**THE HISTORY BEHIND THE MODELS**

# THE F-111 AARDVARK: LEGEND OR LEMON?

**BY E. L. MOTLEY**

When President John F. Kennedy took office in 1961, two major aircraft proposals were on the desk of his new Secretary of Defense, Robert S. McNamara. The Air Force wanted a supersonic all-weather tactical strike bomber to replace the F-105 Thunderchief. At the same time, the Navy was looking for a carrier based interceptor which would eventually replace the F-8 Crusader and the F-4 Phantom. The two projects gave every indication of being very involved and expensive.

Before his appointment as defense secretary, McNamara was a Harvard business professor and the president of Ford Motor Company. At Ford, he had a reputation for streamlining the automaker's operations, improving efficiency and reducing expenses. Kennedy hoped McNamara could implement the same improvements at the Pentagon. Although the missions and requirements for the USAF strike bomber and the Navy interceptor were vastly different, McNamara believed both services' specifications could be combined into one common airframe, saving much development time and money. He requested designs for a supersonic aircraft which could bomb targets at night or in any weather yet operate from carriers and perform as a fighter.

By December, 1961, Boeing, General Dynamics, Lockheed, McDonnell, North American and Republic submitted proposals for the new plane, now designated "TFX" (Tactical Fighter Experimental). None of the proposals met all of the specifications for the new plane, but the two best were Boeing's and General Dynamics'. The Boeing and General Dynamics designs featured variable-geometry ("swing") wings which met the USAF's need for take-offs and landings on all types of runways and the Navy's requirement of carrier compatibility. The Air Force preferred Boeing's design, but neither design impressed the Navy. Pentagon review of both proposals stretched through 1962. Final evaluation reports submitted in the fall of 1962 recommended that Boeing be given the nod as the winning TFX design. Boeing's TFX was cheaper than General Dynamics', weighed less, and was considered more suitable for Navy use.

On November 24, 1962, Secretary McNamara shocked everyone by announcing that the lucrative TFX contract would go to General Dynamics. Called before Congress to

defend his decision, McNamara explained that General Dynamics' design shared far more common parts between the Air Force and Navy versions, was more maneuverable, and was better in a supersonic dash and in penetrating hostile airspace. He also thought the General Dynamics design would be easier to produce. However, for many observers, the unsaid but highly suspected reason for McNamara's decision was that General Dynamics was based in Texas, the home state of Washington's most notorious "arm twister," Vice-President Lyndon Johnson.

Unfortunately for the Secretary of Defense, the Air Force, the Navy, General Dynamics, Grumman (General Dynamics' partner for the Navy version), and American taxpayers, the controversy over TFX was just beginning. The Air Force version was designated the F-111A and the Navy's version the F-111B. A reconnaissance version, the RF-111, was also planned. Hopefully, orders from the United Kingdom, Australia and other allies would follow. But over the next few years, everything would go sideways with the entire F-111 project. The F-111B would be cancelled, the RF-111 recon version shelved, and the F-111A would be considered hexed.

Problems began almost immediately. In retrospect, the expectations may have exceeded the available technology. The F-111 was an extremely sophisticated aircraft for the pre-computer, slide rule driven engineering of the early 1960's. Along with its novel swing wings and space age avionics, the F-111 had many still untried features. There were new radars to seek distant targets and to guide the plane at high speed and at low level in the dark and in bad weather. An escape module replaced ejection seats for the two-man crew. A highly advanced air-to-air missile (which would become the AIM-54 Phoenix) was planned for the Navy's F-111B. And the new Pratt & Whitney TF30 jet engines ordered for the F-111 were the first attempt at using afterburning turbofans in a supersonic military aircraft.

Wind tunnel and flight testing showed the F-111 to have serious drag and stability issues. Ongoing engine problems also plagued the F-111. The first generation TF30 turbofans were underpowered and prone to stalling. Many of the stall problems were finally resolved by several revamps of the F-111's jet intakes and engine modifications. However, repeated design changes to the airframe and powerplant escalated costs and delayed production. While the F-111's development crept and costs spiraled, several test flight crashes drew scathing media coverage. The seemingly endless setbacks made the entire F-111 program even more politically charged. By 1966, the F-111 was increasingly derided as "McNamara's Folly" and a "lemon."

