The Constellation-Class Frigate Tragedy

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How the Navy Lost Its Resolve—and With It, a Generation of Capability

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Preface

This paper examines the United States Navy's Constellation-class frigate program not as a case of technical failure or flawed contracting, but as a breakdown in sustained stewardship over a sound acquisition construct. The program was conceived to adapt a mature, serially produced parent design; expand the U.S. surface-combatant industrial base; and impose cost discipline through a fixed-price structure that depended on preserving design stability and commonality.

That construct remained coherent through early execution and even through extraordinary external disruption during the Covid-19 pandemic. The program did not fail because it proved infeasible. It became vulnerable when the continuity of senior ownership eroded. During a narrow period between mid-2022 and mid-2023, the program's central premise—reliance on a proven parent design to control risk, cost, and schedule—was no longer actively defended as directed changes accumulated to comply with historical Navy shipbuilding specifications. Absent deliberate reconstitution of that premise, contractual and technical alignment degraded, and the program's recovery pathways narrowed.

Compliance in this context does not mean absolute conformance. No major surface-combatant program achieves literal 100 percent compliance with every inherited U.S. shipbuilding specification at award or early production, nor has that ever been the historical standard for success. The FFG(X) acquisition strategy explicitly accepted managed deviation from legacy specifications where a certified, operationally proven parent design already satisfied the mission intent.

What ultimately undermined the Constellation-class program was not insufficient compliance, but the Navy's subsequent pursuit—particularly within NAVSEA—of near-total clean sheet design specification conformance after contract award. That shift displaced the program's foundational premise, transforming a heritage-based adaptation into a de facto new-design effort without a corresponding reset of cost, schedule, or governance.

The purpose of this paper is not to assign fault, but to reconstruct how a program that remained recoverable for an extended period became institutionally untenable; to examine where governance failed to keep pace with accumulated change; and to surface lessons relevant to any complex defense acquisition in which outcomes depend as much on sustained ownership as on engineering rigor. The paper also reassesses the decision to cancel the Constellation-class frigate in light of those findings.

For clarity, this paper uses "Constellation-class frigate" as the formal program name; "FFG(X)" when referring to the acquisition construct and contract vehicle; and "Constellation" or "the frigate" as shorthand where context makes the reference unambiguous.

Prologue—Why This Story Matters

This paper is not about a single ship, a shipbuilder, or an isolated contract outcome. It examines whether the United States Navy is prepared to sustain ownership of complex acquisition decisions that require prolonged attention, adjustment, and leadership under pressure.

The Constellation-class frigate was intended to restore serial production discipline in U.S. surface-combatant shipbuilding, translate foreign design maturity into domestic industrial capacity, and demonstrate that early production instability could be managed without abandoning long-term objectives. These aims were consistent with assurances repeatedly provided to Congress in support of modern shipbuilding programs.

The challenges the program encountered were foreseeable and visible as they emerged. Design changes accumulated (many reflecting strict compliance of historical requirements rather than mission shortfalls), production assumptions were stressed, and cost and schedule pressure increased. At multiple points, the program remained recoverable through deliberate intervention. What was required was sustained engagement to reassert the original acquisition premise and realign technical, contractual, and organizational elements as conditions evolved.

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That engagement did not occur with sufficient consistency. Decisions were deferred, design commonality eroded, and governance failed to keep pace with the changes being imposed. Over time, the range of viable recovery actions narrowed, not because the program became infeasible, but because senior leadership did not exercise ownership when it mattered most.

The consequence was not merely the cancellation of a frigate program. It was the loss of an opportunity to strengthen the surface-combatant industrial base through continuity of design, workforce, and competition. That outcome matters because future shipbuilding initiatives will rely on the same assurances that are now in doubt. If early instability is treated as grounds for withdrawing commitment rather than a condition to be governed, confidence in those assurances will continue to erode.

This paper addresses that risk by examining the Constellation-class frigate as a concrete case in which recovery remained possible longer than commonly acknowledged, and by identifying the specific Navy choices that shaped the outcome.

1. The Moment of Abandonment: When Difficulty Became Disqualifying

In late November 2025, the Secretary of the Navy announced a decision that effectively ended the Constellation-class frigate program as it had been conceived. In a public statement and subsequent remarks, the Secretary directed that the Navy would accept delivery of only the first two ships already well advanced in construction, cancel the remaining vessels then under contract, and make a "strategic shift" away from the Constellation-class as the Navy's future frigate solution. The rationale offered was familiar and concise: unacceptable cost growth, schedule delays, and the need to reallocate resources toward alternatives judged to deliver better returns for readiness and warfighting advantage.

For many observers, the announcement blended into a steady drumbeat of troubled naval acquisition programs. For others, particularly those outside the shipbuilding and acquisition community, it passed with little notice. Yet this decision should have registered as a strategic shock, because it marked far more than the termination of a single ship program. It represented the abandonment of a decade-long effort to rebuild a critical class of surface combatant and to reshape the industrial base required to produce it at scale.

The muted reaction is itself revealing. **When the cancellation of a major surface combatant program becomes background noise, something deeper has shifted in how difficulty is perceived and tolerated.** Difficulty has moved from being a condition to be managed to a justification for withdrawal. That shift, more than any individual cost or schedule metric, defines the moment of abandonment of sound program management this paper examines.

2. The American Pattern: Doing the Hard Things Together

The United States did not become a global military power by choosing the easy path. It did so by committing itself to the hardest problems at precisely those moments when retreat would have been cheaper, quieter, and more politically convenient. Again and again, national leaders accepted near-term disruption in exchange for long-term advantage, even when success was uncertain and the political cost was real.

That pattern is visible across the foundations of American military power. Nuclear propulsion, intercontinental ballistic missiles, strategic airlift, stealth aircraft, integrated Intelligence, Surveillance and Reconnaissance (ISR) architectures, and precision strike networks were not stable or consensus programs at inception. They emerged from unsettled requirements, contested execution, and years of sustained institutional commitment exercised through incomplete designs, contested requirements, and evolving technical reality.

What unified these efforts was not technical perfection or contractual elegance. It was shared resolve between government and industry. Early instability was accepted as the price of transformational capability, not as evidence of failure. When assumptions proved wrong, programs were not abandoned. They were reset, baselines were reset, contracts were rebalanced, and authority was exercised alongside accountability. Leaders accepted responsibility not merely for compliance, but for outcomes.

The C-17 Globemaster III provides one of the clearest historical parallels.[1] By the early 1990s, the pro-

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gram suffered from cost growth, production shortfalls, and performance concerns severe enough to trigger repeated calls for cancellation. In both 1993 and 1997, the Department of Defense formally considered terminating the program. Yet the Air Force did not confuse difficulty with failure. It recognized that the requirement remained valid, the industrial capability was irreplaceable, and the cost of abandonment exceeded the cost of recovery. Additionally, the Air Force recognized it was equally culpable for much of the program management problems.

The decision to persist was not sentimental; it was disciplined. The program was restructured, production was stabilized, and contractual incentives were realigned to reflect reality rather than aspiration. Senior leadership accepted sustained scrutiny in exchange for long-term capability. The result was not merely a salvaged acquisition, but a strategic airlift fleet that became indispensable to U.S. global operations for decades.

This pattern repeats across domains. Nuclear propulsion required early acceptance of technical risk in exchange for decisive operational advantage. The Polaris, Poseidon, and Trident missile programs evolved through multiple generations of design correction and governance reform rather than abandonment. Stealth aircraft programs confronted material, manufacturing, and sustainment unknowns that could not be resolved without Air Force and contractor agreement, including the eventual recalibration of the F-22 Raptor air-superiority fighter program. In each case, success depended less on initial precision than on institutional willingness to endure and adapt.

Across these efforts, the determining factor was institutional resolve. Programs survived not because they were easy, but because leaders chose endurance over retreat when the cost of persistence became uncomfortable. That choice—repeated across decades—defined how American military power was built.

This is the tradition from which that power emerged. It is a tradition defined not by optimism, but by resolve. As in earlier periods of global strategic strain, the Nation is again at a point in history when that tradition must be restored, because it is essential for U.S. national security.

3. The Modern Temptation: Def-Tech Optimism and the Illusion of Ease

In the years leading up to the Constellation decision, the defense acquisition environment shifted in subtle but consequential ways. Commercial innovation, software-defined systems, rapid prototyping opportunities, and venture-backed defense technology firms injected new energy into a system long criticized for rigidity and slow adaptation. These developments delivered real benefits, particularly in sensor development, system autonomy, software integration, and data exploitation, and they reshaped expectations about how quickly capability could be fielded.

However, alongside these gains emerged a quieter and more corrosive belief. Complexity came to be viewed as something that could be bypassed rather than actively managed, and institutional endurance was increasingly seen as optional rather than essential. The discipline required to govern large, capital-intensive programs over time began to appear antiquated when contrasted with the apparent speed of software-centric innovation.

That belief does not survive contact with physical reality. Ships, aircraft, and strategic platforms do not obey the logic of software iteration. Many of these platforms were designed to push the state of the art in missions that tolerate virtually no failures. They require capital investments measured in hundreds of millions or billions of dollars, production workforces that take years to develop, qualification and acceptance rooted in safety, survivability, lethality, and sustainment tails that extend across decades. These realities are not artifacts of acquisition policies or practices. They are imposed by fundamental engineering constraints, the requirement for near-absolute mission assurance, and the unforgiving demands of warfighting in contested domains.

The challenge intensifies when programs push into one-of-a-kind and first-of-a-kind territory. Whether in space, at sea, undersea, or in the air, systems operating at the edge of performance expose limits that cannot be resolved analytically or otherwise ignored. Learning occurs through repetition, disciplined production, and controlled failure, not through aspiration alone. Building more than a handful of ships in a new class—at a scale that produces learning-curve benefits—requires experience, risk

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tolerance, and manufacturing prowess that only sustained execution can deliver.

Optimism becomes a liability when it substitutes for endurance. The belief that innovation can replace disciplined program management collapses at the first irreversible decision point. At that moment, institutions must decide whether to absorb pain in the service of long-term capability, adopt an alternative approach while retaining the program objective, or redefine the problem in a way that makes withdrawal appear rational and prudent.

The Navy entered the 2020s under sustained pressure. Ship delivery delays were endemic across multiple classes, workforce shortages were growing more acute, and scrutiny from Congress, the Government Accountability Office, the Office of the Secretary of Defense, and internal Navy oversight intensified. Each of these actors sought evidence of early stability, predictable execution, and rapid course correction.

In that environment, optimism—particularly the promise that new entrants, new technologies, or new acquisition approaches could bypass legacy friction—became increasingly attractive. Difficulty was no longer interpreted as an expected feature of complex defense programs to be managed and governed through. Instead, sustained discomfort narrowed tolerance for persistence, and friction itself increasingly became grounds for disqualification rather than a signal demanding leadership intervention.

It is against this backdrop that the Constellation-class frigate program has become particularly susceptible. Conceived during an earlier period, the program reflected an assumption that complex surface-combatant development would require persistence, learning, and continuity over multiple hulls. It was a serious, capital-intensive effort to address a real operational requirement, fortify the Navy's Distributed Maritime Operations concept, and stabilize a fragile industrial base. It was neither speculative nor experimental. It was an attempt to do something difficult, deliberately, and at scale, with the explicit expectation that learning and improvement would occur across multiple ships, not within a single prototype.

What followed was not a failure of ambition. It was a failure to reconcile ambition with responsibility once friction emerged—over time, and under changing institutional expectations. That distinction matters. Programs fail for many reasons. They become tragedies only when they are abandoned not because the objective was wrong, but because governing complexity outpaced the leadership resolve and management competence required to see a difficult program through.

4. A Real Operational Need in a Fragile Industrial System

The operational requirement that gave rise to the FFG(X) program was neither hypothetical nor abstract.[2] It emerged from years of accumulated strain in the United States Navy's surface force structure, as legacy ships retired faster than replacement capacity could be fielded. By the late 2010s, the imbalance was visible across missions, readiness accounts, and force employment patterns.

The retirement of the Oliver Hazard Perry–class frigate, completed in 2015, left the Navy without a dedicated small surface combatant capable of escort, anti-submarine warfare, maritime security, and forward presence missions at scale. In response, destroyers were increasingly pressed into missions for which they were poorly suited, consuming readiness better reserved for high-end conflict. The Littoral Combat Ship—conceived as a lighter, more specialized platform oriented toward presence and niche mission sets—proved unable to evolve into a survivable, multi-mission frigate suitable for sustained operations in contested environments.

This was not a matter of preference or doctrine. It was a structural imbalance in the fleet, acknowledged repeatedly in Navy force-structure assessments and in congressional testimony throughout the late 2010s. The absence of a credible frigate-class capability created persistent tradeoffs between presence and preparedness, with no sustainable resolution under the existing force mix.

At the same time, the Navy's surface combatant industrial base was growing increasingly brittle. Complex warship construction was concentrated in just two shipyards, both operating at or near capacity. Learning curves for new designs were long and

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difficult to sustain, workforce availability fluctuated across regions, and delivery delays were no longer isolated disruptions. They had become systemic conditions affecting multiple classes simultaneously. Furthermore, these conditions were foreseeable without benefit of 20-20 hindsight.

Reviews by the Government Accountability Office and internal Navy assessments during this period identified recurring themes. Design instability drove rework, concurrency amplified cost growth, and limited industrial elasticity constrained throughput. These findings were not retrospective discoveries made after the FFG(X) award. They were well understood beforehand—and their acknowledgment was a central driver of the program's fundamental premise: reliance on an operationally proven parent design to mitigate exactly these risks.

Against this backdrop, the frigate program was never just about procuring a ship. It was an effort to address two problems at once: restoring a missing operational capability and expanding the maritime defense industrial base capable of producing surface combatants reliably and at scale. Treating either problem in isolation would have guaranteed failure, regardless of platform performance.

The decision to pursue a proven parent design, introduce a new prime surface-combatant builder, and emphasize serial production discipline reflected a clear understanding of this interdependence. Operational relevance and industrial renewal were inseparable objectives, not parallel lines of effort. Failure, conversely, would be evidence of the very dynamics the program was designed to counteract.

The Navy understood these stakes when it moved forward, and industry stepped up to the challenge. The decision to proceed was not naïve optimism or reflexive continuation of past practice. It was deliberate. What followed would test whether the institution still possessed the resolve required to see such a decision through.

5. The Foundational Premise: Why a Parent Design Was Not a Compromise, but a Necessity

The most consequential decision in the FFG(X) program was not the selection of a shipbuilder. It was the Navy's deliberate choice to anchor the frigate program in a proven parent design.[3] That decision established the governing logic for the entire acquisition and determined whether the program would be manageable if difficulty emerged.

This choice reflected institutional self-awareness rather than expedience. For decades, the Navy had not designed and produced a new class of small surface combatants at scale. The retirement of the Oliver Hazard Perry–class frigate did not trigger an evolutionary replacement. Instead, it marked the beginning of a prolonged interregnum[4] characterized by experimentation, incomplete execution, and the gradual erosion of design-for-production muscle memory in precisely the class of ships that had once formed the backbone of fleet presence and escort operations.

The Navy understood this condition clearly. While its requirements discipline and technical rigor remained strong, its recent experience designing, integrating, and serially producing small surface combatants did not. Restarting that capability from a clean sheet would have imposed risk far exceeding what the operational problem, the industrial base, and the level of congressional and stakeholder tolerance could reasonably absorb.

At the same time, the global naval market offered a contrasting picture. Allied navies had continued to design, build, and evolve modern frigates in sustained production. These ships were not theoretical constructs or paper studies. They were operational platforms, tested at sea, refined through service, and improved incrementally across successive hulls. They embodied thousands of ship-years of operational learning, integration experience, and production refinement. They reflected hard-won lessons in survivability, acoustics, growth margin, maintainability, and lifecycle cost control.

