider	Central long-cycle growth driver; margin depends on LRIP execution, EACs, capacity agreement accounting, learning curve, and customer/company-funded capital	No separate program revenue disclosed; data package says management described B-21 as nearing 10% of company revenue, but historical product dollars are not disclosed
Restricted aircraft programs	Growth and backlog support; likely structurally attractive but opaque	No separate product revenue or margin disclosed
TACAMO / E-130J	Early ramp contributor tied to strategic airborne command-and-control recapitalization	No separate product revenue or margin disclosed
F-35, E-2, tactical fighter, F/A-18	Mature fighter and airborne command-and-control content; F/A-18 is a known volume headwind after final production deliveries	No separate Aeronautics product P&L disclosed

Program / driver	Current economics treatment	Disclosure status
Autonomous / uncrewed systems	Strategic optionality within segment definition	No separate product revenue or margin disclosed
F/A-XX	Potential upside if awarded; excluded from base case until awarded	No award in base package; no disclosed revenue

Capital intensity is rising at the company level because of B-21. The data package says Northrop raised 2026 capex expectations to about $1.85 billion, including roughly $200 million of incremental 2026 capex related to the B-21 capacity agreement, and that management described about $2.5 billion of company-funded investment over multiple years to support the B-21 production-rate increase [data_package.md Section 6 and Section 7]. Segment-level capex is not disclosed, so this appendix cannot assign a precise Aeronautics capex/revenue ratio. Qualitatively, however, Aeronautics is more capital-intensive than a sensor/software mix segment because it needs production facilities, tooling, test infrastructure, classified manufacturing capacity, supplier qualification, and labor capacity for aircraft production.

3. Unit economics

Aeronautics unit economics are contract-manufacturing and program-execution economics. Revenue is generated by performing development, production, integration, sustainment, and modernization work on large aircraft programs. Cost is dominated by engineering labor, production labor, materials, supplier content, tooling, test, quality assurance, program-management overhead, and allocated facilities. Profit is not simply "price minus parts" in the commercial sense; it is the margin Northrop can earn under contract terms after estimating the total cost to complete each program obligation.

The major margin variable is estimate-at-completion. A favorable EAC update means Northrop now expects a program to cost less than previously estimated, or to perform better under its incentive structure; an unfavorable EAC update means the opposite. The FY2023 and FY2025 Aeronautics history shows why this matters. FY2023 Aeronautics operating income was negative $0.416 billion on $11.164 billion of revenue, a negative 3.7% margin. FY2024 rebounded to $1.236 billion of operating income and a 10.0% margin. FY2025 then fell to $0.813 billion and 6.3% margin [data_package.md Section 3, Aeronautics Systems]. The package specifically links the margin distortion to B-21 loss provisions and EAC changes.

The TTM margin of 9.7% is more representative than the FY2025 margin but still not a clean through-cycle number. It includes a Q1 FY2026 quarter in which Aeronautics margin was 9.3% and the prior-year B-21 loss provision did not repeat. It also includes the unusual B-21 test asset sale, which accelerated revenue timing. A prudent model should not assume that the segment can immediately return to a double-digit margin just because Q1 normalized; it should require evidence that LRIP production costs, supplier readiness, and customer-funded capacity support are improving.

The revenue side has unusually good visibility if the B-21 production acceleration holds. The Air Force announced in February 2026 that it and Northrop reached an agreement to expand B-21 production capacity, using $4.5 billion already authorized and appropriated under FY2025 reconciliation legislation, and that the agreement increases annual production capacity by 25% (Air Force Test Center, February 23, 2026, https://www.aftc.af.mil/News/Article/4417703/daf-increases-b-21-raider-production-capacity-to-deliver-combat-capability-fast/). The same release says B-21 aircraft are expected on the ramp at Ellsworth Air Force Base in 2027. For unit economics, this supports a credible volume ramp, but it does not automatically prove margin expansion. More volume improves fixed-cost absorption only if supplier quality, labor productivity, material availability, and change-order discipline hold.

There are three broad margin mechanisms:

- Positive learning curve. If B-21 production lots move down the cost curve, the segment can spread engineering and production overhead over more output. This is the bull-case margin path.
- Mix shift. More B-21, restricted aircraft, and TACAMO revenue could lift or depress margin depending on contract terms. Restricted programs can be high-value, but classified complexity can also increase execution risk.
- EAC and contract risk. If production costs exceed assumptions or fixed-price exposure is poorly priced, volume growth can destroy margin instead of improving it. The segment's FY2023 negative margin is the warning label.

Working capital is also important. Aircraft programs consume inventory, materials, supplier advances, and labor before cash collection catches up. The company-level Q1 cash flow was seasonally negative, and management expects cash generation to be more second-half weighted [data_package.md Section 2]. Aeronautics therefore should be modeled as a valuable long-cycle franchise, not as a high incremental-margin software business.

4. Competitive dynamics

Aeronautics competes in a concentrated but not sleepy defense-aircraft market. The FY2025 10-K says Northrop competes with Boeing, General Dynamics, L3Harris, Lockheed Martin, RTX, and increasingly new entrants and startups; it also says major programs can involve both competition and teaming among the same companies. This is a crucial nuance: Northrop may compete with Lockheed for a future aircraft prime contract while supplying content on another Lockheed-led platform. The market is competitive at award points but sticky after award because the technical, security, and infrastructure commitments are large.

The direct competitive set varies by product family. In long-range strike and stealth aircraft, the obvious peers are Lockheed Martin and Boeing, with RTX, GE Aerospace, BAE Systems, Spirit AeroSystems, Collins Aerospace, Pratt & Whitney, and others as key subsystem or supply-chain actors depending on program. In tactical fighters and air dominance, Lockheed's F-35 franchise is the central platform ecosystem, Boeing has fighter and trainer exposure, and Northrop participates through prime, subcontract, and mission-system roles. In airborne command-and-control, L3Harris, Boeing, Lockheed, RTX, and specialized mission-systems integrators can appear as competitors or teammates.

Market share is difficult to state precisely for Aeronautics because the relevant market is not "all aircraft." It is classified and unclassified U.S. and allied military aircraft development, production, integration, and sustainment. Northrop's share is very high in the B-21 prime role because it won the program and remains the prime contractor. Its share is lower or indirect in fighter ecosystems where another contractor is prime. The Air Force B-21 fact sheet says Northrop won the engineering and manufacturing development contract in 2015 and names major partners including Pratt & Whitney, Janicki, Collins, GKN Aerospace, BAE Systems, and Spirit AeroSystems. That partner list is a reminder that even the strongest prime role depends on a broad industrial base.

Pricing power is real but bounded. Northrop has pricing power where it owns scarce design knowledge, classified integration capability, unique production tooling, and program incumbency. Once an aircraft program is in production, switching primes is practically difficult and politically disruptive. That gives the contractor bargaining relevance around change orders, sustainment, modernization, and production-rate changes. But the U.S. government is not a price-insensitive customer. It can delay procurement, cap quantities, restructure contracts, use competition for subsystems, or impose cost discipline. The 10-K risk language explicitly says competition and alternative acquisition methods can increase pricing pressure and demand less favorable terms.

Substitution risk is not the same as a commercial product substitute. The B-21 is unlikely to be replaced by a consumer-like alternative. But defense buyers can shift mission architecture. Long-range strike could be rebalanced toward missiles, collaborative combat aircraft, submarines, cyber, space-based sensing, or distributed unmanned systems. Tactical fighter procurement can shift by service budget. Command-and-control architectures can move toward disaggregated networks. That means Aeronautics' moat is strongest around specific awarded programs and weaker around future budget allocation.

The F-35 ecosystem is a useful external check on air-platform optimism. GAO's 2025 F-35 report says DOD aims to procure 2,470 F-35s and that Block 4, engine modernization, and long-life operations and sustainment costs exceed $2 trillion; it also highlights late deliveries, modernization delays, and the need for better capacity evaluation and development practices (GAO-25-107632, https://files.gao.gov/reports/GAO-25-107632/index.html). The read-through for Northrop is not that F-35 weakness directly hurts Aeronautics dollar-for-dollar. It is that even strategically indispensable aircraft programs can suffer cost, schedule, modernization, and supplier issues for years. That external precedent argues against an overly smooth B-21 margin ramp.

5. Moat at the segment level

Aeronautics has a real segment-level moat, but it is program-specific and execution-sensitive rather than structurally invincible. The strongest moat elements are classified know-how, stealth and systems-integration experience, customer trust, program incumbency, production infrastructure, security-cleared workforce, and embedded supplier relationships. These are not easily replicated by new entrants. A startup can build a drone prototype; it cannot easily become the B-21 prime contractor, manage nuclear-certified long-range strike requirements, and operate the classified production and test base.

The B-21 moat is particularly strong once framed as an awarded program. The Air Force says the B-21 is intended to form the future bomber backbone with the B-52 and lists a minimum inventory of 100 aircraft. If Northrop executes, the program can support development, production, sustainment, modernization, and mission-system refresh for decades. That is the closest thing to a segment annuity. The April 2026 Air Force article also says the ongoing test and evaluation program continues to reduce risk and move the weapon system closer to operational service, with Northrop named as the industry partner. Those

facts support durable relevance.

But the moat does not immunize margins. Defense aircraft economics are negotiated. Cost overruns can be absorbed by the contractor depending on contract type. The government can demand affordability. Congress can alter quantities. Production-rate acceleration can strain suppliers. If the moat were absolute, FY2023 Aeronautics would not have printed a negative margin. The right conclusion is that the segment has a strong revenue moat around awarded strategic programs, a moderate margin moat after execution stabilizes, and a weak-to-moderate moat around future competitive awards not yet won.

Compared with Mission Systems, Aeronautics likely has lower normalized margin but longer visible production duration. Compared with Space Systems, Aeronautics has a cleaner current growth catalyst through B-21, but similarly meaningful EAC and technical risk. Compared with Defense Systems, Aeronautics is more dominated by aircraft production and B-21-specific investment; Defense has Sentinel and weapons, which are also long-cycle but under a different program and industrial-base structure.

Over a 5-10 year window, the moat is durable if B-21 transitions from LRIP and test-driven accounting volatility into repeatable production. Over a 20-year Gideon lens, the segment is attractive only if it can compound with stable returns on the incremental capital now being deployed. The customer is sticky and the program is strategic, but the segment will not look like a >20% ROIC compounder if B-21 needs repeated company-funded capital and produces only high-single-digit operating margins.

6. Historical growth rates - reproduced from data package, not re-derived

Northrop does not disclose product-level Aeronautics revenue in dollars for B-21, F-35, E-2, TACAMO, F/A-18, restricted aircraft, autonomous aircraft, or F/A-XX in the data package. The only reliable dollar line is the reportable segment. FY2023-FY2025 are latest-restated FY2025 10-K taxonomy; FY2021-FY2022 are less comparable because of the January 1, 2025 SSAS realignment. For the formal historical table, I use FY2023-FY2025 as the comparable restated base.

Product / sub-segment	FY-3 rev	FY-2 rev	FY-1 rev	3-year historical CAGR	Most recent YoY	Data package cite
Aeronautics Systems reportable segment	$11.164B [data_package.md Section 3, Aeronautics FY2023 row]	$12.396B [data_package.md Section 3, Aeronautics FY2024 row]	$12.992B [data_package.md Section 3, Aeronautics FY2025 row]	7.9% over FY2023-FY2025 restated span [calculated from cited rows]	FY2025 +4.8%; Q1 FY2026 +17% [data_package.md Section 3 and Section 5]	Section 3 rows for Aeronautics Systems; Section 5 Q1 FY2026 segment YoY row
B-21 Raider	Not separately disclosed [data_package.md Section 4, Aeronautics B-21 row]	Not separately disclosed [same row]	Not separately disclosed [same row]	N/A - no product revenue series	Management/program commentary only; no product YoY disclosed	Section 4 product table and Section 6 Aeronautics commentary
F-35, E-2, TACAMO, F/A-18, restricted aircraft	Not separately disclosed [data_package.md Section 4, Aeronautics aircraft row]	Not separately disclosed [same row]	Not separately disclosed [same row]	N/A - no product revenue series	Q1 FY2026 Aeronautics +17% segment YoY; drivers cited, not product YoY	Section 4 product table; Section 5 Q1 FY2026 segment YoY row
F/A-XX option value	No award in base package; no historical revenue disclosed	No award in base package; no historical revenue disclosed	No award in base package; no historical revenue disclosed	N/A	N/A	Section 6 Aeronautics F/A-XX modeling implication

Arithmetic check on the disclosed Aeronautics segment line: $11.164B x 1.110 = $12.393B, which ties to FY2024 reported $12.396B within rounding. $12.396B x 1.048 = $12.991B, which ties to FY2025 reported $12.992B within rounding. No product-level back-solved rows are included because the data package explicitly says not to create platform revenue series unless labeled as forward estimates, not historical disclosures.

The history tells two stories at once. Revenue growth is improving on a restated basis: FY2024 growth was 11.0%, FY2025 growth was 4.8%, and Q1 FY2026 was 17%. Margin, however, is not on a smooth path: negative 3.7% in FY2023, 10.0% in FY2024, 6.3% in FY2025, and 9.7% on the TTM base. The model must therefore give more credit to revenue visibility than to automatic margin expansion.

7. Management guidance - quoted from data package Section 6

The relevant management and official-commentary items for Aeronautics are:

Driver	Data package row / section	Data package evidence	Interpretation
FY2026 Aeronautics guide	Section 6, consolidated guidance paragraph	Segment guidance is Aeronautics "mid-$13B sales with low-to-mid 9% margin."	This is the near-term bridge from FY2025 $12.992B and TTM $13.461B. It supports modest FY2026 revenue growth but not a double-digit margin assumption.
B-21 capacity increase	Section 6, Aeronautics Systems; Section 9 recent corporate actions	Production rate +25%, Lot 4 LRIP award, Ellsworth path in 2027; about $2.5B company-funded investment over multiple years and roughly $200M incremental 2026 capex.	Strong evidence of volume visibility, offset by capital intensity and execution risk. The company is buying capacity before the full production benefit is visible.
B-21 test asset sale	Section 6, Aeronautics Systems	Q1 FY2026 included sale of a company-owned B-21 test asset to the Air Force, accelerating revenue but not changing total LRIP deliveries expected in the phase.	Q1 growth is high quality as a program signal but not a clean run-rate. Base-case CAGR should not simply annualize Q1.
Restricted programs	Section 6, Aeronautics Systems	Q1 restricted awards include Aeronautics among benefiting segments.	Supports backlog and visibility, but the disclosure opacity prevents product-line modeling.
TACAMO	Section 6, Aeronautics Systems	Q1 release cites increased E-130J TACAMO volume.	Early ramp contributor; strategically important but likely smaller than B-21 in segment impact.
F/A-18	Section 6, Aeronautics Systems	Q1 release cites lower volume after final production deliveries.	A known headwind that mutes reported growth from newer programs.
F/A-XX	Section 6, Aeronautics Systems	Q1 call said selection expected in Q3 and would be upside if won.	Excluded from base case; included only as bull-case optionality.
B-21 return assertion	Section 6, corporate framing	On whether B-21 improves returns above cost of capital, management answered "We do."	Useful directional signal, not proof. The model should require actual margin and cash-flow evidence.

[DATA GAP: The data package does not include separate B-21, TACAMO, restricted-aircraft, F-35, F/A-18, autonomous-aircraft, or F/A-XX revenue or operating-income series. This appendix uses segment-level history and driver-based forward assumptions.]

8. Forward growth assumptions - explicit and justified

The forecast starts from the TTM Aeronautics revenue base of $13.461 billion and compounds exactly five calendar years to March 31, 2031. Because product-level dollars are not disclosed, the reportable segment is the only dollar-modeled line. Named programs are treated as drivers that push the segment line up or down.

Base case growth

Product / disclosed modeling line	3-year historical CAGR	Latest YoY	Mgmt FY+1 guide	Base CAGR TTM->TTM+5y	Justification
Aeronautics Systems reportable segment	7.9% over FY2023-FY2025 restated span	FY2025 +4.8%; Q1 FY2026 +17%	Mid-$13B FY2026 sales; low-to-mid 9% margin	4.8%	Base case gives credit for B-21 capacity increase, restricted programs, and TACAMO, but fades Q1's 17% because the B-21 test asset sale accelerated revenue and F/A-18 is a known headwind. The 4.8% CAGR roughly matches FY2025 YoY and is below the restated 2023-2025 span because the 2026 guide is only mid-$13B from a $13.461B TTM base.

The base path is not a bearish view of B-21. It assumes the program scales, the 25% production capacity increase is real, TACAMO contributes, and restricted work remains healthy. It simply refuses to treat a single Q1 jump as the new steady state. A plausible year-by-year revenue path is $13.8B, $14.5B, $15.2B, $16.0B, and $17.0B. That path implies the segment grows around Northrop's likely consolidated growth rate plus a modest premium for B-21, but it does not require F/A-XX or a perfectly smooth LRIP learning curve.

Bull case growth

Product / disclosed modeling line	3-year historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM->TTM+5y	Justification
Aeronautics Systems reportable segment	7.9% over FY2023-FY2025 restated span	FY2025 +4.8%; Q1 FY2026 +17%	Mid-$13B FY2026 sales; F/A-XX would be upside if won	6.5%	Bull case assumes B-21 production acceleration converts faster, restricted programs remain strong, TACAMO ramps without major delays, and Northrop wins or meaningfully participates in F/A-XX. The CAGR remains below Q1's 17% because Q1 included timing benefits and because the FY2026 guide is not a step-change guide.

The bull path reaches $18.443 billion by TTM+5y. The practical story is not just "more B-21." It is B-21 plus production learning plus stable appropriations plus restricted-program awards plus a new air-dominance opportunity. The Air Force's April 2026 B-21 article says aerial refueling demonstrated maturation and that testing continues to reduce risk; if that operational confidence is matched by production execution, Aeronautics can grow faster than the base path.

Bear case growth

Product / disclosed modeling line	3-year historical CAGR	Latest YoY	Mgmt FY+1 guide	Bear CAGR TTM->TTM+5y	Justification
Aeronautics Systems reportable segment	7.9% over FY2023-FY2025 restated span	FY2025 +4.8%; Q1 FY2026 +17%	Mid-$13B FY2026 sales	2.0%	Bear case assumes B-21 volume still grows but supplier, labor, EAC, or funding friction slows conversion; F/A-18 headwind persists longer than expected; TACAMO and restricted ramps are lumpy; and F/A-XX is not won or is delayed. Growth remains positive because B-21 is strategic and funded, but the segment loses its current growth premium.

The bear path reaches $14.862 billion by TTM+5y. This is not a cancellation case. It is an execution-friction case. The reason revenue does not decline is that the B-21 is a strategic program with official production-capacity expansion and minimum inventory ambition. The reason it does not compound at the recent restated CAGR is that aircraft programs can absorb years of schedule, supplier, and cost friction before reaching stable production.

Thesis-consistency check

Q1 FY2026 growth of 17% is materially above the base-case 4.8% five-year CAGR, so the deceleration must be explicit. The deceleration is justified by four facts from the source package: Q1 included B-21 test asset revenue timing; management's FY2026 segment guide is mid-$13B rather than a Q1 annualized run-rate; F/A-18 final production deliveries are a headwind; and product-level dollars are not disclosed, so there is no evidence that B-21 alone can drive segment-level double-digit growth for five straight years. The external F-35 precedent from GAO also argues that major military aircraft programs can be strategically essential while still experiencing schedule and modernization friction.

9. Forward operating margin assumptions - explicit and justified

The current TTM margin is 9.7% on $13.461 billion of revenue and $1.301 billion of operating income [quant_foundation.md P4]. FY2026 management guidance is low-to-mid 9% margin for Aeronautics [data_package.md Section 6]. Product-level margins are not disclosed, so this appendix uses a segment-level margin model rather than pretending to know B-21 or TACAMO standalone profitability.

Case	Current TTM margin	TTM+5y margin	Change	Mechanism
Bear	9.7%	7.5%	-220 bps	B-21 LRIP/EAC friction, supplier inflation, labor constraints, fixed-price exposure, and capital/depreciation burden offset volume growth. Margin remains above FY2025's 6.3% because the worst visible B-21 provision year is not assumed to repeat, but it falls below TTM because execution does not stabilize.
Base	9.7%	10.2%	+50 bps	Production learning and overhead absorption on B-21 offset mix and capex burden. Restricted programs and TACAMO help revenue, but government pricing and EAC risk prevent a large margin step-up.
Bull	9.7%	11.0%	+130 bps	B-21 moves toward repeatable production, capacity investments are absorbed by higher volumes, restricted programs mix favorably, and no major adverse EAC update emerges. This is above FY2024's 10.0% but still below Mission Systems-type margins because aircraft production remains capital- and labor-intensive.

The base margin is deliberately close to current TTM rather than a heroic reversion to a mid-teens defense electronics margin. Aeronautics has a real moat, but aircraft production has more material, labor, tooling, and test burden than mission electronics. The segment's FY2021-FY2022 margins were 9.7% and 10.6% under the older taxonomy, FY2024 was 10.0% under the restated basis, and TTM is 9.7%. That history supports a 10% neighborhood once B-21 charges normalize. It does not support assuming 13%-15% without product-level evidence.

The bull margin of 11.0% requires the B-21 production-rate increase to improve unit economics rather than merely increase cost absorption risk. It also requires stable appropriations and no large unfavorable estimate-at-completion changes. The bear margin of 7.5% is plausible because FY2025 was already 6.3% and FY2023 was negative; a major LRIP issue, supplier shock, or fixed-price loss could keep the segment below normalized expectations even with rising revenue.

10. Segment rollup - built bottoms-up from disclosed modeling line

Because no product-level Aeronautics revenue series is disclosed, the only auditable bottoms-up line is the reportable segment. The rollup below is therefore a one-line disclosed-segment rollup with non-dollar program drivers. The arithmetic ties exactly: segment revenue equals the modeled Aeronautics line, operating income equals segment revenue multiplied by the case margin.

Case	Disclosed modeling line	TTM revenue base	CAGR TTM->TTM+5y	TTM+5y revenue	TTM+5y op margin	TTM+5y op income	Probability
Bear	Aeronautics Systems reportable segment	$13.461B	2.0%	$14.862B	7.5%	$1.115B	25%
Base	Aeronautics Systems reportable segment	$13.461B	4.8%	$17.017B	10.2%	$1.736B	50%
Bull	Aeronautics Systems reportable segment	$13.461B	6.5%	$18.443B	11.0%	$2.029B	25%

Weighted by the illustrative probabilities above, the probability-weighted TTM+5y Aeronautics outcome is about $16.84 billion of revenue, 9.8% operating margin, and $1.65 billion of operating income. I would not use that weighted result as the main valuation input without checking the combined-company synthesis, because segment probabilities can be correlated. For example, a defense-budget shock would likely hit multiple Northrop segments at once; a B-21-specific execution issue would be more Aeronautics-heavy.

The base case implies about $3.56 billion of incremental Aeronautics revenue over five years and about $0.44 billion of incremental operating income versus the TTM base. That is helpful to the company but not transformational by itself. The ER2 implication is that Aeronautics can be a solid growth engine, but a BUY thesis for Northrop still needs Defense, Mission, Space, consolidated margin, cash conversion, and valuation to cooperate. Aeronautics alone does not create a high-confidence >20% ROIC compounder if B-21 capital intensity absorbs too much cash.

11. Key risks and wildcards

Bear - B-21 EAC and LRIP execution. The largest risk is that B-21 production cost does not come down as expected. The segment has already shown how severe program accounting can be: FY2023 negative 3.7% margin and FY2025 6.3% margin are not theoretical warnings. If B-21 capacity rises before the cost curve stabilizes, revenue can grow while operating income disappoints.

Bear - funding and procurement timing. The customer concentration risk is fundamental. Northrop derived 84% of FY2025 sales from the U.S. government at the consolidated level [data_package.md Section 1]. Continuing resolutions, shutdowns, debt-ceiling disputes, procurement protests, or changed budget priorities can delay awards and payments. B-21 is strategic, but even strategic programs face timing risk.

Bear - supplier and labor constraints. Aeronautics depends on specialized suppliers, advanced materials, classified facilities, and security-cleared labor. A 25% production-capacity increase is good news only if the supply chain scales with it. Otherwise, Northrop may carry more cost, more inventory, and more schedule pressure.

Base - F/A-18 wind-down offset. The data package says lower F/A-18 final production delivery volume was a Q1 offset. A mature program rolling off can obscure the ramp of newer programs. The base case assumes that B-21, restricted work, and TACAMO more than offset this headwind, but not instantly.

Base - contract mix. If the mix shifts toward better-funded or better-structured production lots, margins can improve modestly. If the mix shifts toward difficult fixed-price work or complex classified integration, margins can stagnate. The base case assumes no major adverse mix shock.

Bull - F/A-XX. Management treated F/A-XX as upside if won, with selection expected in Q3 2026 according to the data package. This is the cleanest named bull wildcard. It is excluded from base case because it is not awarded in the source package. If Northrop wins or gets meaningful content, the growth case improves.

Bull - production learning and sustainment tail. If B-21 production stabilizes and the platform becomes a long-duration modernization and sustainment franchise, Aeronautics could earn a better long-run margin than the base case. Open systems architecture could support ongoing upgrades, although it can also invite competition for future modernization modules.

Cross-case - disclosure opacity. Product-level non-disclosure is itself a risk for analysis. The lack of B-21, TACAMO, restricted-program, or F/A-18 dollar disclosure prevents a precise bridge between named drivers and segment revenue. This is acceptable for company reporting, but it means the ER2 model must carry wider error bars than it would for a company with product-level revenue and margin disclosure.

ER2 implications

Aeronautics is strategically attractive but financially not yet clean. The segment has the strongest named growth catalyst in Northrop through B-21. It has high barriers to entry, customer stickiness, and a path to a multi-decade production and sustainment tail. The customer is explicitly accelerating B-21 capacity, and the TTM margin has recovered to a more normal 9.7% after the worst B-21 loss-provision optics.

The counterweight is that this is not an asset-light compounding machine. B-21 requires company-funded investment, facilities, tooling, labor, and supplier scale. The segment has printed both negative and high-single-digit margins in the recent restated period. If the ER2 framework demands durable >20% ROIC compounding, Aeronautics is a yellow/green contributor, not a standalone green light. It can help Northrop grow earnings if execution is good, but it can also absorb cash and create EAC volatility.

The base case for combined-model purposes should use $17.017 billion of TTM+5y Aeronautics revenue, a 10.2% operating margin, and $1.736 billion of operating income. The bull case should only be used if the combined thesis explicitly assumes stronger B-21 execution and F/A-XX or similar upside. The bear case should be kept alive because historical margin volatility makes a low-margin growth scenario entirely plausible.

Summary table

Case	Segment TTM+5y Revenue	Segment TTM+5y Op Margin	Segment TTM+5y Op Income	Probability
Bear	$14.862B	7.5%	$1.115B	25%
Base	$17.017B	10.2%	$1.736B	50%
Bull	$18.443B	11.0%	$2.029B	25%

Source flags and data gaps

[DATA GAP: No separate B-21 revenue series, operating income series, margin, backlog, or capital employed disclosure is included in the data package.]

[DATA GAP: No separate TACAMO, F-35, E-2, F/A-18, restricted-aircraft, autonomous-aircraft, or F/A-XX product revenue series is included in the data package.]

[DATA GAP: Segment-level capex and invested capital are not disclosed, so this appendix cannot compute Aeronautics-specific ROIC.]

[SOURCE FLAG: Local live download of the Northrop Q1 FY2026 IR release URL timed out twice through `Invoke-WebRequest`; the appendix relies on the verified data package for that release's historical and management-commentary content.]

Appendix B2 - Mission Systems

Mission Systems - Segment Deep Dive

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Stage 0 anchor and source discipline

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

This appendix uses `data_package.md` as the source of truth for Northrop Grumman historical segment figures and management commentary, and `quant_foundation.md` as the numerical control for TTM construction. Live source checks were also performed through FMP stable endpoints and Northrop/SEC sources, with mission-prefixed raw FMP pulls saved under `raw\`. The live checks did not change the historical controls: the FMP segment endpoint still reports reportable segments rather than product-level Mission Systems revenue, and the SEC/IR materials continue to show Mission Systems as a segment with named program drivers but without product-level P&L.

0. Segment boundary + taxonomy note

Mission Systems has a stable reportable-segment boundary in the FY2025 taxonomy used by the data package. The January 1, 2025 realignment of Strike and Surveillance Aircraft Solutions from Defense Systems to Aeronautics Systems matters mainly for Aeronautics and Defense; it does not redefine Mission Systems in the data package. Mission historical dollar comparisons in this appendix therefore use the FY2021-FY2025 Mission Systems series from `data_package.md` Section 3 and the TTM series from `quant_foundation.md` P4. The boundary caveat is still important at the company level because the segment tables are built from a restated FY2023-FY2025 basis while FY2021-FY2022 come from prior official 10-K history; however, Mission itself is not the segment whose composition changed.

1. What this segment actually is

Mission Systems is Northrop Grumman's defense-electronics, mission-processing, sensor, communications, electronic warfare, and microelectronics segment. The FY2025 10-K taxonomy in the quant foundation describes Mission Systems as advanced mission solutions and multifunction systems, with major products and services including radar, electro-optical/infrared and acoustic sensors, C4ISR systems, electronic warfare systems, advanced communications and network systems, advanced microelectronics, and mission-processing capabilities. In plain English, this is the layer of Northrop that helps aircraft, ships, submarines, ground systems, and command networks sense, communicate, jam, protect, and process mission data.

The customer set is primarily the U.S. government, with international customers and intersegment demand as important but secondary channels. The FY2025 10-K geographic table shows Mission Systems external customer sales of $8.947B in the United States, $0.550B in Asia/Pacific, $1.121B in Europe, $0.454B in other geographic regions, and $1.434B of intersegment sales, for total Mission Systems sales of $12.506B. That means the segment is heavily but not exclusively U.S.-government exposed: roughly 81% of external Mission sales came from the United States in FY2025, with Europe at about 10%, Asia/Pacific at about 5%, and other regions at about 4% [SEC FY2025 10-K, Segment Information: Sales by Customer Type table; raw `d_NOC_2025_10K_SEC.htm`; data_package Section 1 customer/geographic exposure].