Complicating matters further was McNamara's dogged insistence upon "commonality" of the Air Force and Navy versions. Trying to squeeze into one aircraft what the Air Force needed and what the Navy needed resulted in a plane that pleased neither service and couldn't perform the missions required by either. The Navy remained very unsatisfied with their F-111B.

Despite continuing efforts to make the naval F-111B lighter and suitable for deployment aboard carriers, the plane remained way too heavy. The F-111B's side by side crew seating created visibility issues in what was supposed to be a "fighter." And by 1968, the intensifying air war in Vietnam showed that a large missile-armed standoff "fighter" with no internal gun, no dogfighting ability, and dubious carrier handling qualities was impractical for the Navy. Congress cut off funding for the F-111B in July, 1968. The Navy's F-111B program ended after six years, seven planes (three of which crashed), delays to the F-111A's production, and the expenditure of $377,700,000.00. Fortunately, Grumman was able to incorporate much of the F-111B's technology into the F-14 Tomcat, but that's a story for another day.

Finally, in June, 1967, the USAF took delivery of their first production F-111A's. However, the F-111A was still far from a perfected product ready for squadron service. Unwisely, the Pentagon made a political rather than military decision to send some F-111A's to Vietnam. Six F-111A's were deployed to Thailand in March, 1968, for a "combat evaluation" designated as Operation Combat Lancer. By the end of April three of the six F-111A's (and two crews) were lost. Two planes simply vanished. A third crashed in friendly territory after the crew ejected. Detailed debriefing of the airmen and examination of the wreckage pointed to failure of the horizontal stabilizers (tailplanes). The May, 1968, crash of a stateside F-111A under nearly identical circumstances was also traced to horizontal stabilizer failure.

The F-111's hard luck continued as metal fatigue issues with the steel wing carry-through box were encountered (Boeing's TFX design called for an arguably stronger titanium wing box). After an F-111A lost its left wing in a fatal crash in December, 1969, the entire fleet was grounded. Yet another serious mechanical issue, this time faulty wing pivot pins, was found to be the cause.

In the meantime, one major F-111 sale to an ally collapsed while another was put on indefinite hold. In Britain, the F-111 had a very formidable rival, the British Aircraft Corporation's TSR.2. The TSR.2 was larger, designed from the start as a bomber, and was in some respects superior to the F-111. But like the F-111, the TSR.2's development dragged on for nearly seven years, costs soared, and the entire project became a political football. In spite of the F-111's myriad woes, the U.S. pressured the Brits to buy F-111's instead of the TSR.2. Some senior RAF officers wanted the F-111, too.

After Britain's Labour Party won the October, 1964, general election, they made major defense spending cuts and cancelled a number of air and naval projects. First and foremost of the cancellations was the TSR.2. The Labour government told the RAF they would be supplied with 50 F-111's tailored to British requirements. In 1968, after continued delays and only two RAF F-111K's were partially built, the British cancelled the order.

Sensing possible British government cancellation of the TSR.2, Australia ordered 24 F-111's in 1963. The Aussies finally received their planes…10 years later in 1973! The endless waiting and cost escalations nearly brought down one Australian government. To maintain the RAAF's strike capability, the Australians leased 24 F-4E Phantoms from the U.S. pending delivery of the F-111's. It is said that a number of RAAF pilots wanted to keep the Phantoms when the F-111's at last arrived.


By 1970, the F-111's design and mechanical flaws had been remedied and production was underway. F-111's deployed to USAF bases in Europe displayed the plane's amazing capabilities…not as a "fighter" but as a bomber. For all the bad publicity generated by F-111 crashes, the F-111 went on to enjoy an excellent safety record that was better than the F-4 Phantom, the A-7 Corsair and all of the "Century" fighters. Unlike the USAF's principal tactical strike aircraft, the F-4 Phantom and the F-105 Thunderchief, the F-111 did not require an accompanying entourage of tankers and electronic warfare (ECM) aircraft. Depending upon the mission and target, the F-111 could fly alone, at night and in bad

weather, under enemy radar and without fighter cover. Four F-111A's could carry the bomb load of 20 Air Force F-4C Phantoms.