Mature, combat-proven designs already existed, and the Navy chose to acknowledge that reality. Basing FFG(X) on a parent design was not an abdication of rigor or a concession to convenience. It

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was an explicit recognition that risk is not eliminated through reinvention and that maturity cannot be specified into existence. Reducing program risk required leveraging existing maturity, including established learning curves and production practices, rather than attempting to create it at great cost and over long timelines.

The objective was not novelty, but disciplined execution. This choice also represented a meaningful departure for Naval Sea Systems Command (NAVSEA). Historically, NAVSEA exercised deep ownership of ship design, either as the design agent itself or through highly directive engagement with industry throughout development. In the case of FFG(X), the Navy was attempting to restart a class of warship it had not built in generations, within an industrial base that had consolidated and specialized elsewhere, and under acquisition conditions shaped by decades of scrutiny over surface-combatant cost growth and schedule performance. Under those constraints, design ownership would have magnified risk rather than reduced it.

The decision to adopt a parent design therefore signaled a positive and realistic shift in posture. The Navy wisely moved from design ownership to design stewardship, from invention to integration, and from theoretical optimization to operationally proven balance. This shift required restraint as much as authority. It demanded not only clarity about what the Navy wanted, but discipline in governing how much change it was willing to impose once construction began.

The success of this approach depended on a single, non-negotiable premise: restraint in departing significantly from the chosen parent design. The parent design would remain the reference point, and U.S.-specific modifications—however legitimate when considered individually—would be governed collectively, with constant awareness of their cumulative effect on cost, schedule, and producibility. This premise was understood at the outset and was a defining factor in the competition. It shaped the choice of contract type, the pricing logic, and the allocation of responsibility between the Navy and industry.

In this sense, the parent-design decision was not a technical preference. It was the cornerstone of the entire acquisition strategy. Everything that followed—competition outcomes, industrial investment, contractual assumptions, and the possibility of introducing a third peer surface-combatant builder—rested on the preservation of that discipline. Without it, the program would not merely stumble; it would lose its governing logic altogether.

What the Navy chose in FFG(X) was not an easier path. It was the only path that matched the reality of the moment.

6. The Navy's Phased Approach to Design, Risk, and Commitment

The FFG(X) competition was neither casual nor rushed. It was the product of nearly a decade of institutional learning shaped by the Littoral Combat Ship experience, mounting concern about surface-combatant availability, and a sober reassessment of how much technical and programmatic risk the United States Navy could absorb at once. By the late 2010s, the Navy understood that ambition without discipline carried real operational cost.

By the time the competition was formally launched, several hard lessons had been internalized. Clean-sheet designs promised flexibility but delivered instability. Concurrency layered onto immature designs amplified risk rather than reducing it. Most importantly, the fleet could no longer afford to wait for theoretical perfection while escort, presence, and anti-submarine warfare gaps widened year after year.

The Navy's framing of the competition reflected this reality. U.S. shipbuilders had not designed or built a modern frigate in recent memory, and the Littoral Combat Ship program was widely acknowledged as a failure. Given that history, the Navy deliberately turned to an existing parent design to remove as much technical and production risk as possible.

The State of the Market: Proven Frigates Existed—But None Were American

When the FFG(X) competition was initiated, the reality of the global frigate market was unambiguous. The only modern frigate designs proven in serial production were foreign. For more than two decades, the United States had not produced a new class of frigate, while allied navies continued to

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treat frigates as core elements of their surface-force architecture.

European shipbuilders, in particular, had sustained continuous production lines and evolved their designs across multiple hulls. Fincantieri had delivered more than 30 FREMM-class frigates and closely related variants across Italy, France, Egypt, and other customers, with additional ships under contract. Navantia had produced the F-100 family and follow-on designs for Spain and export customers, integrating Aegis combat systems and modern survivability standards. BAE Systems, through the Type 23 and Type 26 lineages, sustained decades of frigate design, production, and in-service evolution for the British Royal Navy and international partners.

The scale and continuity of that experience are summarized in Table 1 below:

These programs consisted of operational ships supported by industrial bases accustomed to building complex surface combatants at cadence. Design changes were introduced incrementally, informed by fleet experience and disciplined configuration control, rather than through wholesale reinvention. Learning curves were real, measurable, and deliberately captured across successive hulls.

This distinction mattered in FFG(X). The competition was never about who could design a frigate on paper, but who could credibly transfer an existing, continuously produced combatant into Navy service with manageable integration risk.

The Navy understood this disparity clearly. The FFG(X) program was never intended to resurrect dormant domestic frigate-design expertise overnight, nor to recreate decades of production learning through specification alone. It was conceived as a disciplined way to re-enter the frigate domain by leveraging maturity where it already existed, while rebuilding U.S. capacity through adaptation, integration, and serial production.

In that sense, the competition was not a retreat from American design authority. It was a recognition of starting conditions and a pragmatic strategy for recovery. The Navy chose to anchor its future frigate program in demonstrated reality rather than aspirational reinvention, with the explicit expectation that experience, confidence, and industrial depth would be rebuilt through execution.

The Competing Parent Designs

Consistent with this approach, the Navy awarded initial concept contracts to multiple teams, each anchored in a different parent design. This phase was deliberately structured to allow NAVSEA to evaluate not only the ships themselves, but how each design responded to U.S. requirements, constraints, and oversight.

Table 1: European Frigate & Adjacent Surface-Combatant Production Experience (Delivered / Operational).

Shipbuilder	Principal Frigate/Adjacent Families	Estimated Delivered & Operational Hulls*	Nature of Experience
Fincantieri (Italy/US)	Maestrale, FREMM (Italian), PPA (light frigate), FREMM exports, U.S. FREMM-derived builds	~50–52	Continuous serial production; multiple navies; incremental evolution
ThyssenKrupp Marine Systems (Germany)	MEKO 200 / 300 / 400 families (incl. licensed builds)	~80–85	Largest global frigate "family" by volume; modular evolution
Naval Group (France)	FREMM (FR), La Fayette, Floréal, Gowind (frigate-scale variants)	~40–45	High-end systems integration; moderate batch scale
BAE Systems (UK)	Type 23, legacy export frigates	~30–35	Long in-service evolution; strong ASW pedigree
Navantia (Spain)	Santa María (OHP derivative), F-100, export Aegis frigates	~25–30	Aegis integration expertise; steady but smaller volume
Damen Naval (Netherlands)	SIGMA frigate/large-corvette families	~20–25	Modular export model; medium scale

Note: Counts include frigates, light frigates, and closely related surface combatants with full combat systems; exclude OPVs without combat systems and amphibious ships. Figures represent delivered or operational hulls, not orders or planned programs. (SMA, Inc. analysis)

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Among the principal competitors:

Fincantieri Marinette Marine proposed the FREMM-class frigate, a large, highly capable platform already in service with multiple allied navies and produced in significant numbers. FREMM emphasized strong anti-submarine warfare performance, substantial growth margin, and proven survivability characteristics, balanced against its relative size and complexity.

Navantia/General Dynamics Bath Iron Works offered the F-100 Álvaro de Bazán–class, a smaller, Aegis-equipped frigate with a strong air-defense pedigree and a well-established production history. Its strengths lay in combat system integration and radar performance, with more constrained margins for growth and adaptation.

Lockheed Martin/BAE Systems proposed a derivative of the Type 26 Global Combat Ship, an advanced ASW-focused design then entering service with the Royal Navy. Type 26 offered excellent acoustic performance and modern design practices, but at the time of competition, had limited production history and higher programmatic risk associated with early-stage maturity. Note that ultimately Lockheed Martin formally withdrew from the subsequent Detailed Design and Construction competition.

Austal USA approached FFG(X) from a different maturity vector, proposing a frigate concept derived from its Independence-class Littoral Combat Ship variant. While LCS was not conceived as a true frigate, Austal argued that the trimaran hull form offered a production-proven baseline, supported by serial construction experience, an established supplier base, and a workforce already trained in large-ship modular fabrication. Austal's proposal reflected an effort to adapt an existing domestic hull form toward greater combat capability, leveraging manufacturing continuity even as the operational suitability of the underlying design for a frigate mission set remained an open question.

Huntington Ingalls Industries proposed a frigate concept derived from the Coast Guard's Legend-class National Security Cutter (NSC), emphasizing hull maturity, seakeeping performance, and an established construction and sustainment record. By the time HII received its FFG(X) concept contract, multiple NSCs had been delivered and were operational, providing empirical data on hull behavior, producibility, and lifecycle support.[5] HII's approach treated the NSC as a stable starting point from which additional combat systems could be integrated, testing whether a proven patrol-oriented platform could be evolved into a credible surface combatant without incurring the risks of a clean-sheet design.

Each of these designs reflected different philosophies of frigate employment and different tradeoffs among size, capability, growth margin, and producibility. None were untested concepts. All were the products of sustained foreign investment in frigate design and construction. Table 2 summarizes the parent designs proposed under the FFG(X) concept contracts and highlights the distinct advantages, limitations, and risk profiles the Navy evaluated in the concept studies.

The initial concept-contract phase, conducted between 2017 and 2019, was not a formality. It enabled close, iterative engagement between NAVSEA—the Navy's technical authority for ship design, integration, and certification—and the competing teams on requirements interpretation, design adaptation, survivability standards, combat system integration, and producibility. This phase allowed the Navy to test its assumptions about parent designs in practice rather than in theory. It exposed where U.S.-specific shock, survivability, electromagnetic, and integration requirements would drive divergence—and where discipline could preserve commonality. It gave NAVSEA detailed, comparative insight into how each design absorbed change, where margins existed, and where the risk of cascading redesign was greatest.

In effect, the Navy developed an intimate understanding of each competing platform at a level of granularity comparable to how NAVSEA would traditionally assess a clean-sheet design under a design-agent model. The difference was that this understanding was grounded in ships already built, already operating, and already refined through service.

Importantly, this process preserved NAVSEA's role as an active technical authority even as it explored a different acquisition posture. The Navy was not relinquishing oversight or control. It was deliberately informing its eventual choice with empirical evidence rather than abstract specification.

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Table 2: FFG(X) Concept Proposals.

Company/Team	Parent Design	Principal Advantages	Key Limitations	Primary Risks
Fincantieri Marinette Marine	FREMM (Italian/French)	Combat-proven frigate in active service; continuous production history; balanced ASW, AAW, and SUW capability; mature hull, propulsion, and combat-system integration	Required adaptation to U.S. Navy standards (Aegis, survivability, shock, margins); limited prior U.S. construction history	Risk of requirement creep eroding parent advantages; integration risk if U.S. changes exceeded design margins
General Dynamics Bath Iron Works (with Navantia)	F-100 Álvaro de Bazán Class	Proven Aegis-equipped combatant; strong AAW pedigree; allied operational experience; familiarity with U.S. combat-system integration	Design optimized for AAW rather than balanced frigate missions; older baseline relative to evolving threat environment	Risk of limited growth margins for ASW-centric missions; modernization complexity
Lockheed Martin (with BAE Systems)	Type 26 Global Combat Ship	Designed from inception for ASW; strong acoustic and survivability features; clear export and long-term production vision	Not yet operational at time of competition; limited production learning realized	Risk of developmental immaturity at program start; learning-curve and schedule uncertainty
Huntington Ingalls Industries	Legend-class National Security Cutter (NSC)	Mature U.S.-built hull; excellent seakeeping and endurance; established production and sustainment record	Not designed as a surface combatant; limited margins for combat-system weight, power, and survivability	Risk that combat-system integration would drive major redesign; uncertainty around lethality and survivability upgrades
Austal USA	Independence-class LCS (trimaran)	Serial domestic production; modern modular construction methods; high speed and deck area	Aluminum trimaran not optimized for frigate survivability; LCS mission-module shortfalls	Risk of repeating LCS integration and survivability challenges; limited confidence in full-spectrum combat capability

The Downselect

Only after this period of structured engagement did the Navy proceed to a final downselect for Detail Design and Construction (DD&C). In April 2020, the Navy awarded Fincantieri Marinette Marine the FFG(X) DD&C contract. The contract provided for the construction of six ships under the base award, with additional ships contemplated through priced options, reflecting the Navy's intent to establish a stable serial production line if early execution proved successful.[6]

When proposals were evaluated, the FREMM-based design stood apart. At the time of award, it was already in operational service with multiple allied navies, with more than a dozen ships delivered and additional hulls under construction. Its anti-submarine warfare performance, survivability margins, and growth capacity were established through service experience—not inferred through analysis or projected through modeling.

That distinction was decisive. The Navy was not being asked to underwrite the maturation of a new hull form or an unproven production approach. It was being asked to adapt a demonstrably mature platform to U.S. standards and systems, informed by a deep, comparative understanding of how that platform performed under real operational and design constraints.

That understanding was central to the acquisition strategy. It defined the program's risk profile, underpinned the contract structure, and carried an implicit obligation: that post-award change would be governed with the same discipline and restraint that informed the selection decision itself. The Navy did not select the wrong ship. It selected the most mature and capable option available—fully aware of what made it viable, and equally aware of what would place that viability at risk.

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7. Why Fincantieri Won: A More Mature Ship, a Credible Price, and a Strategically Aligned Industrial Plan

Fincantieri Marinette Marine won the FFG(X) competition for reasons that were clear in 2020 and remain defensible today. The award was not driven by novelty, politics, or short-term expedience. It reflected a coherent alignment between a mature and capable ship design, a credible price grounded not only in design maturity but in demonstrated serial production experience—providing a concrete basis for learning-curve savings, and a strategic commitment to rebuilding U.S. surface-combatant industrial capacity.

The selection of Fincantieri's FREMM reflected an engagement sequence that is rarely executed correctly, and even more rarely sustained. Requirements were first anchored in warfighter needs through the Type Commanders, then translated through OPNAV, and only then structured into an acquisition approach. That sequence enabled acceptance of a mature parent design optimized for operational effectiveness rather than theoretical specification completeness.

At the core of Fincantieri's proposal was based on a parent design that was already proven in serial production. The FREMM was not a conceptual baseline or a single lead ship used to anchor a paper proposal. It was a modern frigate family already in service with multiple navies, with dozens of hulls delivered or under construction. Critically, it met—or exceeded—the Navy's stated FFG(X) requirements across survivability, warfighting capability, range, endurance, and growth margin. Its maturity was reflected not just in drawings, but in validated arrangements, tested systems integration, known production sequences, and operational feedback embedded directly into the design. This maturity sharply differentiated Fincantieri from competitors proposing ships that were either significantly less capable or substantially less proven.

That design maturity translated directly into manufacturing credibility. FREMM was already being built in series, not in small numbers or limited production runs. The production system—work breakdown, module sequencing, outfitting strategy, supplier integration, and quality control—had been exercised repeatedly. This mattered. The Navy was not merely selecting a ship; it was selecting a repeatable production model. Fincantieri could point to demonstrated throughput, learning-curve effects, and empirical cost and schedule performance across multiple hulls.

In several performance areas central to the escort mission—including sustained ASW effectiveness, combat-system integration, and growth margin—the FREMM-derived FFG(X) compared favorably with DDG-51 Flight II destroyers. This comparison does not extend to later Flight IIA or Flight III variants, which were optimized for expanded air- and missile-defense roles rather than the escort-centric mission that defined FFG(X).

Beyond these combat-relevant attributes, Fincantieri's proposal incorporated operational and habitability improvements that exceeded minimum compliance. These included a redesigned bridge optimized to reduce crew workload and improve situational awareness; condition-based maintenance concepts informed by both commercial and naval practice; improved habitability standards aligned with long-duration deployments; and layout decisions that supported maintainability and lifecycle affordability. These features were not speculative. They reflected lessons learned from FREMM and from Fincantieri's extensive experience in complex naval and commercial shipbuilding, where reliability, maintainability, and crew efficiency are enforced by economics, not aspiration.