The go-to-market model is not a commercial product-led sales motion. It is a program, contract, upgrade, and production-cycle model. Revenue comes from prime and subcontract roles on U.S. Department of Defense, intelligence-community, Navy, Air Force, allied defense, and internal Northrop platform programs. Some contracts are cost-type, where the customer reimburses allowable costs plus negotiated fee or incentive economics. Some contracts are fixed-price, where Northrop bears more cost-performance risk but can earn stronger margins when execution and production learning go well. The FY2025 10-K contract-type table shows Mission Systems at $5.012B cost-type external sales, $6.060B

fixed-price external sales, and $1.434B intersegment sales in FY2025 [SEC FY2025 10-K, Segment Information: Sales by Contract Type table; raw `d_NOC_2025_10K_SEC.htm`]. This 45% cost-type and 55% fixed-price external mix is one reason Mission has better margins than pure development-heavy work, but it also means estimate-at-completion discipline still matters.

The product set is broad, and Northrop does not disclose separate revenue for the named products most relevant to the investment debate. The data package identifies restricted airborne radar, F-35 radar, SEWIP, marine systems, international ground radar, microelectronics, communications, networks, and C4ISR as Mission drivers, but states that there is "No separately reported product P&L" and instructs downstream appendices to use segment revenue only [data_package Section 4, Mission Systems product/program driver row]. This is the central modeling constraint for Mission Systems: the segment is analytically understandable at a program-driver level, but the reported financial model must remain at segment level unless explicitly labeled as a forward estimate.

2. Current economics

Mission Systems is Northrop's highest-margin reportable segment in the historical data package. FY2025 revenue was $12.506B, operating income was $1.827B, and operating margin was 14.6% [data_package Section 3, Mission Systems FY2025 row]. The TTM base ending March 31, 2026 is slightly higher: Q2 FY2025 revenue of $3.157B, Q3 FY2025 revenue of $3.093B, derived Q4 FY2025 revenue of $3.449B, and Q1 FY2026 revenue of $2.861B sum to $12.560B. TTM operating income was $1.899B, implying a 15.1% TTM margin [quant_foundation P4, Mission Systems row].

Recent growth is uneven but not weak enough to overturn the long-term segment thesis. FY2025 revenue rose 9.7% from $11.399B in FY2024 to $12.506B in FY2025 [data_package Section 3, Mission Systems row]. Q1 FY2026 revenue rose only 2% year over year to $2.861B, while operating income rose 20% to $0.433B and margin expanded to 15.1% [data_package Section 5, Q1 FY2026 segment YoY table]. The Q1 revenue explanation is mixed: higher restricted airborne radar and marine systems volume, partly offset by lower SABR and airborne electronic warfare volume [data_package Section 5 and Section 6, Mission Systems commentary]. That combination supports a mid-single-digit through-cycle forecast, not a simple extrapolation of either FY2025's high-single-digit growth or Q1's low-single-digit growth.

Mission's current economics are attractive inside a defense-prime portfolio because the segment contains a relatively dense mix of electronics, mission processing, software-heavy integration, sensors, and specialized hardware. It is not software-as-a-service economics, and it should not be valued as if it were. The margin structure remains tied to government-contract cost accounting, production learning, supplier availability, labor clearances, and periodic EAC adjustments. But compared with aircraft production or launch systems, Mission Systems has less exposure to giant low-rate initial production airframe cost curves and more exposure to upgrade cycles, subsystem refreshes, classified demand, and high-value electronics integration.

Capital intensity is disclosed at company level rather than segment level. Northrop FY2025 capex was $1.450B, or 3.5% of consolidated revenue, and TTM capex through Q1 FY2026 was $1.361B [data_package Section 7; quant_foundation P6]. The company has a major B-21 investment cycle in Aeronautics, so Mission-specific capital intensity is not separately measurable from the disclosed data. The right treatment is to view Mission as less capital-intensive than new aircraft production, but not asset-light: radar, microelectronics, secure communications, test equipment, classified facilities, and manufacturing capacity all require plant, tooling, cleared labor, and specialized supply chains. [DATA GAP: Northrop does not disclose Mission Systems capex, R&D, or working-capital intensity separately.]

3. Unit economics

Mission Systems revenue turns into operating income through three linked mechanisms: contract mix, program maturity, and technology content. On cost-type development and integration work, margins are generally bounded by negotiated fee, incentive structure, and allowed cost recovery. On fixed-price production, spares, and upgrade work, margin can be higher if Northrop controls manufacturing cost, suppliers deliver, and the program matures into repeatable production. On specialized electronics and restricted systems, pricing power comes less from list price increases and more from sole-source position, classified know-how, customer trust, embedded platform position, and mission-critical performance.

The historical margin series shows both the strength and the limits of the model. Mission Systems margin was 15.6% in FY2021, 15.6% in FY2022, 14.8% in FY2023, 14.0% in FY2024, 14.6% in FY2025, and 15.1% on a TTM basis through Q1 FY2026 [data_package Section 3; quant_foundation P4]. The segment has maintained a mid-teens margin band despite mix movement and quarterly program timing. That is materially better than the company average, but it is not immune to normal defense-contract volatility. Q1 FY2026 margin rose because operating income grew much faster than sales, with the data

package citing higher net EAC adjustments and prior-year opportunity investments as part of the margin explanation [data_package Section 6, Mission Systems commentary]. The phrase matters: a 15.1% quarterly margin is real, but some of the improvement is tied to the timing of accounting adjustments rather than a permanent step-change in price.

Margin can move down if the segment shifts toward early-stage development, lower-margin international contracts, first-unit production on new radar/electronic-warfare systems, or supplier-constrained hardware. It can move up if production volume scales on F-35 radar, restricted airborne radar, marine systems, and international ground radar while engineering and manufacturing learning improves. A favorable mix toward more mature sensors, mission computers, communications, and classified production should sustain or modestly improve segment margin. A negative mix toward cost-type development and production start-up could compress the segment below its historical mid-teens band.

The segment's internal intersegment work is also relevant. Mission Systems sells electronics and mission content into other Northrop platforms. In FY2025, the 10-K segment note shows $1.434B of Mission intersegment sales, up from $1.177B in FY2024 and $1.054B in FY2023 [SEC FY2025 10-K, Segment Information: Intersegment Sales table; raw `d_NOC_2025_10K_SEC.htm`]. Intersegment work can be attractive because Northrop controls the broader platform relationship, but it can also tie Mission's growth to the cadence of Aeronautics, Defense, and Space programs. The segment therefore benefits from B-21, F-35, Triton, restricted aircraft, marine, space, and missile-defense ecosystems even where the ultimate end-customer contract appears in another segment.

The best simple unit-economic framing is this: Mission Systems is a mid-teens operating margin defense-electronics franchise with high technical barriers, meaningful classified and embedded positions, and moderate cyclicality from program timing. It deserves a higher-quality rating than a low-margin production airframe line, but it still sits inside government-contract economics where cost growth, bid protests, continuing resolutions, export timing, and EAC estimates can change the annual margin result.

4. Competitive dynamics

Mission Systems competes in a crowded but specialized defense-electronics ecosystem. Direct peers include RTX's Raytheon business in radar, missile-defense sensors, electronic warfare, command systems, and effectors; Lockheed Martin's Rotary and Mission Systems and Missiles and Fire Control businesses in mission systems, sensors, C2, and fire-control systems; L3Harris in ISR, airborne systems, resilient communications, electronic warfare, and mission networks; BAE Systems Electronic Systems in electronic combat, C4ISR, precision strike and sensing, and electromagnetic attack; General Dynamics Mission Systems in communications, networks, command systems, and undersea electronics; and selected international players such as Leonardo, Thales, Saab, Elbit, and Hensoldt.

The market is competitive because governments often prefer multiple viable suppliers for critical sensing and communications technologies. It is not a commodity market, however. A credible supplier must have security clearances, export-control compliance, classified development experience, mission assurance processes, manufacturing repeatability, test infrastructure, platform integration history, and a balance sheet able to absorb working-capital and development timing. A new entrant cannot simply hire software engineers and bid an advanced airborne radar. Radar, EW, acoustic, microelectronics, and secure communications systems require decades of domain knowledge, qualification, and customer trust.

RTX is the largest broad competitor in many sensors and air-defense electronics areas. RTX reported 2025 sales of $88.603B and strong Raytheon demand inside an aerospace-and-defense portfolio [RTX 2025 results release, Jan. 27, 2026]. L3Harris is a more focused electronics peer. In its FY2025 results, L3Harris reported Communication Systems revenue of $5.673B with a 25.2% operating margin, Integrated Mission Systems revenue of $6.630B with a 12.2% operating margin, and Space and Airborne Systems revenue of $6.946B with a 12.3% operating margin [L3Harris FY2025 results release, Feb. 2026]. BAE Systems Electronic Systems reported 2025 sales of about GBP7.528B, underlying EBIT of GBP1.162B, and a 15.4% return on sales in the annual-report data surfaced by FinancialReports/BAE filing references [BAE Systems Annual Report 2025 filing reference]. These peer figures suggest Northrop Mission's 15.1% TTM margin is strong but not outlandish; the best defense-electronics franchises can sustain low-to-mid-teens or better margins when mix and execution are favorable.

The demand environment is supportive. The FY2026 Department of Defense budget briefing highlighted missile defense, long-range fires, space, cyber, industrial-base investment, and RDT&E as priority areas, including $25B for Golden Dome, $15.1B for cyber security, and $20.3B for science and technology [DoD/War Department FY2026 budget briefing]. Mission Systems does not capture all of those dollars directly, and this appendix does not assign dollars to programs that Northrop has not disclosed. But the priority set is clearly aligned with sensing, networking, electronic warfare, secure communications, microelectronics, mission processing, and integrated defense systems.

Pricing power is real but bounded. Northrop can have strong economics where it owns a mission-critical incumbent subsystem, a classified radar, a platform-specific upgrade path, or an integration role that would be costly to displace. But the customer is usually a sophisticated government buyer with audit rights, contract clauses, budget constraints, political oversight, and competitive procurement preferences. The right conclusion is not "Mission Systems can price like a monopoly." It is "Mission Systems can earn attractive margins because substitution is operationally difficult, qualification is slow, and performance failure is unacceptable, but the government captures part of that value through contract negotiation."

Substitution risk comes from three directions. First, a peer can win the next upgrade or replacement cycle if it offers better performance, lower cost, or easier integration. Second, software-defined architectures can shift value away from bespoke hardware toward open systems, modular software, commercial compute, or government-owned interfaces. Third, small defense-tech firms can introduce faster iteration in autonomy, electronic warfare, or sensing, especially where software is the differentiator. Northrop's defense is its installed base, classified access, production capacity, microelectronics know-how, platform integration history, and ability to scale beyond prototype.

5. Segment-level moat

Mission Systems has a defensible moat, but it is not a simple brand moat or a consumer-network moat. Its moat is built from accumulated technical knowledge, security clearances, customer trust, long program histories, mission assurance processes, integration know-how, and embedded position on enduring platforms. In radar and electronic warfare, performance depends on RF design, signal processing, apertures, cooling, power, materials, software, waveform knowledge, countermeasure libraries, and real-world threat understanding. In microelectronics and mission processing, the moat includes trusted supply chains, classified packaging, radiation tolerance in some applications, ruggedization, and assured production for government customers.

The moat is strongest where Northrop has a qualified incumbent position on a platform or mission architecture. Once a sensor, radar, communications suite, or mission processor is integrated into a fighter, maritime platform, undersea system, restricted aircraft, or command network, replacement carries testing, airworthiness, cybersecurity, interface, training, maintenance, and operational-risk costs. The customer may still recompete upgrades, but the incumbent starts with knowledge of the system, the interfaces, and the failure modes. That supports recurring upgrades and refreshes, which are often better economics than clean-sheet development.

The moat is also supported by classified work. The data package repeatedly identifies restricted airborne radar and restricted programs as Mission growth contributors [data_package Section 4 and Section 6]. Restricted work is not automatically high-margin, and classification limits outside analytical visibility. But classified programs can deepen customer reliance and reduce the number of credible competitors. A contractor with proven secure facilities, cleared engineering teams, and long program performance can be very difficult to replace quickly.

The moat is weaker where technology modularizes. Open-systems architectures, government-owned interfaces, and software-defined payloads are intended partly to reduce prime-contractor lock-in. If the customer can swap sensors, processors, or software modules more easily, incumbency becomes less protective. That risk is not hypothetical: the defense customer wants speed, lower cost, and more competition. Over five years, however, modularity is more likely to pressure the edges than destroy Mission Systems' franchise. Qualification, classified integration, production scale, and mission assurance remain slow-moving barriers.

Durability over five to ten years is good but not unbreakable. A base-case moat view should support mid-single-digit revenue growth and roughly stable mid-teens margins. A bull-case moat view requires Northrop to convert restricted radar, F-35 radar capacity, marine systems, microelectronics, and international radar into scaled production without giving back economics through cost growth. A bear-case moat view assumes the segment is still strategically relevant but loses some margin to open architecture, competitive recompetes, mix shift, or weaker program execution.

6. Historical growth rates reproduced from data package

The data package does not disclose product-level Mission Systems revenue. It explicitly states that restricted airborne radar, F-35 radar, SEWIP, marine systems, international ground radar, microelectronics, communications, networks, and C4ISR have "No separately reported product P&L" [data_package Section 4, Mission Systems product/program driver row]. Therefore the historical table below uses the only dollar-disclosed line available for Mission: the reportable segment. [DATA GAP: data_package Section 4 does not provide Mission product-level revenue rows; the appendix cannot build historical product lines without fabrication.]

Product / sub-segment	FY-3 rev	FY-2 rev	FY-1 rev	3-yr CAGR	Most recent YoY	Data package cite
Mission Systems reportable segment	$10.895B [data_package Section 3, Mission Systems FY2023 revenue row]	$11.399B [data_package Section 3, Mission Systems FY2024 revenue row]	$12.506B [data_package Section 3, Mission Systems FY2025 revenue row]	6.35% using FY2022-FY2025 [data_package Section 3, Mission Systems FY2022 and FY2025 revenue rows]	9.7% FY2025 YoY; Q1 FY2026 +2% [data_package Section 3 FY2025 YoY row; Section 5 Q1 FY2026 Mission row]	data_package Section 3 Mission Systems table; Section 5 recent-quarter table
Restricted airborne radar	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed	Q1 FY2026 cited as a growth driver, no dollar row [data_package Section 5 and 6 Mission commentary]	data_package Section 4 Mission driver row
Marine systems	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed	Q1 FY2026 cited as a growth driver, no dollar row [data_package Section 5 and 6 Mission commentary]	data_package Section 4 Mission driver row
F-35 radar / SABR / airborne EW	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed	Lower SABR and airborne EW volume were Q1 FY2026 offsets [data_package Section 5 and 6 Mission commentary]	data_package Section 4 Mission driver row
Microelectronics / communications / networks / C4ISR	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed [data_package Section 4, Mission driver row]	Not separately disclosed	No separate quarterly dollar or YoY disclosure [data_package Section 4 Mission driver row]	data_package Section 4 Mission driver row

Internal arithmetic check: Mission Systems FY2022 revenue was $10.396B, FY2023 was $10.895B, FY2024 was $11.399B, and FY2025 was $12.506B [data_package Section 3]. The disclosed/calculated YoY rates tie within 2%: $10.396B x 1.048 = $10.895B; $10.895B x 1.046 = $11.396B, within $0.003B of the reported $11.399B; $11.399B x 1.097 = $12.505B, within $0.001B of the reported $12.506B. No product-level back-solving is performed because there is no disclosed recent product-dollar base to anchor it.

7. Management guidance quoted from data package Section 6

The data package contains Mission Systems management/read-through commentary but does not provide long verbatim Mission-specific management quotes in the way it does for some corporate and other segment items. The relevant guidance anchors are therefore quoted or paraphrased from the data package rows and flagged where the package lacks a direct quote.

Source row	Management / official commentary anchor	Interpretation
data_package Section 6, Mission Systems narrative	"best historical margin segment"	The data package frames Mission as the strongest segment margin contributor. This supports using a high-14% to mid-15% margin band rather than a company-average margin.
data_package Section 6, Mission Systems narrative	Q1 FY2026 sales grew 2% and operating income rose 20%, with margin up to 15.1%	Revenue momentum is slower than FY2025, but the segment's profit conversion remains strong. The model should not extrapolate Q1 revenue growth alone.
data_package Section 6, Mission driver table	"Restricted airborne radar"	Restricted radar is a growth contributor, but the lack of program dollars requires modeling at the segment level.
data_package Section 6, Mission driver table	"Marine systems"	Marine and undersea-related work broadens Mission beyond airborne electronics and supports a durable mid-single-digit outlook.
data_package Section 6, Mission driver table	"F-35 radar / advanced radar"	Facility/tooling and concurrent development-production risk make this a growth-and-execution driver rather than a risk-free acceleration assumption.
data_package Section 6, Mission driver table	"International ground-based radar"	International radar is upside, but export approvals, customer timing, and FMS processing argue against aggressive base-case acceleration.
data_package Section 6, Mission driver table	"Use high-14% segment margin as guide"	This is the clearest margin guide. The base case holds TTM+5 margin at 15.1%, with bear/bull bands around execution and mix.

[DATA GAP: data_package Section 6 does not include full verbatim Mission-specific transcript excerpts for each driver. This appendix uses the data-package snippets and official-source paraphrases rather than re-fetching or re-quoting transcripts.]

8. Forward growth assumptions by disclosed line and driver

The forward model compounds from the TTM base, not from FY2025. The disclosed Mission Systems TTM revenue base is $12.560B [quant_foundation P4]. The model uses one dollar-disclosed revenue line, Mission Systems segment total, and treats named programs as qualitative drivers inside that line. This is not analytically perfect, but it is the only treatment consistent with Northrop's non-disclosure of product-level dollars.

Base case growth

Product / driver	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Base CAGR TTM to TTM+5y	Justification
Mission Systems reportable segment	6.35% FY2022-FY2025	FY2025 +9.7%; Q1 FY2026 +2%	FY2026 segment guide: high-$12B sales, high-14% margin [data_package Section 6 consolidated guidance]	4.8%	Base growth steps down from the 6.35% historical CAGR because Q1 FY2026 slowed to 2%, SABR/EW had lower volume, and government budget timing can be uneven. It remains above 4% because restricted airborne radar, marine systems, microelectronics, F-35 radar capacity, and international radar provide multiple demand lanes.
Restricted airborne radar	Not disclosed	Growth driver, no dollar YoY	No separate guide	Included in segment CAGR	Classified/restricted radar likely grows faster than the segment average, but no dollar base is disclosed. The base case lets this driver offset weaker SABR/EW rather than assigning standalone revenue.
Marine systems	Not disclosed	Growth driver, no dollar YoY	No separate guide	Included in segment CAGR	Navy and undersea-related electronics are structurally supported by U.S. maritime emphasis, but product-level revenue is not disclosed.
F-35 radar / SABR / airborne EW	Not disclosed	Lower SABR and airborne EW volume in Q1 FY2026	No separate guide	Included in segment CAGR	Advanced radar capacity and F-35 content support the medium term, while Q1's lower SABR/EW volume warns against aggressive near-term extrapolation.
Microelectronics / communications / networks / C4ISR	Not disclosed	Not separately disclosed	No separate guide	Included in segment CAGR	Defense microelectronics, secure networking, and C4ISR are strategic priorities, but Northrop does not disclose a product series. Base case assumes these sustain the segment's moat rather than creating a separate growth line.

Base-case revenue calculation: $12.560B x (1 + 4.8%)^5 = $15.878B at March 31, 2031.

Bull case growth

Product / driver	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM to TTM+5y	Justification
Mission Systems reportable segment	6.35% FY2022-FY2025	FY2025 +9.7%; Q1 FY2026 +2%	FY2026 high-$12B sales, high-14% margin	6.8%	Bull growth assumes FY2025 was not a one-off, Q1 timing normalizes, restricted airborne radar and marine systems scale, and international radar demand converts faster. This is above the historical 3-year CAGR but not wildly above it.
Restricted airborne radar	Not disclosed	Growth driver	No separate guide	Included in segment CAGR	Restricted awards and classified airborne demand convert into sustained production/upgrade volume.

Product / driver	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM to TTM+5y	Justification
Marine systems	Not disclosed	Growth driver	No separate guide	Included in segment CAGR	Navy and undersea electronics demand accelerates with maritime modernization and supplier execution.
F-35 radar / SABR / airborne EW	Not disclosed	Q1 headwind	No separate guide	Included in segment CAGR	F-35 radar tooling and advanced radar production overcome SABR/EW timing softness.
Microelectronics / communications / networks / C4ISR	Not disclosed	Not separately disclosed	No separate guide	Included in segment CAGR	Secure microelectronics and networking become a larger share of customer modernization budgets, with Northrop retaining incumbent positions.

Bull-case revenue calculation: $12.560B x (1 + 6.8%)^5 = $17.452B at March 31, 2031.

Bear case growth

Product / driver	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bear CAGR TTM to TTM+5y	Justification
Mission Systems reportable segment	6.35% FY2022-FY2025	FY2025 +9.7%; Q1 FY2026 +2%	FY2026 high-$12B sales, high-14% margin	2.5%	Bear growth assumes Q1 FY2026's 2% growth is closer to the near-term run rate, lower SABR/EW volume persists, export timing slips, and open-architecture competition limits upgrade economics.
Restricted airborne radar	Not disclosed	Growth driver	No separate guide	Included in segment CAGR	Restricted work remains strategically important but experiences timing delays or lower production conversion.
Marine systems	Not disclosed	Growth driver	No separate guide	Included in segment CAGR	Marine growth continues but cannot offset weaker airborne electronics and budget timing.
F-35 radar / SABR / airborne EW	Not disclosed	Q1 headwind	No separate guide	Included in segment CAGR	Advanced radar execution remains sound, but volume transitions and concurrent development-production risk weigh on growth.
Microelectronics / communications / networks / C4ISR	Not disclosed	Not separately disclosed	No separate guide	Included in segment CAGR	Demand remains but is competed more aggressively, with smaller vendors and government-owned architectures capturing some value.

Bear-case revenue calculation: $12.560B x (1 + 2.5%)^5 = $14.210B at March 31, 2031.

Thesis-consistency check: the base-case 4.8% CAGR is below the FY2022-FY2025 6.35% CAGR and below FY2025's 9.7% YoY, but above Q1 FY2026's 2% YoY. That is an intentional midpoint between a strong FY2025 and a slower Q1. The deceleration path is defensible because the segment already has a $12.6B TTM base, management's FY2026 guide is "high-$12B" rather than a double-digit guide, and the Q1 disclosure named offsets from lower SABR and airborne EW volume. The bull case requires Q1 to prove temporary; the bear case assumes it reveals a more persistent plateau.

9. Forward operating margin assumptions

The current TTM operating margin is 15.1%: $1.899B of TTM operating income divided by $12.560B of TTM revenue [quant_foundation P4]. FY2025 margin was 14.6%, FY2024 margin was 14.0%, FY2023 margin was 14.8%, and FY2021-FY2022 margins were both 15.6% [data_package Section 3]. The margin history therefore supports a mid-teens range, not a linear expansion story.

Case	Current margin reference	TTM+5y margin	Mechanism
Bear	15.1% TTM; FY2025 14.6%	14.3%	Bear margin falls 80 bps from TTM because lower volume absorption, competitive pricing, early-stage development mix, supplier/labor pressure, or less favorable EAC adjustments outweigh the segment's technology content. The decline is less than 100 bps but still meaningful relative to Mission's stable history.
Base	15.1% TTM; high-14% FY2026 guide	15.1%	Base margin holds the TTM level. Scale benefits in restricted radar, marine systems, and electronics are offset by continued investment, cost-type development mix, export timing, and normal EAC volatility.
Bull	15.1% TTM; FY2021-FY2022 at 15.6%	15.8%	Bull margin rises 70 bps from TTM as mix shifts toward mature production/upgrade work, fixed-price execution improves, and restricted/electronics content scales. The margin does not move into a software-like band because government contracting still caps economics.

The most important margin risk is not gross margin in a consumer sense; it is EAC accuracy and recoverability. Northrop's broader portfolio shows that segment profit can move sharply when estimated costs or contract economics change. Mission has been more stable than Aeronautics or Space, but it is still subject to the same accounting framework. A high-teens margin assumption would require either product-level evidence of a mix shift or a management guide beyond the high-14% framing, and neither is disclosed.

The base-case 15.1% margin is slightly above the FY2026 high-14% guide because the model endpoint is five years out and assumes some scale and learning. It is not above the best historical years by much. The bull margin of 15.8% is close to the FY2021-FY2022 15.6% band and assumes better production mix. The bear margin of 14.3% remains above many defense peers but below the segment's current run rate, reflecting the risk that Q1's favorable EAC and prior-year investment comparisons fade.

10. Segment rollup built bottoms-up

Because no Mission product-level dollars are disclosed, the rollup uses a single disclosed product line: Mission Systems reportable segment. Named drivers are included qualitatively inside the segment CAGR and margin rather than assigned fabricated revenue. The arithmetic therefore ties exactly by construction, and the lack of product-level summation is itself a disclosure limitation.

Case	Disclosed revenue line	TTM revenue	CAGR	TTM+5y revenue	TTM+5y margin	TTM+5y operating income
Bear	Mission Systems segment	$12.560B	2.5%	$14.210B	14.3%	$2.032B
Base	Mission Systems segment	$12.560B	4.8%	$15.878B	15.1%	$2.398B
Bull	Mission Systems segment	$12.560B	6.8%	$17.452B	15.8%	$2.757B

Probability-weighted read-through: using 25% bear, 50% base, and 25% bull probabilities produces expected Mission Systems TTM+5 revenue of about $15.855B and expected operating income of about $2.396B. That is essentially the base case because the distribution is symmetric around it. The more important investment conclusion is not the probability-weighted decimal; it is that Mission Systems can plausibly add roughly $0.13B to $0.86B of operating income over the TTM base depending on growth and margin mix. TTM operating income is $1.899B, so the base case adds about $0.499B of segment operating income by March 31, 2031.

This rollup should be used carefully in the consolidated ER2 model. Mission is a high-quality contributor, but it is not large enough by itself to turn Northrop into a high-growth compounder. At the base case, Mission revenue grows from $12.560B to $15.878B over five years, adding $3.318B of revenue. Operating income grows from $1.899B to $2.398B, adding $0.499B. That supports the company but does not solve Space headwinds, B-21 execution risk, Sentinel funding risk, or company-level

ROIC questions on its own.

11. Key risks and wildcards

Bear risk: budget timing and continuing resolutions. Mission Systems depends heavily on U.S. government funding, and Northrop identifies continuing resolutions, shutdowns, debt-ceiling payment delays, procurement changes, and program-support changes as risks in its filings and Q1 materials. A budget pause can delay awards, slow volume conversion, and create inefficiency without changing the long-term need.

Bear risk: open architecture and modular competition. Government customers want faster upgrades and lower lock-in. If open mission systems make subsystem replacement easier, Northrop's incumbent advantage can erode at the margin. This does not eliminate the moat, but it can reduce pricing power and compress upgrade economics.

Bear risk: EAC and supplier execution. Mission's margin stability is a strength, but the segment still uses contract accounting. Labor shortages, security-clearance constraints, electronic component shortages, inflation, or supplier failures can turn a strong program into a lower-margin program.

Bear/base risk: product disclosure opacity. Restricted airborne radar, marine systems, F-35 radar, SEWIP, microelectronics, communications, networks, and C4ISR are all qualitatively important, but Northrop does not disclose dollar series. The forecast therefore has less internal product-level verification than a segment with explicit subsegment revenue.

Base risk: F-35 radar and airborne EW timing. Q1 FY2026 growth was offset by lower SABR and airborne EW volume. Advanced radar remains a strategic driver, but capacity, tooling, testing, and concurrent development-production risk can stretch the timing of growth.

Bull wildcard: restricted programs and international radar. Q1 sales commentary cited restricted airborne radar ramp-up, and the data package identifies international radar strength. If classified radar and international ground-based radar convert faster than expected, Mission can sustain growth above the base case without needing a new disclosed mega-program.

Bull wildcard: intersegment leverage. Mission content can ride other Northrop platform ramps. If B-21, F-35 content, Triton, restricted aircraft, Navy programs, missile defense, and space/airborne systems require more sensors, processors, communications, and EW content, Mission can grow even when the external program is booked elsewhere.

Case probability is set at 25% bear, 50% base, and 25% bull. The segment is good enough to justify a balanced distribution rather than a strongly skewed downside case, but the absence of product-level dollars and government contracting constraints keep the bull case from becoming the default.

Case	Segment TTM+5y Revenue	Segment TTM+5y Op Margin	Segment TTM+5y Op Income	Probability
Bear	$14.210B	14.3%	$2.032B	25%
Base	$15.878B	15.1%	$2.398B	50%
Bull	$17.452B	15.8%	$2.757B	25%

ER2 implications

Mission Systems is one of the cleanest quality assets inside Northrop Grumman. It has the strongest historical segment margin profile, a defensible technical moat, and exposure to structurally important defense priorities: sensing, radar, EW, communications, microelectronics, mission processing, marine systems, and restricted programs. It deserves a better-than-company-average quality score at the segment level.

The segment is not enough to make the consolidated ER2 thesis a simple BUY. First, Mission's growth is mid-single-digit in the base case, not a secular 10% compounder. Second, the segment's operating margin is already good, so future margin expansion is incremental. Third, product opacity limits confidence in a true bottom-up product rollup. Fourth, company-level quality still depends on B-21, Sentinel, Space Systems, consolidated cash conversion, and ROIC after elevated investment.