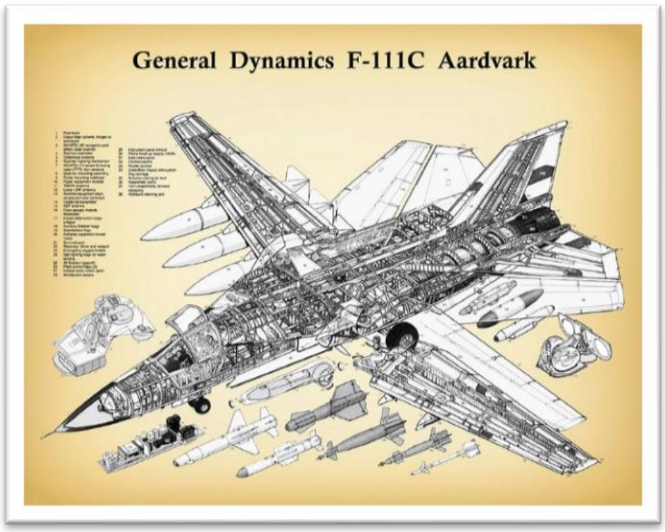
Accordingly, it was only a matter of time before the Air Force and Defense Department decided to send F-111's back to Vietnam. North Vietnam had the world's most heavily defended airspace. Whenever the U.S. suspended bombing, the North Vietnamese used the respite to pack in more radars, surface-to-air missiles, anti-aircraft guns and MiG fighters.


The second time around in Vietnam was the charm for the F-111. Its electronic countermeasures and ability to slip in undetected at low level and at any time was a threat the North Vietnamese could not counter. The F-111's were so devastating that during the massive air assaults of the Linebacker II campaign, the North Vietnamese gave the F-111 the nickname of "Whistling Death." One American POW, imprisoned near an NVA installation, saw the target left untouched during an American raid. Then, a few minutes after the "All Clear" siren sounded, a lone F-111 appeared from nowhere, and the enemy target vanished under the fireball of bomb blasts. Only a dozen F-111's were lost (eight in combat) during the Vietnam conflict.

After Libyan-backed terrorists killed a number of Americans in several attacks in Europe, F-111's played a vital role in the joint Air Force and Navy raid on Libya, Operation El Dorado Canyon. On the night of April 14, 1986, 24 F-111F's flew a circuitous route from England and attacked targets in Libya. Their guided "smart" bombs destroyed Libyan bases that housed and trained terrorists. One F-111F and its crew were lost, but otherwise, the mission was a resounding success.

F-111's also provided excellent service during Operation Desert Storm in 1991. On the first night of the conflict, January 17, 1991, F-111's attacked Iraqi air bases and other high-value targets. Throughout the campaign, F-111's knocked out bridges and disrupted Iraqi ground transportation and communications. Only one F-111 was lost (an EF-111A electronic warfare version) in a non-combat accident.

The Soviet Union's 1991 implosion and the end of the Cold War created a (later proved mistaken) belief that the defense budgets of the U.S. and NATO allies could be greatly reduced. For the USAF, major cuts meant the elimination of many older aircraft, in particular, remaining F-4 Phantoms and the F-111's. The last new-build F-111's rolled off the assembly line in 1976. By the mid-1990's, the F-111 fleet was becoming increasingly expensive to maintain. Although the F-15E Strike Eagle could not match the F-111's prowess as an all-weather bomber, it was a newer and more economical aircraft. By 1998, the USAF's F-111 fleet was fully retired. Australia held out longer, retiring their last F-111's at the end of 2010. Upon retirement from the U.S. Air Force, the F-111's nickname, "Aardvark," finally became its official name.




Was the F-111 a legendary strike aircraft or a lemon? It still depends on whom you ask. The F-111 consumed a ghastly amount of money long before the first USAF squadron formed. The TFX / F-111 program remains the textbook case of how NOT to develop a major weapons system.

Picking scapegoats is always the easiest way to explain setbacks, but much of the F-111's trouble can be traced back to Defense Secretary McNamara. By overruling the consensus decision that Boeing's plane was better and then refusing to budge on his requirement for a joint USAF-Navy airplane with "commonality," McNamara antagonized his subordinates, the F-111's contractors, influential politicians, and many generals and admirals. McNamara's stubbornness cost the military, the taxpayers, and himself dearly.

General Dynamics also shares some of the blame, too. Although General Dynamics wisely brought Grumman aboard to build the naval F-111B version, serious design flaws and chronic mechanical failures cost lives and aircraft over a period of five years.

Nonetheless, despite all of the controversy, delays and missteps throughout the development program, the F-111 survived and matured into the world's best all-weather

supersonic attack aircraft. Although only a total 539 were built out of a planned production run of 1,704 (including 231 Navy F-111B's), the F-111 became the USAF's and RAAF's most effective strike bomber.