Equally important was Fincantieri's manufacturing philosophy. The company proposed a modular construction approach that was not theoretical, but already proven—both on FREMM and across decades of large-scale commercial shipbuilding. This approach emphasized early outfitting, disciplined module interfaces, and digital continuity from design through construction. It was explicitly designed to reduce rework, compress schedules, and stabilize labor demand. The Navy understood that this was not "modularity" as an experiment, but as an industrial system with demonstrated results.

Fincantieri reinforced this proposal with a concrete, private-capital commitment to the U.S. industrial base. The company pledged—and ultimately invested—nearly **a Billion Dollars** of its own funds to

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modernize the Marinette, Wisconsin yard[7]. These were not speculative promises contingent on future awards. They included hard investments in facilities, tooling, digital infrastructure, and workforce development, made in anticipation of a sustained production run. The scale and timing of this investment signaled confidence in execution and alignment with the Navy's long-term intent to field a new class of frigates at a meaningful scale. No other U.S. surface-combatant shipyard has made a comparable, single-yard, privately funded investment over the past decade. By comparison, other major shipbuilders have pursued incremental, portfolio-wide modernization programs, often supported by government facilities funding and spread across multiple yards and programs.

Risk realism was another decisive factor. Fincantieri demonstrated a thorough understanding of technical, schedule, and industrial risks and explicitly incorporated them into its Integrated Master Schedule. The proposal did not assume frictionless execution. Instead, it reflected realistic sequencing, margin where needed, and an appreciation for the challenges of starting up a modern surface-combatant production line in the United States. That realism underpinned the credibility of both the schedule and the cost.

Pricing confidence ultimately tied all of this together. Fincantieri's offer reflected a coherent relationship between design maturity, manufacturing readiness, and contractual risk. Its confidence in delivering the frigate at the target cost and ceiling price was not an act of bravado, nor a speculative bid predicated on later renegotiation. It was a deliberate and well-supported judgment grounded in decades of global experience designing and building frigates in sustained serial production. That judgment incorporated proven parent-design performance, validated production sequences refined across multiple shipyards, and the application of modern manufacturing methods intended to reduce variability and capture learning-curve efficiencies.

High commonality with the parent design was not a marketing claim—it was the economic foundation of the bid. The solicitation explicitly allowed offerors to define their own assumptions regarding commonality and to structure target-to-ceiling risk accordingly. The proposed target prices, cost-share lines between target and ceiling, and the ceiling prices themselves were not aggressive in isolation; they were aggressive because the underlying assumptions were defensible.

Just as importantly, those assumptions reflected a strategic calculus about Fincantieri's continued global expansion. Establishing a durable surface-combatant production base in the United States was not viewed as a short-term transactional opportunity, but as a long-horizon industrial investment. The Navy knowingly accepted Fincantieri's pricing because it was inseparable not only from the stability of the design and the credibility of the production model, but from an integrated strategy that assumed continuity of production, disciplined governance of change, and execution conditions consistent with prior frigate programs delivered internationally.

Finally, the award reflected a strategic industrial-base judgment. For decades, the Navy had relied on a narrow duopoly of surface-combatant builders: Huntington Ingalls Industries' Ingalls Shipbuilding yard and General Dynamics' Bath Iron Works. Introducing a third peer surface-combatant builder was not incidental to the FFG(X) decision—it was one of its most consequential features. Concentration reliably produces higher prices, reduced innovation, and fragile surge capacity. The Navy understood that sustaining long-term affordability and resilience required at least three credible builders willing to invest, compete, and execute at scale for future surface combatants. Fincantieri's proposal made that outcome possible.

The decision to award FFG(X) to Fincantieri did not introduce failure. It created the conditions for success. At that moment, the Navy still had a choice: to govern the program with the discipline, patience, and senior ownership required for a strategically significant acquisition; or to allow technical, contractual, and organizational friction to accumulate until recovery became politically inconvenient. What followed would determine which path was taken.

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8. The Bargain at the Heart of FFG(X)

At award, the Constellation-class frigate program rested on more than a technical baseline. It rested on a deliberate institutional bargain that linked design discipline, contract structure, industrial investment, and competition into a single, coherent construct. Each element depended on the others holding. None functioned independently.

The first element was the preservation of a parent design with high commonality. The second was a contract structure that priced discipline rather than reinvention. The third was an industrial investment thesis built around serial production rather than episodic procurement. The fourth was the intentional introduction of a third peer surface-combatant builder into a concentrated industrial base. Together, these elements defined not just how the ship would be built, but how the program would be governed once difficulty emerged.

The Navy accepted a bid priced on the premise that the FREMM parent design would remain the governing reference point. That acceptance carried implications far beyond cost and schedule. It established an expectation of restraint: that U.S.-specific requirements would be integrated deliberately, that change would be assessed cumulatively rather than incrementally, and that authority would be exercised with constant awareness of second-order effects on design maturity and production flow.

Industry accepted reciprocal risk. Fincantieri committed capital, workforce development, supplier relationships, and management attention on the expectation that the program was not a short-run experiment, but the foundation of a durable production line. The Fixed-Price Incentive structure was viable only under conditions of stability and continuity, conditions that depended as much on disciplined governance as on contract enforcement. The shipbuilder accepted meaningful cost risk in exchange for predictability of scope, intent, and production cadence.

Crucially, this bargain enabled something the Navy had lacked for decades: a credible third peer builder of complex surface combatants. The introduction of Fincantieri as a third peer was not symbolic. It was structural. It promised sustained competitive pressure on cost, schedule, and design-for-production discipline across the surface-combatant enterprise, while introducing learning curves that benefited not just a single yard, but the system as a whole. It also added elasticity to an industrial base that had grown dangerously concentrated and brittle.

This outcome could not have been achieved through a clean-sheet design or a fragmented procurement strategy. It depended entirely on the discipline imposed by a parent platform and the patience required to allow serial production to mature. The ship itself was the vehicle. Competition and industrial renewal were the objective.

Congress implicitly accepted this bargain as well. Funding profiles, industrial-base expectations, and early oversight posture reflected an understanding that initial instability was not evidence of failure, but a foreseeable phase in rebuilding lost capacity and capability. The program was treated not as a one-off procurement, but as an investment in long-term industrial resilience.

Over time, however, the bargain was meant to become something more than a set of aligned incentives. Once steel was cut, capital committed, and workforce risk assumed, the relationship could no longer be governed solely by transactional logic. What began as a bargain was intended to mature into a covenant—an implicit understanding that stability, continuity, and mutual restraint would guide decisions once reversal became impossible without shared loss.

That covenant was not abstract; it was operationalized through the contract structure itself. The pricing model, the target-to-ceiling risk share, the production options, and the treatment of change were all mechanisms through which intent was meant to be enforced in practice. The baseline was never a static snapshot of frozen requirements; it was a statement of how the Navy intended to rebuild capability and capacity together with industry under conditions that demanded discipline on both sides.

When that intent held, the program retained multiple viable recovery paths. When it eroded, the contract did not fail mechanically; it instead became the mechanism through which technical, contractual, and managerial misalignment was expressed rather than corrected.

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9. The Contract as Written and the Foundational Premise That Was Never Protected

To understand why a program with a sound strategic foundation nevertheless became vulnerable, it is necessary to examine the contract not merely as a legal instrument, but as the mechanism used to enforce a specific acquisition premise: sustained commonality with the FREMM parent design as the means of controlling risk. That premise required active, disciplined defense by both the Navy and Fincantieri. When the premise was allowed to erode, the contract's pricing, risk allocation and incentives became misaligned with the ship ultimately being built.

When the Navy awarded the FFG(X) Detail Design and Construction contract to Fincantieri Marinette Marine in April 2020, it deliberately chose to use a Fixed-Price Incentive (Firm Target) structure as a governance mechanism, not merely a pricing vehicle. The intent was explicit: align incentives around execution, bound government exposure, and force tradeoffs to be confronted early rather than deferred.[8]

That structure was viable only because it rested on a clearly articulated and evaluated premise: that the ship to be built would remain closely aligned with the FREMM parent design on which the bid was based. High commonality was not an implicit assumption; it was the economic foundation of the proposal. Target prices, ceiling prices, cost-share lines, workforce ramp-up, supplier commitments, capital investment plans, and schedule realism were all derived from that condition.

The Navy accepted this premise during source selection. In doing so, it accepted an obligation that is often left unstated but is essential in fixed-price parent programs: the obligation to actively defend the premise over time, particularly once execution begins and institutional forces push toward change.

Serial Intent and the Expectation of Stewardship

The initial contract covered the Detail Design and Construction of FFG-62, with priced options for follow-on ships beginning with FFG-63. While the Navy retained discretion over option exercise, senior leadership publicly framed the program as a serial production effort, with a long-term planning horizon of up to twenty frigates. Early ships were intended to absorb non-recurring engineering and integration cost, stabilize the workforce, and establish the production learning curve required to drive average procurement unit cost down across the class.

This framing mattered. It justified private capital investment at Fincantieri Marinette Marine, supplier commitments across the industrial base, and workforce pipelines designed for continuity rather than episodic demand. It also carried an implicit expectation: that early turbulence would be governed with patience and senior ownership, not treated as evidence of failure.[9]

The contract awarded in April 2020 was structured to support up to ten ships in the base program, with a longer-term planning horizon for as many as twenty frigates in total. The initial award covered Ships 1 through 3, with explicit signals—communicated through the solicitation structure and Navy messaging—that Ships 4, 5, and 6 would follow as options once early production stability was demonstrated. If fully executed, the program's total value was widely estimated to exceed $20 billion over its life, reflecting the Navy's intent to commit to a sustained production run rather than a limited experiment.[10]

COVID-19: Disruption Managed Through Resolve

Almost immediately after award in April 2020, the program encountered an external shock no bidder had fully priced: the Covid-19 pandemic. Early assumptions across industry and government anticipated a short-duration disruption measured in weeks or months; instead, the shock persisted for multiple years. Supply chains fractured, skilled labor availability declined, productivity fell, and material lead times lengthened across heavy industry.[11]

Fincantieri Marinette Marine experienced the same effects seen across the defense industrial base: recruiting challenges, elongated training pipelines, higher attrition, and cascading supplier delays. These impacts were systemic, not program-specific.

During 2020 and 2021, the Navy and Fincantieri responded with a shared posture of stewardship.

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Pandemic-driven inefficiencies were treated as transient. Design work continued. Informal problem-solving compensated for contractual rigidity. Most importantly, there remained a shared belief that the underlying bargain—parent commonality governed by disciplined change—was intact.

The Navy's exercise of the FFG-63 option in May 2021 reinforced this belief. It signaled continuity, affirmed serial intent, and conveyed confidence that the program remained recoverable under its original logic.

What was not yet visible was the contract's fragility. The Firm Fixed Price Incentive Fee (FPIF) structure could tolerate disruption, inefficiency, and even some cost growth. What it could not tolerate was unacknowledged erosion of the design premise on which it was priced.

That vulnerability would not surface through a single decision. It would emerge only if cumulative Navy-directed change invalidated the assumptions embedded in the target and ceiling prices, without a corresponding reset of governance, scope, and incentives. By early 2022, the contract remained intact, but the conditions that sustained it were beginning to strain.

10. The Year Resolve Was First Lost: From Stewardship to Momentum (Summer 2022–Summer 2023)

This twelve-month period is the hinge on which the entire program turned. This period marks the point at which the program shifted from being strained but recoverable to institutionally fragile, well before any formal termination decision was contemplated. The Constellation-class frigate program did not fail at contract award, nor during the pandemic-disrupted early years of execution. It entered irreversible decline during a specific window—from roughly summer 2022 through summer 2023—when institutional resolve, mutual trust, and continuity of stewardship failed to survive a series of personnel transitions and compounding execution pressures.

Before this period, the program was strained but recoverable. After it, recovery became politically and institutionally difficult.

CDR and the Choice to Proceed Without Closure

In May 2022, the Navy declared the program to have passed Critical Design Review (CDR). Formally, this signaled readiness to proceed into full construction. Substantively, major portions of the design remained unresolved, particularly those driven by NAVSEA interpretations of U.S.-specific survivability standards, shock qualification, electrical-load growth, and combat-system integration requirements beyond what the parent design had been selected to satisfy.

As later documented by the Government Accountability Office (GAO) and Congressional Research Service (CRS), these unresolved areas were not abstract risks. They translated directly into structural redesign, systems rework, and unplanned weight growth as Navy-unique requirements were incorporated into the foreign parent design. Weight growth, incomplete functional design, and late system definition became reinforcing drivers of divergence from the original FREMM baseline rather than isolated technical issues.[12]

Proceeding under these conditions was a conscious choice. Other major defense programs have delayed construction or re-baselined when faced with comparable uncertainty. Here, the Navy elected to move forward, relying on continued cooperation and informal alignment to manage the risk. *What did not occur at this juncture was enterprise-level intervention to reaffirm and actively protect the program's founding premise.*

NAVSEA's role was never to adjudicate tradeoffs between parent preservation and cumulative requirement accretion. Its mandate is, and has always been, to enforce technical standards, survivability requirements, and system integration rigor. Expecting NAVSEA to self-limit that role absent explicit direction was unrealistic.

The responsibility to manage that tension, and to decide when accumulated change had overtaken the original acquisition logic, rested above the execution layer—specifically with the Secretary of the Navy, the Assistant Secretary of the Navy for Research, Development and Acquisition, the Chief of Naval Operations as requirements owner, and the Program Executive Officer for Ships. During this

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period, no senior authority assumed that role. As a result, a program that depended on actively defending its core tenet—high commonality with a proven parent design—was allowed to proceed as if that tenet still held, even as the conditions that sustained it steadily eroded. That erosion was not theoretical. Oversight reporting later showed that the cumulative effect of Navy-directed design changes during this period materially reduced commonality with the FREMM parent design and drove significant weight growth, with downstream effects on cost, schedule, and performance margins.[13]

First Steel and the Collapse of Optionality

On 31 August 2022, first steel was cut for FFG-62. Construction began while design work continued in parallel, collapsing remaining optionality and converting unresolved design issues into immediate cost, rework, and schedule pressure on the shop floor.

Concurrency was not unprecedented, but it required heightened trust, rapid escalation, and decisive intervention when assumptions failed. Yet, those conditions were beginning to erode.

Personnel Transitions and the Breakdown of Trust

Between mid-2022 and mid-2023, the program experienced significant personnel turnover across the Navy acquisition chain, including within the program office, NAVSEA interfaces, and oversight roles. These transitions disrupted continuity at precisely the moment when premise enforcement required consistency and judgment.

At the same time, Fincantieri faced its own challenges: persistent workforce shortages, stretched engineering resources, and rising execution stress. While these challenges did not originate the program's divergence, they complicated communication, slowed responsiveness, and contributed to a gradual erosion of mutual confidence.

The net effect was not a single breach of trust, but the failure of trust to survive transition. Informal understandings frayed. Escalation paths blurred. Decisions slowed. What had previously been governed through collaboration increasingly defaulted to process. No enduring Navy authority was designated to carry responsibility for preserving high commonality with the proven parent design across these transitions. As a result, the program became increasingly governed by process rather than stewardship. *What did not occur at this juncture was enterprise-level intervention to reaffirm and actively protect the program's founding premise.*

The responsibility to manage that tension, to decide when accumulated change had overtaken the original acquisition logic, rested above the execution layer, within Navy leadership. During this period, no senior authority assumed that role. As a result, a program that depended on disciplined premise protection was allowed to proceed as if the premise remained intact, even as the conditions that sustained it further eroded.

Momentum Replaces Stewardship

During this same period, commitment deepened without reconstitution. The option for FFG-64 was exercised in June 2022, placing three ships under contract even as design stability declined. Construction advanced faster than alignment could be restored.