For the synthesis agent, the right use of this appendix is to treat Mission as a stabilizing, high-quality earnings contributor with roughly $2.4B base-case segment operating income at the March 31, 2031 horizon. It should improve the blended company margin and moat assessment, but it should not be used to paper over weaker segment economics elsewhere. The ER2 conclusion should reward Mission's durability while preserving the framework's default skepticism: the stock earns a BUY only if the consolidated company clears valuation, ROIC, cash conversion, and execution risk, not simply because one segment is strong.

Source and data-gap log

Primary controlled sources: `data_package.md` Sections 1, 3, 4, 5, and 6; `quant_foundation.md` P2 and P4. Live check sources: FMP stable `revenue-product-segmentation`, `income-statement`, and `quote` endpoints saved as mission-prefixed raw files; Northrop Q1 FY2026 earnings release / Form 8-K; SEC FY2025 10-K and Q1 FY2026 10-Q. External competitive context used: RTX FY2025 results release; L3Harris FY2025 results release; BAE Systems Annual Report 2025 filing reference; Department of Defense FY2026 budget briefing.

[DATA GAP: Northrop does not disclose Mission Systems product-level historical revenue or operating income for restricted airborne radar, F-35 radar/SABR, SEWIP, marine systems, international ground radar, microelectronics, communications, networks, or C4ISR.]

[DATA GAP: Northrop does not disclose Mission Systems capex, R&D, working-capital intensity, or invested capital separately.]

[DATA GAP: data_package Section 6 does not include full verbatim Mission-specific transcript excerpts for each driver; this appendix uses the data-package snippets and official-source paraphrases.]

Appendix B3 - Space Systems

Space Systems - Segment Deep Dive

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Stage 0 time anchor used verbatim:

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

0. Segment Boundary And Taxonomy Note

Space Systems is one of Northrop Grumman's four current reportable segments. The segment boundary in the verified data package is satellites, spacecraft systems, sensors and payloads, ground systems, missile defense systems and interceptors, and launch vehicles. The company-level taxonomy change identified by the data package was the January 1, 2025 realignment of the Strike and Surveillance Aircraft Solutions business unit from Defense Systems to Aeronautics Systems. That restatement matters mainly to Aeronautics and Defense. Space Systems itself was not the moved business unit, but the appendix still uses the data-package convention: FY2023-FY2025 are treated as the latest restated basis, while FY2021-FY2022 are earlier official 10-K history and are less comparable at the full company segment table level [data_package Section 1, Reporting Structure & Taxonomy; quant_foundation P2].

The modeling unit for this appendix is the reportable segment, not a product portfolio built from platform estimates. The verified package is explicit that Northrop does not disclose full product-line revenue for SDA, NGI, GEM 63XL, GPI, Golden Dome/C2, Artemis/SLS motors, restricted space, or other named platforms; the most granular reliable dollar disclosure is Space Systems segment revenue and operating income [data_package Section 4, Product / Sub-Segment Historicals]. Therefore all historical dollars, operating income, and margin figures below are segment-level. Named programs are used as forward drivers only. [DATA GAP: Northrop does not disclose product-level Space Systems revenue or operating income for SDA, NGI, GEM 63XL, GPI, Golden Dome/C2, Artemis/SLS motors, restricted space, international space, or other named Space programs in the verified package; this appendix does not create product-level historical dollars.]

1. What Space Systems Actually Is

Space Systems is Northrop Grumman's defense-space, missile-defense, and launch-systems segment. A simple way to describe it is this: the segment designs, builds, integrates, and operates systems that sit above the atmosphere or defend against threats that travel through or near space. In practice, that includes classified and unclassified satellites, space payloads, missile-warning and missile-tracking sensors, ground infrastructure, launch vehicles, interceptor-related work, and propulsion or launch-system content. The data package's segment description is the controlling taxonomy: satellites and spacecraft systems, subsystems, sensors and payloads, ground systems, missile defense systems and interceptors, and launch vehicles [data_package Section 1, row Space Systems; quant_foundation P-Taxonomy].

The customer is overwhelmingly the U.S. government. In FY2025, Northrop reported $9.510B of U.S. government sales inside Space Systems, equal to 93% of external Space sales, making Space the most U.S.-government-heavy of the four reportable segments [data_package Section 1, Customer / geographic exposure]. That customer mix changes the economics. This is not a commercial satellite business selling recurring capacity to telecom customers, nor a venture-like space manufacturing business trying to win low-cost commercial constellations. It is a prime defense contractor segment with U.S. government contracting, security clearances, classified demand, export controls, congressional funding cycles, and estimate-at-completion accounting.

Revenue is mostly generated through long-cycle government contracts. Contract form can vary by program and phase: early design or prototype work may use cost-plus or Other Transaction Authority structures; production lots may include fixed-price or incentive mechanics; sustainment and operations can look more service-like. The common thread is that Northrop earns revenue as it satisfies performance obligations, delivers hardware, performs integration, or operates systems under

government contracts. This means sales are driven by awards, funded backlog, production and test milestones, supply-chain throughput, and EAC judgments rather than by unit demand visible in a normal commercial order book.

Go-to-market is programmatic rather than transactional. Northrop competes for large U.S. government and allied requirements, often after years of funded studies, prototypes, design reviews, test events, and classified customer engagement. The key buying centers are the Space Force and its acquisition arms, the Missile Defense Agency, NASA for certain propulsion and exploration content, the intelligence community, and U.S.-sponsored international military channels. The segment's sales force is therefore a combination of engineering credibility, program execution history, cleared technical teams, lobbying and budget-shaping capability, and the ability to integrate hardware, payloads, ground systems, and mission software into a working architecture.

For the ER2 framework, the important framing is that Space Systems is strategically relevant but not currently the company's cleanest compounding segment. Its mission areas are attractive: missile warning, missile tracking, missile defense, hypersonic defense, restricted space, space-based sensing, proliferated low-earth-orbit architectures, launch and propulsion. Yet the reported segment has been shrinking recently. FY2025 revenue declined 8.2%, Q1 FY2026 sales declined 3%, and management attributed recent pressure to an NGI wind-down, a GEM 63XL unfavorable adjustment, and the fact that offsetting drivers such as SDA satellites and restricted space were not yet large enough to produce reported reacceleration [data_package Sections 3, 5, and 6].

2. Current Economics: FY2025 And TTM Base

The current numerical base for the forward model is TTM ended March 31, 2026, not FY2025. Quant foundation P4 gives Space Systems TTM revenue of $10.683B, TTM operating income of $1.135B, and a TTM operating margin of 10.6%. That TTM is Q2 FY2025 revenue of $2.646B, Q3 FY2025 revenue of $2.698B, Q4 FY2025 revenue of $2.859B, and Q1 FY2026 revenue of $2.480B [quant_foundation P4]. The same table controls the TTM margin. The data package is aligned: it says FY2025 Space revenue was $10.771B, FY2025 operating income was $1.183B, and FY2025 operating margin was 11.0%; it also says Q1 FY2026 Space sales were $2.480B, operating income was $0.235B, and margin was 9.5% [data_package Section 3 Space Systems; Section 5 recent quarterly trend].

The most recent full-year trend was negative. Space Systems revenue was $10.608B in FY2021, $12.275B in FY2022, $11.873B in FY2023, $11.731B in FY2024, and $10.771B in FY2025 [data_package Section 3, Space Systems table]. The FY2022 peak was followed by three years of decline. The 3-year CAGR from FY2022 to FY2025 was approximately -4.25%, and the latest annual YoY was -8.2%. Q1 FY2026 was not yet a snapback: sales declined 3% YoY, with the official explanation citing NGI wind-down and the GEM 63XL EAC adjustment, partly offset by SDA and restricted space [data_package Sections 5 and 6].

The margin picture is better than the revenue picture, but still not high quality in a software-like sense. Segment operating margin was 10.6% in FY2021, 9.4% in FY2022, 9.5% in FY2023, 10.7% in FY2024, and 11.0% in FY2025 [data_package Section 3, Space Systems table]. The TTM margin at 10.6% sits close to that range [quant_foundation P4]. Management's FY2026 guidance, as summarized in the data package, calls for Space around $11B of sales with around 11% margin [data_package Section 6, consolidated guidance]. That guide implies management expects the segment to hold or slightly improve from the TTM base even though the Q1 print was weighed down by program headwinds.

Capital intensity is disclosed at company level, not segment level. Company capex was $1.450B in FY2025, 3.5% of revenue, and management guided to higher company capex of about $1.85B in FY2026 because B-21 investment is rising [data_package Section 7]. That B-21 capex belongs to Aeronautics, not Space, but Space is still not an asset-light segment. Satellites, launch systems, interceptor hardware, propulsion, test facilities, classified production space, and ground infrastructure require specialized plants, engineering labs, security, and supplier tooling. The lack of segment capex disclosure is a limit on precision. [DATA GAP: Space Systems segment-level capex, working capital, and invested capital are not disclosed in the data package; capital intensity is inferred qualitatively from the program mix and company-level capex only.]

Sub-product share is not disclosed. The verified data package names SDA Tranche, NGI, GEM 63XL, GPI, Golden Dome/C2, and Artemis/SLS motors as Space drivers, but explicitly says there is no separate product P&L and instructs downstream subagents not to infer product dollars [data_package Section 4, Space row]. That matters because the economics are likely heterogeneous. A restricted satellite payload program, a launch motor production line, a missile-defense interceptor prototype, and a proliferated LEO satellite award can have different risk, margin, and cash profiles. The appendix therefore uses these as drivers of the segment-level growth rate and margin, not as separate product revenue lines.

3. Unit Economics

Space Systems converts revenue to profit through the familiar defense-prime path: funded contract backlog becomes engineering labor, purchased material, manufacturing, integration, test, delivery, and program management; the segment earns operating income after direct costs, supplier costs, overhead, IRAD allocation, and EAC adjustments. The business can generate good margins when a program is mature, technically stable, and moving through repeat production or operations. It can also absorb material charges when design maturity, launch anomaly, supplier quality, test failure, or customer-scope changes move estimated costs faster than recoverable contract value.

The historical margin range shows both characteristics. Despite a three-year revenue decline from FY2022 to FY2025, margin improved from 9.4% to 11.0% [data_package Section 3, Space Systems table]. That tells us the segment is not simply suffering from a fixed-cost absorption collapse. The mix likely improved, cost performance likely helped in some areas, and lower-margin volume may have rolled off. But Q1 FY2026 margin fell to 9.5%, and the data package ties that period to a $71M unfavorable GEM 63XL EAC adjustment associated with a launch anomaly [data_package Sections 5, 6, and 9]. One adverse EAC item was large enough to be visible against quarterly segment operating income of $0.235B.

The first unit-economic lever is contract type. Cost-plus development work can protect cash and margin when technical risk is high, but it usually caps upside. Fixed-price or fixed-price incentive production can create margin expansion after learning-curve maturity, but it also exposes Northrop to cost growth if supply, labor, test, or launch issues emerge. The Space portfolio contains both. GPI and other missile-defense development activity may be funded through prototype or R&D structures, while satellite production awards and launch vehicle work can include more fixed-price content. The segment's margin ceiling is therefore structurally lower than a commercial software model and likely lower than Mission Systems' 14%-15% historical margin profile.

The second lever is learning curve. Space hardware economics can improve as a design moves from development into repeat production. SDA's proliferated architecture, for example, is explicitly built around repeated tranches, common ground integration, interoperability, and periodic technology refresh. The Space Development Agency's December 2025 Tranche 3 award announcement said four teams, including Northrop, would each deliver and operate 18 satellites as part of a 72-space-vehicle Tracking Layer constellation launching in FY2029, and Northrop's agreement had a total potential value of $764M [SDA Dec. 19, 2025 release]. That kind of serial production can help if design reuse and supplier throughput improve. However, SDA is also intentionally competitive and multi-vendor, which limits monopoly economics.

The third lever is mission criticality. Missile warning, missile tracking, restricted payloads, ground systems, and interceptors are high-stakes capabilities. If Northrop is one of a few cleared suppliers able to meet the mission need, it can sustain share and avoid purely price-based competition. But the government customer still has negotiating power, and the Department of Defense has been actively pushing acquisition speed, modularity, and competition in space. SDA's Tranche 3 structure is a good example: Lockheed Martin, Rocket Lab, Northrop, and L3Harris all won parallel awards [SDA Dec. 19, 2025 release]. Strategic importance helps the segment win funded work; it does not automatically give it 20% operating margins.

The fourth lever is EAC discipline. Northrop's Space Systems accounting depends on estimates of total contract revenue, total contract cost, profit recognition, and recoverability. A launch anomaly, material defect, integration delay, or customer change can create a negative adjustment. Q1 FY2026's GEM 63XL charge is the live example [data_package Section 6, Space Systems forward implications]. This is why the base case assumes only modest margin expansion from 10.6% TTM to 11.2% by March 31, 2031. A better revenue mix and learning curve can help, but the operating model has real downside convexity when technical events happen.

4. Competitive Dynamics

Space Systems competes in several overlapping markets rather than one homogeneous market. In national security space and missile warning/tracking, competitors include Lockheed Martin, L3Harris, RTX/Raytheon, Boeing, General Dynamics in certain ground/C2 roles, and newer or more specialized entrants such as Rocket Lab, York Space, Sierra Space, Blue Origin, SpaceX, and other payload or bus suppliers depending on the procurement. In missile defense and interceptors, Lockheed Martin and RTX are especially important. In launch vehicles and solid propulsion, Northrop also intersects with Aerojet Rocketdyne/L3Harris, RTX, and emerging launch suppliers. In classified space, the exact competitor set and share positions are often not visible.

The market structure is best described as restricted oligopoly with pockets of forced competition. Entry barriers are high: clearances, mission assurance, classified customer intimacy, export controls, nuclear and missile-defense credibility, secure manufacturing, quality systems, space-qualified components, payload heritage, and the ability to survive long bid cycles. At

the same time, the customer works hard to keep more than one supplier alive. SDA's Tranche 3 award is the cleanest public example. SDA awarded approximately $3.5B across four teams for 72 Tracking Layer satellites, with Lockheed Martin receiving a $1.1B potential value award, Rocket Lab $805M, Northrop $764M, and L3Harris $843M [SDA Dec. 19, 2025 release]. Northrop is credible, but not sole-source.

The competitive threat in proliferated LEO is different from the threat in exquisite classified satellites. Proliferated LEO architectures value speed, lower unit cost, interoperability, optical links, refresh cycles, and vendor diversity. Those traits lower the relative advantage of a legacy prime's bespoke satellite heritage and open room for Rocket Lab, SpaceX-related supply chains, and smaller bus or payload specialists. SDA's acquisition philosophy is intentionally disruptive: its public materials describe the agency as a constructive disruptor meant to accelerate delivery to the joint warfighter [SDA site, About / Dec. 19 release]. That does not eliminate Northrop's role, but it pushes pricing discipline and compresses excess margin.

In missile defense, Northrop has attractive exposure but also a visible lost opportunity. The Missile Defense Agency selected Lockheed Martin in April 2024 to deliver the Next Generation Interceptor for homeland missile defense [Lockheed Martin NGI announcement, Apr. 15, 2024]. The data package says Northrop's Space pressure included an NGI prior-year closeout headwind of $98M in Q1 FY2026 [data_package Section 6, Space Systems]. The combination is important: NGI work was a meaningful historical contributor, but the forward path no longer supports assuming the same NGI revenue level. Northrop's GPI win helps refill the missile-defense pipeline, but it is not a one-for-one replacement in timing, scale, or margin.

GPI is strategically valuable because hypersonic defense is a high-priority mission. The Department of Defense contract announcement in November 2024 increased Northrop's GPI prototype OTA value to $832.8M and said the work would further develop and define the design concept, with estimated completion in November 2029 [DoD Contracts, Nov. 13, 2024]. The data package adds that shortly after Q1 FY2026 quarter-end, Northrop secured an award to accelerate GPI development, bringing total contract value to $1.3B according to management commentary [data_package Sections 6 and 9]. This is real backlog support. But it is still development/prototype work, and the revenue cadence before production is uncertain.

Pricing power exists, but it is bounded. Northrop can have pricing power where it owns critical intellectual property, where switching would be expensive, where there are only two or three qualified suppliers, or where the government needs a particular design quickly. It has less pricing power where the customer splits awards among multiple primes, where fixed-price competition forces cost realism, or where acquisition reform emphasizes speed and modularity over bespoke prime integration. Space Systems therefore earns a moat score that is real but not exceptional: better than a commodity manufacturer, worse than a monopolistic platform with high recurring revenue.

5. Moat At The Segment Level

The Space Systems moat has four layers. The first is technical qualification. Space and missile-defense systems need to work under harsh conditions, often after long periods in orbit or under extreme flight regimes. Qualification history, test data, systems-engineering processes, and mission assurance matter. A new entrant can build a satellite bus; it is harder to become a prime contractor for classified payload integration, missile-warning sensors, interceptor development, or high-consequence launch and propulsion work.

The second layer is customer embeddedness. Northrop has decades of U.S. government space and missile-defense relationships. It understands classification rules, requirements evolution, test infrastructure, funding mechanics, and program-office behavior. That embeddedness matters in restricted work where competitors cannot even describe the opportunity publicly. The data package's Q1 award list included $4.9B for restricted programs across benefiting segments [data_package Section 5]. The exact share that belongs to Space is not disclosed, but restricted space is repeatedly identified as an offsetting growth driver [data_package Section 6].

The third layer is scale and integration. Northrop can combine payloads, ground systems, propulsion, launch vehicles, battle management, and missile-defense engineering across business units. Space Systems itself includes satellites, payloads, ground systems, missile defense, interceptors, and launch vehicles [data_package Section 1]. That breadth gives Northrop a seat at the table for architectures rather than isolated components. Golden Dome/C2 optionality, SDA integration, missile warning, and GPI all reward systems-level credibility. The catch is that systems breadth is not unique to Northrop. Lockheed Martin and RTX also bring broad missile-defense and space capabilities, and L3Harris is a serious space payload and mission-systems competitor.

The fourth layer is switching cost and program continuity. Once a contractor is selected and the program passes design reviews, the cost of switching primes can be high. That protects incumbent production and sustainment work. However, the moat resets at recompete points and new tranches. SDA's spiral approach explicitly refreshes capabilities every generation;

that makes Northrop's installed position valuable, but it also prevents a permanent lock-in. The moat is therefore strongest in classified incumbent programs and mature mission-critical systems, and weaker in modular proliferated architectures.

Durability over five to ten years looks adequate but not dominant. The demand side is durable: the U.S. and allies need missile warning, space resilience, hypersonic defense, and proliferated tracking. Threats from China, Russia, Iran, and North Korea support budget priority. But segment economics are not guaranteed to compound at high incremental returns. The government customer retains bargaining power, fixed-price risk remains, and new entrants can pressure parts of the satellite stack. For ER2, the moat supports a mid-single-digit growth recovery and low-double-digit margin in the base case; it does not support underwriting a clean 8%-10% segment CAGR with structurally rising margins.

6. Historical Growth Rates - Reproduced From Data Package

The table below uses Space Systems segment-level dollars only. There are no product-level Space revenue rows in the data package. FY2023-FY2025 revenue, operating income, and margin are from data_package Section 3, Space Systems table, which itself is controlled by QF P2 / SEC 10-K. The 3-year CAGR uses FY2022 as the starting point and FY2025 as the endpoint because that is the only way to calculate a three-year annualized rate. Latest quarterly YoY is separately noted from data_package Section 5.

Product / sub-segment	FY-3 rev	FY-2 rev	FY-1 rev	3-yr CAGR	Most recent YoY	Data package cite
Space Systems reportable segment	$11.873B FY2023 [data_package Section 3, Space row Revenue]	$11.731B FY2024 [data_package Section 3, Space row Revenue]	$10.771B FY2025 [data_package Section 3, Space row Revenue]	-4.25%, calculated from FY2022 $12.275B to FY2025 $10.771B [data_package Section 3, Space row Revenue]	FY2025 -8.2%; Q1 FY2026 -3% [data_package Section 3 YoY row; Section 5 Space Q1 row]	data_package Section 3 Space Systems rows; data_package Section 5 Q1 FY2026 segment YoY row
SDA Tranche / restricted space / NGI / GEM 63XL / GPI / Golden Dome-C2 / Artemis-SLS motors	Not separately disclosed [data_package Section 4 Space product row]	Not separately disclosed [data_package Section 4 Space product row]	Not separately disclosed [data_package Section 4 Space product row]	Not meaningful because no product dollars are disclosed	Q1 FY2026 qualitative: NGI wind-down and GEM 63XL offset SDA and restricted space [data_package Section 4 growth-rate-only row; Section 6 Space Systems]	data_package Section 4 Space row and growth-rate-only table

Arithmetic tie-out for the disclosed segment row:

Check	Calculation	Result
FY2022 to FY2023	$12.275B x (1 - 3.3%) = $11.870B vs reported $11.873B	Pass, within 2%
FY2023 to FY2024	$11.873B x (1 - 1.2%) = $11.731B vs reported $11.731B	Pass
FY2024 to FY2025	$11.731B x (1 - 8.2%) = $10.769B vs reported $10.771B	Pass, rounding difference
TTM bridge	$2.646B + $2.698B + $2.859B + $2.480B = $10.683B	Pass vs quant_foundation P4

No back-solved product rows are included. The data package explicitly says named program mentions are qualitative drivers and that downstream segment appendices should not create platform revenue series unless explicitly labeled as model estimates [data_package Section 4]. I do not label any historical Space program dollars as estimates because doing so would create false precision where the verified package deliberately withheld it.

7. Management Guidance - Quoted From Data Package Section 6

Management guidance for Space is more limited than for some other NOC segments. The data package includes corporate guidance, segment-level Space guidance, and Space-specific program commentary, but most Space comments are paraphrased by the data-package subagent rather than reproduced as long verbatim transcript quotations. I use the data package as source of truth and do not re-fetch transcripts.

Data package row / section	Quote or package text	Interpretation for Space Systems
Section 6, consolidated guidance	Management reaffirmed 2026 sales guidance of $43.5B-$44.0B and segment operating income of $4.85B-$5.00B; Space guidance is around $11B sales with around 11% margin.	The FY+1 anchor is modest recovery from TTM revenue of $10.683B to roughly $11B and margin roughly in line with FY2025. This supports a base case that starts with low-single-digit growth, not immediate high-single-digit reacceleration.

Data package row / section	Quote or package text	Interpretation for Space Systems
Section 6, Space Systems paragraph	Space is strategically important but currently mixed; FY2025 revenue fell 8.2% and Q1 FY2026 sales fell 3%.	Management's own framing does not yet show a clean reported growth inflection. The forward model needs a bridge from known headwinds to replacement drivers.
Section 6, Space Systems paragraph	Official Q1 commentary cites an NGI prior-year closeout headwind of $98M and a $71M unfavorable GEM 63XL adjustment tied to a launch anomaly.	The near-term revenue and margin base is depressed by identifiable items, but the items are not purely timing noise. NGI wind-down is a real program transition, and GEM 63XL shows live EAC risk.
Section 6, Space Systems paragraph	Offsetting drivers include SDA satellite ramp, restricted space, GPI, Golden Dome/C2 opportunities, international space demand, and NASA/Artemis-related propulsion content.	The positive case is a portfolio refill: new satellite and missile-defense programs replacing NGI and launch/propulsion pressure. The timing and disclosed scale are uncertain.
Section 6, Space forward implications row	Q1 release: $98M Q1 prior-year sales headwind for NGI.	The model cannot simply extrapolate old NGI revenue. Replacement programs must be visible before growth accelerates.
Section 6, Space forward implications row	Q1 release: $71M unfavorable EAC adjustment for GEM 63XL.	Margins should include a recurring risk discount; one charge can move quarterly margin by hundreds of basis points.
Section 6, Space forward implications row	Q1 release says higher SDA / restricted space volume partly offset declines.	SDA and restricted space are real growth drivers, but they are not yet dominant enough to overcome all headwinds.
Section 6, Space forward implications row	Q1 call says post-quarter GPI award brought total contract value to $1.3B.	GPI is meaningful long-term missile-defense backlog, but the data package itself says near-term revenue cadence is uncertain.
Section 6, corporate table	"over $95 billion in backlog"	Backlog gives company-level visibility and supports Space demand, but the package does not disclose Space backlog separately.

[DATA GAP: The data package's Space Systems management section provides mostly paraphrased guidance and short evidence rows rather than full verbatim transcript quotes for every Space driver. Per Subagent B instructions, this appendix does not re-fetch transcripts; it quotes only the snippets already present in the data package and flags the gap.]

8. Forward Growth Assumptions - Explicit, Segment-Level, TTM Base

The forward model compounds from Space Systems TTM revenue of $10.683B for exactly five calendar years to March 31, 2031 [quant_foundation P4]. Because product-level dollars are not disclosed, the model uses one dollar line: Space Systems reportable segment. Named programs explain the growth rate, but the segment rollup does not allocate dollars to them.

Base Case Growth

Base case: Space Systems grows at a 3.62% CAGR from $10.683B TTM revenue to $12.761B at March 31, 2031. The year-by-year path is +3.0%, +3.5%, +3.7%, +3.9%, and +4.0%. This assumes FY2026 roughly matches management's around $11B guide and then gradually improves as SDA, restricted space, GPI, Golden Dome/C2, and Artemis/SLS-related propulsion offset NGI wind-down and launch/propulsion execution pressure.

Product / model line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Base CAGR TTM to TTM+5y	Justification
Space Systems reportable segment	-4.25% from FY2022 to FY2025 [data_package Section 3]	FY2025 -8.2%; Q1 FY2026 -3% [data_package Sections 3 and 5]	Around $11B sales and around 11% margin in FY2026 [data_package Section 6]	3.62%	Base assumes a measured turn from decline to low-single/mid-single growth. SDA and restricted space grow, GPI ramps from development, and Golden Dome/C2 remains opportunity value, but NGI roll-off and GEM/launch EAC risk keep the CAGR below the strongest defense budget growth narratives.
SDA / restricted space / GPI / NGI / GEM / Golden Dome-C2 / Artemis-SLS drivers	Not disclosed as product dollars [data_package Section 4]	Qualitative only: SDA and restricted space partly offset NGI and GEM headwinds [data_package Section 6]	No product guide; segment guide controls	Not modeled as separate dollars	These drivers are the explanation for the segment growth rate, not separate revenue lines. This preserves the non-disclosure constraint and prevents fabricated program-level history.

Base case year-by-year revenue bridge:

Period	Growth	Revenue
TTM ended 2026-03-31	Base	$10.683B
Year 1	+3.0%	$11.003B
Year 2	+3.5%	$11.389B
Year 3	+3.7%	$11.810B
Year 4	+3.9%	$12.271B
TTM+5y ending 2031-03-31	+4.0%	$12.761B

The base case deliberately does not treat the $764M SDA Tranche 3 award as immediate revenue. SDA said the Tranche 3 Tracking Layer is expected to launch in FY2029 and that the Northrop award is one of four parallel awards [SDA Dec. 19, 2025 release]. That timing supports the back half of the five-year horizon more than the first year. Similarly, GPI's program value supports long-term missile-defense exposure, but development cadence is uncertain and production is not yet the disclosed base case [data_package Section 6; DoD Contracts Nov. 13, 2024].

Bull Case Growth

Bull case: Space Systems grows at a 5.74% CAGR from $10.683B to $14.120B. The year-by-year path is +4.5%, +5.5%, +6.0%, +6.2%, and +6.5%. This assumes SDA and restricted space scale faster, GPI acceleration becomes a more material revenue bridge before 2031, Golden Dome/C2 produces actual funded work rather than just option value, international space demand develops faster than management's conservative framing, and launch/propulsion charges normalize.

Product / model line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM to TTM+5y	Justification
Space Systems reportable segment	-4.25%	FY2025 -8.2%; Q1 FY2026 -3%	Around $11B sales and around 11% margin	5.74%	Bull assumes the current decline is a trough caused by program transitions rather than structural share loss. SDA Tranche 3, restricted space, and GPI convert to funded volume quickly enough to overcome NGI wind-down, and Northrop maintains a strong role in missile-defense architecture despite multi-vendor competition.
SDA / restricted space / GPI / NGI / GEM / Golden Dome-C2 / Artemis-SLS drivers	Not disclosed	Qualitative only	No product guide	Not modeled as separate dollars	The driver mix is favorable, but no product-level dollars are inferred. The bull case still rolls up through one segment line.

Bear Case Growth

Bear case: Space Systems grows at only 0.50% CAGR from $10.683B to $10.953B. The year-by-year path is a flat +0.5% each year. This assumes FY2026 guidance is achieved only barely or with mix help, NGI roll-off is harder to replace, SDA economics are competitive and slower to convert, GPI remains development-heavy with uncertain production timing, Golden Dome/C2 does not become material within the five-year window, and launch/propulsion EAC risk recurs.

Product / model line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bear CAGR TTM to TTM+5y	Justification
Space Systems reportable segment	-4.25%	FY2025 -8.2%; Q1 FY2026 -3%	Around $11B sales and around 11% margin	0.50%	Bear assumes Space remains a strategically important but competitively pressured and execution-constrained segment. The business avoids a collapse because mission demand is durable, but new awards are not large or fast enough to replace program closeouts and EAC drag.
SDA / restricted space / GPI / NGI / GEM / Golden Dome-C2 / Artemis-SLS drivers	Not disclosed	Qualitative only	No product guide	Not modeled as separate dollars	The bear case treats these as real opportunities but not enough to produce a clean segment reacceleration.

Thesis-consistency check: the base case is not a heroic deceleration story from a high-growth product. It is a recovery story from a declining segment. The disclosed segment historicals show -4.25% 3-year CAGR and -8.2% FY2025 YoY [data_package Section 3]. The base case asks Space to move from -3% Q1 FY2026 YoY to roughly +3% in the first forward year, consistent with management's around $11B FY2026 sales guide, and then to 4% by year five. That is defensible because SDA, restricted space, GPI, and missile-defense opportunities are real; it is also conservative enough to reflect the fact that management has not yet shown reported reacceleration.

9. Forward Operating Margin Assumptions

Current segment margin is 10.6% TTM and 11.0% in FY2025 [quant_foundation P4; data_package Section 3]. Q1 FY2026 margin was 9.5%, dragged by the $71M GEM 63XL unfavorable adjustment [data_package Sections 5 and 6]. Management's FY2026 guidance is around 11% for Space [data_package Section 6]. The forward margin cases therefore start from a low-double-digit normalized anchor, with explicit discount for program EAC risk.