One of the F-111's strengths was that the basic design permitted ongoing improvements in performance and capability. From the A through F marks, the F-111 steadily became more reliable and formidable. The final and most powerful version, the F-111F, numbered 106. Many of the F's were posted to England as NATO's conventional and nuclear spear tip. Seventy-six longer-winged FB-111A's (broadly similar to Australia's F-111C's) joined SAC as strategic bombers after retirement of the Convair B-58 Hustler. Forty of the best F-111A airframes were converted into EF-111A Raven electronic warfare aircraft. One wishes the USAF would opt for—and be granted—a version of the EF/A-18 Growler to fill the void created by the retirement of the "Spark Varks."

The F-111 influenced military aircraft designs from the 1960's into the 1990's. NATO's Panavia Tornado and Russia's MiG-23 Flogger and Sukhoi Su-24 Fencer were greatly influenced by the F-111. In many ways, the Fencer is a smaller copy of the F-111. Although the F-111B was a failure as a carrier-based interceptor, it paved the way for the F-14 Tomcat.

And ironically, even McNamara's belief in "commonality" was proven…**IF** one has the right aircraft being used in the same role for each armed service. For over 20 years, the F-4 Phantom was good and adaptable enough to become the preferred fighter-bomber of the USAF, USN, Marines and many U.S. allies. The A-7 Corsair enjoyed similar success in joint service as did Britain's Harrier with the RAF, RN and the U.S. Marines. Hopefully, today's F-35 Lightning (Joint Strike Fighter) in its multiple versions will live up to all the ballyhoo following its slow and costly development.

Probably the best evaluation of the F-111 comes from the brave and highly skilled men who flew them. They took their F-111's "downtown" in the missile and flak filled

skies of North Vietnam and over the desert wastes of Iraq. They entrusted their airplanes—and lives—to terrain following radar and automated flying while "skiing" through valleys and over mountains at night. The F-111 crews were pioneers flying the first generation of electronics-laden "super jets."

When asked about the F-111, those men will tell you that it was the most survivable aircraft to fly into North Vietnam. They will tell you how the F-111 could execute its mission at night, over heavily defended targets and in weather that grounded Phantoms and Thunderchiefs. As one F-111 driver explained, it was the only plane that would let you "make one pass and then haul ass." Not exactly the description of a "failure" or "lemon," is it?

## SOURCES AND RECOMMENDED READING:

Although long out of print, Bill Gunston's ***F-111*** (Charles Scribner's Sons, 1978), is an excellent account of the F-111's troubled development and ultimate success. This book also has detailed technical information and covers the F-111's history in Vietnam.

Written for scale modelers and loaded with terrific color photographs, SAM Publications' ***General Dynamics F-111, A Comprehensive Guide*** (MDF No. 19, 2013) is one of SAM's outstanding series on World War II and modern military aircraft. It covers "all things F-111," and includes color profiles as well as helpful reviews of the best 1/48 and 1/72 F-111 kits.

Cheaper and more readily available than the SAM Publications book is Squadron Signal's ***F-111 Aardvark Walk Around*** (Ken Neubeck, Squadron Signal Publications, 2008). Although not as comprehensive and detailed as the SAM Publications book, this entry in Squadron's popular "Walk Around" series has many good color photographs of the F-111's features, especially on 1980's era Aardvarks.

Also highly recommended:

***F-111 Aardvark*** (Detail & Scale, Vol. 4, Revised Edition), Bert Kinzey (Kalmbach Books and Airlife Publishing Ltd., 1989). Includes a chapter on the 1986 Libya raid.

***Grumman Navy F-111B*** (Naval Fighters No. 41), Tommy Thomason (Ginter, 1998). This is probably the best and most readily available reference on the cancelled F-111B version.

"The Earth Pig," article by Rick Stephens, World Air Power Journal, Vol. 14, Autumn/Fall 1993 (Aerospace Publishing, Ltd., and Airtime Publishing, Inc., 1993).

## THE F-111 IN 1/48 AND 1/72 SCALE

For all of the F-111's fame and combat service, 1/48 and 1/72 Aardvark kits have not been all that common. Nonetheless, a number of kits in those popular scales have appeared over the years, as well as some in 1/144. Since the 1/144 scale F-111 kits are mostly old and inaccurate models now rarely seen and then only on vendors' tables, only 1/48 and 1/72 kits are highlighted here. Like the airplane they replicate, these F-111 models have their good and bad features.