Throughout late 2022 and 2023, Navy-directed design changes accumulated steadily. Some addressed legitimate safety and survivability concerns. Others reflected evolving interpretations of requirements previously treated as settled. None of these deviations reflected unsafe construction or failure to meet warfighting mission requirements. They reflected differences between U.S. specification inheritance and the certified, operational standards of a parent design already operating in comparable threat environments. Individually potentially defensible, their cumulative effect was decisive.

Internal Navy assessments by late 2023 indicated that effective commonality with the FREMM parent design had fallen from approximately 85% at award to roughly 15%, largely as a result of Navy-directed design changes to satisfy NAVSEA interpretations of U.S. 'heritage' requirements—applied without reconstituting the original premise of sustained parent-design commonality. Critically, the majority of this decline occurred in the preceding year, as unresolved design issues were resolved through construction concurrency, requirements interpretation, and the absence of Navy restraint.[14] What had been a gradual erosion accelerated rapidly during

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this period, driving commonality to its effective floor. Once this threshold was crossed, restoring the original acquisition premise exceeded what incremental adjustment could achieve and would have required enterprise-level ownership and decisive authority that had existed earlier in the program but did not persist through the transition period.

This erosion of commonality and its implications for cost, schedule, and incentive alignment were examined contemporaneously in an independent analysis published by SMA, Inc. in 2024 as part of a broader study on contracting risk in U.S. naval shipbuilding[15]. That work was initiated in response to a growing pattern observed across multiple programs: the progressive transfer of design and execution risk to industry without corresponding adjustments to contract structure, governance, or authority.

The study focused on how cumulative government-directed change, sustained concurrency, and the absence of a stable functional design baseline interact with fixed-price incentive contracts to distort accountability and undermine acquisition logic. Drawing on program data, oversight reporting, and historical shipbuilding precedent, the analysis assessed not whether individual programs failed, but how otherwise rational contracts became unbalanced over time as scope expanded while price, schedule, and incentives remained fixed.

That analysis synthesized program data, oversight reporting, and historical shipbuilding precedent to assess how cumulative Navy-directed change, sustained concurrency, and the absence of a stable functional design baseline undermined the original acquisition logic.

At that point, the ship was no longer a close derivative governed by the parent design discipline. It had become a hybrid platform bearing the cost and complexity of novelty without the optimization of a clean-sheet design.

It is important to be precise at this point: none of these developments—cost growth, schedule pressure, or declining commonality—rendered the program technically unrecoverable. Programs with greater divergence have been successfully re-baselined and fielded. What narrowed the range of outcomes during this year was not feasibility, but the absence of a durable mechanism to restore alignment once continuity, trust, and premise ownership began to erode.

Cost Reality, Request for Equitable Adjustments and Government Response

By the end of this period, it was broadly recognized within the program that the ships had exceeded their target prices and had likely exceeded their ceiling prices. This outcome was largely driven by Navy-directed design changes and the resulting collapse of commonality.

As the gap between the ship being built and the ship that had been priced widened, Fincantieri sought contractual relief through Requests for Equitable Adjustment (REAs). The central assertion was straightforward: the Navy-directed changes and sustained loss of parent commonality had invalidated the original pricing assumptions. What followed was not a single, decisive reset, but a prolonged series of incremental actions as shown in Table 3, partial acknowledgments of cost growth without formal recognition that the underlying pricing premise had failed.

As of the publication of this article, the Navy has not formally acknowledged the cost impact of Navy-directed design changes. Requests for Equitable Adjustment submitted by Fincantieri remain unadjudicated, and the contract has not been modified to revise target costs or ceiling prices to reflect the ship that is actually being built. Congressional cost-to-complete funding did not alter this posture[16]; it ensured contract completion but did not resolve responsibility for cost growth beyond the priced baseline.

In practical terms, accumulated change was allowed to proceed without a contractual reset and without full funding, on the implicit assumption by the Navy that Fincantieri would absorb the difference. While this posture is procedurally permissible under FPIF contracting, it is atypical for a major Program of Record delivering a strategically important naval combatant once government-directed change becomes material and persistent.[17]

This posture left the program financially misaligned and increasingly brittle, even as execution pressures and design divergence intensified.

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Table 3: FFG(X) Contract Events and Treatment of Cost Issues.

What Happened	What It Meant	Why It Occurred
Fincantieri submitted multiple REAs between 2022 and 2024	The contractor formally asserted that the ship no longer matched the priced design	Navy-directed design change and construction concurrency
Total REA exposure grew into the hundreds of millions	Cost growth became material and systemic, not incidental	Rework, late design changes, and loss of FREMM commonality
Original target prices were exceeded	Incentive structure no longer reflected achievable performance	Design divergence invalidated cost assumptions
Early ships approached or exceeded ceiling prices	Contractual risk shifted fully onto the contractor	Same underlying drivers
Congress added ~$400M in FY25 "cost-to-complete" funding	The Navy funded its obligation to complete ships up to existing contract ceiling prices	It did not adjudicate REAs, reset pricing assumptions, or provide relief for Navy-directed changes
Navy contracting did not issue a formal rebaseline	Relief remained piecemeal and reactive	Changes treated individually rather than structurally

Why Recovery Failed During This Year (Summer 2022–Summer 2023)

This period mattered because the program depended on restraint exercised above the execution layer. Once that restraint weakened, the program defaulted to familiar behaviors: requirements accretion, design refinement, and risk absorption through process rather than reset.

NAVSEA did not fail the program. NAVSEA acted as designed—enforcing survivability, safety, and combat-system integration—within a technical warrant-holder structure that lacked explicit direction to preserve parent-design equivalency once cumulative change began to overtake the acquisition premise. At the point where enforcement itself began to undermine that premise, the responsibility of the Commander of NAVSEA was not merely to continue execution, but to intervene and force a senior decision. That intervention did not occur.

The failure therefore rested at the management and enterprise level, where no single authority asserted responsibility for declaring that accumulated change had overtaken the acquisition logic. Program risk escalated beyond the capacity of residual resolve to contain it. The loss of resolve did not appear as a decision; it appeared as hesitation—reluctance to rebaseline, reluctance to confront cumulative implications, and reluctance to assume ownership of consequences.

Why SecNav Intervention Became Inevitable

By the time the Secretary of the Navy (SecNav) initiated a senior-level review in early 2025, conditions were already trending toward an adverse outcome. Design instability had driven substantial weight growth, commonality with the parent design had eroded sharply, and construction was underway despite incomplete design work, setting the program on a path away from its original intent. The program had drifted far from its founding premise without reconstitution. Congressional confidence had eroded. Contractual posture and technical reality no longer aligned.

The SecNav review did not create these conditions; they matured during the year when resolve was lost. At that point, recovery was no longer achievable through routine programmatic mechanisms alone. While the program remained technically recoverable—as other major defense programs have demonstrated when senior leadership intervened decisively—the delay in exercising that authority sharply narrowed the available paths forward and made senior-level intervention unavoidable.

11. The Secretary of the Navy's Review: How Judgment Yielded to Inertia

The decision space had already narrowed materially by 2025. This context is essential, because it explains not only what the review examined, but how its conclusions functioned inside the Navy and why the process ultimately entrenched institutional inertia.

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In late 2024, SecNav John Phelan directed a comprehensive review of the program and asked the Hon. John Young to assemble a review team and conduct an independent assessment. The intent was to provide the Secretary with a clear-eyed evaluation of the program's condition, the sources of its distress, and the realistic options available for moving forward. While the review team operated independently in its analysis, it was convened explicitly to inform a decision that only the Secretary could make.

The review began against a backdrop of visible and widely acknowledged distress. By late 2024, the program was tracking roughly three years behind its originally planned delivery schedule. Cost growth on FFG-62 had moved well beyond the original target and was projected to exceed the ceiling price, driven by cumulative Navy-directed design change, extensive concurrency rework, and sustained inefficiencies associated with workforce shortages and supply-chain disruption. Weight growth had eroded early margins, forcing cascading redesign across electrical distribution, cooling capacity, and internal arrangements. Critically, significant design items remained unresolved even as steel was already being cut, erected, and welded, placing the program deep into concurrency without a baseline that reflected the reality of the program.[18]

Confidence within the Navy had eroded, and congressional patience was thinning. The program no longer enjoyed the insulation that sometimes allows complex acquisition efforts to be stabilized away from sustained public scrutiny. Pressure was visible, and time was no longer neutral.

It was in this environment that the Secretary's review team began its work. According to internal accounts, Mr. Young briefed Secretary Phelan in early April 2025, at a moment when the FY26 budget was already hardening and the window for preserving production continuity was rapidly closing.

On paper, the mandate of the Secretary's review was straightforward: assess the state of the program, identify root causes, and present options to inform senior decision makers. Independent reviews have played constructive roles in other troubled programs, particularly when senior leadership seeks external validation to support difficult corrective action.

What distinguished this review was not a lack of competence, effort, or access to data. The team understood that the program was in serious trouble. What proved decisive, however, was how judgment was expressed, and ultimately how it was left unstated.

Rather than issuing a definitive recommendation, it is likely the review presented a set of options clustered around three outcomes. The first option was to complete design and construction of Ships #1 and #2 while canceling Ships #3 through #6, effectively treating the initial hulls as pathfinders while foreclosing serial production. That framing also created a clear window for the incumbent surface-combatant builder—most notably HII—to defend its market position. As is often the case following a disruptive loss, it is likely that the strategic objective was not to replace the Constellation outright, but to truncate it: to limit the program to a small number of ships, reopen force-structure alternatives, and increase the probability that the Navy would pivot toward options more closely aligned with existing production lines, thereby restoring incumbent advantage and closing the door on a durable new entrant.[19]

The second option was to issue a stop-work order on Ships #3 through #4 (for which they had Navy funding and execution commitment) and defer Ship #5 in the upcoming National Defense Authorization Act (NDAA), preserving optionality while allowing time for reassessment.

The third option was to pursue a comprehensive restructuring that would have required formal re-baselining, revised pricing aligned to the transformed ship, a stabilized production cadence, and an explicit recommitment by both the Navy and Fincantieri.

Of these, the first option, truncation after the initial ships, emerged as the most administratively and politically tractable. It allowed Ships #1 and #2 to proceed, avoided an immediate termination-for-convenience confrontation, and reduced near-term exposure. It also implicitly accepted that the United States would forfeit a viable frigate production line for the foreseeable future, as no other U.S. shipyard would have had the capacity to absorb the program before the end of the decade.

What the Secretary's review did not do was advance a clear, affirmative recovery construct comparable to those used successfully in prior defense pro-

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grams under similar stress, most notably the C-17 Globemaster III. There was no fully articulated proposal for elevating control to the Office of the Secretary of War, formally reconstituting the program baseline, reconciling Navy-directed change explicitly, and restoring a stable production rhythm. Such approaches were neither unknown nor unprecedented. What the Navy lacked was institutional appetite.

Several dynamics shaped this outcome. First, the review was conducted at arm's length from the shipbuilder. While understandable in form, this distance reinforced assumptions about root causes rather than rigorously interrogating them. Navy-directed change, erosion of parent-design discipline, and governance choices were acknowledged but not examined deeply as primary drivers of the observed cost and schedule outcomes.

Second, the composition of the review team carried unstated institutional biases. Members were steeped in legacy surface-combatant programs and acquisition pathways, including leadership drawn from organizations that had long operated within—and benefited from—the existing surface-combatant duopoly. That experience brought rigor and credibility, but it also shaped perceptions of what constituted "normal" failure and acceptable risk. Within that frame, cost growth and schedule delay were interpreted as evidence of structural program deficiency rather than as a failure of governance to keep pace with accumulated change.

Third, and most importantly, the review appears to have been constrained—whether consciously or implicitly—by expectations about what senior leadership would find acceptable. Recommending recovery would have required advocating for a politically inconvenient course: public acknowledgment that Navy-directed actions materially contributed to cost growth, recommitment to a program already branded as troubled, and acceptance of prolonged scrutiny. Recommending truncation reduced institutional exposure. It resolved the problem of perception, even as it foreclosed recovery.

Rather than forcing a choice, The Secretary's review appears to have presented options rather than a recovery decision. That proved decisive. By declining to render an explicit judgment—either to restore the program or to terminate it cleanly—the review allowed implicit judgment to substitute for decision. Recovery was treated as theoretically possible but practically undesirable. Truncation was treated as analytically defensible without being formally endorsed. In the space between analysis and recommendation, inertia took hold.

That inertia was then reinforced by budget mechanics. As the FY26 budget request advanced without funding for the next ship, a break in production was created—an outcome universally understood in shipbuilding as effectively fatal. What followed was not a sudden cancellation, but an engineered inevitability. The outward form of continuity masked an inward collapse of commitment.

By the time the Department announced the cancellation of the program in late November 2025, the decision appeared unavoidable to many observers. In reality, it had been enabled by a sequence of deferrals: deferral of re-baselining, deferral of accountability, deferral of contractual realignment to reflect the ship actually being built, and deferral of recommitment to the necessity of a proven parent design.

The Secretary of the Navy's review did not cause the failure of the Constellation-class frigate program. But it did not arrest it either. Judgment was exercised, but only implicitly, and because it was never stated plainly, it expressed itself as inertia. In that sense, the review became part of the story it was convened to judge.

12. Transition: From Review to Inevitability

By the time the SecNav announced the cancellation of the Constellation-class frigate program in late November 2025, the decision no longer presented itself internally as a choice among alternatives. It appeared instead as the logical conclusion of a process in which judgment had been repeatedly deferred, alignment left unrepaired, and continuity quietly surrendered.

This was the second pivotal moment—following the initial loss of resolve during the summer 2022–summer 2023 period—at which the program could still have been recovered through deliberate intervention, yet resolve was again deferred. As with the earlier failure to arrest design drift and reset the con-

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tract, the opportunity remained within the Department's grasp, but it was not taken.

What made the announcement seem inevitable was not a sudden deterioration in program conditions, but the cumulative effect of prior non-decisions. The failure to rebaseline after design drift, the reluctance to reconcile Navy-directed change with contractual reality, and the absence of an explicit recommitment following the Secretary's review all narrowed the available paths forward. By the time budget actions introduced a break in production, the outward form of continuity masked an inward collapse of resolve.

The Secretary's decision did not create this outcome. It ratified it. The announcement functioned less as a decisive intervention than as formal recognition that the Navy had already chosen, through inaction, not to govern the program back to health.

Even the completion of the two remaining ships was left less certain than the cancellation announcement suggested. By truncating the program without fully resolving cost responsibility, contractual alignment, or long-term production intent, the decision introduced residual execution risk rather than eliminating it. What had been presented publicly as a clean containment of exposure instead left open questions about whether the remaining hulls could be completed without further disruption, renegotiation, or delay.

It is in that context, not as a singular misjudgment, but as the end state of accumulated inertia, that the broader consequences of the decision must be understood.

13. The Tragedy That Extends Beyond the Program

The cancellation of the Constellation-class frigate program did not merely terminate a troubled acquisition. It altered the trajectory of the U.S. naval industrial base in ways that will endure long after the particulars of this program fade from memory. The most immediate and visible casualty was Fincantieri Marinette Marine, but the deeper loss was institutional and national.

When the United States Navy selected Fincantieri in 2020, it did more than choose a ship design. It deliberately invited a new participant into one of the most exclusive and consequential domains of the American defense industry: the construction of complex surface combatants. Entry into that domain is not symbolic. It confers credibility, access, and—most importantly—the confidence required to justify massive, irreversible capital investment.

Fincantieri accepted that invitation fully and acted accordingly. Over the following years, the company invested over $400 Million in the Marinette, Wisconsin shipyard and its surrounding ecosystem. Facilities were modernized, production lines reconfigured, and digital design and modular outfitting practices introduced. Hiring accelerated even as labor markets tightened, suppliers were drawn into longer-term relationships premised on serial production, and workforce training pipelines were expanded. These investments were not speculative. They were made in reliance on the Navy's stated intent to field a class, not merely to complete a pair of ships.