Case	Current / guide anchor	TTM+5y margin	Mechanism
Bear	TTM 10.6%; Q1 FY2026 9.5%; FY2026 guide around 11%	9.5%	Bear assumes recurring EAC pressure, slower absorption, lower-margin development mix, and competitive pricing in SDA / missile-defense programs. Margin ends below TTM because revenue growth is too weak to offset technical and supplier risk.
Base	TTM 10.6%; FY2025 11.0%; FY2026 guide around 11%	11.2%	Base assumes GEM 63XL is not repeated every year, SDA/restricted work and GPI scale modestly, and fixed-cost absorption improves. The expansion is only 60 bps from TTM because government pricing and EAC risk cap the segment.
Bull	TTM 10.6%; FY2026 guide around 11%	12.0%	Bull assumes better mix, more repeatable satellite production, stronger restricted-space contribution, and clean execution. The 140 bps improvement from TTM requires fewer adverse EACs and production learning, so it is reserved for the upside case.

Because product margins are not disclosed, I do not compute a revenue-weighted product margin table. Any such table would require invented margins for SDA, GPI, restricted space, launch propulsion, and ground systems. The correct arithmetic is a single disclosed segment line. The economic interpretation still uses program mix: restricted programs and mature production can pull margin up; prototype-heavy missile defense, launch anomalies, and supplier stress can pull margin down.

Margin sensitivity is material. At base-case TTM+5y revenue of $12.761B, each 100 bps of segment margin equals about $128M of operating income. That is larger than the Q1 FY2026 Space operating-income shortfall implied by a normal quarter versus one with GEM pressure. For the consolidated NOC model, Space margin is therefore not an afterthought. A move from the base 11.2% margin to the bear 9.5% margin cuts TTM+5y Space operating income by about $388M even before considering lower bear revenue.

10. Segment Rollup - Bottoms-Up Within Disclosure Limits

The rollup uses the only disclosed dollar line: Space Systems reportable segment. Program drivers are embedded in the case CAGR and margin assumptions. Totals reconcile exactly because no undisclosed product dollars are created.

Case	TTM revenue base	5-year CAGR	TTM+5y revenue	TTM+5y op margin	TTM+5y operating income	Probability
Bear	$10.683B	0.50%	$10.953B	9.5%	$1.040B	25%
Base	$10.683B	3.62%	$12.761B	11.2%	$1.429B	50%
Bull	$10.683B	5.74%	$14.120B	12.0%	$1.694B	25%

Arithmetic checks:

Case	Revenue calculation	OI calculation	Tie-out
Bear	$10.683B x 1.005^5 = $10.953B	$10.953B x 9.5% = $1.040B	Pass

Case	Revenue calculation	OI calculation	Tie-out
Base	Year path produces $12.761B	$12.761B x 11.2% = $1.429B	Pass
Bull	Year path produces $14.120B	$14.120B x 12.0% = $1.694B	Pass

The probability-weighted case is $12.649B of TTM+5y revenue and $1.398B of operating income, but the synthesis agent should use the explicit bear/base/bull cases rather than blend them unless the ER2 framework requests probability weighting. The base case is the main input for consolidated FY+5 earnings.

The rollup is intentionally less detailed than the technical program map. That is a feature, not a weakness. The data package already warned that product-level dollars are not disclosed. A more granular-looking model would be less reliable because it would pretend to know the revenue share of SDA, NGI, GPI, restricted space, launch, and ground systems. For ER2 purposes, the right question is whether the segment-level base case is credible. I judge that it is credible but not generous: it assumes the segment moves from recent decline to low-single/mid-single growth, with only modest margin expansion.

11. Key Risks And Wildcards

Bear risk - NGI replacement gap. The Q1 FY2026 package identifies a $98M NGI prior-year closeout headwind and warns not to assume Space returns to growth until replacement programs overcome it [data_package Section 6]. If SDA, GPI, restricted space, and Golden Dome/C2 do not scale on time, Space can remain flat despite strong mission demand.

Bear risk - EAC and launch/propulsion events. The $71M GEM 63XL unfavorable adjustment is the live reminder [data_package Sections 6 and 9]. Space hardware can fail in ways that create immediate accounting charges, schedule slips, and customer scrutiny. This risk mainly affects bear margin, but repeated events would also slow revenue conversion.

Bear/base risk - multi-vendor pressure in proliferated LEO. SDA's Tranche 3 awards went to four teams, not one, and included Rocket Lab and L3Harris alongside Lockheed and Northrop [SDA Dec. 19, 2025 release]. This validates demand but caps pricing power. It also means Northrop must keep winning every tranche rather than harvesting a permanent monopoly.

Base risk - funding cadence and U.S. government concentration. Space Systems is 93% U.S. government by FY2025 external sales [data_package Section 1]. Continuing resolutions, shutdowns, changed priorities, protest delays, or budget caps can move revenue timing. The segment can have strategic demand and still miss a year if funding authority is late.

Base/bull wildcard - Golden Dome and space-based missile defense architecture. The data package lists Golden Dome/C2 as an opportunity, but not a disclosed dollar program [data_package Section 6]. If the architecture turns into funded, executable Northrop work, bull revenue is plausible. If it remains politically visible but slow to contract, it should not be in the base case.

Bull wildcard - SDA and restricted space scale faster. SDA Tranche 3 launch timing in FY2029 means the back half of the horizon could benefit from production and operations if Northrop executes. Restricted space could add higher-value work that is not publicly visible. This is the cleanest path to the bull case, but disclosure opacity prevents confirming it today.

Bear/base risk - supply chain and cleared labor. Space payloads, propulsion, and missile-defense systems need specialized suppliers and cleared engineers. The data package flags supply chain and labor clearance constraints as operational gating items [data_package Section 10]. Tightness here would show up as delayed sales, lower absorption, and EAC pressure.

Bear/base risk - program mix. Development-heavy GPI or early satellite work may not carry mature production margins. If Space replaces old revenue with lower-margin prototype revenue, sales can recover while operating income disappoints. This is why the base margin expands only to 11.2%, not to Mission Systems levels.

Summary Table

Case	Segment TTM+5y Revenue	Segment TTM+5y Op Margin	Segment TTM+5y Op Income	Probability
Bear	$10.953B	9.5%	$1.040B	25%
Base	$12.761B	11.2%	$1.429B	50%
Bull	$14.120B	12.0%	$1.694B	25%

Source Notes

Primary historical and management source: `C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\data_package.md`, especially Sections 1, 3, 4, 5, 6, 9, and 10. Numerical TTM control source:

C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\quant_foundation.md, especially P2 and P4. External competitive context used: Space Development Agency Tranche 3 award release, Dec. 19, 2025, https://www.sda.mil/space-development-agency-makes-awards-to-build-72-tracking-layer-satellites-for-tranche-3/; SDA Tranche 3 solicitation note, Apr. 7, 2025, https://www.sda.mil/sda-seeks-proposals-for-tranche-3-tracking-layer-t3trk-of-the-proliferated-warfighter-space-architecture-pwsa/; Department of Defense / War contract notice for Northrop GPI, Nov. 13, 2024, https://www.defense.gov/News/Contracts/Contract/Article/3964063/; Lockheed Martin NGI selection announcement, Apr. 15, 2024, https://news.lockheedmartin.com/2024-04-15-U-S-Missile-Defense-Agency-selects-Lockheed-Martin-to-provide-its-Next-Generation-Interceptor. A live FMP quote pull for NOC was saved as raw\space_fmp_quote_NOC_2026-04-26.json; it was not used to override any historical segment data.

Appendix B4 - Defense Systems

Defense Systems - Segment Deep Dive

PATH_RECEIVED: C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\appendix_B_defense_systems.md

Prepared as ER2 Subagent B for Northrop Grumman Corporation (NOC). Segment: Defense Systems. Date anchor: 2026-04-26.

Stage 0 time anchor used verbatim:

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Primary internal controls used here:

- `data_package.md`, especially Sections 1, 3, 4, 5, 6, 9, and 10.
- `quant_foundation.md`, especially P-Taxonomy, P2, P4, and P5.
- Northrop's latest official sources cited inside the data package: FY2025 10-K, Q1 FY2026 earnings release, SEC Q1 FY2026 10-Q, and last-four-quarter transcripts.

External sources used only for competitive/program context, not for Northrop historical dollar figures:

- Northrop Sentinel release, April 13, 2026: https://investor.northropgrumman.com/news-releases/news-release-details/northrop-grumman-and-us-air-force-accelerate-sentinel-program
- Northrop IBCS product page: https://www.northropgrumman.com/what-we-do/missile-defense/integrated-battle-command-system-ibcs
- Northrop missile defense page: https://www.northropgrumman.com/what-we-do/missile-defense
- Northrop advanced weapons page: https://www.northropgrumman.com/what-we-do/advanced-weapons
- Lockheed Martin FY2025 and Q1 FY2026 releases: https://news.lockheedmartin.com/2026-01-29-Lockheed-Martin-Reports-Fourth-Quarter-and-Full-Year-2025-Financial-Results and https://news.lockheedmartin.com/2026-04-23-Lockheed-Martin-Reports-First-Quarter-2026-Financial-Results
- RTX FY2025 release: https://www.rtx.com/news/news-center/2026/01/27/rtx-reports-2025-results-and-announces-2026-outlook
- General Dynamics FY2025 release: https://www.gd.com/Articles/2026/01/28/general-dynamics-reports-fourth-quarter-and-full-year-2025-financial-results

0. Segment Boundary and Taxonomy Note

Defense Systems is one of Northrop Grumman's four reportable segments: Aeronautics Systems, Defense Systems, Mission Systems, and Space Systems. The segment boundary is not perfectly stable over the full five-year table. The data package and quant foundation both flag a January 1, 2025 taxonomy realignment under which the Strike and Surveillance Aircraft Solutions business unit moved from Defense Systems to Aeronautics Systems. That realignment is reflected in the FY2025 10-K, and QF treats FY2023-FY2025 as the latest restated basis. FY2021-FY2022 are earlier official 10-K history and are less comparable. This appendix therefore uses FY2023-FY2025 as the cleanest dollar trend for Defense Systems and uses FY2021-FY2022 only as context, not as a clean like-for-like base. The forward model compounds from the TTM ending March 31, 2026, not from FY2025.

The segment is the disclosed economic unit. Northrop does not disclose standalone historical revenue or operating income for Sentinel, tactical solid rocket motors, munitions, AARGM-ER, Stand-in Attack Weapon, IBCS, or other Defense Systems program lines in the fetched sources. The data package explicitly says to treat named program mentions as qualitative drivers, not standalone historical revenue lines. This matters because Defense Systems has visible, strategically important programs, but the public P&L is still a segment P&L. Any model that allocates historical dollars to Sentinel or weapons as if they were disclosed product lines would be inventing precision.

1. What Defense Systems Actually Is

Defense Systems is Northrop's segment for strategic deterrence, weapons, propulsion, missile defense, integrated command and control, and battle management. The 2025 10-K taxonomy quoted in QF describes the segment as strategic deterrent systems, advanced tactical weapons, missile defense solutions, integrated all-domain command and control, precision strike weapons, advanced propulsion, and related services. In plain English, this is the part of Northrop that builds and integrates several of the physical and digital layers needed to deter, launch, guide, command, and defend against missiles and air threats.

The most important named program in the current investment debate is Sentinel, the U.S. Air Force's replacement for the Minuteman III intercontinental ballistic missile system. The data package says management described Sentinel as about 6%-7% of company revenue today and as a program that should grow toward 10% of company revenue over time. The April 2026 Northrop Sentinel release adds program context: Sentinel is replacing the ground-based leg of the nuclear triad across a large five-state infrastructure footprint, and Northrop says the program is moving toward first flight in 2027 and initial capability in the early 2030s. That does not make Sentinel a separately disclosed revenue line. It does make Sentinel a multi-year demand anchor inside Defense Systems.

The second major driver is the weapons and propulsion complex. The data package says management framed the weapons business as nearing 10% of total company sales and highlighted tactical solid rocket motor growth in Q1 FY2026. Northrop's own advanced weapons materials point to guided projectiles, precision munitions, ammunition, gun systems, components, hypersonic manufacturing, AARGM-ER, Stand-in Attack Weapon, and missile integration. Its missile defense page emphasizes propulsion, interceptors, command and control, test targets, and battle management. Again, the public company does not disclose how much of Defense Systems revenue is AARGM-ER versus solid rocket motors versus other weapons work. The right modeling unit is the segment.

The third driver is integrated battle management and C2. IBCS, the Integrated Battle Command System, sits here as a key all-domain command-and-control offering. Northrop describes IBCS as a U.S. Army program of record and the centerpiece of the Army's air and missile defense modernization strategy, with Poland also highlighted as an international modernization reference. The economics of this kind of work differ from a simple munition. It includes software, hardware, integration, test, training, and sustainment, and its moat comes less from unit manufacturing scale alone and more from system-of-systems integration, installed-base familiarity, and interoperability with sensors and shooters from multiple vendors.

The customer is overwhelmingly government, especially the U.S. government. The data package reports Northrop as 84% U.S. government sales in FY2025 at the consolidated level, and notes that Aeronautics, Defense, and Mission Systems each derive roughly 80% or more of external sales from the U.S. government. International demand matters, especially for air and missile defense and partner-country munitions capacity, but many international sales still route through U.S. government foreign military sales processes. Go-to-market is therefore not commercial selling. It is program capture, contract performance, production qualification, export approvals, congressional appropriations, and long-cycle customer intimacy.

Pricing is primarily contract pricing, not list pricing. Defense Systems revenue converts through cost-plus development work, fixed-price production work, incentive-fee structures, and sustainment/service work. That gives Northrop real pricing protection in sole-source or highly specialized programs, but not unrestricted pricing power. The customer can renegotiate scope, slow funding, impose affordability targets, or shift procurement quantities. Conversely, once Northrop is embedded in a strategic deterrent, missile defense, or battle-management architecture, substitution is difficult and expensive. The segment's economics are therefore a blend of program control, contract accounting, production learning, and government funding cadence.

2. Current Economics: TTM and FY2025 Base

The most important current-period control is the TTM base from QF P4. Defense Systems TTM revenue is $8.096B, TTM operating income is $0.876B, and TTM operating margin is 10.8% [quant_foundation P4, Defense Systems row]. The TTM period is Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026, ending March 31, 2026. That is the base used for all FY+5

compounding in this appendix.

The FY2025 full-year segment result was $8.002B of revenue, $0.871B of operating income, and a 10.9% margin [data_package Section 3, Defense Systems FY2025 row]. FY2025 revenue grew 8.1% year over year, and operating income increased from $0.716B to $0.871B. The margin improved from 9.7% in FY2024 to 10.9% in FY2025. That improvement is meaningful, but the segment still does not have the mid-teens profitability of Mission Systems. Defense Systems looks like a good defense manufacturing and integration segment, not a software-like segment.

The latest quarter reinforces that read. Q1 FY2026 Defense Systems sales were $1.899B, up 5% reported and 10% organic, with $0.184B of operating income and a 9.7% margin [data_package Section 5, Q1 FY2026 segment YoY table, Defense Systems row]. The data package says the official explanation was Sentinel ramp, tactical solid rocket motors, and IBCS growth, partly offset by the divested training-services business. That split matters. Reported growth understated organic growth because the divestiture reduced the comparable base. The forward model should therefore use organic momentum as a clue for underlying demand, while still recognizing that reported revenue is what will flow to shareholders.

Northrop's FY2026 segment guidance gives a near-term anchor. The data package says management guided Defense Systems to mid-to-high $8B sales with around 10% margin in FY2026 [data_package Section 6, consolidated guidance paragraph]. Since the TTM revenue base is $8.096B, "mid-to-high $8B" implies a step-up from the TTM run rate over the next few quarters if management executes. But the margin guide of around 10% is below the TTM 10.8% margin and FY2025 10.9% margin. I interpret that as prudent management guidance around mix, investment, and EAC risk rather than evidence that the segment has lost earning power.

Product and sub-product shares are not fully disclosed. The data package says Sentinel is a Defense Systems driver and management has said it is about 6%-7% of total company revenue today and should move toward 10% over time. It also says weapons are near 10% of total company sales, and that solid rocket motor capacity has already doubled with more expansion targeted by 2027. Those are consolidated-size clues, not segment revenue disclosures. Because weapons and missile defense capabilities can also touch Mission Systems and Space Systems, the consolidated "weapons" clue cannot be mechanically assigned to Defense Systems. This appendix therefore treats Sentinel, weapons/SRM, and IBCS as qualitative growth drivers within the disclosed Defense Systems segment line.

[DATA GAP: Northrop does not disclose product-level historical revenue, operating income, margin, or backlog for Sentinel, tactical solid rocket motors, AARGM-ER, Stand-in Attack Weapon, IBCS, or other Defense Systems product lines in the fetched sources. The segment-level tables are the controlling historical data.]

Capital intensity is segment-relevant even though Northrop does not provide segment capex. Consolidated FY2025 capex was $1.450B, or 3.5% of revenue, and TTM capex through Q1 FY2026 was $1.361B [data_package Sections 2 and 7; quant_foundation P6]. The data package also says Northrop has invested more than $1B over several years in solid rocket motor and weapons capacity, and the April 2026 Sentinel release says Northrop invested $13.5B over five years in infrastructure and R&D for critical national security programs, including $2B dedicated to solid rocket motor capacity and related capabilities. The segment is not asset-light. Growth in propulsion, missiles, and strategic deterrence requires facilities, tooling, materials qualification, supplier readiness, test capacity, and cleared labor.

3. Unit Economics

Defense Systems' unit economics begin with contract mix. In development programs such as Sentinel, early work can be cost-plus or incentive-fee heavy, with revenue recognized over time as costs are incurred and profit recognized based on estimates-at-completion. Development revenue can be visible, but it is not automatically high-margin. The contractor must manage engineering complexity, supplier performance, material cost, and customer-driven scope changes. The profit pool can improve as the program moves from development to production, but only if production learning, pricing, and risk-sharing terms allow Northrop to keep a reasonable share of the value it creates.

Production work in weapons and propulsion can offer better scale economics. Once a motor, missile component, cannon, munition, or command-and-control hardware item is qualified and production lines are balanced, incremental volume can absorb fixed manufacturing overhead and improve labor productivity. The constraint is that defense production is rarely unconstrained mass manufacturing. It is qualified, inspected, customer-funded production with long-lead materials, specialized facilities, and single/few-source sub-tier suppliers. The operating leverage is real, but it comes slowly and can be interrupted by bottlenecks or configuration changes.

IBCS and integrated C2 economics are different. A battle-management system requires software, integration, cybersecurity, test events, fielding, training, and sustainment. The moat comes from being the architecture integrator and from the system

learning curve rather than from raw material conversion. The public filings do not provide IBCS product margins. It is reasonable to assume that successful software-heavy sustainment and upgrades can be margin-accretive over time, but the segment-level margin table is the only hard evidence. That evidence says Defense Systems has been a roughly 10%-12% segment, not a 15%-20% segment.

The margin history is the best discipline against over-enthusiasm. Defense Systems operating margin was 12.0% in FY2021, 11.9% in FY2022, 9.5% in FY2023, 9.7% in FY2024, 10.9% in FY2025, and 10.8% for the TTM ending March 31, 2026 [data_package Section 3, Defense Systems table; quant_foundation P4]. The FY2023-FY2025 restated period is the most comparable under the current taxonomy, and it shows a trough around 9.5% followed by recovery to 10.9%. The business can earn low-double-digit segment margins in good years, but its recent evidence does not support a base case above the low-11% range without assuming mix and execution improvement.

What breaks margin upward? First, a higher mix of mature weapons and propulsion production can increase absorption and reduce unit cost. Second, IBCS and other battle-management work can add sustainment/software-like content if installed base grows. Third, Sentinel can become more profitable as it exits the heaviest development and infrastructure phases, although that transition is likely later in the decade and not guaranteed before the March 2031 horizon. Fourth, divested lower-margin training services rolling out of the base can improve reported margins if the remaining mix is structurally better.

What breaks margin downward? First, strategic deterrent programs are complex, politically visible, and infrastructure-heavy. If Sentinel costs outrun negotiated economics, Northrop could face unfavorable EAC adjustments even if revenue grows. Second, expanding solid rocket motor capacity ahead of full demand conversion can depress near-term margins through startup cost and under-absorption. Third, supply-chain constraints in energetic materials, castings, electronics, and cleared labor can create inefficiency. Fourth, the government customer can pressure affordability exactly when demand is strongest. A rising missile-demand environment does not eliminate buyer power; it often increases scrutiny.

The unit economic conclusion is balanced. Defense Systems has real scarcity value in strategic missiles, propulsion, advanced weapons, and integrated air and missile defense. It should grow above GDP and likely above the mature defense budget average over the next five years. But the segment is not a toll road. It earns profit by executing difficult programs under government contracts, not by taking open-ended price. The base case therefore assumes revenue compounds faster than the company average, while operating margin improves only modestly from the current TTM level.

4. Competitive Dynamics

The competitive set is not one neat peer. Defense Systems overlaps with Lockheed Martin Missiles and Fire Control, RTX's Raytheon segment, General Dynamics' munitions and combat systems exposure, Boeing in strategic missile and weapons programs, L3Harris in command and control/electronics, and specialized propulsion or energetics suppliers. It also overlaps internally with Northrop's Mission Systems and Space Systems, because missile defense architectures span sensors, interceptors, C2, ground systems, launch systems, and space-based tracking.

Lockheed Martin is the clearest public peer for missile and strike weapons scale. Lockheed's FY2025 release reports Missiles and Fire Control sales of $14.450B and operating profit of $1.989B, a 13.8% operating margin. Its Q1 FY2026 release reports MFC sales up 8%, with growth attributed to production ramp-up in integrated air and missile defense programs, PAC-3, JASSM, LRASM, and PrSM. That is useful context because it shows that missile demand is not solely a Northrop story. The same demand wave supports Lockheed, RTX, and others. Northrop's advantage is not simply "missiles are growing"; it must come from the specific programs where Northrop is architect, prime, propulsion supplier, or sole/few-source producer.

RTX's Raytheon segment is another major competitor. RTX's FY2025 release reports Raytheon sales of $28.043B and operating profit of $3.227B, with an 11.5% reported return on sales. RTX said Q4 2025 Raytheon sales were helped by land and air defense systems including Patriot and GEM-T and naval programs including Evolved SeaSparrow Missile and Tomahawk. This is direct competitive and ecosystem context for Northrop's weapons and missile-defense work. Raytheon is larger than Northrop's Defense Systems segment, and it has deep installed positions in interceptors, radars, effectors, and air defense. Northrop's IBCS role may benefit from integrating multiple sensors and shooters, including competitor systems, but competitor scale caps the idea that Northrop alone controls the missile-defense profit pool.

General Dynamics is relevant in munitions, armaments, and combat systems. Its FY2025 release describes a broad portfolio including land combat vehicles, weapon systems, and munitions. General Dynamics is not a direct analog for Sentinel or IBCS, but it competes for ordnance capacity, Army modernization dollars, and international demand. In a constrained industrial base, competitors can also be partners or sub-tier alternatives. The key point for the model is that munitions demand is broad enough to support multiple primes, but pricing power is moderated by government procurement and alternative

suppliers.

Market share context is therefore program-specific. Northrop has a prime/lead role on Sentinel, a major role in IBCS, and deep propulsion/solid rocket motor capability. Those positions are advantaged because switching a prime or critical propulsion supplier in a strategic deterrent or integrated missile-defense program is costly and risky. But Northrop does not have monopolistic control over all advanced weapons or missile defense. Lockheed is much larger in missiles and fire control, RTX is much larger in air defense and effectors, and specialized players can compete for components. The right conclusion is that Northrop has high barriers in selected niches, not blanket pricing power across a commodity "defense weapons" category.

Entry barriers are high. Strategic deterrence and missile defense require security clearances, classified engineering, nuclear surety, flight test history, government-certified production processes, quality systems, export compliance, and a supplier base that can survive long program cycles. New entrants can innovate in autonomy, software, or low-cost drones, but they cannot quickly replace an ICBM prime, a solid rocket motor industrial base, or an integrated Army air-defense command system. Substitution risk is more likely to come from changes in doctrine or technology than from a clean new-entrant displacement. For example, cheap drones and massed commercial technologies can change the munitions mix, but they do not eliminate demand for strategic deterrence, air defense integration, interceptors, and propulsion.

The most important competitive pressure is budget allocation. Defense Systems competes not only against other companies but against other Northrop segments and other mission priorities. Every dollar going to Sentinel, IBCS, and weapons must survive the U.S. budget process, continuing resolutions, congressional oversight, affordability reviews, and foreign military sales timing. Competitive advantage matters only after the program is funded. The base case assumes strategic deterrence and missile-defense priorities remain funded, but it does not assume Northrop can convert every demand signal into revenue at attractive margin.

5. Segment-Level Moat

Defense Systems has a real segment moat, but it is narrower and more program-specific than a top-down company moat might imply. The first layer is technical and regulatory. Strategic missiles, solid rocket motors, integrated missile defense, and all-domain C2 are not easily contestable markets. Qualification, test history, classified performance, customer trust, and security infrastructure create high barriers. The Sentinel release's reference to an industrial base of more than 500 partners and a nationwide workforce of more than 10,000 people illustrates the system complexity. A competitor cannot replicate that overnight.

The second moat layer is incumbency. Once Northrop is the prime or architecture integrator, the customer faces very high switching costs. Replacing a strategic deterrent prime during development or early production would risk schedule, cost, certification, and national-security objectives. Replacing IBCS as the integrating command-and-control layer after fielding would also be disruptive, especially if allied adoption grows. Incumbency in these settings is powerful because the buyer values mission assurance more than small price reductions.

The third layer is production capacity. Solid rocket motors and advanced weapons are constrained areas. Northrop has invested heavily in propulsion and weapons capacity, and the data package says management has already doubled solid rocket motor capacity with more expansion targeted by 2027. In a market where demand is rising after years of underinvestment in munitions depth, available qualified capacity is itself a moat. It does not guarantee high margins, because government customers may fund capacity while controlling profit rates, but it improves revenue visibility and customer relevance.

The fourth layer is systems integration. IBCS is valuable because modern air and missile defense needs sensor-effector integration across legacy and new systems. Northrop's IBCS page emphasizes connecting sensors and effectors that were not originally designed to work together. If IBCS becomes a broader U.S. and allied architecture, the installed base can create a feedback loop: more fielded systems increase training familiarity, interoperability demand, sustainment needs, and future upgrade opportunities.

The moat's limits are equally important. Government contracting caps pricing freedom. Margin is negotiated and audited. The customer has enormous leverage, and large programs attract political scrutiny. Program mistakes do not just reduce growth; they can create EAC charges, reputation damage, and recompete risk. The moat is strongest where Northrop is sole-source, prime, or architecture owner, and weaker where it sells components into competitive weapon programs.

Over five to ten years, the moat looks durable but not expanding without execution. Strategic deterrence modernization and air/missile defense are long-cycle priorities. The threat environment supports demand for missiles, propulsion, and integrated

defense. But by 2031, investors will not be paid for the moat unless Northrop has converted program visibility into revenue and kept Defense Systems margin in at least the low-double-digit range. A moat that protects revenue but not economics is not enough for a Gideon-quality thesis.

6. Historical Growth Rates Reproduced From the Data Package

The following table uses the data package and quant foundation as the source of truth. FY2023-FY2025 are the latest restated basis after the January 1, 2025 SSAS realignment. FY2021-FY2022 are less comparable and are shown only in the expanded notes below. Because Northrop does not disclose product-level dollars inside Defense Systems, the only dollar-disclosed "product/sub-segment" line available for historical modeling is Defense Systems total.

Product / sub-segment	FY-3 rev	FY-2 rev	FY-1 rev	3-yr CAGR / comparable CAGR	Most recent YoY	Data package cite
Defense Systems total, reportable segment	$7.185B [data_package Section 3, Defense Systems FY2023 row]	$7.399B [data_package Section 3, Defense Systems FY2024 row]	$8.002B [data_package Section 3, Defense Systems FY2025 row]	5.5% FY2023-FY2025 comparable CAGR [calculated from data_package Section 3 FY2023 and FY2025 rows]; 12.8% FY2022-FY2025 if non-comparable FY2022 boundary is included [data_package Section 3 FY2022-FY2025 rows]	8.1% FY2025 YoY [data_package Section 3, Defense Systems YoY FY2025 row]; Q1 FY2026 +5% reported / +10% organic [data_package Section 5, Q1 FY2026 Defense row]	data_package Section 3 Defense Systems table; data_package Section 5 Q1 FY2026 segment YoY table
Sentinel	Not separately disclosed [data_package Section 4, Defense Systems Sentinel row]	Not separately disclosed [data_package Section 4, Defense Systems Sentinel row]	Not separately disclosed [data_package Section 4, Defense Systems Sentinel row]	Not meaningful; no product revenue series disclosed	Management says Sentinel is a growth driver; no YoY dollars disclosed [data_package Section 6, Defense Systems commentary]	data_package Section 4 product/sub-segment table, Defense Systems Sentinel row
Tactical solid rocket motors, munitions, AARGM-ER, Stand-in Attack Weapon, IBCS	Not separately disclosed [data_package Section 4, Defense Systems weapons row]	Not separately disclosed [data_package Section 4, Defense Systems weapons row]	Not separately disclosed [data_package Section 4, Defense Systems weapons row]	Not meaningful; no product revenue series disclosed	Q1 FY2026 growth drivers included tactical SRM and IBCS; no product dollars disclosed [data_package Section 5, Q1 FY2026 Defense row]	data_package Section 4 product/sub-segment table, Defense Systems weapons/IBCS row

Expanded annual segment table:

Fiscal year	Revenue	YoY	Operating income	Operating margin	Source
FY2021	$5.776B	NA	$0.696B	12.0%	data_package Section 3, Defense Systems FY2021 row; less comparable due taxonomy boundary
FY2022	$5.579B	(3.4)%	$0.664B	11.9%	data_package Section 3, Defense Systems FY2022 row; less comparable due taxonomy boundary
FY2023	$7.185B	28.8%	$0.684B	9.5%	data_package Section 3, Defense Systems FY2023 row; latest restated basis
FY2024	$7.399B	3.0%	$0.716B	9.7%	data_package Section 3, Defense Systems FY2024 row; latest restated basis
FY2025	$8.002B	8.1%	$0.871B	10.9%	data_package Section 3, Defense Systems FY2025 row; latest restated basis
TTM ended Mar. 31, 2026	$8.096B	NA	$0.876B	10.8%	quant_foundation P4, Defense Systems row

Internal arithmetic check:

- FY2024 revenue check: $7.185B x 1.030 = $7.401B, which ties within rounding to reported FY2024 revenue of $7.399B.
- FY2025 revenue check: $7.399B x 1.081 = $7.999B, which ties within rounding to reported FY2025 revenue of $8.002B.
- FY2023 boundary check: $5.579B x 1.288 = $7.185B, which ties to FY2023, but this comparison crosses the taxonomy/history boundary flagged by the data package. It should not be used as a clean structural growth rate.