**Aurora** released 1/48 kits of the Air Force's F-111A and the Navy's F-111B in 1966. In 1960's style, these kits featured moving parts (including the landing gear) and minimal detail. Since both kits were designed from press releases and pictures of prototypes, many inaccuracies resulted. The F-111B kit was probably last available around 1969. According to the Scalemates website, Aurora last released the F-111A kit in 1972. Aurora went out of business around 1975.

**Monogram** bought a number of Aurora's molds and reworked the F-111A into a "new" 1/48 kit in 1981. Unfortunately, a number of Aurora's inaccuracies weren't corrected and Monogram added some of their own. Although the mistakes literally run from nose cone to exhaust nozzles and wingtip to wingtip, the biggest issues are the nose, cockpit and jet intakes. Despite all this (and some fit problems), the old Aurora / Monogram kit can be built into a passable representation of an early F-111A. The best approach may be to build it as a 1965 test F-111A in gull gray and white with minimal and generic USAF markings.


In 1988, **Academy-Minicraft** launched a series of 1/48 F-111 kits. These models were of the F-111A, F-111D, F-111E, F-111F, the "long-winged" FB-111A, the Australian F-111C and the ECM version EF-111A. Parts and decals vary from kit to kit to build that particular version. Although these are very good kits and probably still the best value for the 1/48 modeler, there are some inaccuracies and issues that will frustrate those suffering from "Advanced Modelers Syndrome." The Australian F-111C is still available from Academy.

For 1/48 Aardvark builders (particularly those afflicted with AMS), the best bet will be **Hobby Boss**' recent series of kits. These cover the F-111A, F-111C, F-111D/E, FB-111A and EF-111A. More detailed (and more expensive) than the older Academy F-111 kits, the Hobby Boss kits are more accurate and feature droppable control surfaces and two detailed TF30 engines. These are the F-111 models contest builders and rivet counters should buy. All of these F-111 versions were shown as available in Hobby Boss' 2019 catalog. There are also a number of aftermarket accessories that can be worked into these kits.


In 1969, **Revell** released a 1/72 kit that could be built as a prototype F-111A or F-111B. Like its contemporary 1/48 Aurora kit, this Revell kit had a number of working features, particularly retractable landing gear and movable wings. Also like Aurora's model, this kit was really one of a prototype F-111. This ancient Revell kit is now the only way to model the F-111B in any scale. When Revell later re-issued the kit, the parts needed to build the kit into a F-111B were omitted. A 1971 "re-release" of the kit contained the wing extensions and decals to build an Australian F-111C, even though the RAAF's planes were still two years away from service.



**Airfix** released a 1/72 F-111A in 1967. Like most early F-111 models, the kit has a number of inaccuracies and detail is skimpy. Also, this kit is the tedious and poorly fitting "Old School" Airfix and not the excellent product Airfix sells today. Airfix re-released the kit in 1973 under both Airfix and MPC labels. Some tweaking of

the mold and additional parts yielded an “F-111E” in 1976, but the kit was still neither an accurate A nor E. Airfix last re-released the kit in 1978, with another MPC boxing following sometime in the early 1980’s.

**Monogram** released a very good 1/72 EF-111A Raven in 1984. Although now rare and a bit dated, this was the first kit released of the “Spark Vark” in any scale. In 1988, during ESCI’s heyday, they released both F-111A and EF-111A kits in 1/72 scale. These kits were re-released under the AMT label in the early 1990’s. Italeri obtained a number of ESCI’s molds and released 1/72 F-111A and EF-111A’s at various times, starting in 2002. A 2019 Italeri re-release of the F-111A kit may still be available. According to online chatter, these kits have the same virtues and vices of many ESCI and Italeri offerings. In other words, they can be built up into very good models with patience and a lot of extra work.

The best 1/72 F-111 kits are probably those in **Hasegawa’s** long running series. Hasegawa released a 1/72 F-111A in 1989. In the 30 years since, Hasegawa followed Academy’s practice of working the same basic molding into D/E, F, FB-111A, C and EF-111A versions. Being older Hasegawa releases, their F-111 kits may not feature the intricate detailing many modelers now expect, even in 1/72 scale. Also, like many of Hasegawa’s kits, the F-111’s are not consistently available. Nonetheless, the Hasegawa F-111 kits are well regarded and certainly the best produced in 1/72 scale.