The cancellation announced in late November 2025 did not simply halt production. It destroyed the investment logic under which those commitments had been made. What makes this loss especially damaging is that there is no automatic recovery mechanism. Fincantieri Marinette Marine is now left without ship orders for the very class of vessels it has been modernized to build, and there is no clear, executable commitment by the Navy to replace that workload. While various public statements have referenced alternative ships, future concepts, or potential opportunities, these expressions of intent are not equivalent to ships under contract. They do not carry funding, schedules, or acquisition authority behind them.

Critically, the Navy cannot simply "give" ships to a shipyard, regardless of strategic intent. Any new class or variant must proceed through the full acquisition process—requirements definition, analysis of alternatives, budget submission, authorization, and appropriation—before construction can begin. That process unfolds over years, not months. In that context, the absence of a committed follow-on program is not a neutral pause. It functions as a de facto decision. Without a defined acquisition pathway and funded bridge, Fincantieri Marinette Marine's surface-combatant production capacity will not be preserved. It will atrophy, not because it failed, but because it was left idle.

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The loss of production continuity and the absence of an executable acquisition pathway matter because they convert the outcome from a contractual issue into a structural one. Even if the Navy were to make Fincantieri "financially whole" in a narrow contractual sense—through reimbursement, equitable adjustment, or negotiated compensation—that outcome would not restore what was lost. Money can address incurred cost on Ships #1 and #2, but it cannot recreate serial production, recover foregone learning-curve benefits across a larger class, or reestablish Fincantieri Marinette Marine as a durable third shipyard capable of building surface combatants at scale. Nor can it reverse workforce attrition, reconstitute supplier confidence, or erase the lesson learned by industry about asymmetric risk.

The implicit message delivered to the industrial base was unmistakable. Entry into surface-combatant shipbuilding carries irreversible downside risk for non-incumbents, even when a firm wins a legitimate competition, executes in good faith, makes substantial investments, and absorbs years of programmatic turbulence. Authority remains centralized, risk is pushed downward, and institutional resolve is contingent rather than assured.

That message will not be lost on industry. Shipbuilding is among the most demanding sectors in the defense enterprise, requiring sustained capital investment, long workforce development cycles, and tolerance for early inefficiency. Unlike software or electronics, sunk costs cannot be repurposed, and a modern shipyard cannot pivot quickly to alternative missions. Once capital is committed, exit is painful and often permanent.

By canceling Constellation in the manner it did—without reconstitution, without restored continuity, and without shared ownership of causality—the Navy materially altered the calculus for any firm contemplating entry into this space. Unless a company is already an entrenched incumbent with diversified workloads and institutional insulation, the risks now outweigh the rewards.

This outcome is especially damaging because the Navy's surface-combatant industrial base was already fragile. The Constellation program was conceived explicitly to address that fragility by expanding capacity and restoring competition. Its cancellation does the opposite. It reinforces concentration, reduces elasticity, and deepens reliance on a small number of overstretched yards whose own delivery performance has been persistently challenged.

The tragedy extends further when viewed through the lens of innovation. Fincantieri did not merely bring a hull form. It brought different approaches to ship construction and sustainment informed by decades of serial frigate and commercial ship production abroad. Design-for-production discipline, modular outfitting strategies, and lifecycle thinking that integrated sustainment and human factors from the outset were being embedded in how the Marinette, Wisconsin yard was organized, how suppliers were engaged, and how the class was intended to be sustained.

By ending the program prematurely, the Navy foreclosed the learning that would have accrued not only to Fincantieri, but to the entire surface-combatant ecosystem. Innovation in shipbuilding does not arrive as a finished artifact. It emerges through repetition, comparison, and competition. That process requires time, volume, and continuity. Continuity is precisely what was denied.

There is a deeper irony in this outcome. For decades, the Navy has grappled with chronic ship delivery delays across multiple classes. Study after study has identified the same systemic causes: immature designs, workforce instability, supplier fragility, and insufficient competition. These problems cannot be solved by substituting one platform for another or retreating to perceived safety of an existing but inadequate platform.

Yet the response to the failure of Constellation was not to double down on governance discipline, industrial learning, and long-term capacity. It was to narrow options, curtail ambition, and reduce exposure. This is not how complex systems recover. It is how they ossify.

The cancellation also weakens the Navy's credibility with the United States Congress. For years, lawmakers have been asked to fund shipbuilding programs on the assurance that lessons have been learned—designs stabilized earlier, risk governed more deliberately, and competition restored. The Constellation program reflected those assurances at inception. Its termination instead reinforces congres-

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sional skepticism that those objectives will be sustained once programs encounter prolonged difficulty and recovery requires continued Navy resolve.

Perhaps the most consequential loss, however, is intangible. The decision reflects an erosion of institutional self-confidence in the Navy's ability to govern complexity over time. That erosion is more damaging than any single canceled ship. It invites future decisions to be shaped by fear of scrutiny rather than commitment to outcomes and normalizes withdrawal as a form of prudence rather than a failure of resolve.

In that sense, the tragedy of the Constellation-class frigate is not confined to Marinette, Wisconsin, or to the ships that will never be built. It resides in the institutional lesson now being internalized. When the next ambitious surface-combatant program is proposed, industry will remember this moment, Congress will remember it, and the Navy's own institutional memory will carry forward the signal that when difficulty arises, persistence is optional. That lesson will shape behavior long after the specific details of this program fade from view.

Critically, this lesson did not remain abstract. It established a clear operational precedent: when the Constellation-class frigate encountered difficulty, the Navy chose program termination and substitution over re-baselining, recommitment, and sustained governance. This was not a pause to restore discipline or an effort to preserve the frigate requirement through recovery; it was an exit from the program itself.

That precedent moved quickly from implication to action. In late 2025, following the cancellation of the Constellation program, the Navy announced that it would pursue a new frigate-sized combatant—designated an "FF"—derived from the Huntington Ingalls Industries National Security Cutter, presenting this approach as a faster, lower-risk alternative to FFG(X).

In doing so, the Navy accepted a replacement with compromised warfighting capability. The National Security Cutter was not designed to survive missile attack and continue fighting as an escort in a contested environment, and relabeling it an FF does not change that reality.

Whether this declared remedy represents a sound strategic adaptation or a politically expedient displacement can only be assessed by returning to the Navy's own earlier judgment: the Guided Missile Frigate FFG(X) competition, and the reasons the National Security Cutter was not selected as the basis for a frigate in the first place. Only by revisiting that decision can the logic—and risk—of the pivot to an FF(X) class be properly examined.

14. The Original Verdict: Why the National Security Cutter Lost FFG(X)

The Navy has already answered—explicitly and empirically—whether a NSC–derived platform constitutes a credible foundation for a guided-missile frigate. It did so during the FFG(X) competition, when Huntington Ingalls Industries (HII) submitted an NSC-based proposal and lost to Fincantieri's FREMM-derived design. That outcome was a technical judgment that the FREMM constituted a materially superior starting point for the Navy's frigate mission—lower risk, higher maturity, and demonstrably closer to the required combat requirements.

The decisive distinction was not about the age or the number of hulls delivered, but transferable commonality with a modern frigate. In the FFG(X) source selection, suitability was defined by how much of a parent design could be carried forward without fundamental redesign—validated margins, integrated combat systems, survivability standards, and production sequences already proven in high-end naval service. Designs optimized for other missions, even if operational and well-built, did not meet this test. The NSC, for example, was designed for maritime security and law-enforcement missions, not sustained combat operations in contested environments, and would have required extensive redesign to meet frigate warfighting requirements. By that definition, the NSC does not constitute a proven frigate parent design.

The NSC is a mature and capable platform for its intended missions: long-endurance patrol, maritime security, law enforcement, and presence operations in permissive environments. Its operating history validates seakeeping, endurance, reliability, and habitability for those roles. However, it has never operated with the systems, loads, or certifica-

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tion regimes that define a modern Navy surface combatant.

The Constellation-class frigate was conceived from inception as a networked surface combatant operating inside the Navy's most demanding kill chains. Its combat system, sensors, weapons, and survivability standards were not optional enhancements layered onto a hull; they were the organizing logic of the ship. At the core of that logic was an Aegis-derived combat system integrated into the Navy's air and missile defense architecture. This was not a software choice. It was a ship-defining architectural decision that drove power density, cooling capacity, redundancy, electromagnetic compatibility, internal zoning, topside geometry, and growth margins from the outset.

The weapons fit made this distinction unavoidable. The Constellation was designed to carry the Mk 41 Vertical Launch System (VLS), enabling employment of SM-2, SM-6, and TLAM (Tomahawk) missiles, and future interceptors. Vertical launch is not a matter of deck space or modularity; it is a structural commitment requiring deep deck penetration, blast protection, magazine safety architecture, fire suppression, and strict separation from critical ship systems. More consequentially, VLS-equipped combatants must meet exceptionally demanding shock and vibration standards to survive both external weapons effects and the internal stresses generated by missile launch.

Power and cooling complete the picture. Modern radars, electronic warfare suites, and missile fire-control systems impose sustained electrical and thermal loads far beyond those of patrol platforms. The Constellation's integrated power architecture was sized not merely for initial outfitting, but for decades of growth. That margin was not incidental; it is what differentiates a surface combatant from a patrol ship.

The NSC was never intended to absorb these demands. It does not have a vertical launch system and was never designed to support one. Its hull structure, internal arrangements, and weight margins were optimized for endurance and patrol persistence, not for absorbing shock loads associated with missile launch and battle damage. Retrofitting for VLS would require fundamental redesign of hull structure, decks, magazines, internal zoning, and safety systems—at which point the platform ceases to be an NSC in any meaningful engineering sense and becomes the starting point for a new ship design.

The same is true of combat-system integration and Anti-Submarine Warfare (ASW). The NSC's electrical generation, cooling capacity, acoustic treatments, and survivability standards were not sized for high-end naval combat.[20] These characteristics cannot be "bolted on" later without wholesale redesign.

This is why the Navy evaluated NSC-derived approaches during FFG(X) as materially less mature, higher risk, and less producible than frigate designs already proven in serial production. The NSC proposal acknowledged, correctly, that extensive modification would be required. The Navy scored that reality accordingly.

15. NSC as a Frigate (FF) is Feasible, but Only Within Limits

Notwithstanding its unsuitability as a guided-missile frigate, the NSC retains a defensible rationale within a strictly bounded role. As a candidate platform for an FF-level ship focused on escort duties, maritime security, distributed presence, and local self-defense, the NSC offers genuine advantages: a mature hull form, proven seakeeping, long endurance, and an established production history.

Even when constrained deliberately to an FF-level mission—no area air defense, no Aegis, no SM-6—the NSC must still cross several non-linear thresholds that the baseline cutter was never designed to absorb. These are not matters of ambition or weapons count. They are structural transitions that force redesign once crossed: naval survivability and shock standards; continuous, conditioned power and cooling for combat systems; weight-high stability penalties from fixed sensors and masts; integration and certification burdens that containerization does not eliminate; and test and safety regimes that dominate schedule regardless of capability tier. None of these transitions is incremental. Each is binary. Once crossed, the platform ceases to behave like a patrol ship with enhancements and begins to behave like a first-of-class combatant.[21] But they do not establish that the platform is low-risk, nor that adaptation to a Navy combatant role can be accom-

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plished without repeating the very dynamics that undermined FFG(X).

The NSC program itself illustrates why. Unlike Constellation, it was not derived from a mature, in-service parent design, yet it proceeded with confidence that design and integration risks were manageable. That confidence eroded quickly. The first ships experienced substantial cost growth and schedule delays driven by design changes, structural issues, and underestimated integration effort. Government reviews documented that early cost estimates for the lead ships roughly doubled from initial projections, while weight and margin management emerged as persistent concerns.[22] These were not exotic problems. They were the same categories of issues that later plagued FFG-62: design immaturity revealed too late, growth absorbed by margins assumed to exist, and corrective action becoming more expensive the longer it was deferred.

Crucially, these problems arose without the burden of full naval combat-system integration, area air-defense requirements, or Navy survivability standards. In other words, the NSC experienced early-ship instability in a comparatively benign acquisition environment.

If the National Security Cutter program encountered these dynamics under those conditions, a naval adaptation incorporating full combat-system integration and survivability requirements would reasonably be expected to experience equal or greater instability. The parallel to Constellation is therefore not one of design lineage, but of institutional behavior. In both cases, early confidence rested on optimistic assumptions about margin, integration effort, and the pace at which real-world constraints would assert themselves.

For the NSC, the Coast Guard ultimately chose to renegotiate contracts, absorb costs, and correct deficiencies on the first ships. That approach preserved the class, but it also masked how narrow the margin for recovery actually was. The underlying lesson was not that the NSC model was robust; it was that recovery required sustained institutional patience and willingness to pay.[23] That patience proved finite.

Early Signals of Overreach

Against that history, even the earliest public depictions of an NSC-based FF raise concern about how quickly those limits are likely to be tested. At the January 2026 Surface Navy Association National Symposium, the Navy presented a conceptual configuration of an NSC-derived FF equipped with layered hard- and soft-kill defenses, a modern electronic-warfare suite, an air-search radar, a medium-caliber bow gun, and an aft deck supporting armed unmanned aerial systems and containerized mission payloads.[24]

Individually, none of these systems is implausible. Collectively, they signal a return to the same pattern of cumulative integration that undermined both the NSC and Constellation programs. Each additional sensor, weapon, launcher, and mission module competes for finite margins in weight, power, cooling, stability, shock qualification, survivability zoning, and bridge integration. What begins as an FF framed around escort and self-defense functions quickly acquires the attributes—and expectations—of a much more capable combatant.

The significance is not that the Navy is proposing advanced systems, but that it is doing so before establishing the governance mechanisms required to prevent escalation beyond the platform's limits. The NSC's own history demonstrates how narrow those limits are. Introducing layered combat-system architecture at the conceptual stage increases the likelihood that requirements growth will again outpace design margins before those margins are fully understood.

Defined Limits of NSC Growth

Analyses of NSC growth potential show that the platform can credibly support FF-level mission requirements, but only if requirements discipline is absolute and sustained. Those limits are summarized in Table 4. This table captures the central reality: modifying the NSC to an FF is plausible; modifying it to an FFG is not without violating the assumptions that make the FF case viable.

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Table 4: NSC Growth Feasibility by Mission Tier.

Capability Area	NSC Baseline	FF-Level Feasible	FFG-Level Feasible
Local Air Defense	Point defense only; engagement ranges <10–15 km; limited sensor fusion	**Feasible:** short-range SAMs (~15–25 km) with incremental sensor upgrades; consumes **~10–20%** remaining combat-system margin	**Not feasible:** requires full area-defense radar & fire-control integration exceeding platform margins
Area Air Defense (VLS)	No VLS; no missile magazines; deck not rated for launch loads	**Marginal/High Risk:** limited VLS (e.g., single-digit cells) adds **~40–80 tons**, requires deep hull intrusion and ship-wide safety recertification	**Not feasible:** multi-dozen cells drive **>100–150 tons** added mass plus shock/blast loads beyond structural and stability limits
ASW Participation	Helicopter-centric ASW; limited organic sensors; modest quieting	**Feasible:** towed array + processing adds **~0.5–1.5 MW** electrical load; acoustic margins largely consumed	**Marginal/High Risk:** combined sensors, quieting, and processing exceed available power, cooling, and acoustic margins
Survivability (Navy Std)	Coast Guard standards; limited zoning and redundancy	**Partial:** selective upgrades possible; **~50–70%** of Navy survivability criteria achievable without cascading redesign	**Not feasible:** full Navy standards require ship-wide redesign of structure, systems, and damage-control philosophy
Power & Cooling Margin	Patrol-oriented generation; limited excess capacity	**Constrained:** remaining margin **~1–2 MW**; largely consumed by sensors and combat systems	**Insufficient:** area-defense radar and fire control require **multi-MW continuous loads** beyond generation and thermal rejection capacity
Shock Qualification	Not shock-qualified; no allowance for missile launch or combat loads	**Partial:** localized qualification of select systems; ship-wide certification risk remains	**Not feasible:** ship-wide shock, blast, and safety certification exceed design envelope

Even the FF modification depends on underlying presumptions that are rarely stated explicitly. It assumes absolute requirements discipline, a smooth production restart, and that early hulls will be operationally credible rather than merely afloat. Each of those assumptions is undermined by the NSC's own program history.