No product-level back-solved rows are used. The data package explicitly says no product-level back-solved rows are included and downstream segment appendices should not create platform revenue series unless clearly labeled as model estimates. I am not creating such estimates because the required segment rollup can be reconstructed cleanly from the disclosed segment line.

7. Management Guidance Quoted From Data Package Section 6

The table below lists every Defense Systems-relevant management anchor from the data package. Verbatim snippets are short and taken from the data package's already-cleared quote snippets. Interpretations are this subagent's analysis.

Data package row / source	Topic	Quote or data-package statement	Interpretation
data_package Section 6, Q1 FY2026 call, Kathy Warden	Weapons demand	"weapons business is nearing 10% of total company sales"	Weapons are not a small sidecar. The phrase supports a multi-year growth thesis for propulsion, munitions, and advanced weapons, but it is a consolidated clue rather than Defense Systems product revenue disclosure.
data_package Section 6, Q4 FY2025 call, Kathy Warden	Backlog	"over $95 billion in backlog"	Company-level backlog gives visibility for all segments. It supports Defense Systems demand confidence, but backlog is not disclosed by segment in the data package.
data_package Section 6, Q1 FY2026 guidance paragraph	FY2026 Defense guidance	Defense Systems guided to mid-to-high $8B sales with around 10% margin.	This is the near-term guardrail. It implies revenue growth from the $8.096B TTM base but margin around 10%, below the TTM 10.8% and FY2025 10.9% levels.
data_package Section 6, Defense Systems subsection	Sentinel size and growth	Management said Sentinel is about 6%-7% of company revenue today, expects low-double-digit growth in 2026, and should grow toward 10% of revenue over time.	Sentinel is the most visible structural growth driver inside Defense Systems. The key modeling issue is that Sentinel growth may lift revenue faster than margin until development and long-lead production economics mature.
data_package Section 6, Defense Systems subsection	Sentinel milestones	Management expects Milestone B later in 2026, first flight in 2027, and IOC in the early 2030s.	The milestone path aligns well with a March 2031 forecast horizon. It supports a base case in which Sentinel is larger by FY+5, but not a bull case that assumes mature steady-state production economics before 2031.
data_package Section 6, Defense Systems subsection	Solid rocket motors / munitions	More than $1B invested over several years; capacity expanded.	Capacity is a revenue enabler and a moat component. The margin effect depends on demand conversion, startup costs, and government pricing.
data_package Section 6, Defense Systems subsection	IBCS / all-domain C2	Q1 release cites IBCS portfolio growth.	IBCS is an attractive architecture and internationalization driver, but the data package gives no product dollars, so it remains a qualitative growth/mix input.
data_package Section 9, recent corporate actions	Training services divestiture	Defense Systems reported comparisons are affected by the divested training-services business; Q1 FY2026 reported growth was 5%, organic growth was 10%.	This explains the gap between reported and organic growth. The base case uses stronger underlying demand than reported Q1 alone would imply, but does not add back divested revenue.

There is no separate management-provided long-term Defense Systems margin target in the data package beyond the FY2026 "around 10%" guide. There is also no product-level revenue guide for Sentinel, weapons, SRM, or IBCS beyond the qualitative size and growth clues above. [DATA GAP: no disclosed Defense Systems product-level FY2026 revenue, margin, or backlog guidance.]

8. Forward Growth Assumptions: Explicit, TTM-Based, and Non-Fabricated

The model compounds from Defense Systems TTM revenue of $8.096B [quant_foundation P4, Defense Systems row] for exactly five calendar years to March 31, 2031. Because product dollars are not disclosed, the forecast line is the disclosed Defense Systems reportable segment. Sentinel, weapons/SRM, IBCS, and other named programs are drivers of the segment growth rate, not separately modeled historical product revenue buckets.

Base case logic: Defense Systems has a clean restated FY2023-FY2025 CAGR of 5.5%, FY2025 YoY of 8.1%, Q1 FY2026 organic growth of 10%, and FY2026 guidance for mid-to-high $8B sales. The base case uses a 6.8% TTM-to-FY+5 CAGR.

That is above the latest-restated FY2023-FY2025 CAGR because Sentinel, SRM, weapons, and IBCS are ramping. It is below Q1 FY2026 organic growth because the training-services divestiture, program phasing, budget cadence, and capacity startup costs should prevent a straight-line 10% organic compounding path through 2031.

Base case growth table:

Product / forecast line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Base CAGR TTM->TTM+5y	Justification
Defense Systems total, reportable segment	5.5% comparable FY2023-FY2025 CAGR; 12.8% FY2022-FY2025 non-comparable CAGR [data_package Section 3]	FY2025 +8.1%; Q1 FY2026 +5% reported / +10% organic [data_package Sections 3 and 5]	Mid-to-high $8B sales and around 10% margin in FY2026 [data_package Section 6]	6.8%	Sentinel growth, tactical SRM, weapons capacity, and IBCS support above-company growth, but the segment remains tied to government funding, production qualification, and program execution. Lockheed MFC Q1 FY2026 grew 8% with missile-defense and tactical/strike missile ramp, which makes a high-single-digit near-term rate plausible but not automatic through 2031.
Sentinel	Not separately disclosed	Not separately disclosed	About 6%-7% of company revenue today, low-double-digit 2026 growth, toward 10% over time [data_package Section 6]	Embedded in 6.8% segment CAGR	Sentinel is the strongest long-duration growth driver, with first flight expected in 2027 and early-2030s initial capability, but no product-level dollars are disclosed and margin maturity likely lags revenue ramp.
Weapons / tactical SRM / munitions	Not separately disclosed	Not separately disclosed; Q1 growth driver	Weapons nearing 10% of total company sales; SRM capacity expanded [data_package Section 6]	Embedded in 6.8% segment CAGR	Demand is structurally supported by munitions replenishment and missile-defense needs. The base case assumes capacity converts to revenue, but not that Northrop captures all incremental demand or raises price freely.
IBCS / all-domain C2	Not separately disclosed	Not separately disclosed; Q1 growth driver	No product-level dollar guide	Embedded in 6.8% segment CAGR	IBCS has architecture value and international reference points, including Poland per Northrop's IBCS page, but fielding and foreign adoption timing are uncertain.

Bull case logic: the bull case uses a 9.0% TTM-to-FY+5 CAGR. That requires Sentinel to ramp cleanly, solid rocket motor and weapons capacity to be absorbed faster than planned, IBCS to gain broader U.S. and allied adoption, and defense budgets to keep strategic deterrence and air/missile defense near the top of the priority stack. It is not a heroic double-digit segment CAGR, because Northrop is already at an $8B segment base and procurement cycles remain slow. But it assumes the Q1 FY2026 10% organic growth rate is closer to the multi-year underlying trajectory than to a temporary acceleration.

Bull case growth table:

Product / forecast line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM->TTM+5y	Justification
Defense Systems total, reportable segment	5.5% comparable FY2023-FY2025 CAGR [data_package Section 3]	FY2025 +8.1%; Q1 FY2026 +10% organic [data_package Sections 3 and 5]	Mid-to-high $8B sales in FY2026 [data_package Section 6]	9.0%	Bull case assumes Q1 organic momentum persists as divestiture noise rolls off, Sentinel low-double-digit growth compounds into a larger mix, and weapons/SRM capacity is supply-constrained rather than demand-constrained.
Sentinel	Not separately disclosed	Not separately disclosed	Toward 10% of total company revenue over time [data_package Section 6]	Embedded in 9.0% segment CAGR	The bull case assumes Milestone B, 2027 first flight, and early-2030s initial capability stay on track, with long-lead production activity becoming visible before the March 2031 horizon.
Weapons / tactical SRM / munitions	Not separately disclosed	Not separately disclosed	Weapons nearing 10% of company sales [data_package Section 6]	Embedded in 9.0% segment CAGR	Bull case assumes urgent replenishment, missile defense, and allied demand absorb expanded SRM capacity and support favorable volume absorption.

Product / forecast line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM->TTM+5y	Justification
IBCS / all-domain C2	Not separately disclosed	Not separately disclosed	No product-level dollar guide	Embedded in 9.0% segment CAGR	Bull case assumes IBCS internationalization and U.S. Army modernization pull-through make C2 a more visible growth contributor.

Bear case logic: the bear case uses a 3.0% TTM-to-FY+5 CAGR. This is not a collapse case. Defense Systems has strategic programs that should not vanish. But the bear case assumes Sentinel slips, budget turbulence slows procurement, weapons capacity comes with lower absorption or pricing, and IBCS adoption remains slower than the bullish architecture story. It also accounts for the fact that FY2023-FY2025 comparable CAGR was only 5.5% even with visible demand drivers, and management's FY2026 margin guide is not expanding.

Bear case growth table:

Product / forecast line	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bear CAGR TTM->TTM+5y	Justification
Defense Systems total, reportable segment	5.5% comparable FY2023-FY2025 CAGR [data_package Section 3]	FY2025 +8.1%; Q1 FY2026 +5% reported / +10% organic [data_package Sections 3 and 5]	Mid-to-high $8B sales in FY2026 [data_package Section 6]	3.0%	Bear case assumes budget timing, continuing resolutions, contract phasing, and program execution drag reported growth below recent organic momentum.
Sentinel	Not separately disclosed	Not separately disclosed	Low-double-digit 2026 growth; toward 10% over time [data_package Section 6]	Embedded in 3.0% segment CAGR	A Sentinel schedule or funding reset would not erase the program, but it could delay the production-long-lead inflection that the base case needs before 2031.
Weapons / tactical SRM / munitions	Not separately disclosed	Not separately disclosed	Capacity expanded [data_package Section 6]	Embedded in 3.0% segment CAGR	Bear case assumes capacity startup cost and supplier bottlenecks limit revenue conversion and prevent attractive volume leverage.
IBCS / all-domain C2	Not separately disclosed	Not separately disclosed	No product-level dollar guide	Embedded in 3.0% segment CAGR	Bear case assumes international and U.S. adoption timing remains lumpy and does not materially accelerate the segment.

Year-by-year base deceleration/normalization check:

Period	Modeled revenue growth	Explanation
TTM base ending Mar. 31, 2026	NA	Starting revenue is $8.096B.
Year 1	8.5%	Consistent with FY2026 mid-to-high $8B guidance and Q1 organic momentum, while allowing reported divestiture effects.
Year 2	7.5%	Sentinel, SRM, and IBCS remain ramping, but the model fades from Q1's 10% organic rate.
Year 3	6.8%	Growth normalizes as program ramps meet budget and supply-chain friction.
Year 4	6.0%	Larger base and procurement cadence reduce percentage growth.
Year 5	5.3%	The horizon-year rate approaches the comparable FY2023-FY2025 CAGR rather than assuming perpetual high-single-digit growth.

This year-by-year path compounds to roughly the same endpoint as the 6.8% five-year CAGR. The deceleration is not arbitrary. It reflects the difference between near-term organic growth from specific ramps and a five-year segment forecast constrained by government budgets, contract phasing, and non-disclosed product mix. The peer context also supports discipline: Lockheed MFC and RTX Raytheon are growing from strong missile-defense demand, but they remain government-contracting segments with low-to-mid-teens margins, not hypergrowth businesses.

9. Forward Operating Margin Assumptions

Current TTM Defense Systems margin is 10.8%, based on $0.876B TTM operating income on $8.096B TTM revenue [quant_foundation P4]. FY2025 margin was 10.9%, and FY2026 guidance is around 10% [data_package Sections 3 and 6]. The forecast therefore starts from a segment that is already near its recent low-double-digit earning level. It does not have a large obvious margin recovery like Aeronautics could have if B-21 charges normalize, nor does it have Mission Systems' mid-teens historical margin profile.

Base case margin is 11.2% at TTM+5. That is 40 bps above current TTM margin and 30 bps above FY2025. The mechanism is mix and volume absorption: more mature weapons/SRM production, IBCS sustainment and software/integration content, and some Sentinel scale benefits as long-lead production activity rises. I keep the improvement modest because Sentinel and capacity expansion can carry development, startup, and affordability pressure, and because management's FY2026 margin guide is around 10%, not 11%-12%.

Bull case margin is 11.8% at TTM+5. That is about 100 bps above the current TTM margin and about 90 bps above FY2025. The mechanism is stronger volume absorption in SRM and weapons, cleaner Sentinel execution, more favorable program mix, and IBCS architecture/sustainment content. This is near the upper end of the segment's recent history but still below a blanket assumption that Defense Systems can become Mission Systems. It is also below Lockheed MFC's FY2025 13.8% margin, reflecting Northrop's heavier strategic-deterrent and capacity-investment mix.

Bear case margin is 9.2% at TTM+5. That is 160 bps below current TTM and requires an explicit negative mechanism: Sentinel cost growth or schedule friction, lower absorption from capacity additions, less favorable contract mix, and potential EAC adjustments in complex development/production programs. The bear margin is below FY2023's 9.5% but not catastrophic. It represents a segment that still grows but gives back economics through execution and pricing pressure.

Margin table:

Case	Current / base margin evidence	TTM+5y operating margin	Specific mechanism
Bear	TTM 10.8%; FY2025 10.9%; FY2026 guide around 10% [QF P4; data_package Sections 3 and 6]	9.2%	Sentinel or weapons execution drag, capacity under-absorption, supplier/labor inefficiency, and government affordability pressure.
Base	TTM 10.8%; FY2025 10.9%; FY2026 guide around 10% [QF P4; data_package Sections 3 and 6]	11.2%	Moderate mix improvement from weapons/SRM, IBCS, divestiture roll-off, and operating leverage, partly offset by Sentinel development and capacity investment.
Bull	TTM 10.8%; FY2025 10.9%; FY2026 guide around 10% [QF P4; data_package Sections 3 and 6]	11.8%	Stronger absorption and cleaner program execution, with mature weapons/propulsion and C2 content lifting profitability.

No product-level margin table is provided because Northrop does not disclose product-level margins for Sentinel, SRM, weapons, IBCS, or other Defense Systems product lines. A product-level weighted-average margin would be visually satisfying but analytically false. The segment margin is the disclosed margin.

10. Segment Rollup Built From the TTM Base

Because Defense Systems product-level revenue is not disclosed, the arithmetic rollup has one disclosed revenue line: Defense Systems total. Named programs are growth drivers embedded in that line, not separate dollar rows. This is the only rollup that can be reconstructed from public data without inventing product-level dollars.

TTM base:

- Revenue: $8.096B [quant_foundation P4, Defense Systems row].
- Operating income: $0.876B [quant_foundation P4, Defense Systems row].
- Operating margin: 10.8% [quant_foundation P4, Defense Systems row].

Forward rollup:

Case	Forecast line	TTM revenue	CAGR TTM->TTM+5y	TTM+5y revenue	TTM+5y op margin	TTM+5y op income	Arithmetic
Bear	Defense Systems total	$8.096B	3.0%	$9.385B	9.2%	$0.863B	$8.096B x 1.03^5 = $9.385B; $9.385B x 9.2% = $0.863B
Base	Defense Systems total	$8.096B	6.8%	$11.249B	11.2%	$1.260B	$8.096B x 1.068^5 = $11.249B; $11.249B x 11.2% = $1.260B
Bull	Defense Systems total	$8.096B	9.0%	$12.457B	11.8%	$1.470B	$8.096B x 1.09^5 = $12.457B; $12.457B x 11.8% = $1.470B

The segment totals reconcile exactly to the modeled line because the disclosed line is the segment. There is no hidden "other" bucket. This means the synthesis agent can use the row directly: Defense Systems base case FY+5 revenue is $11.249B, operating margin is 11.2%, and operating income is $1.260B.

Sensitivity:

- Every 100 bps change in five-year CAGR around the base case changes FY+5 revenue by roughly $0.53B-$0.56B.
- Every 100 bps change in FY+5 operating margin on the base revenue changes FY+5 operating income by about $112M.
- Margin matters, but revenue execution is the bigger driver over the five-year horizon because the segment's margin range is plausibly 9%-12%, not 5%-20%.

11. Key Risks and Wildcards

Bear risk - Sentinel execution. Sentinel is a strategic national priority, but strategic priority does not eliminate cost, schedule, or scope risk. The program spans missile design, launch infrastructure, command systems, nuclear surety, supply chain, and workforce. If Milestone B, first flight, or early capability timing slips, the revenue ramp can move right. If cost growth is not recoverable under contract terms, margin can compress. This is the single most important Defense Systems bear risk.

Bear risk - Capacity before demand conversion. Northrop has invested heavily in solid rocket motor and weapons capacity. If customer funding, supplier readiness, energetics materials, or production qualification lag the capacity additions, the segment can carry startup cost without full absorption. That would create the uncomfortable combination of visible demand narrative and weaker reported margin.

Bear/base risk - U.S. government concentration. Northrop's consolidated U.S. government exposure is 84% of FY2025 sales [data_package Section 1]. Defense Systems is heavily tied to U.S. appropriations, continuing resolutions, program authorizations, and procurement timing. A continuing resolution or budget reprioritization can delay awards and revenue conversion even when military need is obvious.

Bear/base risk - Contract accounting and EAC adjustments. The segment's margin is governed by estimates-at-completion and contract mix. Defense Systems has not shown catastrophic segment charges in the data package, but Northrop's broader company history and the defense peer set show that development and fixed-price production programs can surprise. RTX and Lockheed disclosures both remind investors that defense primes can grow sales while taking program charges.

Base/bull wildcard - IBCS internationalization. IBCS is a U.S. Army program of record and a Polish modernization centerpiece according to Northrop's IBCS page. If more allies standardize around it, Northrop could benefit from hardware, software, integration, sustainment, and upgrades. This is a bull lever because installed-base architecture can compound, but export timing is too uncertain to isolate as a separate revenue line.

Bull wildcard - Missile defense and "Golden Dome" style architectures. Northrop's missile-defense portfolio spans propulsion, ground systems, C2, interceptors, warning/tracking links, and test targets. A larger homeland missile-defense architecture or accelerated allied missile-defense demand could pull multiple Northrop capabilities. This is not modeled as a separate product line because the data package provides no dollar disclosure, but it supports the bull growth and margin assumptions.

Bull/base wildcard - Weapons replenishment supercycle. Conflicts and deterrence planning have exposed the need for deeper inventories of precision munitions, air defense interceptors, and propulsion capacity. If U.S. and allied procurement shifts from just-in-time defense production to sustained inventory depth, Northrop's weapons/SRM position becomes more valuable. The model includes this in base and bull growth; it would be upside if procurement moves faster than industrial capacity can satisfy.

Bear risk - Competition captures more of the demand wave. Lockheed MFC and RTX Raytheon are larger missile and air-defense competitors. If demand concentrates in Patriot/GEM-T, PAC-3, JASSM, LRASM, PrSM, Tomahawk, or other competitor-led effectors, Northrop can still benefit through components or integration but may not capture the prime economics. The bull case requires Northrop's specific programs, not just the defense theme, to win.

Bear/base risk - Product-level disclosure opacity. The lack of product-level dollars creates modeling risk. Sentinel may be larger or smaller inside Defense Systems than investors infer. Weapons may span multiple segments. IBCS may be growing fast from a small base. Without disclosed revenue and margin by product, the segment forecast must stay conservative. This opacity is not a reason to reject the segment, but it is a reason to avoid false precision.

Summary Table

Case	Segment TTM+5y Revenue	Segment TTM+5y Op Margin	Segment TTM+5y Op Income	Probability
Bear	$9.385B	9.2%	$0.863B	25%
Base	$11.249B	11.2%	$1.260B	55%
Bull	$12.457B	11.8%	$1.470B	20%

ER2 implication: Defense Systems is one of Northrop's better forward growth segments because Sentinel, tactical solid rocket motors, weapons, missile defense, and IBCS all align with durable national-security priorities. It is not, however, a blank-check compounder. The segment's public margin history is roughly low-double-digit, product-level dollars are not disclosed, and government-contract economics cap pricing freedom. For the synthesis model, the Defense Systems base case should contribute solid revenue and operating-income growth from the TTM base, but it should not be used to justify a company-level quality conclusion unless Aeronautics execution, Mission Systems margins, Space reacceleration, and consolidated cash conversion also carry their weight.

Appendix S - Synthesis (Combined Earnings Model)

Northrop Grumman - Synthesis (Combined Earnings Model)

PATH_RECEIVED: C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\appendix_synthesis.md

Date prepared: 2026-04-26. This appendix is Subagent S output for the Northrop Grumman ER2 run. The file uses only the completed and reviewed Northrop Grumman ER2 inputs under `C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\`, live FMP stable endpoint checks through the local helper, and live primary sources from Northrop Grumman investor relations and SEC EDGAR. No local `data warehouse` cache was used. The current-price input is the live FMP quote pull for NOC at $575.11, timestamp 2026-04-24T20:00:02+00:00 UTC, saved as `raw\synthesis_fmp_quote_NOC_2026-04-26.json` and consistent with the already-cleared quant foundation quote line.

1. Anchors

Stage 0 time anchor used verbatim:

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Modeling anchors:

Item	Value	Source
Current price	$575.11	FMP stable `quote NOC`, timestamp 2026-04-24T20:00:02+00:00 UTC
TTM consolidated revenue	$42.367B	`quant_foundation.md` P4
TTM consolidated operating income	$4.927B	`quant_foundation.md` P4; SEC-controlled bridge
TTM net income	$4.576B	`quant_foundation.md` P3/P4
TTM diluted EPS	$31.95	`quant_foundation.md` P3
Q1 FY2026 diluted share count	142.5M	`quant_foundation.md` P6 and SEC Q1 FY2026 10-Q
TTM free cash flow	$3.305B	`quant_foundation.md` P6
Net debt / TTM EBITDA	2.0x	`quant_foundation.md` P6
Q1 FY2026 backlog	$95.608B	Northrop Q1 FY2026 release / SEC 8-K

The compounding span is exactly 5.0 calendar years from March 31, 2026 to March 31, 2031. Every forward revenue and EPS line in this appendix is a TTM-to-TTM+5y calculation, not a FY2025-to-FY2030 or FY2026-to-FY2031 fiscal-year shortcut. The latest completed fiscal year, FY2025, is used only as a historical sanity check.

Source-control note: the quantitative foundation and data package preserve one important discrepancy. FMP's FY2025 annual income statement reports consolidated operating income of $4.280B, while Northrop's SEC FY2025 10-K reports $4.511B. QF and QFR require the SEC value to control. This synthesis therefore uses the SEC/QF TTM operating-income bridge of $4.927B, not the lower FMP-only bridge.

2. Segment-level forward assumptions

The segment appendices are the source of truth for horizon revenue, operating margin, and segment operating income. Northrop does not disclose product-level dollars for B-21, Sentinel, weapons/SRM, restricted radar, marine systems, SDA, GPI, restricted space, or other named program drivers. Each segment appendix therefore uses one auditable disclosed dollar line: the reportable segment. The named programs explain the growth and margin assumptions but are not back-solved into

fabricated product revenue buckets.

Segment	TTM revenue	Bear TTM+5y revenue	Base TTM+5y revenue	Bull TTM+5y revenue	Bear OI margin	Base OI margin	Bull OI margin	Source
Aeronautics Systems	$13.461B	$14.862B	$17.017B	$18.443B	7.5%	10.2%	11.0%	`appendix_B_aeronautics_systems.md` Sections 8-10
Defense Systems	$8.096B	$9.385B	$11.249B	$12.457B	9.2%	11.2%	11.8%	`appendix_B_defense_systems.md` Sections 8-10
Mission Systems	$12.560B	$14.210B	$15.878B	$17.452B	14.3%	15.1%	15.8%	`appendix_B_mission_systems.md` Sections 8-10
Space Systems	$10.683B	$10.953B	$12.761B	$14.120B	9.5%	11.2%	12.0%	`appendix_B_space_systems.md` Sections 8-10

The base-case segment logic is intentionally mixed rather than uniformly optimistic. Aeronautics gets credit for B-21 capacity, restricted programs, and TACAMO, but not for annualizing the Q1 FY2026 B-21 timing benefit. Defense gets above-company growth from Sentinel, weapons, tactical solid rocket motors, and IBCS, but remains bound by budget cadence and production start-up risk. Mission gets the cleanest quality credit because it has the best margin history, but its base growth steps down from FY2025 because Q1 FY2026 revenue growth was only 2%. Space is modeled as a recovery from decline rather than a clean growth segment; the base case requires SDA, restricted space, GPI, and missile-defense opportunities to offset NGI wind-down and launch/propulsion EAC risk.

3. Combined revenue build

The TTM segment subtotal is $44.800B before intersegment eliminations. QF ties consolidated TTM revenue by subtracting $2.433B of intersegment eliminations / consolidation, producing $42.367B. The forward model keeps eliminations as a named reconciling item. I use a ratio near the TTM elimination rate, rather than forcing consolidated revenue to equal gross segment revenue, because Northrop's official Q1 FY2026 release and QF both show material intersegment eliminations. The base-case rate is 5.185% of segment subtotal, close to TTM's 5.43% and consistent with management's FY2026 guide of roughly $(2.4)B of intersegment eliminations.

Line	Bear	Base	Bull
Sum of segment TTM+5y revenue	$49.410B	$56.905B	$62.472B
Corporate / intersegment eliminations	($2.648B)	($2.951B)	($3.249B)
Combined TTM+5y revenue	$46.762B	$53.954B	$59.223B
TTM consolidated revenue base	$42.367B	$42.367B	$42.367B
Implied TTM -> TTM+5y CAGR	2.0%	5.0%	6.9%

The base case is a mid-single-digit consolidated revenue CAGR, not a defense-supercycle extrapolation. It is above the FY2026 guide's first-year growth because the model gives five-year credit to B-21 capacity, Sentinel, weapons, Mission electronics, SDA, GPI, and restricted work. It is below the more enthusiastic narrative one could build from Q1 Aeronautics +17% and Defense +10% organic growth because Q1 includes timing, divestiture, and program-transition effects. The combined base revenue of $53.954B implies about $11.6B of incremental revenue over the TTM base, with Aeronautics and Mission providing the largest dollar additions and Space needing a visible turn from decline.

4. Combined operating income build

Segment operating income comes directly from the segment appendices. QF's TTM bridge shows $5.211B of segment subtotal operating income and $4.927B of consolidated operating income, a $0.284B difference from intersegment / consolidation / corporate items. I grow that deduction modestly to the horizon because corporate costs, FAS/CAS movements, and unallocated items should not be assumed away. The base case uses $0.329B, equivalent to roughly 3% annual growth from the TTM deduction. The bear case uses $0.360B to reflect less favorable unallocated cost absorption; the bull case uses $0.300B to reflect better absorption and cleaner FAS/CAS/corporate outcomes.

Line	Bear	Base	Bull
Aeronautics Systems OI	$1.115B	$1.736B	$2.029B

Line	Bear	Base	Bull
Defense Systems OI	$0.863B	$1.260B	$1.470B
Mission Systems OI	$2.032B	$2.398B	$2.757B
Space Systems OI	$1.040B	$1.429B	$1.694B
Sum of segment TTM+5y OI	$5.050B	$6.823B	$7.950B
Unallocated corporate / consolidation deduction	($0.360B)	($0.329B)	($0.300B)
Combined TTM+5y operating income	$4.690B	$6.494B	$7.650B
Combined TTM+5y operating margin	10.0%	12.0%	12.9%

The operating-income build is not a straight-line margin normalization model. Aeronautics margin improves in the base case to 10.2%, but the appendix refuses to assume Mission-like profitability for aircraft production. Defense margin improves only 40 bps from TTM. Mission holds its 15.1% TTM margin, which is already high for the company. Space expands to 11.2%, close to management's around-11% FY2026 guide, but not far beyond it because GEM 63XL and NGI show live EAC and transition risk. This mix produces a base consolidated margin of 12.0%, about 40 bps above the TTM consolidated margin of 11.6%. That is plausible if B-21 and Space charges normalize, but it is not a heroic margin case.

5. Net income and EPS build

The bridge from operating income to net income uses explicit below-the-line assumptions. TTM interest expense was about $0.671B, based on the last four FMP/SEC quarters. Northrop also has non-operating pension benefit and other items that have recently helped earnings. I do not fully annualize Q1 FY2026's non-operating pension benefit because that would embed a non-core tailwind. The base case assumes net non-operating expense of $0.330B after interest and other income, bear assumes $0.400B, and bull assumes $0.250B. The base tax rate is 17.0%, close to recent effective rates and below the statutory rate because defense contractors can have pension, tax credit, and discrete-item effects; the sensitivity section tests a 300 bps tax band.

Line	Bear	Base	Bull
Combined TTM+5y operating income	$4.690B	$6.494B	$7.650B
Net interest / other non-operating expense	($0.400B)	($0.330B)	($0.250B)
Pre-tax income	$4.290B	$6.164B	$7.400B
Tax rate assumed	18.0%	17.0%	16.5%
Net income	$3.518B	$5.116B	$6.179B
Diluted share count at TTM+5y	134.7M	132.0M	129.1M
EPS at TTM+5y	$26.12	$38.77	$47.86

The base-case net income result is $5.116B, up about 12% from TTM net income of $4.576B over five years. That may look modest relative to revenue growth, but TTM net income has already been helped by below-the-line items and share count is doing part of the EPS work. The base EPS result of $38.77 is therefore a company-level earnings bridge, not a high-growth compounder result. It clears the mechanical P/E 15 line by only a narrow amount.

6. Share count path

The starting diluted share count is 142.5M from Q1 FY2026. Historical buybacks were $3.705B in FY2021, $1.504B in FY2022, $1.500B in FY2023, $2.514B in FY2024, $1.624B in FY2025, and only $68M in Q1 FY2026. Management is also funding elevated B-21 capacity investment. The base path therefore assumes $1.5B of annual buybacks, not a return to the FY2021 outlier and not a full suspension. Stock-based compensation was $119M in FY2025 and $119M on a Q2 FY2025 through Q1 FY2026 TTM basis. At roughly the current share price, that is only about 0.2M shares a year. I use 0.21M annual SBC issuance in the base share bridge.

Base-case share count path:

Year	Starting diluted shares	Buyback dollars	Avg price assumed	Shares retired	SBC issuance	Ending diluted shares
Year 1	142.50M	$1.50B	$600	2.50M	0.21M	140.21M

Year	Starting diluted shares	Buyback dollars	Avg price assumed	Shares retired	SBC issuance	Ending diluted shares
Year 2	140.21M	$1.50B	$625	2.40M	0.21M	138.02M
Year 3	138.02M	$1.50B	$650	2.31M	0.21M	135.92M
Year 4	135.92M	$1.50B	$675	2.22M	0.21M	133.91M
Year 5	133.91M	$1.50B	$700	2.14M	0.21M	131.98M

Scenario share counts:

Case	Buyback assumption	SBC assumption	Ending diluted shares
Bear	$1.0B per year at lower but still elevated average prices; cash reserved for program execution	0.24M shares per year	134.7M
Base	$1.5B per year; below FY2024, close to FY2022-FY2025 median	0.21M shares per year	132.0M
Bull	$2.0B per year as FCF scales and program charges normalize	0.18M shares per year	129.1M

This bridge is important because the P/E 15 test is close. If the base case used a flat 142.5M share count, EPS would be about $35.90 and the stock would fail the P/E 15 hurdle. The base case requires both operating-income growth and continued repurchases. That is not an automatic disqualifier because Northrop has a long repurchase history and TTM FCF is about $3.3B, but it reduces the confidence of the gate.

7. P/E 15 test

Required TTM+5y EPS for P/E 15 at the current price:

`$575.11 / 15 = $38.34`.

Case	EPS at TTM+5y	EPS x 15	Current price	Cushion	Pass?
Bear	$26.12	$391.74	$575.11	(31.9)%	No
Base	$38.77	$581.51	$575.11	1.1%	Mechanically yes; confidence yellow
Bull	$47.86	$717.93	$575.11	24.8%	Yes
Probability-weighted EPS	$37.88	$568.17	$575.11	(1.2)%	No

The base case technically clears the P/E 15 threshold, but the cushion is only 1.1%. In the Gideon / ER2 framework, that is not a clean BUY signal. The base case depends on mid-single-digit revenue growth, modest consolidated margin improvement, continued buybacks, no major B-21/Sentinel/Space charge, and a tax / below-the-line profile that remains close to recent experience. A 1% cushion can be erased by a single quarter of unfavorable EAC, a slower repurchase cadence, a higher tax rate, or a modest miss in Aeronautics or Defense growth. The correct implication is YELLOW / WATCH rather than a high-confidence BUY.

8. Reflexivity check

The model compounds from QF's TTM base. Before using the forward result, the starting point must tie.

Check	Calculation	Result
Segment TTM revenue subtotal vs consolidated TTM revenue	$44.800B segment subtotal + ($2.433B) eliminations = $42.367B consolidated	Pass, exact to QF
Segment TTM OI subtotal vs consolidated TTM OI	$5.211B segment subtotal - $0.284B corporate / consolidation = $4.927B consolidated	Pass, exact to QF
Latest completed FY2025 revenue tie	$44.271B segment revenue - $2.317B eliminations = $41.954B consolidated	Pass, exact to QF
Latest completed FY2025 OI tie	SEC FY2025 operating income $4.511B controls; FMP $4.280B rejected	Pass with discrepancy logged

This matters because a bottoms-up model can look precise even when the base is wrong. Here, the TTM segment base and the consolidated base tie through the QF/QFR-cleared bridge. The remaining modeling uncertainty is economic, not arithmetic: whether each segment can actually hit the forward assumptions and whether the share-count path is funded after

elevated B-21 capex.

9. In-progress FY reconciliation

Stage 0 does not treat FY2026 as complete. It uses Q2 FY2025 through Q1 FY2026 as the TTM base. Still, FY2026 guidance is a useful sanity check because the first forward year of the five-year model should not start from an unrealistic step-up.

Northrop's Q1 FY2026 release reaffirmed 2026 sales guidance of $43.5B-$44.0B, segment operating income of $4.850B-$5.000B, MTM-adjusted EPS of $27.40-$27.90, and free cash flow of $3.1B-$3.5B. Segment guidance was mid-$13B Aeronautics, mid-to-high $8B Defense, high-$12B Mission, around $11B Space, and roughly $(2.4)B intersegment eliminations. Q1 FY2026 sales were $9.881B and operating income was $0.989B; Q1 is seasonally cash-negative for Northrop, so quarterly FCF is not annualized.

The base consolidated revenue path moves from $42.367B TTM to $53.954B at March 31, 2031. That is a 5.0% CAGR. A simple first-forward-year base path consistent with the segment appendices would be roughly $43.8B-$44.2B consolidated revenue, which is close to management's $43.5B-$44.0B FY2026 guide. The model therefore does not start above the current official run-rate by more than 10%. It requires compounding after FY2026, not a hidden first-year jump.

10. Sensitivity

The base case is close enough to the valuation hurdle that small changes matter. The table below varies one driver while holding the other base-case assumptions constant.

Sensitivity	Low case EPS	Base EPS	High case EPS	Interpretation
Aeronautics revenue CAGR +/- 200 bps	$37.76	$38.77	$39.85	B-21 / restricted-aircraft execution can move the verdict by about one EPS point each way.
Defense Systems horizon OI margin +/- 200 bps	$37.35	$38.77	$40.18	A 200 bps margin swing in Defense is enough to move the stock from fail to clear.
Share count +/- 5%	$36.92	$38.77	$40.81	Buybacks are the largest mechanical swing factor in the P/E test.
Tax rate +/- 300 bps	$37.36	$38.77	$40.17	Tax normalization alone can erase the base cushion.

The two most important variables are share count and segment margin / EAC execution. The market price is already close to 15x base-case FY+5 EPS, so the model cannot tolerate much disappointment. The most thesis-relevant operating variables are Aeronautics execution around B-21 and Space/Defense EAC risk, because they can move margin and cash allocation at the same time. The share-count variable is not independent of operations: if B-21, Sentinel, or Space consumes more cash than expected, the buyback bridge weakens, EPS falls, and the valuation hurdle fails.

11. Combined earnings summary

Case	Revenue	OI	OI margin	NI	EPS	Probability	EPS x 15	vs. $575.11
Bear	$46.762B	$4.690B	10.0%	$3.518B	$26.12	25%	$391.74	(31.9)%
Base	$53.954B	$6.494B	12.0%	$5.116B	$38.77	50%	$581.51	1.1%
Bull	$59.223B	$7.650B	12.9%	$6.179B	$47.86	25%	$717.93	24.8%
Probability-weighted EPS	NA	NA	NA	NA	$37.88	100%	$568.17	(1.2)%

Probability weights are 25% bear, 50% base, and 25% bull. That is not a symmetric optimism exercise; it reflects a moat that passes, a management gate that is yellow, visible backlog and strategic demand, but also program accounting risk, Space transition risk, B-21 capital intensity, and only a narrow valuation cushion. The probability-weighted EPS fails the P/E 15 test even though the base case barely clears. That is an important verdict implication: the stock may be reasonable for investors underwriting a stable defense-prime compounder, but under the Gideon framework it does not yet offer enough margin of safety for a confident BUY at $575.11.

Model reading and limitations

The model's main strength is that it is anchored to auditable segment disclosure. Each segment appendix refused to invent product-level revenue, and this synthesis preserves that discipline. That makes the model less visually granular than a platform-by-platform defense model, but more reliable. The missing product split is not a small issue: B-21, Sentinel, restricted programs, weapons, radar, SDA, GPI, and other drivers are exactly the programs a bullish story would want to isolate. Northrop does not provide enough public dollar disclosure to do that honestly. The correct synthesis treatment is therefore to let those programs influence segment CAGRs and margins, while keeping the actual arithmetic at the reportable-segment level.

The model's main weakness is that the base-case price gate depends on repurchases and smooth execution at the same time. A business with $95.6B of backlog, Mission Systems mid-teens margins, and strategic defense demand deserves credit for durability. But the same company is funding B-21 capacity, managing Sentinel and Space transitions, and living with EAC risk. If cash is needed for program investment or debt reduction, the share-count path becomes less favorable. If the share count ends closer to 135M than 132M, base EPS falls below the P/E 15 hurdle even if net income is unchanged. If operating income disappoints and buybacks slow at the same time, the downside is nonlinear.

This is why I would not round the 1.1% base cushion up into a BUY conclusion. The model is coherent, but not forgiving. It says Northrop is a durable defense prime trading around a fair-to-full Gideon price, not a mispriced quality compounder with a wide five-year earnings cushion. The bull case is attractive, but it relies on multiple things going right: B-21 production learning, Sentinel growth, weapons capacity absorption, Mission resilience, Space recovery, and enough FCF to keep retiring shares. The bear case does not require a demand collapse; it only requires normal defense-prime friction to arrive in a few places at once.

Verdict implications

P/E 15 gate: YELLOW. The base case mechanically clears by 1.1%, but the cushion is too thin to treat as robust. A strict ER2 BUY would require either a lower stock price, a higher-confidence base EPS bridge, or evidence that the base case should be lifted without relying on bull-case assumptions.

The implied BUY trigger price at the base-case EPS is roughly `$38.77 x 15 = $581.51`, but that is a weak trigger because the margin of safety is almost zero. A more useful watch-list trigger would require at least a 15% cushion to P/E 15, or a price near `$38.77 x 15 / 1.15 = $505.66`, unless new evidence raises base-case EPS. Conversely, a base EPS path below $38.34 fails the current price. That can happen if ending share count is above about 133.4M at the base net-income level, if the tax rate normalizes near 20%, if Defense margin is 200 bps lower, or if Aeronautics growth is 200 bps lower.

Operational trigger criteria:

- Upgrade evidence: B-21 capacity investment converts into cleaner margins without new major EAC charges; Sentinel and weapons/SRM growth remains on schedule; Mission sustains mid-teens margins; Space shows reported reacceleration rather than only award headlines; FCF supports buybacks while capex is elevated.
- Downgrade evidence: B-21, Sentinel, GEM/Space, or fixed-price development charges recur; FY2026 guidance is cut; backlog conversion slows despite high awards; buybacks remain de minimis after Q1; net debt rises while FCF misses.
- Price discipline: at $575.11, the model is too close to fair value under the P/E 15 rule. At a price materially below $505-$520, the same base model would begin to offer a real cushion. At a price above $600 without an EPS upgrade, the P/E 15 gate fails.

Tie-out checks

- Reported-financial tie-out (TTM + latest completed FY): PASSED. TTM segment revenue subtotal $44.800B plus $(2.433)B eliminations equals $42.367B consolidated revenue. TTM segment OI $5.211B less $0.284B corporate / consolidation equals $4.927B consolidated OI. FY2025 segment revenue $44.271B less $(2.317)B eliminations equals $41.954B consolidated revenue. FY2025 SEC operating income of $4.511B controls over FMP's $4.280B discrepancy, and the discrepancy is logged.

- NI / shares = EPS: PASSED. Bear: $3.518B / 134.7M = $26.12. Base: $5.116B / 132.0M = $38.77. Bull: $6.179B / 129.1M = $47.86. Rounding differences are less than $0.01-$0.02 per share.

- Segment sum tie-out at horizon: PASSED with named eliminations. Gross segment revenue is $49.410B / $56.905B / $62.472B for bear/base/bull. Named intersegment eliminations of $(2.648)B / $(2.951)B / $(3.249)B reconcile to combined revenue of $46.762B / $53.954B / $59.223B. The gap is not hidden; it is the same type of reconciling item in QF and Northrop's official guidance.

- Product-to-segment rollup: PASSED with disclosure limitation. Each segment appendix states that product-level dollars are not disclosed and uses one auditable reportable-segment line. Therefore the disclosed modeling line equals segment revenue by construction; no fabricated product subtotal is introduced.

- Weighted margin check: PASSED with disclosure limitation. Because product-level operating margins are not disclosed, the segment appendices do not create product margin tables. Each horizon segment OI equals segment revenue times the stated segment margin: for example, Aeronautics base $17.017B x 10.2% = $1.736B and Mission base $15.878B x 15.1% = $2.398B.

- Share count path: PASSED. Starting diluted shares of 142.5M, five years of base buybacks totaling $7.5B, explicit average prices, and annual SBC issuance of 0.21M shares produce 132.0M ending diluted shares. The path uses exactly five years, not six.

- Growth plausibility: PASSED / YELLOW. Aeronautics base CAGR 4.8% is below its 7.9% comparable restated span and far below Q1's 17% timing-affected growth. Defense base CAGR 6.8% is above its 5.5% comparable FY2023-FY2025 CAGR but justified by Sentinel, weapons/SRM, and IBCS, and below Q1's 10% organic growth. Mission base CAGR 4.8% is below its 6.35% three-year history. Space base CAGR 3.62% is a recovery from recent decline, supported by guidance and new awards but flagged as the least proven acceleration.

- Historical arithmetic: PASSED. Segment appendices compute `TTM revenue x (1 + CAGR)^5 = TTM+5y revenue` or explicit year-by-year paths within rounding. Examples: Defense base $8.096B x 1.068^5 = $11.249B; Mission base $12.560B x 1.048^5 = $15.878B; Space base year-by-year path reaches $12.761B; Aeronautics base path reaches $17.017B.

- Recency anchor: PASSED. The first-forward-year base path is consistent with Northrop's reaffirmed FY2026 revenue guide of $43.5B-$44.0B and does not start more than 10% above the most recent four-quarter run-rate. The model reaches $53.954B only after five years of compounding.

- Price-gate arithmetic: PASSED. Required EPS is `$575.11 / 15 = $38.34`. Base EPS $38.77 multiplied by 15 equals $581.51, producing a 1.1% cushion. Bear and probability-weighted EPS fail; bull passes.

- Source / rounding consistency: PASSED. All consolidated historical anchors are taken from QF/QFR-cleared files; all segment horizon values are reproduced from the four reviewed B appendices; management and moat cross-checks are drawn from their completed appendices; the live price source is FMP stable quote with timestamp; and all displayed model differences are rounding or named eliminations.

Tie-out check result: 11/11 passed. The control result does not make the stock a BUY. It means the model is internally coherent. The economic conclusion is still cautious because the P/E 15 cushion is only 1.1% in the base case and negative on a probability-weighted EPS basis.

Appendix CS - Compounder Score

Northrop Grumman - Compounder Score

PATH_RECEIVED: C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\appendix_compounder_score.md

Analysis date: 2026-05-28

Ticker: NOC

Currency: USD

This appendix is the diagnostic CompounderScorer output for the existing Northrop Grumman ER2 work folder. It uses the verified local ER2 artifacts first: `quant_foundation.md`, `quant_foundation_review.md`, `data_package.md`, the four segment appendices, `appendix_management.md`, `appendix_moat.md`, `appendix_synthesis.md`, `appendix_red_team.md`, and the raw live pulls saved in the local `raw` folder. I did not need a fresh live fetch because the local ER2 package already contains recent Q1 FY2026 primary-source and FMP evidence, including the quote, filings, transcript pulls, annual and quarterly financial statements, segment endpoint checks, and QF/QFR discrepancy logs. The score is diagnostic only. It is not an ER2 gate and does not override the main ER2 PASS verdict.

1. Executive Verdict

Northrop Grumman is a serious defense-prime franchise with a real moat, high-trust procurement advantages, a nearly $96 billion backlog, good free cash flow conversion, and a credible 2046 business. The evidence supports a watch-worthy business. It does not support the dream-compounder profile required by this 100-point diagnostic rubric.

The total Compounder Score is 57 / 100. Business Quality is 52 / 80. Valuation and 20 percent Return Underwriting is 5 / 20. The score-implied classification is `Reject under strict 20 percent compounder rubric`. That classification should not be read as "bad company." It means the evidence does not show a high-ROIIC, long-run reinvestment machine available at a price capable of underwriting 20 percent annualized shareholder returns without terminal multiple expansion.

The core problem is the mix of only acceptable-to-good returns on capital, execution-sensitive reinvestment, and a full current valuation. The ER2 synthesis uses a current price of $575.11 from the local FMP quote dated 2026-04-24. The base case reaches TTM+5y EPS of $38.77, versus $38.34 required for a 15x P/E at that price. The base case therefore clears the ER2 P/E 15 line by only 1.1%, and the probability-weighted EPS case fails by 1.2%. A 20 percent annualized return case is much harder than that. Even giving credit for dividends, the base-case five-year shareholder IRR is roughly 2% using the ER2 base-case terminal value. The bull case is still only around mid-single-digit IRR on the same rough math. The 20 percent case would require either a much lower entry price, much higher FY+5 earnings, or terminal multiple expansion.

The evidence supports good cash conversion. FY2025 CFO was $4.757 billion, equal to 114% of net income. FY2025 FCF was $3.307 billion, equal to 79% of net income. QF reports TTM CFO of $4.666 billion, capex of $1.361 billion, and FCF of $3.305 billion. The problem is not fake cash earnings. The problem is that Northrop is not asset-light, not unconstrained in pricing, and not clearly producing high incremental returns during the B-21, Sentinel, weapons, and Space transition period.

The score is capped by four issues. First, FMP FY2025 ROIC is 9.2%, the QF adjusted check implies a 2025 point estimate nearer 11.7%, and the management appendix cites a proxy-adjusted 2025 measure of 15.4%. That range is acceptable for a defense contractor but not a >30% compounder. Second, ROIIC is not cleanly provable from the local artifacts because program-level capital, working-capital timing, and classified program economics are not separately disclosed. Third, the moat is real but economics are capped by government procurement, fixed-price EAC risk, and customer concentration. Fourth, current valuation prices much of the stability already.

2. Data Source Map

Evidence item	Source used	Confidence	Scoring treatment
Current price, market cap	`appendix_synthesis.md`; `raw\d_fmp_quote_NOC_2026-04-26.json`	High	Current price $575.11; market cap about $81.7B
Enterprise value	`raw\d_fmp_key_metrics_annual_NOC_2026-04-26.json`; Q1 net debt from data package	Medium	FY2025 EV about $97.2B; current EV may differ with price movement

Evidence item	Source used	Confidence	Scoring treatment
TTM revenue, operating income, EPS, FCF	`quant_foundation.md`; `appendix_synthesis.md`	High	TTM revenue $42.367B; OI $4.927B; EPS $31.95; FCF $3.305B
FY2025 operating income	QF/QFR SEC control	High	SEC/QF $4.511B controls; FMP $4.280B rejected
ROIC and invested capital	`data_package.md`; FMP key metrics raw pull; management appendix	Medium	Use range, not false precision: FMP 9.2%, QF proxy about 11.7%, management appendix proxy 15.4%
FCF conversion	`data_package.md`; FMP cash flow raw pull	High	FY2025 CFO/NI 114%; FCF/NI 79%; TTM FCF $3.305B
Segment moat and runway	Four segment appendices, data package, moat appendix	Medium	Segment-level dollars are reliable; product/program dollars mostly not disclosed
Management and incentives	`appendix_management.md`, proxy raw files	High	Management gate YELLOW; LTIP includes FCF, ROIC, relative TSR
20 percent return case	`appendix_synthesis.md`, `appendix_red_team.md`	High for ER2 model; Medium for IRR conversion	Base P/E 15 cushion only 1.1%; probability-weighted EPS fails

3. Key Financial and Quality Metrics

Metric	Value	Source / calculation	Scoring read-through
Current price	$575.11	Local FMP quote used in synthesis	Full valuation, no obvious bargain
Market cap	$81.7B	Local FMP quote	Large mature prime
Enterprise value	$97.2B	FY2025 FMP key metrics plus Q1 net debt context	About 23.8x TTM NOPAT proxy
TTM revenue	$42.367B	QF / synthesis	Large and durable base
TTM operating income	$4.927B	QF / synthesis	11.6% OI margin
TTM net income	$4.576B	QF / synthesis	Solid but helped by below-the-line items
TTM diluted EPS	$31.95	QF / synthesis	Base for P/E 15 comparison
TTM FCF	$3.305B	QF / synthesis	About 4.0% FCF yield on market cap
Net debt / TTM EBITDA	2.0x	Data package / QF	Manageable, not overcapitalized
FY2025 FMP ROIC	9.2%	FMP key metrics in data package	Low for a compounder rubric
FY2025 adjusted ROIC proxy	11.7% to 15.4%	QF check and management appendix	Acceptable-to-good, not elite
FY2021-FY2025 revenue CAGR	4.1%	FMP annual revenue	Good mature-prime growth
FY2021-FY2025 FCF CAGR	11.3%	FMP annual FCF	Helped by FY2021 base and cash timing
FY2021-FY2025 diluted share CAGR	-2.8%	FMP annual diluted shares	Meaningful buyback support
FY2025 SBC / revenue	0.3%	FMP cash flow and revenue	SBC is small
FY2025 SBC / FCF	3.6%	FMP cash flow	Not a major dilution issue

The key metric table explains the score. Northrop has real scale, real cash, and real customer embeddedness. It does not show the hallmark of a classic exceptional compounder: very high current ROIC plus clearly measurable high ROIIC plus an uncrowded reinvestment runway. The best reading is a good defense compounder with execution and procurement constraints.

4. Rubric Scorecard

Category	Score	Max	Evidence summary
Incremental Returns on Capital	13	25	Adjusted returns look acceptable but not elite; ROIIC cannot be proven cleanly from disclosed program data
Reinvestment Runway	14	20	B-21, Sentinel, weapons, missile defense, restricted work, Mission electronics, and allied demand create runway

Category	Score	Max	Evidence summary
Durability of Moat	12	15	High-trust procurement and classified integration are durable; pricing is capped
Accounting and Financial Quality	7	10	Cash conversion is real; FMP/SEC OI discrepancy and program accounting require caution
Capital Allocation Discipline	6	10	Buybacks and dividends are meaningful; B-21 capital intensity and price-insensitive repurchases cap score
Price and 20 percent Return Underwriting	5	20	Base IRR is far below 20%; the ER2 P/E 15 cushion is only 1.1%
Total	57	100	Strict rubric classification: Reject

Incremental Returns on Capital - 13 / 25

Normalized ROIC gets 2 / 5. The local evidence does not justify a 20% to 30% ROIC score. FMP FY2025 ROIC is 9.2%. The QF adjusted check using SEC operating income points nearer 11.7%. The management appendix cites a proxy-adjusted 2025 ROIC of 15.4%. That range lands between acceptable and good, not exceptional. The score gives partial credit for adjusted measures but refuses to average upward into a high-ROIC story.

ROIIC gets 2 / 8. This is the biggest evidence gap. The local files disclose segment revenue and operating income, but not program-level invested capital, B-21 capital deployed by year, Sentinel capital employed, classified-program economics, contract-level working capital, or incremental NOPAT by reinvestment bucket. The company asserts that the B-21 deal improves life-of-program returns and that ROIC is above cost of capital, but the scorer cannot award high ROIIC points from management claims alone. A rough five-year NOPAT look is distorted by FY2021 and FY2023 items and does not show clean high incremental returns. Unsupported ROIIC gets conservative treatment.

ROIIC deterioration gets 2 / 3. Returns are not collapsing, but they are noisy. B-21 LRIP provisions, Space EAC adjustments, and the FMP/SEC operating-income discrepancy keep the score below full credit. Unit economics get 2 / 3 because Mission Systems margins around 14% to 15%, restricted work, and high-trust procurement support decent economics, while government contracting caps upside. Cash conversion gets 3 / 3. ROIC artifact risk gets 2 / 3 because goodwill and intangibles exceed common equity and FMP adjusted/unadjusted ROIC requires careful interpretation.

Reinvestment Runway - 14 / 20

The runway is one of the stronger pieces of the score. Northrop has clear demand drivers: B-21 production and capacity, Sentinel modernization, tactical solid rocket motors, munitions, missile defense, IBCS, restricted radar, marine systems, microelectronics, SDA, GPI, restricted space, and allied defense demand. The backlog is roughly $95.6B at Q1 FY2026, and the data package shows multiple concrete program drivers rather than vague TAM language.

The score is not higher because the runway is not asset-light and not fully organic in economic terms. B-21 requires about $2.5B of company-funded investment over multiple years, with an incremental roughly $200M of 2026 capex. Space is not yet a clean growth segment: FY2025 revenue declined 8.2% and Q1 FY2026 sales declined 3%. Defense and Aeronautics growth can require supplier expansion, cleared labor, customer funding, EAC discipline, and working-capital support. Growth exists, but growth does not automatically create value at high incremental returns.

Durability of Moat - 12 / 15

The moat is real. The moat appendix's best summary is high-trust procurement. Northrop participates in mission-critical systems where failure has national consequences and replacement requires years of testing, accreditation, budget process, training, classified integration, and mission assurance. The moat is strongest in restricted programs, strategic aircraft, deterrence, missile defense, sensors, EW, command systems, and Mission Systems content.

The moat score is high but not perfect. The business does not have pure commercial pricing power. The customer is concentrated: FY2025 U.S. government sales were 84% of consolidated sales. Procurement politics, continuing resolutions, budget timing, protests, program resets, and fixed-price EAC risk can move economics. Space architecture change, autonomy, AI-native mission software, and low-cost weapons can reallocate value over time. The 2046 test passes with yellow edging, which is exactly how this score treats it.

Accounting and Financial Quality - 7 / 10

Cash flow supports earnings. FY2025 CFO was $4.757B and FCF was $3.307B. QF reports TTM FCF of $3.305B. SBC is modest at $119M in FY2025, or about 0.3% of revenue and 3.6% of FCF. Leverage is manageable at about 2.0x net debt / TTM EBITDA. These are good financial-quality signals.

The score is capped because defense-prime accounting requires program judgment, EAC estimates, pension and below-the-line effects, and contract timing. QF and QFR found and preserved an important discrepancy: FMP FY2025 operating income was $231M below the SEC/QF value. The local ER2 package handled that correctly by using the SEC value, but the presence of the discrepancy is a reminder not to rely blindly on automated data. The B-21 LRIP loss provision and GEM 63XL unfavorable EAC adjustment are not accounting fraud flags, but they are proof that estimates can matter.

Capital Allocation Discipline - 6 / 10

Northrop has returned large amounts of cash. Buybacks were $3.705B in FY2021, $1.504B in FY2022, $1.500B in FY2023, $2.514B in FY2024, and $1.624B in FY2025. Dividends rose from $983M in FY2021 to $1.293B in FY2025. Diluted shares declined from 160.9M in FY2021 to 143.8M in FY2025 and 142.5M at Q1 FY2026. The company is not currently behaving like a serial acquirer trying to manufacture growth through goodwill.

The score is capped because the buyback framework looks more like steady capital return than price-sensitive value timing. The red team correctly highlights that the ER2 base case depends on the share-count path. If B-21, Sentinel, or Space execution absorbs cash, buybacks fall, EPS falls, and valuation support weakens. Management incentives are better than average because LTIP metrics include FCF, ROIC, and relative TSR, but yellow management, a new CFO, B-21 cost history, and Space EAC noise prevent a higher mark.

5. ROIIC and Reinvestment Analysis

The evidence does not support a precise high-ROIIC claim. The rubric asks for 3-year and 5-year ROIIC, preferably separating organic from acquisition-inclusive ROIIC. The local ER2 package does not disclose enough program-level invested capital or reinvestment by bucket to calculate that cleanly. This is not a file-quality failure; it is a disclosure limitation. Northrop reports at the segment level, while the most important growth programs are B-21, Sentinel, weapons/SRM, restricted radar, restricted aircraft, SDA, GPI, and restricted space. Product-level dollars are usually not disclosed, and capital employed by program is not disclosed.

Using only high-level public financials would create false precision. FY2021 EBIT was elevated by company-specific effects, FY2023 operating income was depressed, FY2025 FMP operating income understates the SEC value, and Q1 FY2026 has B-21 timing effects. Working capital can be seasonal and program-specific. Acquisitions are not a major current growth driver, but historical acquisition spend and goodwill still affect invested-capital interpretation. A mechanically calculated ROIIC from these aggregated lines would look precise and be analytically weak.

The conservative conclusion is: ROIIC is at least plausible above cost of capital in selected programs, but not proven high enough for this rubric. Mission Systems provides the cleanest evidence of durable economics because it has sustained margins around 14% to 15%. B-21 and Sentinel may have attractive life-of-program economics, but the five-year scoring horizon still includes capex, EAC, working-capital, and production-learning risk. Space has important optionality, but recent reported growth is negative. Therefore ROIIC receives low partial credit rather than an insufficient-evidence zero.

6. Runway Analysis

The runway is credible because it is tied to specific national-security needs rather than a generic market-size slide. Aeronautics has B-21, restricted programs, TACAMO, sustainment, and potential future air-dominance work. Defense has Sentinel, weapons, tactical solid rocket motors, IBCS, and missile-defense exposure. Mission Systems has restricted airborne radar, F-35 radar, SEWIP, marine systems, microelectronics, EW, secure communications, and processing content. Space has SDA, restricted space, missile warning/defense, GPI, ground systems, and resilient architecture demand.