16. The Mirage of Growth: Why "FF Now, FFG Later" Repeats the Constellation Failure

The risk emerges when the FF rationale is extended beyond its natural boundary. While the Navy avoids explicitly claiming that the NSC-derived ship will become a guided-missile frigate, its public language repeatedly gestures toward "growth," "evolution," and "modularity," phrases that implicitly promise future expansion without confronting structural consequences.

Growth from FF to FFG is not linear. Weight and stability margins, power generation and distribution, cooling capacity, and shock and survivability requirements are tightly coupled at the platform level. Consumption in any one domain rapidly degrades margin in the others, as illustrated in Table 5.

Table 5: Margin Consumption from FF to FFG.

Domain	FF-Level Residual Margin	Incremental Demand to Reach FFG	Resulting Condition
Weight & Stability	~5–10% displacement margin remaining	VLS, strike-length magazines, reinforced deck, sensors add ~100–150 tons high and low	Margin exceeded; stability, trim, and reserve buoyancy violated
Power Generation	~1–2 MW excess capacity	Area-defense radar, fire control, combat systems require ~3–6 MW continuous	Margin exceeded; generation and distribution saturated
Cooling	~15–25% thermal margin	Sustained radar and combat-system loads require ~30–50% additional heat rejection	Margin exceeded; cooling and HVAC redesign required
Shock & Survivability	Partial, localized qualification only	Missile launch loads, blast, redundancy, and zoning upgrades are ship-wide	Margin exceeded; certification requires cascading redesign

Notes: Residual margins reflect aggregate platform headroom at FF-level, not individual subsystem allowances; incremental demands represent order-of-magnitude deltas associated with FFG-level capability; "Margin exceeded" denotes structural, power, thermal, or survivability limits breached simultaneously, not a single isolated shortfall. (Source: SMA analysis)

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This is precisely the failure mode observed in both NSC and Constellation: optimistic assumptions about margin, delayed reckoning with integration complexity, and cascading redesign once reality asserts itself.

Containerized mission systems are often invoked as a workaround. That framing substitutes concept for engineering. Containerized systems still require power, cooling, EMC integration, deck strength, shock qualification, and combat-system interfaces. Containerization does not eliminate integration complexity; it defers it, and deferred integration is how "fast and cheap" becomes "late and expensive."

17. The Warning Shot: NSC-11 and the Limits of Institutional Patience

The NSC is often described as "proven." Ten hulls were delivered by HII and are operating globally. Its relevance to the frigate debate lies not in that success, but in the warning embedded in its termination.

NSC-11 was halted early in construction and ultimately canceled due to deficiencies in material conformance and performance. Unlike earlier ships, the program did not pursue renegotiation or corrective rework. The Coast Guard elected to terminate the hull and end production.[25]

This decision was made after ten ships had already been delivered. The design and production system were mature. The determination was that completing NSC-11 would impose unacceptable cost, schedule disruption, and residual risk. NSC-11 therefore represents not a recoverable setback, but a conscious institutional decision to stop when patience was exhausted.

Restarting NSC after NSC-11, while simultaneously imposing Navy standards and a new combat mission, combines production interruption, workforce dispersion, supplier atrophy, and heightened certification scrutiny. From an execution standpoint, stabilizing an active but troubled frigate line would almost certainly require less institutional effort than resurrecting NSC under these conditions.

18. Strategy After the Fact: When Narrative Followed Cancellation

The pivot from Constellation to an NSC-derived FF did not emerge from completed fleet-architecture analysis. It followed a political decision to curtail FFG(X). The sequence matters.

A strategy-led decision of this magnitude would normally be preceded by a force-structure assessment, alternative fleet-mix evaluation, and explicit trade analysis addressing survivability, capacity, and risk acceptance. No publicly released study has concluded that the guided-missile frigate mission is obsolete or that it should be replaced by an FF-only construct. The FF concept did not emerge from a documented analytic process; it emerged as a readily communicable alternative after a visible program failure, without the benefit of a completed force-structure reassessment.[26]

Distributed operations increase, not reduce, the need for survivable, integrated combatants. Removing the frigate layer destabilizes the force. The decision to sole-source the FF reinforces the conclusion that expedience, not strategy, governed the pivot.

The Logical Conclusion

The Navy did not determine that the frigate mission disappeared. It determined that governing Constellation was uncomfortable. The NSC-derived FF functions as an institutional exit ramp rather than a strategy-derived solution. It avoids recommitment while recreating the same failure mode under a different name.

This is not a point of no return. The forces that derailed Constellation were failures of governance and resolve, not of mission necessity. What is required now is not substitution, but resolve.

19. The Road Still Open: Why Recovery Requires Resolve

Tragedy becomes fate only when an institution convinces itself that no alternative remains. The cancellation of the Constellation-class frigate, the erosion of trust between Navy and industry, and the visible fatigue now surrounding the program do not foreclose a rational path forward. They obscure it. What has narrowed the decision space is not technical impossibility, but the accumulation of avoidance.

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History provides guidance here, not as metaphor, but as instruction. There are moments in U.S. defense acquisition when programs reach a point of public failure, political exposure, and institutional exhaustion comparable to where Constellation stood in 2024. In those moments, recovery did not come from substitution or denial. It came from an explicit decision to acknowledge that the original bargain no longer held and to replace it with a new one—openly, deliberately, and with shared ownership of consequence.

The lesson is not that troubled programs must always be saved. It is that they must be judged honestly, against reality rather than fatigue. When recovery has succeeded, it has done so because leadership chose to endure the disruption required to reset baselines, clarify accountability, and recommit to outcomes.

The Constellation-class frigate never received that moment. What would recovery look like now?

First, it would require the Navy to state plainly what has so far been implied but never fully owned: the ship that emerged from cumulative Navy-directed change is no longer the ship that was bid. That admission is not an indictment of any party. It is a prerequisite for integrity. Programs cannot be governed against assumptions that no longer reflect the artifact under construction.

Second, recovery would require a formal, comprehensive re-baseline—technical, schedule, and financial—aligned to the ship as it exists today. This would mean repricing the ships already under contract in a coherent reset that explicitly reconciles Navy-directed change, concurrency rework, and transformed integration complexity, rather than continuing to rely on fragmented adjustments that manage cash flow without restoring alignment.

Third, recovery would require an explicit recommitment by all parties, expressed structurally rather than rhetorically. Stable leadership. Clear decision rights. Escalation paths that function. A governance model that confronts divergence early instead of rewarding quiet accommodation. It would also require the re-establishment of trust as a daily operating condition, not a deferred outcome. That trust must be actively reinforced through consistent decisions, transparent tradeoffs, and timely resolution of disputes. It is as much a function of leadership choices on both sides as it is of the institutional structures that support those leaders and sustain their authority.

This is not a novel requirement. The recovery of the C-17 program required a comparable trust reset—explicitly established at senior levels, reinforced daily through disciplined governance, and sustained by institutional backing on both the government and industry sides. Commitments were made visible through decisions, not assurances, and trust was treated as an operating prerequisite rather than an assumed condition. These are not abstract management preferences; they are the conditions under which complex shipbuilding programs remain governable.

Fourth, it would require Congress to do what it has already signaled a willingness to do: fund the program transparently against a restored baseline. Cost-to-complete mechanisms can keep work moving, but they cannot substitute for a shared understanding of what is being built, why it costs what it does, and how risk is allocated going forward.

There is also an economic dimension to recovery that has gone largely unspoken, but which materially strengthens the case for preserving the Constellation-class program once governance is restored. Unlike a bespoke domestic-only platform, FFG-62 is derived from a frigate design with demonstrated global acceptance. Variants of the FREMM are already in service with multiple allied navies, operating across different mission sets, threat environments, and sustainment regimes. That installed base matters. It establishes credibility, reduces buyer risk, and creates a reference framework that few surface combatants can match.

A stabilized Constellation-class frigate—built on a mature FREMM hull form and integrated with U.S. combat systems, sensors, and weapons—would occupy a unique position in the international market. While U.S. shipbuilding costs are higher than those of many foreign yards, allied nations do not purchase complex warships on hull price alone. They pay for integration into U.S. command-and-control architectures, access to advanced combat systems, interoperability with U.S. and allied fleets, and long-term alignment with U.S. upgrade and sustainment pathways. That premium already exists in other

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domains. There is no structural reason it could not exist here as well.

Export potential should not be treated as the justification for recovery. It is not. But it is a consequential reinforcing factor. A disciplined restart of serial production would not only restore domestic industrial capacity; it would reopen the possibility that FFG-62 becomes a competitive offering for close allies seeking a high-end frigate aligned with U.S. naval operations. That prospect improves the long-term economics of the program, strengthens the industrial base through additional volume, and reduces the per-ship cost burden borne by the U.S. Navy itself.

None of this is possible without first doing the hard work this paper outlines. Export credibility follows stability; it does not precede it. But once stability is restored, the Constellation-class frigate is not condemned to remain a purely domestic, single-customer effort. It can become something more durable: a U.S.-anchored, allied-supported surface combatant program that reinforces both naval capability and industrial resilience over time.

None of this guarantees success. But success was never guaranteed. What it guarantees is something more fundamental: integrity of effort. It preserves the distinction between programs that fail because they cannot work and programs that fail because the institution no longer wishes to endure the work required to make them succeed.

It is in this context that the proposed substitution, pivoting to an NSC-derived frigate, must be evaluated. It is not a hard recovery choice, but a politically convenient one. It avoids the difficult work of restoring alignment, rebuilding trust, and governing the existing program back to health, while introducing long-lasting consequences. Chief among these is the creation of an evergreen mission gap: the loss of a modern, survivable surface combatant capable of operating credibly in contested environments, without a defined, funded, or executable alternative to replace that capability.

The substitution is most often justified on grounds of speed and affordability. Examined on their own terms, neither claim holds.

From a schedule perspective, substituting platforms does not bypass design. It resets it. The moment the Navy imposes the combat-system, survivability, shock, and weapons requirements necessary to approximate Constellation's mission, the NSC ceases to be an existing ship and becomes the starting point for a new surface combatant design. That design must progress through requirements reconciliation, preliminary and critical design, stability and survivability certification, shock qualification, and combat-system integration, much of which must occur in sequence. Any near-term schedule advantage disappears before first steel is cut.

From a certification perspective, the burden is heavier, not lighter. Aegis integration, vertical-launch shock qualification, magazine safety, electromagnetic compatibility, damage-control survivability, and acoustic performance are not transferable attributes. They must be demonstrated, certified, and in many cases rediscovered on a hull never intended to host them. Certification risk does not compress under political urgency; it expands under misalignment.

From an industrial-base perspective, substitution compounds fragility. An NSC-derived frigate would not leverage an existing surface-combatant production line capable of absorbing high-end combat-system integration at scale. It would require new supplier qualification, new workforce learning curves, and new production rhythms, precisely the dynamics the Constellation program was designed to overcome. Rather than preserving hard-won industrial learning, substitution discards it and starts over. This is not course correction. It is misdirection from an unresolved decision failure.

The Constellation-class frigate was not defeated by physics or engineering. It was defeated by the unwillingness to rebaseline, recommit, and endure accommodating to accumulated complexity. Substitution does not cure that condition. It reproduces it under a different name.

The road is still open. But it requires resolve, not avoidance. And the road narrows with every day spent treating deferral as strategy.

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Epilogue: Resolve Under Pressure

The cancellation of the Constellation-class frigate did not occur in isolation. It came at the end of a period in which the United States Navy stepped back—quietly but unmistakably—from two responsibilities that define a military institution's credibility over time: stewardship of its surface-combatant industrial base, and ownership of its own future force design. The retreat on FFG(X) was visible. It was also the second such decision within a single year. The first was more subtle—and in many respects more consequential.

Only months before the frigate decision, the F/A-XX next-generation air-dominance program had yet to transition to Engineering & Manufacturing Development, as Pentagon funding priorities and internal debate over competing sixth-generation efforts delayed contract awards and drew congressional direction, underscoring that the decision authority had moved beyond the Navy's sole control.[27] That move was described publicly as coordination and alignment. In practice, it reflected something deeper: an implicit admission that the service no longer trusted itself to govern sustained technical and programmatic complexity under scrutiny. Taken together, the F/A-XX decision and the truncation of FFG(X) describe a single institutional pattern. They do not reflect a loss of capability. They reflect a loss of institutional resolve—specifically, a reluctance to absorb the political, managerial, and personal cost of governing complexity when stakes are highest.

The significance of this pattern becomes clearest when contrasted with a program that faced comparable—and in several respects worse—conditions, yet was deliberately recovered rather than displaced: the C-17 Globemaster III. By the early-1990s, C-17 was widely regarded as a "problem-plagued" program in crisis. Costs had grown dramatically. Schedules had slipped by years. Performance shortfalls were visible and politically damaging. Congressional patience was thin, and cancellation was openly debated. The prime contractor was under sustained scrutiny, and confidence in the program was badly eroded.

What altered the trajectory of C-17 was not a technical breakthrough or solely a contractual innovation but a change in leadership behavior. Program ownership was elevated rather than diluted. Authority was concentrated rather than dispersed—not to escape responsibility, but to absorb it. Senior leaders on both sides accepted that recovery would require personal engagement under conditions of intense pressure. Oversight did not become more distant; it became continuous. Problems were surfaced early. Assumptions were challenged directly. Neither side retreated into process, contract language, or procedural compliance as a substitute for judgment.

This posture imposed real costs. The government absorbed political risk by recommitting to a program already labeled as troubled and resetting the baseline honestly, in public view. Industry accepted extraordinary scrutiny, internal restructuring, and the obligation to perform under conditions far harsher than those envisioned at award. Recovery was neither quick nor elegant, but it was deliberate—and it succeeded because abandonment was judged to be the worse failure. Within the span of four years, the C-17 became a "model" program and winner of the Collier Trophy awarded for the "greatest achievement in aeronautics."

Nothing about the Constellation-class frigate precluded a comparable course. By late 2024, the program was clearly distressed. Delivery had slipped by years. Costs for the lead ship were projected to exceed the original ceiling price. Weight growth had eroded margins. Design work continued even as steel was erected and welded. Trust between NAVSEA and the shipbuilder was badly strained. These conditions were serious, but they were not unprecedented.

What was missing was not money. Congress demonstrated a willingness to provide additional funding, including cost-to-complete adjustments and industrial-base support. What was missing was not engineering competence; the ship remained buildable. What was missing was not precedent; recovery models existed and were well understood by senior acquisition leaders. What was missing was the willingness to state plainly what recovery required: that the original premises had been broken, that they needed to be reset openly, and that the consequences would have to be owned jointly rather than managed incrementally.

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Instead, responsibility diffused. Reviews multiplied without clear judgment. Options were presented without recommendation. Decision rights blurred. The program drifted into a condition where continuation appeared politically risky and cancellation appeared inevitable—not because it was the correct answer, but because it minimized near-term exposure. This distinction matters. The Navy did not lack alternatives. It lacked the will to choose the most demanding one.

The contrast with C-17 is therefore not aspirational; it is diagnostic. That program survived because senior leaders accepted that governing complexity under pressure was their responsibility, not a burden to be avoided. They chose engagement over distance, recommitment over substitution, and judgment over inertia. With Constellation, that choice was deferred, allowing the outcome to emerge by default rather than through deliberate intervention. In that sense, FFG(X) was not an isolated failure, but the second confirmation in 2025 that institutional resolve had yielded under pressure.