The issue is conversion quality. A government-funded demand runway can still produce mediocre incremental returns if the work is competed, fixed-price, cost-overrun prone, delayed by budget process, or capital-intensive. The data package says Northrop's 2026 guidance is $43.5B to $44.0B of sales and $3.1B to $3.5B of FCF, with capex rising to about $1.85B. That is healthy, but it is not the signature of an asset-light business that can add revenue with minimal capital.

The score gives runway credit because the demand signals are real and backlog is large. It withholds perfect credit because the runway requires execution and reinvestment before the economics are fully visible. A compounder scorer should not confuse "lots of important programs" with "lots of high-ROIIC reinvestment."

7. Moat Analysis

Northrop's moat can be explained in one paragraph. It is a high-trust defense-prime moat built on classified access, mission-critical integration, switching costs, long-cycle procurement, physical and cleared capacity, incumbency, and customer need for reliability where failure has national consequences. The moat does not come from consumer brand, network effects, or software-like pricing. It comes from being one of the few contractors that can design, build, integrate, accredit, and sustain strategic systems for the U.S. government and allies.

This moat is durable enough to pass the 2046 test, but it is not immune. The bear case is not bankruptcy. It is economic compression: the customer modularizes architectures, pushes open systems, funds AI-native vendors, second-sources propulsion, buys commercial space services, and competes more of the stack. Northrop likely still has revenue in that world, but value capture could move elsewhere. The scoring implication is a strong moat score with a pricing-power haircut.

8. Accounting and Capital Allocation Analysis

Accounting quality is acceptable but not simple. Defense contracting involves long-duration programs, EAC estimates, pension effects, cost-type and fixed-price mix, classified-program disclosure limits, and working-capital timing. The QF/QFR process caught the FMP/SEC operating-income discrepancy and used the SEC value. That is a positive process outcome, but it also supports a conservative score. This is not a company where a single API ratio can be accepted without source control.

Capital allocation is reasonable but not elite. Management has pruned the portfolio, funded capex and R&D, returned cash through dividends and buybacks, and avoided major recent empire-building acquisitions. The incentive framework includes ROIC and FCF, which is good. The weak point is that the stock case uses buybacks to make the FY+5 EPS path work. Red team says the most fragile Stage 5 number is the 132.0M diluted share count. If buybacks fall because B-21, Sentinel, or Space consumes more cash, the P/E 15 gate fails. That is a material capital-allocation dependency.

9. 20 Percent Return Underwriting

The evidence does not support the 20 percent annualized return hurdle. The ER2 synthesis is already much less demanding than this scorer's hurdle, and even that test is nearly flat. At $575.11, the required TTM+5y EPS for a 15x P/E is $38.34. The base case reaches $38.77, a 1.1% cushion. The bear case reaches $26.12 and fails by 31.9%. The bull case reaches $47.86 and clears by 24.8%. Probability-weighted EPS is $37.88 and fails by 1.2%.

For a rough shareholder-return translation, assume the base case terminal price is the synthesis EPS x 15 value of $581.51 and add roughly $50 of cumulative dividends over five years. That produces only about 2% annualized return from $575.11. The bear case is negative even with dividends. The bull case is roughly 6% annualized with a similar dividend assumption. These are rough calculations, not a replacement for a full DCF, but they are sufficient to reject a 20 percent return underwriting claim.

The reverse-DCF implication is severe. To earn 20% for five years from $575.11 without terminal multiple expansion, ending per-share value plus dividends would need to be around 2.49x the entry price. Northrop would need either far higher EPS, a far lower share count, a much higher exit multiple, or a much lower starting price. The local ER2 evidence does not support that. Cash returns help, but a roughly 2% dividend yield and buybacks cannot close the gap when the entry FCF yield is about 4% and organic growth is mid-single-digit.

10. Hard Veto Checklist

Veto	Status	Evidence
ROIIC below cost of capital with no path	Watch	Selected programs may exceed cost of capital, but high ROIIC is not proven
Reported ROIC is an artifact	Watch	Goodwill/intangibles and FMP/adjusted gaps require caution
Growth requires external financing	Pass	Leverage is manageable and FCF is real
Share count rises without value creation	Pass	Diluted shares have declined materially
Large acquisitions without return disclosure	Pass	Current issue is internal program investment, not serial M&A
FCF structurally lags earnings	Pass	FY2025 and TTM cash conversion are healthy
Customer/regulation/cyclicality can impair equity	Watch	U.S. government concentration and procurement timing are fundamental risks

Veto	Status	Evidence
20 percent case requires multiple expansion	Fail	Base case does not approach 20% without a much higher terminal value
Needs flawless execution to justify price	Fail	ER2 base case has only 1.1% P/E 15 cushion
Cannot explain moat in one paragraph	Pass	High-trust procurement and classified integration moat is clear
Governance/accounting issues impair trust	Watch	No fatal flag, but program estimates and FMP/SEC discrepancy need control
Balance sheet risk could wipe out equity	Pass	Net debt / TTM EBITDA about 2.0x

The hard-veto screen does not say Northrop is uninvestable in all frameworks. It says this strict 20 percent compounder rubric cannot clear the stock at the current price. Two valuation-related hard vetoes are active: the 20 percent case requires a much better terminal value or entry price, and the current ER2 base case needs too much to go right for too little cushion.

11. Final Decision

Compounder Score note: 57/100; real defense-prime moat and cash conversion, but ROIC/ROIIC evidence is not elite and valuation blocks the 20 percent case.

Business Quality Score note: 52/80; quality is good for a defense prime, with backlog, Mission Systems margins, and classified procurement advantages, but returns are only acceptable-to-good and program execution risk is live.

20% Return UW Score note: 5/20; base-case shareholder IRR is far below 20%, the ER2 P/E 15 cushion is only 1.1%, and the probability-weighted EPS case fails at the current price.

Final classification: Reject under strict 20 percent compounder rubric. Operationally, this remains a watchlist-quality defense franchise, but the diagnostic scorer should not round a good business into a great investment when the current price already captures most of the base-case economics.

Data gaps that matter: clean program-level invested capital, organic versus acquisition-inclusive ROIIC, contract-level working capital, B-21 and Sentinel return disclosure, product-level revenue and margin for restricted programs, and a full current 10-year shareholder-return model with updated market data. Unsupported items are treated as insufficient evidence and scored conservatively.

12. Machine-Readable JSON

The companion file `compounder_score.json` contains the machine-readable scorecard.

Appendix CSA - Scoring Audit

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Northrop Grumman - Scoring Audit

Analysis date: 2026-05-28

Ticker: NOC

1. Original vs Audited Scores

Item	Original	Audited	Notes
Business Quality Score / 80	52	46	Reduced for uncalculated ROIIC, defense-program capital intensity, and evidence gaps in reinvestment economics
Valuation / 20% Return UW Score / 20	5	1	Base IRR is 1.9%, bear IRR is negative, and a 20% case is not remotely underwritten at the current price
Total Score / 100	57	47	The original conclusion was directionally conservative, but several partial-credit items still needed CSA haircuts
Classification	Reject under strict 20 percent compounder rubric	Reject under strict 20 percent compounder rubric	Classification is unchanged; the audited score makes the rejection more explicit

The original CompounderScorer report is directionally honest: it does not call Northrop Grumman a dream compounder, it rejects the stock under a strict 20% annualized-return framework, and it repeatedly flags ROIC/ROIIC opacity. The audit therefore does not need to reverse a false BUY. It does need to reduce points where the scorer awarded partial credit despite missing calculations or where the text relies on management assertions about B-21 and other programs without program-level capital evidence.

The original JSON and markdown agree on the main score: Business Quality 52/80, Valuation and 20% Return Underwriting 5/20, Total 57/100, base IRR 1.9%, bear IRR -5.4%, bull IRR 6.1%, and classification "Reject under strict 20 percent compounder rubric." There is no JSON/markdown disagreement requiring a separate control adjustment.

2. Score Reductions and Reasons

Incremental Returns on Capital is reduced from 13/25 to 11/25. Normalized ROIC remains partly supported: FMP FY2025 ROIC is 9.2%, the QF adjusted point estimate is about 11.7%, and the management appendix cites a proxy-adjusted 15.4%. That supports 2/5 or, at most, low 3/5 for normalized ROIC. The problem is ROIIC. CSA rules say ROIIC must be calculated, not merely asserted. The scorer states that 3-year ROIIC, 5-year ROIIC, acquisition-inclusive ROIIC, and reinvestment rate are all unavailable or null. Under the CSA cap, the ROIIC subcategory should be 0, not 2. This score is reduced because the public files do not disclose program-level invested capital, working capital, B-21 capital by year, Sentinel capital employed, or classified-program economics.

Reinvestment Runway is reduced from 14/20 to 12/20. The demand runway is real and supported by named programs, backlog, Q1 FY2026 awards, and segment commentary. The quality of the reinvestment runway is less well supported. The data package explicitly says B-21 requires about $2.5 billion of company-funded investment over multiple years and roughly $200 million of incremental 2026 capex, while product-level dollars and margins are not disclosed for B-21, Sentinel, weapons, SDA, GPI, restricted programs, or most named platforms. That is not an asset-light repeatable playbook. The evidence supports runway, but not high-ROIIC runway.

Durability of Moat is reduced from 12/15 to 11/15. Northrop has a concrete high-trust procurement moat: classified access, switching costs, mission assurance, cleared capacity, and long-cycle program integration. The reduction is for economics, not existence. FY2025 U.S. government sales were 84% of consolidated sales, Space was 93% U.S. government, and the moat appendix says 50% of FY2025 sales were fixed-price contracts. Government monopsony, audit rights, termination rights, modular/open-system risk, and EAC exposure prevent the moat score from creeping toward a free-pricing compounder score.

Capital Allocation is reduced from 6/10 to 5/10. Dividends and buybacks are real, and share count declined materially from FY2021 to FY2025. But the scorer also says buybacks appear more steady than price-sensitive, and the red team identifies the 132.0 million FY+5 share-count path as fragile. B-21 capex and program execution can reduce buybacks at exactly the time the EPS model needs them.

Valuation and 20% Return Underwriting is reduced from 5/20 to 1/20. The original report itself gives base/bear/bull IRRs of 1.9%, -5.4%, and 6.1%. Under the CS rubric, base-case IRR below 10% receives 0/6 for 6A. The bear case is not acceptable. The reverse-DCF burden is not beatable on local evidence. Cash returns deserve only token credit because the dividend and buyback yield cannot bridge the 20% hurdle.

3. Unsupported Claims

The most important unsupported claim is not that B-21 or Sentinel will grow; that is supported. The unsupported claim is that these programs can be treated as high-ROIIC reinvestment. Management says the B-21 agreement improves life-of-program returns and answered affirmatively when asked whether B-21 ROIC is meaningfully above cost of capital. That is useful evidence of management intent, but it is not enough for compounder scoring. The files do not disclose program NOPAT, invested capital, capitalized tooling, working-capital burden, learning-curve economics, or contract-level return distribution.

The statement that Northrop has "good free cash flow conversion" is supported for FY2025 and TTM, but the score should not treat cash conversion as a permanent structural guarantee. Annual FCF was $2.152 billion, $1.466 billion, $2.100 billion, $2.621 billion, and $3.307 billion from FY2021 to FY2025. That is acceptable and improving, yet lumpy enough that program timing and capex still matter.

The scorer's "credible 2046 business" claim is supported as a qualitative moat statement. It is not evidence of a dream investment. A specific 2046 Northrop can be described, but the moat appendix itself expects low-double-digit margins, not software-like economics.

4. Calculation Errors

No fatal arithmetic error was found in the original score reconstruction. The important issue is point-award discipline rather than mechanical math. The original correctly uses the SEC/QF FY2025 operating income control of $4.511 billion rather than FMP's $4.280 billion, a $231 million discrepancy flagged by QF/QFR.

Spot checks support the valuation critique. At $575.11, a five-year 20% annualized return requires ending value plus cumulative dividends of about $1,431 per share. Even assuming $50 of cumulative dividends, the required terminal price is about $1,381. At a 15x exit P/E, that implies roughly $92 of FY+5 EPS, versus the synthesis base case of $38.77 and bull case of $47.86. From TTM EPS of $31.95, $92 of EPS would require about a 23.6% five-year EPS CAGR, before considering the operating reality of a mature defense prime. The local evidence does not support that.

EV/NOPAT is also full, not cheap. Using EV of about $97.2 billion and TTM operating income of $4.927 billion taxed at roughly 17.5% implies NOPAT around $4.1 billion and EV/NOPAT near 24x. That starting valuation is incompatible with a 20% return case unless NOPAT growth dramatically exceeds the segment model or the exit multiple expands.

5. Missing Data

The most important missing evidence is clean 3-year and 5-year ROIIC by reinvestment bucket. The audit needs B-21 capital employed by year, Sentinel capital employed, program-level NOPAT, contract working-capital intensity, capitalized tooling/facility detail, and classified-program economics. Without those, ROIIC cannot be awarded under CSA rules.

Acquisition-inclusive ROIIC is also missing, though recent M&A does not appear to be the central growth driver. The gap still matters because goodwill and intangibles affect ROIC interpretation and because a defense-prime portfolio has a long acquisition history embedded in invested capital.

The product-level revenue and margin gap remains material. The data package explicitly says B-21, Sentinel, weapons, missile defense, F-35 radar, restricted programs, SDA, GPI, and international pipelines are not separately reported as revenue lines. Any precise product rollup would therefore be a forward estimate, not historical fact.

6. Hard-Veto and Threshold Test Audit

The hard vetoes are correctly failed or watched in the original JSON, but the valuation score should be harsher. The 20% case requires much higher earnings, a much lower entry price, or terminal multiple expansion. The base ER2 P/E 15 cushion

is only 1.1%, while the probability-weighted case fails by 1.2%. That is not enough cushion for a strict compounder rubric.

Threshold tests remain failed: total score is below 70, Business Quality is below 65/80, Valuation is below 15/20, ROIIC plus runway is below 35/45, base IRR is below 20%, bear IRR is negative, and ROIIC is not calculable. The audited classification is therefore Reject.

7. Final 20% Hurdle Pass/Fail

Final 20% hurdle: Fail. The business may be durable and investable under a different defense-prime or value-at-fair-price framework, but the strict 20% compounder hurdle is not close at $575.11.

8. Dream Business / Dream Investment Classification

Classification: neither. Northrop is a good defense-prime franchise, not a dream business under this rubric because normalized ROIC and ROIIC are not elite. It is not a dream investment because the base-case IRR is about 2% and the 20% case requires economics far beyond the local evidence.

The single biggest reason the company does not qualify is simple: the public evidence does not prove high ROIIC, and the starting valuation leaves no path to a 20% return without a much better terminal value than the ER2 model supports.

9. Stage 7 Scorecard Notes

Compounder Score note: 47/100; Northrop has a real defense moat and cash conversion, but audited ROIIC is zero-credit because it is not calculable and valuation is far from a 20% return setup.

Business Quality Score note: 46/80; quality is above average for a defense prime, but government pricing limits, B-21/Sentinel capital intensity, Space noise, and program-level opacity cap the score.

20% Return UW Score note: 1/20; base IRR is 1.9%, the bear case is negative, and a 20% outcome would require far higher EPS or terminal value than the local evidence supports.

10. Auditor JSON

The companion file `compounder_score_audit.json` contains the valid machine-readable audited scorecard.

Appendix RT - Red Team

Northrop Grumman - Red Team

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Stage 0 time anchor used verbatim:

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Source discipline

This red-team appendix used the existing ER2 inputs in `C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\`: `appendix_synthesis.md`, the four segment appendices, `appendix_management.md`, `appendix_moat.md`, and `data_package.md`. Fresh red-team source pulls were also saved under `raw\` with a `red_team_` prefix: FMP quote, quarterly income statement, quarterly cash flow statement, quarterly revenue-product-segmentation, Q1 FY2026 transcript, and annual key metrics. Live primary-source checks used Northrop's Q1 FY2026 earnings release / 8-K at https://investor.northropgrumman.com/static-files/50bb4c80-e273-4ed4-92bb-f1653b8b1156, the SEC Q1 FY2026 10-Q at https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm, and the SEC FY2025 10-K at https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm. Peer context used Lockheed Martin's Q1 FY2026 release and RTX's Q1 FY2026 release/search result context to test whether demand strength is unique to Northrop or industry-wide.

1. The most fragile assumption

The fragile assumption is not one line in isolation; it is the synthesis's implicit assumption that execution, cash conversion, and buybacks can all be reasonably smooth at the same time. The most visible segment expression is Aeronautics Systems: base-case revenue grows from $13.461B TTM to $17.017B at March 31, 2031, a 4.8% CAGR, while operating margin improves from 9.7% TTM to 10.2%. That does not look heroic on paper, and that is precisely why it is dangerous. The apparent modesty hides a linked bet on B-21 capacity, LRIP EAC discipline, supplier scaling, cleared labor, facilities coming online, customer funding, and a manageable cash burden.

The B-21 evidence cuts both ways. The Q1 FY2026 release and transcript support real demand: the Air Force agreement increases annual production capacity by 25%, a Lot 4 LRIP award followed Lot 3, and management says B-21 is nearing 10% of company revenue. But Q1 also included a company-owned test asset sale that accelerated revenue into the quarter without changing expected LRIP deliveries. The segment appendix properly refuses to annualize Q1's 17% Aeronautics growth, yet the consolidated model still requires the business to compound out of a TTM base that includes this unusual quarter and then earn slightly better margin despite a heavier asset base.

The sensitivity is too tight. The synthesis says Aeronautics revenue CAGR 200 bps lower takes base EPS from $38.77 to $37.76. The P/E 15 requirement at the live FMP price of $575.11 is $38.34. So a 200 bps Aeronautics growth miss alone turns a mechanical pass into a fail. That is before considering the second-order effects: if B-21 conversion is slower or more capital-intensive, Northrop likely also buys back fewer shares. In other words, the model treats Aeronautics growth and the share-count bridge as separable sensitivities, but in the real world they are correlated in the bad state.

The red team would rewrite the most fragile assumption this way: base-case Aeronautics is an execution-friction case masquerading as a normal-growth case. The right base may still be positive revenue growth, but it should assume less help from repurchases until the 2027-2029 B-21 capex wave is funded and through the system.

2. The most likely optimistic Stage 5 number

The single Stage 5 number most likely to be optimistic is the base-case ending diluted share count of 132.0M at the March 31, 2031 horizon. This matters more than it looks because the EPS hurdle is within rounding distance. Base net income of $5.116B divided by 132.0M shares gives $38.77 of EPS. The required EPS is $38.34. At the same $5.116B of net income, the maximum share count that still clears is roughly 133.4M. If ending shares are 135M, EPS falls to about $37.90 and the valuation gate fails.

The buyback bridge assumes $1.5B of annual repurchases for five years, at average prices stepping from $600 to $700, partly offset by SBC issuance. That is not impossible; Northrop has a long repurchase history. But the evidence base is thinner than the model needs. FY2025 buybacks were $1.624B, but Q1 FY2026 buybacks were only $68M. Management is holding 2026 FCF guidance at $3.1B-$3.5B while raising capex to about $1.85B, and the transcript says the majority of B-21 company-funded capital comes in 2027-2029. The company can generate cash and still decide that B-21, debt, dividends, and supplier support take priority over buybacks.

This is where the peer context hurts the bull case. Lockheed's Q1 FY2026 release showed strong defense demand and multiyear munitions frameworks, but also negative Q1 free cash flow because working capital timing consumed cash. RTX's Q1 2026 results likewise underline that demand and backlog do not remove program execution, supplier, and cash-timing risks. Northrop's own Q1 cash flow was seasonally negative. A defense-prime supercycle can lift orders while still delaying the cash that funds repurchases.

If the red team had to cut one Stage 5 number without touching the segment forecasts, it would raise ending shares from 132.0M toward 134M-135M. That single adjustment is enough to move the verdict from "mechanically yes; confidence yellow" to "no."

3. Strongest bear case

The strongest bear case is that Northrop is not mispriced as a high-quality compounder; it is fairly priced for a defense prime entering its heaviest execution period. The market is giving credit for B-21, Sentinel, weapons, missile defense, Mission Systems resilience, and a near-record backlog, but those are exactly the programs that require capital, supplier scaling, contract conversion, and EAC discipline. A 1.1% base-case P/E cushion assumes normal defense-prime friction does not cluster. The bear case does not need a defense-budget collapse or a B-21 cancellation. It only needs three ordinary things to happen together: B-21 cash demand reduces buybacks, Space fails to reaccelerate cleanly, and Defense/Sentinel margin stays around management's near-term guide rather than expanding.

The timeline is two to six quarters for warning signs and three years for the earnings miss to become hard to deny. By late 2026, investors should see whether Aeronautics growth still has quality after the Q1 timing benefit, whether Defense's organic growth converts to reported growth and margin, and whether Space is actually back to growth. By 2027-2028, the B-21 capex wave should reveal whether management can fund growth and keep retiring shares. The observable anchor is not backlog. Backlog can stay high while profitability disappoints. The anchor is segment operating income plus free cash flow after capex.

The short-seller version is simple: Northrop has the right programs but the wrong margin of safety. The company is entering a capacity-build and program-ramp cycle with a new CFO, a history of B-21 and GEM 63XL accounting charges, Space revenue decline, and a valuation test that fails if share count is only 2%-3% higher than planned. The moat keeps the revenue base durable; it does not guarantee shareholder compounding from today's price.

4. Cross-examination of management commentary

First, management says weapons are "nearing 10%" of total company sales and positioned to grow well above the company average. The skeptical read is not that demand is fake. It is that the revenue opportunity may be less Northrop-specific than the language suggests. Lockheed, RTX, and other defense suppliers are all pointing to munitions and missile-defense demand. Northrop has important SRM and weapons positions, but the customer is actively trying to increase capacity across the industrial base, not maximize Northrop's margin. If this statement is overpromising, the first sign will be Defense Systems revenue growth that looks good organically but does not lift margin above roughly 10%-10.5%.

Second, management asserts the B-21 deal improves long-life economics and that B-21 ROIC is above cost of capital. The red-team issue is the time mismatch. A program can be attractive over life and still consume cash through 2027-2029, delay buybacks, and create EAC risk during the five-year ER2 horizon. Northrop is selling shareholders a long-duration production and sustainment asset, while the P/E test is built on a March 2031 share count and EPS number. If the statement is wrong or merely too early, the first evidence will be either another Aeronautics unfavorable EAC or sustained capex/working-capital drag that forces annual buybacks below $1.0B.

Third, management says the backlog and opportunity set support longer-term growth beyond mid-single digits if bottlenecks clear. That comment helpfully names the bear case: contract conversion, international sales timing, supplier scaling, and new competitive wins. The base synthesis does not assume double-digit consolidated growth, but it still needs clean enough conversion to reach $53.954B of revenue and $6.494B of operating income. If the commentary is too optimistic, the earliest sign will be backlog remaining high while quarterly sales growth stays in the low-single digits and the book-to-bill fails to translate into funded conversion.

5. Stage 5 spot-check

The recency anchor ties arithmetically. Q2 FY2025 through Q1 FY2026 is the right TTM window, and the synthesis has 11/11 tie-out checks passed. The problem is economic recency, not arithmetic recency. The most recent official quarter shows uneven segment quality: Aeronautics revenue up 17% but helped by B-21 timing; Defense reported sales up 5% with 9.7% margin; Mission sales up only 2% but helped by favorable EACs; Space sales down 3% with a $71M GEM 63XL unfavorable adjustment. That is not a clean starting line for a base case with modest consolidated margin expansion and $7.5B of buybacks.

The share-count path is realistic only if free cash flow remains available after dividends, capex, debt management, and supplier support. The model's own sensitivity says share count is the largest mechanical swing factor. In a company with $3.3B TTM FCF, $1.3B dividends, rising capex, and a 2027-2029 B-21 investment bulge, the burden of proof should be on the buyback assumption. A base case that needs buybacks to pass is not a real Gideon buy unless the buybacks are almost certain.

The product CAGRs are not obviously fabricated, but Defense and Space require more faith than the summary table makes apparent. Defense base revenue CAGR of 6.8% is above the latest comparable FY2023-FY2025 CAGR and depends on Sentinel, SRM/weapons, and IBCS converting cleanly. Space base CAGR of 3.62% is a recovery from a segment whose FY2025 revenue fell 8.2% and Q1 FY2026 sales fell 3%. The synthesis flags Space as the least proven acceleration, but it still gives Space $1.429B of horizon operating income. If Space merely grows 0.5% at 9.5% margin, the segment contributes $1.040B instead, a roughly $389M segment operating income gap before tax.

6. Signal that forces exit or downgrade

The forced-exit signal should be a combined execution-and-cash test, because the thesis breaks through correlation. Over the next two reported quarters, if Aeronautics plus Space segment operating margin is below 9.5% and trailing twelve-month free cash flow remains below $3.1B, downgrade to PASS / exit. This is specific enough to monitor and broad enough to catch the real failure mode.

Why these thresholds? Aeronautics and Space are the two segments with the clearest live EAC and production-risk evidence. Aeronautics needs B-21 to become a cash-producing growth engine rather than a capital sink. Space needs to prove that NGI wind-down and GEM 63XL are not symptoms of a structurally choppy segment. A combined margin below 9.5% would show that the growth programs are not earning the economics needed to support the base case. TTM FCF below $3.1B would show that even management's 2026 cash floor is not being sustained. Together, those signals invalidate the share-reduction bridge and the operating-income bridge at the same time.

There are secondary downgrade signals. Annual buybacks below $1.0B during 2026-2027 without a clearly superior reinvestment explanation should remove the 132.0M share-count assumption. Defense Systems margin below 9.5% while Sentinel revenue grows would indicate that the program is consuming economics as it scales. Space revenue still declining year over year after Q4 FY2026 would weaken the base recovery case. A new unfavorable B-21, Sentinel, or Space EAC charge above $250M should force a model reset.

7. Conviction and verdict

The thesis survives as a watch-list defense-quality thesis, but it does not survive as a BUY at $575.11 under the ER2/Gideon rule. The moat appendix is right that Northrop has real high-trust procurement advantages, and the synthesis is right that the model is internally coherent. The red team objects to the conclusion that a coherent model with a 1.1% base-case cushion is investable. The probability-weighted EPS already fails the P/E 15 test, and the red-team adjustments most likely to occur in the real world are not exotic: fewer repurchases, slightly lower Space recovery, lower Defense margin, or Aeronautics capex/EAC drag.

The strongest non-obvious bear point is that cash and execution risk are positively correlated in the bad scenario. If B-21 or Sentinel execution is worse, operating income falls, capex and working capital rise, and the buyback denominator gets worse.

The synthesis sensitivity table treats these as separate knobs; the red team says they are the same machine.

Red-team verdict: PASS for new money today, WATCH only if the price falls enough to create a real cushion or if evidence raises the base EPS without leaning on buybacks. The synthesis itself points to a more useful watch-list price near $505-$520 for a 15% cushion to the base P/E 15 value. Until then, Northrop is a good business with a real moat, but the stock is too close to fair value for the ER2 framework. Do not round a $0.43 EPS cushion into conviction.

Appendix D - Data Package (raw historicals)

Northrop Grumman Corporation (NOC) - ER2 Data Package

PATH_RECEIVED: C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\data_package.md

Date prepared: 2026-04-26. This data package is Subagent D output for the Northrop Grumman ER2 run. Historical financials are controlled by `C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\quant_foundation.md` and its QFR clearance. No local `data warehouse` cache was used. Live data-package pulls were saved under `C:\Users\Admin\OneDrive\GPT\ER 2.0\Northrop Grumman\raw\` with a `d_` prefix where applicable.

Stage 0 - Time Anchor

- Today: 2026-04-26.
- Company fiscal year convention: Northrop Grumman uses a December 31 fiscal year end.
- Most recently reported quarter: Q1 FY2026, period ended March 31, 2026, reported April 21, 2026.
- TTM anchor: Q2 FY2025 + Q3 FY2025 + Q4 FY2025 + Q1 FY2026 -> TTM ending March 31, 2026.
- Forward horizon: TTM + 5 calendar years = March 31, 2031.

Source Control Notes

Quantitative foundation control: QF reported `RECONCILIATION: 8/8 checks PASSED`; QFR returned `QUANT FOUNDATION VERIFIED - CLEARED FOR WAVE 1`. The most important control item is the FY2025 operating-income discrepancy: FMP annual income statement reports FY2025 consolidated operating income of $4.280B, while the SEC FY2025 10-K reports $4.511B. QF and QFR require the SEC value to control. This package preserves the discrepancy and does not recalculate historical operating income away from QF.

Live sources fetched or opened in this run:

Source	Use	URL / file
FMP stable `income-statement NOC --period annual`	5-year consolidated revenue, net income, EPS, shares; FY2025 revenue self-check	`raw\d_fmp_income_annual_NOC_2026-04-26.json`
FMP stable `cash-flow-statement NOC --period annual`	CFO, capex, FCF, buybacks, dividends, M&A cash flow	`raw\d_fmp_cashflow_annual_NOC_2026-04-26.json`
FMP stable `balance-sheet-statement NOC --period quarter`	Q1 FY2026 balance sheet snapshot	`raw\d_fmp_balance_quarter_NOC_2026-04-26.json`
FMP stable `revenue-product-segmentation NOC --period annual/quarter`	Segment revenue endpoint check; no product split beyond reportable segments	`raw\d_fmp_revenue_product_segmentation_*`
FMP stable `earning-call-transcript`	Q2 FY2025, Q3 FY2025, Q4 FY2025, Q1 FY2026 management commentary	`raw\d_fmp_transcript_NOC_*`
Northrop Q1 FY2026 earnings release / Form 8-K	Recency, guidance, backlog, segment Q1 trends	https://investor.northropgrumman.com/static-files/50bb4c80-e273-4ed4-92bb-f1653b8b1156
SEC Q1 FY2026 10-Q	Official latest-quarter financials	https://www.sec.gov/Archives/edgar/data/1133421/000113342126000016/noc-20260331.htm
SEC FY2025 10-K	Official annual/segment tie-outs, taxonomy, customer mix, risks	https://www.sec.gov/Archives/edgar/data/1133421/000113342126000003/noc-20251231.htm
SEC Q4 FY2025 earnings release	Q4 recency and 2026 initial outlook	https://www.sec.gov/Archives/edgar/data/1133421/000113342126000002/noc-12312025xearningsrelea.htm

Self-verification before finalizing:

Check	Result
Largest recent segment growth	PASS. Official Q1 FY2026 release reports Aeronautics Systems sales of $3.283B, up 17% YoY.
Transcript quote/date	PASS. FMP Q1 FY2026 transcript returned date 2026-04-21 and contained the checked phrase: "weapons business is nearing 10% of total company sales."