This pattern is visible within surface combatant programs themselves. The DDG-51 destroyer class has undergone multiple, non-trivial redesigns—from Flight IIA through Flight III—as evolving mission demands and combat-system requirements outgrew original platform margins.[28] In the case of Flight III, the integration of the SPY-6 radar imposed tightly coupled stresses across power generation, cooling, weight, and stability that could have been cited as evidence that the hull had reached its limits. Instead, the Navy chose to re-baseline the program, accept cost and schedule consequences, and compel resolution within the class rather than redefine the mission or substitute a lesser capability. The lesson was not that adaptation was painless, it was that when the mission was judged essential, resolve governed the outcome.

That is the tragedy—not that the program encountered difficulty, which is endemic to endeavors of this scale, but that when the moment arrived that required resolve, the system selected withdrawal as prudence. That choice will shape behavior long after the particulars of the program fade. Industry will internalize the asymmetry of risk. Congress will remember the retreat from stated intent. Future program managers will absorb the lesson that when difficulty peaks, disengagement is acceptable rather than exceptional.

If anything, the conditions that tested institutional resolve in the Constellation program are becoming more common. As defense acquisition authority continues to centralize and portfolio-level tradeoffs accelerate, programs will succeed or fail less on initial design choices than on whether institutions are willing to sustain ownership and intent under pressure.

This paper is not an argument for indulgence, nor an exercise in fault-finding. It is an argument for responsibility grounded in a reconstruction of how a program that remained recoverable for an extended period became institutionally untenable. The Navy should now do what should have been done earlier: stop substituting platforms to avoid accountability, confront the reality created by cumulative decisions, and govern forward deliberately rather than defensively. There is no low-risk path remaining. The choice is between correcting Constellation with intent and discipline, or accepting the permanent loss of warfighting capability and the industrial consequences of abandoning it.

The tragedy of the Constellation-class frigate is not that it failed. It is that the Navy came to believe it could no longer make the program succeed—and governed accordingly. That belief, not the ship, is what rendered the program untenable. It is also reversible, but only through sustained leadership, public ownership, and personal commitment under scrutiny. This path will be uncomfortable and costly. That is not a flaw. It is the unavoidable price of governing complexity rather than retreating from it—and the central lesson this case offers for any future defense acquisition where success depends as much on stewardship as on engineering rigor.

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Author's Statement of Independence and Disclosure

This paper was prepared independently and without financial sponsorship, direction, or review by any government agency, contractor, or stakeholder. The authors were not compensated by any party with a financial interest in the Constellation-class frigate program for the preparation of this paper.

SMA provided advisory support to Fincantieri during the FFG(X) competition, including assistance with pursuit strategy and proposal development. SMA did not support program execution after contract award, did not participate in program management, and had no role in subsequent design decisions, production activities, or contractual negotiations.

All conclusions presented here are derived from publicly available information, professional experience, and independent analysis intended to inform constructive debate. The facts are presented to speak for themselves.

Sources, Methodology and Intent

This paper is based on SMA's independent analysis of publicly available budget materials, contract actions, program documentation, and contemporaneous reporting, informed by discussions with current and former government and industry professionals familiar with the Constellation-class frigate program and related acquisition decisions.

The analysis reflects SMA's good-faith assessment of the program's evolution, underlying structural dynamics, and decision context. It is not intended to assign personal fault or attribute motive to individual officials or organizations. Rather, it examines institutional choices, governance structures, and incentives as they manifested over time.

To the best of SMA's knowledge, the factual characterizations presented are materially accurate. Any errors or omissions are unintentional and do not alter the central analytical conclusions of the paper.

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To learn more about SMA's strategy-led, outcomes-based approach to acquisition and program governance, or to download a copy of this article, go to The Constellation Class Frigate Tragedy. Contact SMA to begin the conversation.

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Endnotes

[1] By the mid-1990s, the C-17 Globemaster III faced severe cost growth, schedule delays, and public scrutiny. Cancellation was actively debated. Recovery occurred only after senior leadership elevated ownership, rebaselined the program honestly, and engaged continuously with industry. Authority was concentrated rather than diffused. Problems were confronted directly. Accountability was mutual. The program survived not because it was easy, but because abandonment was deemed unacceptable. The relevance of C-17 lies not in analogy, but in demonstrated behavior under stress.

[2] The retirement of the Oliver Hazard Perry–class frigates, completed in 2015, removed from the fleet a category of ship that had performed a critical balancing function for decades. Perry-class frigates were not capital ships, but they were essential: capable of escorting high-value units, conducting anti-submarine warfare, maintaining forward presence, and performing maritime security missions without consuming destroyer readiness.

Their retirement created a structural gap. Guided-missile destroyers increasingly filled missions for which they were neither cost-effective nor operationally optimized, accelerating wear on the fleet and reducing availability for high-end conflict. At the same time, the Littoral Combat Ship (LCS)—despite extensive investment—proved unable to serve as a survivable, multi-mission combatant in contested environments, particularly in anti-submarine warfare and integrated air defense roles.

This imbalance was repeatedly acknowledged in Navy force-structure assessments, Government Accountability Office reviews, and congressional testimony throughout the late 2010s. The requirement for a frigate was therefore not speculative or aspirational. It was a response to a documented and persistent operational shortfall.

[3] A parent design is not simply a prior drawing or a reused hull form. In naval shipbuilding, parent refers to a design that has already been built, integrated, tested, deployed, and refined through operational service and serial production. The value of parent lies not in aesthetics or familiarity, but in embedded learning.

A mature design carries with it validated weight margins, known power and cooling demands, proven arrangements for survivability and damage control, integrated combat systems with established interfaces, and production sequences that have been optimized through repetition. These attributes reduce integration risk and improve predictability—especially in early ships of a class.

Critically, parent only delivers its benefits if commonality is preserved. Once deviations accumulate beyond a certain threshold, the program begins to incur the risks of a new design without the freedom or clarity of a clean-sheet approach. This is why parent-based programs demand exceptional discipline in managing change.

[4] The discussion above refers to the U.S. Navy's LCS program, including both the Freedom-class and Independence-class variants. LCS was, in part, intended to address the post–Oliver Hazard Perry–class gap in small surface combatants, though it was not conceived as a true frigate replacement. Its concept relied heavily on modular mission packages—particularly for surface warfare and anti-submarine warfare—that were expected to enable rapid reconfiguration and cost-effective adaptability.

In practice, the program encountered substantial challenges. Mission module development lagged ship construction, promised combat capabilities were delayed or never fully realized, and concurrency between design, production, and concept refinement drove cost growth, schedule delays, and operational limitations. Over time, these issues attracted sustained criticism from the GAO, the Navy, and Congress, culminating in the curtailment of the program and early retirement of several hulls.

Today, LCS hulls continue to serve in limited roles, but without fulfilling the original vision of a modular, multi-mission small surface combatant. The program's experience reinforced hard-won lessons about the risks of clean-sheet naval combatant design—particularly when paired with unproven operational concepts and high concurrency.

These lessons directly informed the Navy's subsequent approach to FFG(X). Rather than repeating a clean-sheet design, the Navy deliberately anchored the frigate program in an operationally proven parent design, explicitly to avoid the design instability, production learning loss, and capability shortfalls experienced under LCS. In this respect, the decision not to clean-sheet FFG(X) reflected institutional learning and represented a sound corrective response to prior experience.

[5] Note that in the context of the FFG(X) program, the Navy defined a "parent design" not by age or cumulative operating hours at sea, but by demonstrated suitability for the frigate mission set through serial production and operational use. Heritage, as evaluated in the competition, required validated weight margins, known power and cooling demands, proven survivability arrangements, integrated combat systems with established interfaces, and production sequences refined through repetition under comparable warfighting conditions. By this definition, the National Security Cutter (NSC) does not qualify as a heritage frigate design.

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The NSC is a mature and successful platform for its intended missions: long-endurance patrol, maritime security, law enforcement, and presence operations in permissive environments. Its extensive operating history validates seakeeping, endurance, reliability, and habitability for those roles. That experience represents genuine heritage for Coast Guard missions.

However, the NSC has never operated with the systems, loads, or certification regimes that define a modern frigate. It has not integrated a vertical launch system, nor been qualified for missile launch shock, dense electromagnetic environments, sustained high-power radar and fire-control operations, Navy survivability standards, or acoustic performance suitable for high-end anti-submarine warfare. Its operating history does not include the structural, electrical, thermal, or survivability stresses imposed by these requirements.

Operating hours alone do not create relevant heritage if the governing failure modes have never been experienced. A platform earns heritage only for the missions and conditions it has actually endured. Importantly, the Navy recognized this distinction during the FFG(X) competition. Huntington Ingalls Industries' proposal, derived from the NSC, explicitly acknowledged that substantial modification would be required to meet frigate requirements. The proposal did not assert that the NSC already embodied those capabilities, but rather that they could be engineered into the design. The Navy evaluated that approach accordingly. While compliant in concept, the NSC-derived proposal was assessed as involving significantly greater design change, integration risk, and uncertainty than proposals based on frigate designs already proven in serial production. In comparative scoring, it fell well below the FREMM-based design in technical maturity, producibility, and risk posture.

For this reason, an NSC-derived frigate would not represent a shortcut or acceleration path. Once the necessary combat systems, survivability standards, and growth margins are imposed, the NSC ceases to function as a derivative platform and becomes the starting point for a new surface combatant design—subject to the same design churn, certification burden, schedule risk, and cost growth that have historically characterized clean-sheet efforts.

[6] The FFG(X) Detail Design and Construction (DD&C) contract awarded in 2020 provided for the construction of six ships under the base contract, with additional ships contemplated through priced options and follow-on production phases. Ships #7 through #10 were structured as contract options, with subsequent hulls implied as part of a longer-term serial production plan contingent on performance, funding, and Navy exercise of options. This structure reflected the Navy's intent to establish a stable production line following successful execution of the initial ships.

[7] Fincantieri made investments totaling $900 Million to $1 Billion in different tranches associated with post-acquisition of the yard, readiness, LCS, export combatant enablement (MMSC), and FFG(X). Nearly half of the private investment was for FFG production.

[8] A Fixed-Price Incentive (Firm Target) (FPIF) contract establishes a target cost, target profit (fee), and a ceiling price. Cost overruns are shared between the government and the contractor up to the ceiling, beyond which the contractor bears full responsibility; cost underruns are similarly shared, rewarding efficiency. This structure is intended to impose discipline and incentivize execution, and it functions best when the design is stable, requirements are well understood, and the scope of work is unlikely to change materially. It is far less forgiving of cumulative government-directed change.

In the FFG(X) solicitation, the Navy specified a highly structured FPIF construct with ship-specific parameters, while simultaneously allowing offerors discretion in how aggressively to position themselves within those bounds. For all ships, the RFP prescribed a maximum allowable target profit of 14% of fee-bearing target cost. While offerors were permitted to propose lower fees, competitive game theory strongly favored bidding at or near the maximum, as fee reductions did not improve the Total Evaluated Price (TEP) and merely reduced contractor return without evaluation benefit.

For Ship 1 (Lead Ship), the RFP required: 1) Ceiling price: Not to exceed 125% of target cost; 2) over-target cost share: 70% Government/30% Contractor; and under-target cost share: 50% Government/50% Contractor.

For Ship 2, the ceiling price remained capped at 125% of target cost, but the over-target cost share shifted to 60% Government/40% Contractor, with the under-target share remaining 50/50.

For Ships 3 through 10, the RFP further tightened risk sharing by requiring 50% Government/50% Contractor shares for both over-target and under-target scenarios, while retaining the 125% not-to-exceed ceiling price cap. In addition, the solicitation required that each successive ship's proposed ceiling price percentage be less than or equal to that of the prior ship, reinforcing the expectation of learning-curve improvement and increasing pricing confidence over time.

Critically, while the RFP established 125% of target cost as a maximum not-to-exceed ceiling, it explicitly allowed offerors to propose lower ceiling percentages at their discretion. The Total Evaluated Price (TEP) was defined as the sum of the proposed ceiling prices for the first ten ships, which were the only ships formally priced for evaluation purposes.

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This construct was likely intended to elicit credible expressions of design maturity and production confidence by encouraging offerors to voluntarily compress both target costs and ceiling margins. In practice, however, the interaction of (1) a capped fee, (2) progressively harsher share ratios, and (3) TEP driven directly by proposed ceiling prices created a powerful incentive to signal confidence through aggressive ceiling compression—effectively embedding risk acceptance into the evaluation metric itself. Once design stability eroded after award, this structure magnified the economic consequences of cumulative government-directed change rather than absorbing it.

[9] Becoming a peer builder of complex surface combatants requires extraordinary and largely irreversible investment. Shipyards must modernize facilities, reconfigure production lines, qualify suppliers, implement advanced digital design and manufacturing tools, and develop a skilled workforce capable of executing demanding naval standards.

These investments are made on the assumption of continuity. A modern shipyard cannot pivot easily to alternative missions, and specialized labor cannot be redeployed without loss. Entry into surface-combatant construction therefore carries asymmetric risk for non-incumbents: capital and workforce exposure precede certainty of return. The FFG(X) program was explicitly designed to overcome this barrier by offering a credible production horizon. Its cancellation invalidated that investment logic.

[10] In complex manufacturing programs, early units are expected to be less efficient. Learning curves—improvements in labor productivity, material flow, and integration—are realized only through repetition. This is especially true in shipbuilding, where each hull provides feedback that improves the next. The economic logic of the Constellation program assumed that early inefficiencies would be amortized across a class of ships. Cost reduction, schedule improvement, and industrial-base resilience were expected to emerge over time, not in the first hull. Truncating production after a small number of ships destroys this logic. It locks in early inefficiency while forfeiting the benefits of learning, leaving the program appearing expensive precisely because it was never allowed to mature.

[11] The COVID-19 pandemic disrupted heavy industry worldwide. Shipyards faced acute labor shortages, extended training timelines, increased absenteeism, and supply-chain interruptions that delayed materials and drove cost growth. While shipyards were designated essential and remained operational, relief mechanisms were uneven and often ill-suited to fixed-price production contracts already under execution. These effects were systemic, not program-specific, and affected multiple naval shipbuilding efforts during the same period. Understanding these impacts is essential to distinguishing execution challenges from governance failures.

[12] As GAO has reported, the Constellation-class design progressively diverged from the original FREMM parent design as unique Navy requirements and late design decisions accumulated. The program began construction before completing a stable, mature design—a departure from leading commercial shipbuilding practices that emphasize design completion prior to production start, and one that "jeopardized" the Navy's intent to leverage foreign design maturity. Design instability contributed to weight growth and construction delays because large portions of the ship's functional design remained incomplete even well after construction had begun.

GAO found that design instability drove substantial weight growth, with the lead ship forecasted to be at least 759 metric tons (nearly 13%) heavier than initial estimates—a change attributed in part to underestimating the impact of applying U.S. technical and survivability requirements to the foreign design. This weight growth has the potential to affect performance attributes such as speed and future capability growth.

Open reporting based on GAO analysis notes that these accumulation effects have reduced commonality dramatically: media reporting based on GAO analysis indicated that the design had shifted so far from its FREMM origins that commonality estimates fell from roughly 85% to about 15% as design changes mounted.

Specific design modifications reported by program sources included structural and system changes (such as alterations to hull dimensions, topside layout, distribution systems, and machinery control systems) associated with meeting U.S. survivability standards and systems integration requirements—changes that, when combined with premature construction and incomplete design, contributed to instability and risk.

CRS reporting on the Constellation class also documents the consequences of these changes. As of early 2024, the program had experienced delivery delays and weight growth tied to design maturation challenges and the adaptation of a foreign hull to U.S. requirements, making design stability and producibility ongoing issues for oversight and future shipbuilding planning.