Check	Result
FY2025 revenue	PASS. Live FMP annual income pull reports FY2025 revenue of $41.954B, matching QF and SEC. FMP FY2025 operating income remains $231M below SEC and is flagged.

1. Reporting Structure & Taxonomy

Current reportable segments are the four segments used in QF: Aeronautics Systems, Defense Systems, Mission Systems, and Space Systems. Intersegment eliminations are a reconciling item, not a reportable segment. QF found that FMP provides reportable-segment revenue rather than product revenue for NOC, and that the FMP annual segment endpoint ties exactly to SEC FY2025 segment revenue after eliminations. Downstream subagents should use the reportable-segment level as the highest reliable dollar taxonomy unless a later primary source explicitly discloses a program dollar amount.

Segment	FY2025 revenue ($B)	% of consolidated sales	Segment description from FY2025 10-K / QF taxonomy
Aeronautics Systems	12.992	31.0%	Military aircraft design, development, production, integration, sustainment, and modernization. Major products include strategic long-range strike aircraft, tactical fighter and air dominance aircraft, airborne battle management/C2 systems, and autonomous aircraft.
Defense Systems	8.002	19.1%	Strategic deterrent systems, advanced tactical weapons, missile defense solutions, propulsion, all-domain C2, and integrated battle management.
Mission Systems	12.506	29.8%	Advanced mission solutions and multifunction systems including radar, EO/IR and acoustic sensors, C4ISR, electronic warfare, communications, networks, microelectronics, and mission processing.
Space Systems	10.771	25.7%	Satellites, spacecraft systems, sensors/payloads, ground systems, missile defense systems and interceptors, and launch vehicles.
Intersegment eliminations	(2.317)	(5.5)%	Consolidation reconciling item.
Consolidated sales	41.954	100.0%	QF and SEC FY2025 10-K control.

Taxonomy change: QF identified a January 1, 2025 realignment of the Strike and Surveillance Aircraft Solutions (SSAS) business unit from Defense Systems to Aeronautics Systems. FY2023-FY2025 segment tables in QF use the FY2025 10-K latest restated basis. FY2021-FY2022 use prior official 10-K history and are less comparable. This matters most when reading Aeronautics and Defense trends: Aeronautics FY2025 includes SSAS under the new taxonomy, and Defense has a lower base than it would have had under the old taxonomy.

Customer / geographic exposure: Northrop is primarily a U.S. government defense contractor. The FY2025 annual report disaggregates customer type as total U.S. government sales of $35.183B, or 84% of consolidated sales; international sales of $5.990B, or 14%; and other customers of $0.781B, or 2%. Segment-level customer mix shows Space Systems as the most U.S.-government-heavy segment, with FY2025 U.S. government sales of $9.510B, or 93% of external Space sales. Aeronautics, Defense, and Mission Systems each also derive roughly 80% or more of external sales from the U.S. government. International sales include foreign military sales through the U.S. government, so "international" is not the same as direct foreign commercial exposure.

2. Consolidated Historicals (5 Years)

All amounts in this section are USD billions except EPS, margin, ROIC, and share count. Revenue, net income, EPS, shares, capex, and FCF are from live FMP pulls and QF. FY2025 operating income is controlled by SEC/QF because FMP understates the line by $231M. ROIC uses FMP `returnOnInvestedCapital` for comparability, with a caveat that QF calls FY2025 FMP ROIC lower than adjusted proxy ROIC.

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue ($B)	35.667	36.602	39.290	41.033	41.954	FMP annual income; QF tie-out
Operating income ($B)	5.651	3.601	2.537	4.370	4.511	FMP for FY2021-FY2024; SEC/QF for FY2025
Operating margin (%)	15.8%	9.8%	6.5%	10.6%	10.8%	Calculated; FY2025 from SEC/QF
Net income ($B)	7.005	4.896	2.056	4.174	4.182	FMP annual income
EPS diluted ($)	43.54	31.47	13.53	28.34	29.08	FMP annual income
Diluted share count (M)	160.9	155.6	152.0	147.3	143.8	FMP annual income
Capex ($B)	1.415	1.435	1.775	1.767	1.450	FMP cash flow; absolute outflow
FCF ($B)	2.152	1.466	2.100	2.621	3.307	FMP cash flow
ROIC (%)	28.6%	18.9%	7.2%	13.2%	9.2%	FMP key metrics; QF caveat applies

ROIC note: FMP reports FY2025 invested capital of $31.692B and return on invested capital of 9.2%. A simple NOPAT check using SEC operating income of $4.511B and the FY2025 FMP effective tax rate of 17.5% produces NOPAT of about $3.72B; divided by FMP invested capital, that implies an adjusted point estimate closer to 11.7%. QF explicitly warns that FMP unadjusted ROIC is lower than an adjusted proxy and should keep quality conclusions from being overstated. Downstream synthesis should carry both the official/FMP datapoint and the caveat rather than treating NOC as an unambiguous >20% ROIC compounder.

Cash conversion: FY2025 CFO was $4.757B, equal to 114% of FY2025 net income; FY2025 FCF was $3.307B, equal to 79% of FY2025 net income and 73% of SEC operating income. Q1 FY2026 cash flow was seasonally negative, with QF reporting TTM CFO of $4.666B, TTM capex of $1.361B, and TTM FCF of $3.305B. Management said Q1 working capital timing normally weighs on early-year cash flow, with cash generation more heavily weighted to the second half, and QF accepted the TTM cash-flow bridge.

3. Segment Historicals (5 Years)

Annual segment data are controlled by QF P2. FY2023-FY2025 are latest-restated FY2025 10-K taxonomy; FY2021-FY2022 are earlier official 10-K history and are less comparable because of the January 1, 2025 SSAS realignment.

Aeronautics Systems

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue ($B)	11.259	10.531	11.164	12.396	12.992	QF P2 / SEC 10-K
YoY %	NA	(6.5)%	6.0%	11.0%	4.8%	Calculated
Operating income ($B)	1.093	1.116	(0.416)	1.236	0.813	QF P2
Operating margin (%)	9.7%	10.6%	(3.7)%	10.0%	6.3%	QF P2

Aeronautics is the largest FY2025 segment by reported revenue. The margin history is distorted by B-21 loss provisions and estimate-at-completion changes. Q1 FY2026 normalized sharply because the prior-year B-21 loss provision did not repeat and because B-21 capacity agreement accounting accelerated sales into Q1.

Defense Systems

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue ($B)	5.776	5.579	7.185	7.399	8.002	QF P2 / SEC 10-K
YoY %	NA	(3.4)%	28.8%	3.0%	8.1%	Calculated
Operating income ($B)	0.696	0.664	0.684	0.716	0.871	QF P2
Operating margin (%)	12.0%	11.9%	9.5%	9.7%	10.9%	QF P2

Defense Systems is the clearest disclosed home for Sentinel and many weapons/solid rocket motor growth drivers. FY2023 growth is affected by taxonomy/history boundaries; FY2025 growth and Q1 FY2026 organic growth are more relevant to forward modeling.

Mission Systems

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue ($B)	10.134	10.396	10.895	11.399	12.506	QF P2 / SEC 10-K
YoY %	NA	2.6%	4.8%	4.6%	9.7%	Calculated
Operating income ($B)	1.579	1.618	1.609	1.598	1.827	QF P2
Operating margin (%)	15.6%	15.6%	14.8%	14.0%	14.6%	QF P2

Mission Systems is the highest-margin reportable segment in the historical table. Growth drivers include restricted airborne radar, marine systems, F-35 content, SEWIP, international ground-based radar, microelectronics, networks, and C4ISR. The segment has the most structurally attractive historical margin profile among the four segments, but it is still contract/EAC driven rather than a pure software-like economics model.

Space Systems

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue ($B)	10.608	12.275	11.873	11.731	10.771	QF P2 / SEC 10-K
YoY %	NA	15.7%	(3.3)%	(1.2)%	(8.2)%	Calculated
Operating income ($B)	1.121	1.158	1.130	1.254	1.183	QF P2
Operating margin (%)	10.6%	9.4%	9.5%	10.7%	11.0%	QF P2

Space Systems revenue declined in FY2025 and again in Q1 FY2026. Management attributes recent pressure to NGI wind-down effects and a GEM 63XL unfavorable adjustment in Q1 FY2026, partly offset by SDA satellite and restricted space growth. The segment retains strategic relevance through missile defense, space sensors, satellites, ground systems, and launch systems, but the near-term reported revenue base is not yet reaccelerating in the official data.

4. Product / Sub-Segment Historicals

Northrop does not disclose full product-line revenue in dollars for B-21, Sentinel, missile defense, weapons, SDA, restricted programs, or most named platforms. The most granular dollar disclosure available in the live FMP segment endpoint and SEC segment footnotes is reportable segment revenue. This package therefore does not back-solve product dollars from growth commentary. Named program mentions are qualitative drivers, not standalone revenue lines.

Segment	Product / program driver	What it is	Dollar disclosure?	Last 3-year dollar revenue source
Aeronautics Systems	B-21 Raider	Strategic long-range strike aircraft program	No separate program revenue disclosed; management says B-21 is nearing 10% of company revenue	Not disclosed; use segment revenue only
Aeronautics Systems	F-35, E-2, TACAMO, F/A-18, restricted aircraft	Fighter/radar/content, airborne command and control, legacy production, classified aircraft programs	No separate dollar revenue disclosed in fetched sources	Not disclosed; use segment revenue only
Defense Systems	Sentinel	Strategic deterrent modernization program	No separate dollar revenue disclosed; management says about 6%-7% of company revenue today	Not disclosed; use segment revenue only
Defense Systems	Tactical solid rocket motors, munitions, AARGM-ER, Stand-in Attack Weapon, IBCS	Weapons, propulsion, missile and battle command portfolio	No separate dollar revenue disclosed; management says weapons are near 10% of company sales	Not disclosed; use segment revenue only
Mission Systems	Restricted airborne radar, F-35 radar, SEWIP, marine systems, international ground radar, microelectronics	Sensors, radar, electronic warfare, maritime, microelectronics, communications	No separately reported product P&L	Not disclosed; use segment revenue only
Space Systems	SDA Tranche, NGI, GEM 63XL, GPI, Golden Dome/C2, Artemis/SLS motors	Satellites, missile defense, launch/propulsion, C2	No separately reported product P&L; Q1 release discloses a $71M GEM 63XL unfavorable adjustment and a $98M NGI YoY headwind	Use segment revenue; do not infer product dollars

Growth-rate-only disclosure table:

Segment	Product / driver	Disclosure method	Last four quarters commentary	Source
Aeronautics	B-21 / restricted / TACAMO	Qualitative drivers and Q1 segment YoY	Q1 FY2026 Aeronautics sales +17%; management attributes growth to B-21, other restricted programs, and TACAMO, partly offset by F/A-18 completion	Q1 FY2026 release / FMP Q1 transcript
Defense	Sentinel / SRM / IBCS	Qualitative drivers and organic growth	Q1 FY2026 Defense sales +5%, organic +10%; Sentinel, tactical SRM, and IBCS drove growth, offset by training services divestiture	Q1 FY2026 release / FMP Q1 transcript
Mission	Restricted airborne radar / marine / EW	Qualitative drivers	Q1 FY2026 Mission sales +2%; margin up to 15.1% on higher net EAC adjustments and prior-year opportunity investments	Q1 FY2026 release / FMP Q1 transcript
Space	NGI / GEM 63XL / SDA / restricted space	Qualitative drivers and identified headwinds	Q1 FY2026 Space sales -3%; NGI wind-down and GEM 63XL adjustment offset SDA and restricted space growth	Q1 FY2026 release / FMP Q1 transcript

No product-level back-solved rows are included. Downstream segment appendices should not create platform revenue series unless they are explicitly labeled as model estimates, not historical disclosures.

5. Most Recent Quarterly Trend (Last 4 Quarters)

Company FY ends December 31. Most recently completed fiscal quarter at time of writing: FY2026 Q1, covering January 1 to March 31, 2026, reported on 2026-04-21 via https://investor.northropgrumman.com/static-files/50bb4c80-e273-4ed4-92bb-f1653b8b1156 and SEC Q1 FY2026 10-Q.

Revenue and operating income are from QF P4; YoY and margin are from the official release/QF. Q4 FY2025 is derived by QF from FY2025 less 9M FY2025 official SEC filings.

Quarter	Aeronautics revenue / margin	Defense revenue / margin	Mission revenue / margin	Space revenue / margin	Consolidated sales	Source
Q2 FY2025	$3.114B / not separately listed here	$1.991B / not separately listed here	$3.157B / not separately listed here	$2.646B / not separately listed here	$10.351B	QF P4; SEC Q2 FY2025 10-Q
Q3 FY2025	$3.142B / not separately listed here	$2.059B / not separately listed here	$3.093B / not separately listed here	$2.698B / not separately listed here	$10.423B	QF P4; SEC Q3 FY2025 10-Q
Q4 FY2025	$3.922B / derived in QF	$2.147B / derived in QF	$3.449B / derived in QF	$2.859B / derived in QF	$11.712B	QF P4; FY2025 10-K minus 9M
Q1 FY2026	$3.283B / 9.3%	$1.899B / 9.7%	$2.861B / 15.1%	$2.480B / 9.5%	$9.881B	Q1 FY2026 release / QF

Q1 FY2026 segment YoY from the official release:

Segment	Q1 FY2026 sales	YoY %	Q1 FY2026 operating income	Operating margin	Main official explanation
Aeronautics Systems	$3.283B	17%	$0.305B	9.3%	B-21, restricted programs, TACAMO ramp; F/A-18 final production deliveries lower.
Defense Systems	$1.899B	5% reported / 10% organic	$0.184B	9.7%	Sentinel ramp, tactical SRM, IBCS, partly offset by divested training services.
Mission Systems	$2.861B	2%	$0.433B	15.1%	Restricted airborne radar and marine systems; lower SABR and airborne EW volume.
Space Systems	$2.480B	(3)%	$0.235B	9.5%	NGI wind-down and GEM 63XL EAC adjustment; SDA and restricted space partly offset.

Backlog and awards: Q1 FY2026 net awards were $9.8B and ending backlog was $95.6B. Significant Q1 awards included $4.9B for restricted programs, $0.5B for F-35, $0.5B for infrared countermeasures, and $0.4B for Triton. FY2025 year-end backlog was over $95B and Q1 2026 backlog remained close to that level despite sales conversion.

6. Management Commentary on Forward Growth

This section uses short verbatim snippets and paraphrases to remain copyright-safe. Full transcript raw pulls are saved under `raw\d_fmp_transcript_NOC_*`. FMP transcript dates verified: Q2 FY2025 call 2025-07-22, Q3 FY2025 call 2025-10-21, Q4 FY2025 call 2026-01-27, and Q1 FY2026 call 2026-04-21.

Consolidated Guidance and Corporate Framing

Date / source	Speaker	Topic	Quote snippet	Interpretation
Q1 FY2026 call, 2026-04-21	Kathy Warden, CEO	Defense demand	"weapons business is nearing 10% of total company sales"	Management is making weapons/solid rocket motors a multi-year growth pillar rather than a cyclical add-on.
Q4 FY2025 call, 2026-01-27	Kathy Warden, CEO	Backlog	"over $95 billion in backlog"	Backlog covers more than two years of sales and gives visibility, but conversion depends on funding, supply chain, and execution.
Q2 FY2025 call, 2025-07-22	John Green, CFO	Shareholder returns	"approximately 100% of our free cash flow"	2025 capital return was aggressive; Q1 2026 commentary suggests B-21 capex will constrain buybacks during the heavier investment period.
Q1 FY2026 call, 2026-04-21	Kathy Warden, CEO	B-21 investment	"We do"	In response to a ROIC-above-cost-of-capital question on B-21, management asserted the deal improves long-life returns; still execution-dependent.

Q1 FY2026 guidance: management reaffirmed full-year 2026 sales guidance of $43.5B-$44.0B, segment operating income of $4.85B-$5.00B, MTM-adjusted EPS of $27.40-$27.90, and free cash flow of $3.1B-$3.5B. Segment guidance is Aeronautics mid-$13B sales with low-to-mid 9% margin, Defense mid-to-high $8B sales with around 10% margin, Mission high-$12B sales with high-14% margin, and Space around $11B sales with around 11% margin. The guide assumes no prolonged shutdown, no spending-cap shock, and no unmodeled government support changes.

Aeronautics Systems

Management commentary is dominated by B-21, restricted programs, TACAMO, F/A-18 wind-down, and optionality around F/A-XX. Q1 FY2026 included a sale of a company-owned B-21 test asset to the Air Force, accelerating revenue into the quarter without changing the total number of LRIP deliveries expected in the phase. Management says the agreement increases B-21 annual production rate by 25%, is supported by customer funding plus about $2.5B of company-funded investment over multiple years, and includes roughly $200M of incremental 2026 capex.

Forward modeling implications:

Driver	Evidence	Modeling implication
B-21 capacity increase	Q1 FY2026 call and release: production rate +25%, Lot 4 LRIP award, Ellsworth arrival path in 2027	Revenue growth is credible, but margins depend on LRIP EAC execution and production learning. Do not extrapolate Q1 asset-sale timing as recurring run-rate.
Restricted programs	Q1 restricted awards include Aeronautics among the benefiting segments	Supports backlog but disclosure opacity limits program-by-program modeling.
TACAMO	Q1 release cites increased E-130J TACAMO volume	Early ramp contributor; likely below B-21 in strategic magnitude.
F/A-18	Q1 release cites lower volume after final production deliveries	Known headwind and not a thesis driver.
F/A-XX	Q1 call said selection expected in Q3 and would be upside if won	Treat as option value. Do not include in base case until awarded.

Defense Systems

Defense Systems has two especially important growth pillars: Sentinel and weapons/solid rocket motors. Q1 FY2026 Defense sales grew 5% reported and 10% organic, with Sentinel, tactical SRM, and IBCS growth offset by the divested

training-services comparison. Management said Sentinel is about 6%-7% of company revenue today, expects low-double-digit growth in 2026, and should grow toward 10% of revenue over time, with a production-long-lead inflection later this decade. Weapons are also near 10% of company sales, with solid rocket motor capacity already doubled and more expansion targeted by 2027.

Forward modeling implications:

Driver	Evidence	Modeling implication
Sentinel	Management expects Milestone B later in 2026, first flight in 2027, and IOC in early 2030s	Multi-year growth visibility, but program restructuring and government funding cadence remain central risks.
Solid rocket motors / munitions	More than $1B invested over several years; capacity expanded	Growth can exceed company average if demand converts to contract and suppliers scale.
IBCS / all-domain C2	Q1 release cites IBCS portfolio growth	Attractive missile-defense/C2 exposure, but product dollars are not separately disclosed.
Training services divestiture	Q1 organic growth exceeded reported growth	Clean reported comps should improve after divestiture roll-off.

Mission Systems

Mission Systems is the best historical margin segment and a key technology layer across radar, sensors, electronic warfare, communications, networks, microelectronics, and marine systems. Q1 FY2026 sales grew 2% and operating income rose 20%, with margin up to 15.1%. The official release attributes sales growth to restricted airborne radar programs and marine systems, offset by lower SABR and airborne electronic warfare. Management also linked future scale to restricted microelectronics, F-35 radar capacity, and international radar opportunities in earlier calls.

Forward modeling implications:

Driver	Evidence	Modeling implication
Restricted airborne radar	Q1 release cites ramp-up	Supports mid-single-digit segment growth despite disclosure opacity.
Marine systems	Q1 release cites higher volume	Incremental growth, likely tied to Navy and undersea programs.
F-35 radar / advanced radar	Q1 call discussed facility/tooling and concurrent development-production risk	Capacity investment may enable growth, but testing and production ramp are gating items.
International ground-based radar	FY2025 and Q4 commentary cite international radar strength	International demand is a real upside source, but export timing can slip.
Margin quality	FY2025 margin 14.6%, Q1 2026 margin 15.1%	Use high-14% segment margin as guide, but EAC adjustments can move quarterly results.

Space Systems

Space Systems is strategically important but currently mixed in reported growth. FY2025 revenue fell 8.2% and Q1 FY2026 sales fell 3%. Official Q1 commentary cites an NGI prior-year closeout headwind of $98M and a $71M unfavorable GEM 63XL adjustment tied to a launch anomaly. Offsetting drivers include SDA satellite ramp, restricted space, GPI, Golden Dome/C2 opportunities, international space demand, and NASA/Artemis-related propulsion content.

Forward modeling implications:

Driver	Evidence	Modeling implication
NGI wind-down	Q1 release: $98M Q1 prior-year sales headwind	Do not assume Space returns to growth until replacement programs overcome this headwind.
GEM 63XL	Q1 release: $71M unfavorable EAC adjustment	Launch/propulsion EAC risk remains a live margin issue.
SDA Tranche 3 / restricted space	Q1 release says higher volume partly offset declines	Growth driver but not yet large enough to offset all headwinds.
GPI / missile defense	Q1 call says post-quarter GPI award brought total contract value to $1.3B	Supports longer-term missile defense exposure; near-term revenue cadence uncertain.
International space pipeline	Q1 call says pipeline is growing but least developed among segments	Include as upside, not base-case acceleration.

7. Capital Allocation History (5 Years)

Amounts in USD billions. Buybacks and dividends are shown as positive cash returned to shareholders, although FMP reports them as cash outflows. R&D is from FMP income statement; FMP labels it research and development expense.

Year	Capex	Capex / revenue	R&D	R&D / revenue	Buybacks	Dividends	M&A cash flow	Source
FY2021	1.415	4.0%	1.100	3.1%	3.705	0.983	3.400	FMP cash flow / income
FY2022	1.435	3.9%	1.200	3.3%	1.504	1.052	0.155	FMP cash flow / income
FY2023	1.775	4.5%	1.200	3.1%	1.500	1.116	0.000	FMP cash flow / income
FY2024	1.767	4.3%	1.100	2.7%	2.514	1.186	0.000	FMP cash flow / income
FY2025	1.450	3.5%	1.100	2.6%	1.624	1.293	0.000	FMP cash flow / income

Capital allocation read-through: Northrop historically returns substantial cash via dividends and buybacks, but the next several years include elevated B-21 capacity investment. Q1 FY2026 management reaffirmed FCF guidance despite raising 2026 capex expectation to about $1.85B. That is a positive signal on underlying cash generation, but also a reminder that the business is not asset-light. B-21 capex is the central capital-allocation tension: it may improve long-life economics if production scales, but it absorbs cash before the production benefit fully arrives.

8. Balance Sheet Snapshot (Q1 FY2026)

Amounts in USD billions unless otherwise noted. Source is FMP Q1 FY2026 balance sheet and QF P6.

Item	Value	Source / note
Cash and equivalents	2.090	FMP balance sheet, Q1 FY2026
Short-term investments	0.000	FMP balance sheet
Total debt	17.074	FMP balance sheet, includes finance lease obligations as reported by FMP
Net debt	14.984	FMP netDebt field; QF P6
TTM EBITDA	7.495	QF P6, sum of FMP quarterly EBITDA Q2 FY2025-Q1 FY2026
Net debt / TTM EBITDA	2.0x	QF P6 calculated
Goodwill + intangibles	17.439	FMP balance sheet
Total stockholders' equity	17.115	FMP balance sheet
Tangible book value	(0.324)	Equity less goodwill/intangibles
Q1 FY2026 diluted shares	142.5M	QF P6 / SEC Q1 FY2026

Balance sheet read-through: Leverage is manageable at around 2.0x net debt / TTM EBITDA, but the company is not overcapitalized. Goodwill and intangibles exceed common equity, producing a slightly negative tangible book value under the simple calculation above. That is not unusual for an acquired-defense-asset portfolio, but it means book-value support is not the thesis. Debt service, working capital timing, and program cash advances matter more than accounting equity.

9. Recent Corporate Actions (Last 12 Months)

- January 1, 2025 taxonomy action: SSAS realigned from Defense Systems to Aeronautics Systems. The FY2025 10-K reflects this realignment. Use restated FY2023-FY2025 segment figures from QF for comparability.
- 2025 training services divestiture: Defense Systems reported growth comparisons are affected by a divested training-services business. Q1 FY2026 Defense reported sales grew 5%, but organic sales grew 10%.
- January 2026: Northrop reported FY2025 results and issued 2026 guidance. FY2025 backlog reached over $95B after more than $46B of net awards in 2025.

- Q1 FY2026: Northrop and the U.S. Air Force reached agreements to increase B-21 production capacity and accelerate Sentinel initial operating capability. The B-21 agreement includes a 25% production-rate increase and a company-funded investment plan of about $2.5B over multiple years.
- Q1 FY2026: Northrop sold a company-owned B-21 test asset to the Air Force, accelerating revenue into Q1 but not changing the expected total LRIP deliveries.
- Q1 FY2026: Northrop repaid $527M of fixed-rate debt, ending the quarter with more than $2B cash.
- April 2026: Shortly after Q1 quarter-end, Northrop secured an award to accelerate Glide Phase Interceptor development, bringing total contract value to $1.3B according to management commentary.
- Q1 FY2026: Space Systems recorded a $71M unfavorable EAC adjustment on GEM 63XL associated with a launch anomaly.
- Q1 FY2026: Management indicated a potential F/A-XX award decision in Q3 2026; if Northrop is selected, management expects upside to sales and earnings versus current guidance. This is not in base historical data.

10. Risks, Caveats, and Open Data Gaps

Key risk flags for downstream work:

- FMP/SEC operating-income discrepancy: FMP FY2025 annual income statement reports $4.280B consolidated operating income; SEC/QF reports $4.511B. Use SEC/QF. Do not let automated annual FMP pulls overwrite the repaired QF value.
- FMP quarterly segment endpoint caveat: QF found FMP quarterly revenue-product-segmentation omits/nulls Intersegment Eliminations for Q2-Q4 FY2025 while the annual endpoint reports $(2.317)B. Use SEC/QF for consolidated and TTM eliminations.
- Product-level dollars are not disclosed: B-21, Sentinel, weapons, missile defense, F-35 radar, restricted programs, SDA, GPI, and international pipelines are not separately reported as revenue lines. Treat them as qualitative drivers unless a later source discloses dollars.
- Aeronautics/Defense taxonomy changed: SSAS moved from Defense to Aeronautics effective January 1, 2025. QF's FY2023-FY2025 segment values are the latest restated basis; FY2021-FY2022 are less comparable.
- B-21 economics remain execution-sensitive: Q1 2026 management says the Air Force agreement improves long-run economics, but LRIP EACs, production costs, customer funding, and multiyear company capex remain thesis-critical.
- Space Systems is not currently a clean growth segment: FY2025 revenue declined 8.2%; Q1 FY2026 sales declined 3%; NGI and GEM 63XL were explicit headwinds. SDA, restricted space, GPI, and Golden Dome/C2 are offsetting opportunities, not yet a clean reported reacceleration.
- U.S. government concentration is high: FY2025 U.S. government sales were 84% of consolidated sales. Continuing resolutions, shutdowns, debt-ceiling delays, budget shifts, contract protests, and procurement rule changes are fundamental risk factors, not tail risks.
- Contract accounting/EAC risk is central: Margins depend on estimates-at-completion, incentive structures, and recoverability of cost growth. Q1 FY2026 Space and prior B-21 charges show this can move segment income materially.
- Supply chain and labor clearance constraints remain operational gating items. Management is investing in facilities and capacity, but supplier scale and security-cleared workforce availability can delay revenue conversion.
- International demand is real but timing-sensitive. International FY2025 sales were $5.990B, or 14% of total, and management sees Europe/Middle East demand, but export approvals, FMS processing, and local-content preference can change timing.

Open data gaps:

Gap	Treatment
No separate B-21 revenue series	Use Aeronautics segment data; mention management's "nearing 10%" statement only as a qualitative size clue.
No separate Sentinel revenue series	Use Defense segment data; management's 6%-7% today / toward 10% over time is qualitative guidance.
No separate weapons / missile defense dollars beyond management size clues	Use Defense, Mission, and Space segment context; do not build historical product dollars.
No full investor-day / capital-markets-day source fetched in this run	Use last four earnings calls and latest filings/releases; flag absence rather than fabricate.
Official Q1 FY2026 IR PDF raw download timed out twice via local `Invoke-WebRequest`	Web/open access succeeded and SEC Q1 10-Q raw saved; the failed local PDF download is flagged.

Raw Data-Package File Manifest

- `raw\d_fmp_income_annual_NOC_2026-04-26.json`
- `raw\d_fmp_income_quarter_NOC_2026-04-26.json`
- `raw\d_fmp_cashflow_annual_NOC_2026-04-26.json`
- `raw\d_fmp_cashflow_quarter_NOC_2026-04-26.json`
- `raw\d_fmp_balance_quarter_NOC_2026-04-26.json`
- `raw\d_fmp_key_metrics_annual_NOC_2026-04-26.json`
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- `raw\d_fmp_transcript_NOC_2026_Q1_2026-04-26.json`
- `raw\d_fmp_transcript_NOC_2025_Q4_2026-04-26.json`
- `raw\d_fmp_transcript_NOC_2025_Q3_2026-04-26.json`
- `raw\d_fmp_transcript_NOC_2025_Q2_2026-04-26.json`
- `raw\d_NOC_2026_Q1_10Q_SEC.htm`
- `raw\d_NOC_2025_10K_SEC.htm`
- `raw\d_NOC_Q4_2025_8K_earnings_release.htm`

Downstream instruction: use this package and QF as the source of truth for historicals. If a segment subagent wants to model B-21, Sentinel, weapons, restricted programs, or Space missile-defense exposure, it must label those as forward estimates because historical product dollars are not disclosed in the live sources fetched for this run.