[13] Ibidem

[14] Incremental design changes often appear manageable in isolation. Their cumulative effect can be transformational. Weight growth reduces margins, forcing redesign of structure, power distribution, cooling, and stability. Integration complexity compounds. Production sequences are disrupted. In the Constellation program, internal assessments indicated that commonality with the heritage design fell well below levels assumed at award. At

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that point, the ship effectively became a new design—without being treated as one.

[15] Goddard, C. and A. Patel, "Shipbuilding Contract Risk Sharing," SMA, Inc. July 16, 2024, https://smawins.com/news/shipbuilding-contract-risk-sharing/

[16] Cost-to-complete appropriations allow work to continue without formally resetting a program baseline. They address cash flow, not alignment. Absent rebaselining, such funding becomes palliative: it sustains activity while avoiding accountability for cumulative change. It does not restore trust or predictability, and it often masks rather than resolves underlying misalignment.

[17] Under FAR Part 16, Fixed-Price Incentive (Firm Target) contracts place increased cost risk on the contractor relative to cost-reimbursement arrangements, with liability shared between target and ceiling and overruns beyond the ceiling borne by the contractor absent contract modification. Target costs and ceiling prices do not adjust automatically as technical reality evolves; they change only through contract modifications and equitable adjustments.

GAO shipbuilding reporting acknowledges that target costs and ceiling prices can be revised through contract modifications, reflecting a recognized mechanism for realigning incentives when government-directed changes materially alter the scope or complexity of the work. GAO has also noted that in incentive-based shipbuilding contracts, unresolved changes and delayed definitization can allow execution to continue temporarily under an increasingly misaligned pricing baseline.

However, GAO and DOW acquisition guidance consistently emphasize that for major Programs of Record—particularly those delivering strategically significant combat capabilities—sustained execution under materially altered technical conditions without a corresponding contractual reset increases the risk of cost instability, schedule disruption, and loss of incentive effectiveness. DOW and NASA incentive-contracting guidance explicitly contemplates that equitable adjustments may alter share ratios, targets, and ceilings when the underlying assumptions of the incentive structure no longer hold.

Accordingly, while proceeding without immediate repricing is procedurally permissible under FPIF, prolonged reliance on this posture once government-directed changes become cumulative and material is atypical for major, high-visibility defense acquisition programs and is generally viewed by oversight bodies as a risk condition rather than a steady-state management approach. (Sources: FAR Subpart 16.2; GAO shipbuilding and incentive-contracting reports; DAU Acquipedia and DOW/NASA Incentive Contracting Guide.)

[18] Concurrency occurs when construction begins before design is complete. It is inherently risky because unresolved design issues translate directly into rework, cost growth, and schedule disruption. Programs sometimes accept concurrency to preserve schedule or maintain workforce continuity, but successful recovery requires early recognition of misalignment and willingness to rebaseline. Without reconstitution, concurrency amplifies instability rather than containing it. Concurrency did not doom the Constellation program. Failure to confront its consequences did.

[19] In capital-intensive defense markets characterized by a limited number of long-duration programs, incumbent firms that lose a major competition frequently shift from pre-award capture strategies to post-award defensive strategies. These approaches are not aimed at overturning the award directly—an outcome that is rarely feasible—but at limiting the scale, duration, or survivability of the program in order to protect incumbent market leadership and reopen future competitive space.

A common tactic in such situations is the creation—or exploitation—of a decision window in which uncertainty about execution, requirements stability, or industrial capacity can be reframed as a rationale for structural alternatives. In the case of the Constellation-class frigate, two developments were particularly salient.

First, the Navy's issuance of a sources-sought notice for a second FFG production yard—while framed publicly as a risk-reduction measure—functioned as a powerful signaling event. In practice, the timing of the RFI occurred before design stabilization, before learning-curve benefits could be realized at Marinette, Wisconsin, and at a moment when no U.S. yard other than the incumbent surface-combatant builders had realistic near-term capacity to absorb the work. The effect was to introduce uncertainty into the program's continuity, disrupt supplier and workforce confidence, and implicitly reopen questions about whether the original production construct should proceed at all. Even though no second-yard award followed, the RFI itself altered stakeholder perceptions and weakened the assumption of serial production.

Second, the John Young–led senior review created a formal venue in which options involving program truncation could be presented as prudent governance rather than as strategic retreat. Options that contemplated completing Ships #1 and #2 while canceling Ships #3 through #6 normalized the idea that the Constellation could be treated as a limited pathfinder effort rather than as a scalable production program. For an incumbent builder with an existing, producible alternative—particularly one derived from an already-fielded hull form—this framing materially improved the prospects for a future pivot.

Within that context, advocacy for reframing the requirement from a guided-missile frigate (FFG) to a less

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demanding frigate (FF) takes on strategic coherence. Such a reframing reduces combat-system integration demands, survivability requirements, and certification burdens in ways that align more closely with NSC–derived designs already in production at Huntington Ingalls Industries. Importantly, this approach does not require overt opposition to Navy objectives. Instead, it advances an ostensibly pragmatic narrative: fewer requirements, faster delivery, lower risk—while simultaneously undercutting the rationale for sustaining a new entrant as a peer surface-combatant builder.

These dynamics are well documented in both defense-industrial and commercial competition literature. They do not rely on misconduct, coordination, or explicit intent. Rather, they emerge predictably when an incumbent faces displacement in a market with high fixed costs, limited slots, and long program lifetimes. In such cases, program curtailment becomes the rational defensive objective: by truncating the program, reopening alternatives, and delaying irreversible commitment, the incumbent preserves optionality and restores structural advantage.

By contrast, first-time prime contractors entering U.S. Navy Major Defense Acquisition Programs often underestimate the importance of a proactive, external "keep-sold" strategy that extends well beyond technical execution. Assumptions that program performance alone will sustain institutional support are frequently shaped by acquisition cultures—such as those in allied navies—where political, industrial, and operational alignment is more centralized and adversarial competition is less persistent. In the U.S. system, however, the absence of an active keep-sold posture leaves new entrants particularly exposed during moments of stress, when incumbent incentives and institutional uncertainty intersect.

[20] Navy survivability standards govern how a ship withstands damage and continues fighting. They encompass compartmentalization, redundancy, shock hardening, firemain separation, and damage-control zoning. These standards drive internal volume, layout, weight, and cost. They cannot be meaningfully added after construction without extensive redesign. A ship built to different standards cannot be upgraded cheaply to meet them.

[21] Even when deliberately constrained to an FF-level mission—excluding area air defense, Aegis, or long-range interceptors—the adaptation of the National Security Cutter (NSC) to a Navy surface combatant role requires crossing multiple non-linear technical and certification thresholds that the baseline cutter was not designed to absorb. These thresholds are not matters of weapons count or mission ambition; they are structural transitions that impose redesign once crossed.

First, naval survivability requirements represent a step-function change rather than an incremental enhancement. An FF must meet shock qualification standards for hull structure, equipment foundations, and permanently installed combat systems. Shock is binary: a foundation is either qualified or it is not. Achieving compliance requires structural reinforcement, redesigned foundations, equipment isolation, and requalification across affected systems. In parallel, combatant survivability standards require compartmentation, redundancy, and damage-control zoning designed for sustained combat damage, not peacetime maritime law enforcement. These changes fundamentally alter hull arrangements and system routing and cannot be phased in gradually.

Second, power generation and cooling demands for even "light" combat systems exceed the NSC's original design assumptions. Fixed naval radars, electronic warfare systems, and a combat management system impose continuous, conditioned electrical loads and substantial thermal rejection requirements. These demands drive generator sizing, switchboards, power distribution architecture, redundancy philosophy, and chilled-water capacity. Once introduced, original electrical and thermal margins no longer close, forcing redesign of power and cooling systems. This dynamic mirrors the Constellation-class experience, where integration difficulty emerged not from weapons quantity but from power, cooling, and margin arithmetic.

Third, weight-high growth remains a persistent and compounding risk. Even without vertical launch systems, an FF requires permanently installed sensors, masts, electronic warfare apertures, and self-defense weapons that add weight high and outboard. The NSC's stability margins were optimized for endurance, aviation operations, and seakeeping, not combat growth. The Navy's own notional figures indicating an approximate 250-ton displacement increase relative to the baseline NSC suggest early margin consumption. Historically, such weight-high growth drives cascading compensation measures—ballast, structural reinforcement, redistribution—that introduce secondary penalties to performance and schedule.

Fourth, containerized mission systems do not eliminate integration risk; they relocate it. Containerized weapons or sensors must still meet shock, electromagnetic compatibility, safety, and survivability requirements. They impose deck-loading constraints, affect stability and damage-control zoning, and require secure power, cooling, and data integration. Containerization often defers integration and certification decisions to later program phases, where corrective action is more expensive and options more constrained. This logic echoes prior Navy experience with modular combat concepts, where deferred integration translated into schedule and cost instability rather than risk reduction.

Finally, certification and safety requirements dominate schedule regardless of capability tier. Even an FF must

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complete weapons safety certification, radar radiation hazard analysis, shock and electromagnetic interference testing, and combat-system integration and validation. These activities involve independent authorities, instrumented testing, failure resolution, and re-test cycles that define program critical paths. Reducing mission ambition lowers scope but does not remove these programmatic gravity wells.

Taken together, these factors demonstrate that redesignating the ship as an FF rather than an FFG reduces mission scope but does not eliminate the need for structural redesign, system re-integration, or certification. The categories of risk that undermined the Constellation-class frigate—survivability standards, power and cooling margins, weight growth, integration debt, and certification burden—remain present, arriving through a different design pathway but with comparable potential to disrupt cost, schedule, and credibility if underestimated.

[22] GAO and CRS reviews of the NSC program document significant cost growth and schedule delays on the lead ships (NSC-1 and NSC-2), driven by design changes, structural deficiencies, and underestimated integration complexity. Early program estimates for unit cost increased substantially as weight growth and structural reinforcement requirements were discovered after construction had begun, necessitating contract renegotiations and post-delivery modifications.

[23] Following the discovery of structural and design deficiencies on the first two NSCs, the Coast Guard renegotiated contracts and absorbed additional costs to stabilize the class. Oversight reports note that recovery required sustained institutional patience, acceptance of sunk costs, and continued funding to correct deficiencies rather than terminate the program, masking how narrow the margin for recovery had become.

[24] The Navy's depiction of an NSC-based FF, including an aft UAS deck with armed unmanned systems, containerized mission payloads, Mk 49 RAM, a 57 mm bow gun, a 30 mm gun, Nulka soft-kill launchers, SLQ-32(V)6 electronic warfare system, and SPS-77 air-search radar, was presented publicly at the Surface Navy Association (SNA) National Symposium in January 2026. See Stew Magnuson, "*SNA News: Navy Commits to Fielding New Frigate by 2028*," National Defense, January 16, 2026, which includes the Navy graphic and senior-official statements regarding the proposed FF configuration and schedule.

[25] The cancellation of National Security Cutter hull 11 (NSC-11) followed the discovery of serious material nonconformance issues, including deficiencies in steel quality and fabrication practices that undermined confidence in corrective rework. After assessing the cost, schedule impact, and residual risk of remediation, the Coast Guard elected to terminate the hull early in construction rather than pursue corrective action. This decision was taken after ten cutters of the class had already been delivered, underscoring the severity of the nonconformance and the institutional judgment that completion could not be achieved on acceptable terms. See Department of Homeland Security, Office of Inspector General, *Coast Guard Did Not Adequately Ensure Shipbuilder Compliance with Material Quality Requirements*, OIG-22-70 (2022). See also U.S. Government Accountability Office, *Coast Guard Acquisitions: Actions Needed to Address Persistent Management and Oversight Challenges*, GAO-23-106116, which documents related quality-assurance and shipbuilder-oversight deficiencies across major cutter programs.

[26] No publicly released force-structure or maritime-strategy study by the Center for Naval Analyses (CNA), the Naval War College, the Center for Strategic and International Studies (CSIS), or other major U.S. defense analytic institutions has concluded that the guided-missile frigate mission is obsolete or that it can be replaced by an FF-only construct. To the contrary, unclassified analyses supporting Navy Force Structure Assessments (FSAs) conducted by CNA have consistently emphasized the requirement for a balanced surface force that includes combatants below the destroyer class but above patrol and presence vessels, particularly for anti-submarine warfare, escort, and distributed operations in contested environments (see CNA support to Navy FSAs, summarized in unclassified Navy force-structure reporting).

Independent analyses by CSIS reach similar conclusions. CSIS force-structure studies examining high-low fleet constructs and Distributed Maritime Operations argue that the Navy requires a credible mid-tier surface combatant to sustain presence, perform escort and sea-control missions, and avoid over-tasking large surface combatants such as DDG-51s (see Bryan Clark et al., *Restoring American Seapower: Force Structure and Modernization Priorities for the U.S. Navy*, CSIS, 2017; Bryan Clark et al., T*he Future Fleet: A Requirements-Based Approach*, CSIS, 2020; and CSIS, U.S. Navy Force Structure and Shipbuilding Plans, annual series).

Navy and Naval War College concept documents on Distributed Maritime Operations (DMO) likewise assume the availability of survivable, networked small surface combatants capable of independent and dispersed employment. *Advantage at Sea* (Department of the Navy, 2020; updated 2022), *Surface Warfare: The Competitive Edge* (U.S. Navy, 2017), and unclassified Naval War College writings on DMO and distributed surface warfare all implicitly rely on frigate-class or equivalent platforms to execute escort, ASW, and forward sea-control missions; none argue that these roles can be fulfilled by lightly armed patrol-type ships alone.

In this context, the absence of any publicly released analytic study concluding that an FF-only approach is suffi-

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cient—or that the frigate mission should be eliminated—is notable. The pivot from FFG(X) to an NSC-derived FF therefore reflects a post-hoc programmatic rationalization rather than the outcome of an authoritative reassessment of maritime strategy, force-mix requirements, or distributed naval operations.

[27] For a contemporaneous account of how decision authority for the Navy's F/A-XX program migrated beyond service control during 2024–2025—including public statements by senior Navy leadership acknowledging that the decision rested "at the secretary-level and above," the role of OSD and OMB in constraining transition to Engineering & Manufacturing Development, and the resulting loss of Navy narrative control—see Ajay Patel, *The Silent Dogfight: Inside the Battle That Is Shaping the Future of U.S. Airpower in the Pacific* (SMA, Inc., July 21, 2025, https://smawins.com/news/6th-generation-fighter-dog-fight/). The paper documents how F/A-XX remained effectively confined to pre-EMD activity despite completed proposals, as congressional action ultimately adopted an OMB-aligned position that deferred full program commitment.

[28] The DDG-51 program provides a clear example of institutional resolve applied within the surface-combatant domain. The transition from Flight IIA to Flight III required substantial redesign and rebaselining as combat-system requirements—most notably the integration of the AN/SPY-6 Air and Missile Defense Radar—exceeded the original power, cooling, weight, and stability margins of the hull. Rather than redefining the mission or substituting a lesser platform, the Navy elected to preserve the destroyer's role in integrated air and missile defense by accepting cost growth, schedule extension, and ship-wide engineering changes. These decisions are documented in Navy budget justification materials and acknowledged in GAO assessments of the DDG-51 Flight III program, which note the scope of hull, power-generation, and cooling modifications required to accommodate SPY-6 while maintaining survivability and performance requirements. See U.S. Navy, Fiscal Year Budget Estimates, Shipbuilding and Conversion, Navy (SCN) (various years); Government Accountability Office, Navy Shipbuilding: DDG-51 Flight III Destroyer Challenges and Risks, GAO-19-321 (2019); and GAO, *Navy Shipbuilding: Actions Needed to Address Cost Growth and Schedule Risk*, GAO-20-588. The DDG-51 case illustrates that when a mission is judged essential, the Navy has historically chosen to resolve technical and programmatic challenges within the class rather than retreat from the requirement.

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