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The Grumman F11F Tiger was the first fighter capable of level supersonic flight to enter service with the US Navy, but suffered from an underpowered engine and was soon replaced by the Vought F8U-1 Crusader.The Tiger was developed to take advantage of a gap in the US Navys fighter programme. In the late 1940s four designs has been ordered the Douglas F4D Skyray, Chance Vought F7U Cutless, Grumman F10F Jaguar and McDonnell F3H Demon. However all four used underperforming Westinghouse jet engines, and none of them were a success. In 1953 the Navy held a design contest for new day and all weather supersonic fighters, and selected the Grumman F8U/ F-8 Crusader and McDonnell F4H/ F-4 Phantom II. Both of these would go on to be successful designs the F-8 Crusader remained in service as a naval fighter until 1976 and the F-4 Phantom II remained in combat service in the US until 1996 and in Germany until 2013! However in 1953 both were something of a gamble, with neither company having produced swept wing fighters and McDonnell planning to use another untested engine. In the end the Crusader entered service in 1957 and the Phantom in 1961In contrast Grumman were in the middle of producing the F9F Cougar, a swept wing development of the earlier F9F Panther and had gained valuable experience from the F10F. They decided to take advantage of the situation to produce a relatively simple supersonic fighter that would be available before either of the more advanced designsGrummans design team produced an aircraft with very thin swept wings produced by milling down aluminium planks. The fuselage was built using the area rule, giving it a narrow section alongside the wings so the cross section remained equal along the length of the fuselage (also known as the coke bottle shape). The tailplane and elevators would be built into the rear fuselage. It would be powered by the Curtiss Wright J-65 engine, which had performed well in the North American FJ Fury and Republic F-84F, although without an afterburner. The new Grumman design would need an afterburner to be designed and tested. The aim was to have an engine that provided 7,800lb normally and 11,000lb with the afterburner. The Tiger was expected to reach Mach 1.21 in level flight. The Navy was impressed enough with the Grumman design to place an order for three prototypes on 27 April 1953. Funding for the new design had come from the Cougar programme, so the new prototype was designated the YF9F-9. The first prototype made its maiden flight on 30 July 1954 with the Grumman test pilot Corky Meyer at the controls, powered by a standard J65-W-7 engine without supercharger. It went supersonic in a shallow dive on its second flight. A few minor problems were detected, but these were soon solved. Two weeks later the aircraft was put on show, and the Navy increased its production order from 42 aircraft to 388 (although this was later reduced to 201). The second prototype made its maiden flight in October 1954, again without the afterburner. However the first flight by a Navy test pilot, on 20 October 1954, ended with a crash after the engine flamed out and wouldnt restart. Luckily the pilot survived, but the aircraft ended up in a forest. The new afterburner finally arrived in January 1955 and was added to the second prototype. It was expected to increase thrust by 50% and greatly improve the aircrafts rate of climb and high speed performance, which had proved disappointing without it. However the first flight with the afterburner, on 25 January was itself disappointing. The extra thrust was much less than expected, and at mach 1.03 there was an explosion in the afterburner. The aircraft was otherwise undamaged. After landing it was discovered that a hole had been burnt through the side of the afterburner and most of the fuselage. This was the only existing example of the new afterburner, so its loss set the programme back. The next afterburner didnt arrive until April 1956, and it was still short on power. Top speed in level flight was only Mach 1.05, well down on the contract speed of Mach 1.2. Eventually Curtiss Wright were given a new contract with the lower 10,500lb of thrust written into it, thus reducing the top speed of the Tiger. In April 1955 the Tiger was redesignated as the F11F, acknowledging that it was a very different aircraft to any version of the F9F. The production aircraft were delivered between 15 November 1954 and 23 January 1959. The first service unit to receive the Tiger was VA-156 at NAS Moffitt Field, California, which gained its first aircraft in March 1957, two years after originally planned. In the same month VF-32 received the F8U-1 Crusader, which outperformed the Grumman aircraft. As a result the Tiger had a short front line career. They began to go to the Jet Transition Training Units in November 1958, and retired from fleet service in 1961. However they did remain in the training role until 1967. The longest user of the Tiger was the Blue Angels Flight Demonstration Team, which operated the Tiger from 1957 to 1969, taking advance of its excellent flight control at high G and in rolls and low maintenance requirements. Although the Tiger hadnt produced the expected speed, and the development problems meant it had entered service at the same time as the F-8 Crusader, it did have some advantages. It had a very impressive safety record. It was the first Navy jet aircraft to suffer from no accidents during its first year of operation on aircraft carriers. Later, when used as a trainer, it was used to train 84 pilots in its first year, again without an accident. It also needed much less maintenance than other jet fighters of the period, requiring 4-6 man hours of maintenance per hour of flight. Its nearest competitor needed three times that much work. The F11F-1 became the F-11A in the September 1962 joint designation system, by which time it was only in use with the Blue Angels and as a trainer. F11F-1FGrumman was well aware of the limits imposed by the engine, and in 1955 suggested fitting a General Electric J79 engine (as used in the F-4 Phantom) to the airframe of the Tiger. The Navy agreed to fund the conversion of two production F11Fs into F11F-1F prototypes. These aircraft were given a YJ79-GE-3 engine, which produced 12,533lb thrust normally and 17,000lb thrust with the afterburner. They were give larger air intakes and a modified wing.The first prototype made its maiden flight on 25 May 1956, when it reached Mach 1.44, a big increase on the Mach 1.1 of the F11F-1. It was then modified to give it a longer fuselage, a more powerful engine and wing root fillets. In 1957 it reached Mach 2.04, making it the first naval aircraft to go above Mach 2 (greatly exceeding expectations, and also making it twice as fast as the normal Tiger). One of the aircraft also set a world altitude record of 76,932ft with US Navy Lt Commander George Watkins at the controls. Despite its impressive performance, the F11F-1F wasnt ordered for the US Navy. Grumman attempted to sell it to Germany, Japan, Canada and Switzerland, but lost out to the Lockheed F-104 Starfighter in most cases and the Dassault Mirage in Switzerland. F11F-1 Engine: Wright J65-W-18 turbojet Power: 7,450lb Crew: 1 Span: 31ft 7.5in Length: 46ft 11.25in Height: 13ft 2.75in Empty weight: 13,428lb Gross weight: 22,160lb Max speed: 750mph at sea level, Mach 1.1 at 35,000ft Cruising speed: 577mph at 38,000ft Climb Rate: 5,130ft/ min Service ceiling: 41,900ft Endurance: Range: 1,270 miles Armament: Four fixed forward firing 20mm gunsBomb load: Four underwing Sidewinder 1A or 1C air-to-air missiles Air War Index - Air War Links - Air War Books How to cite this article:Rickard, J (18 May 2023), Grumman F11F (F-11) Tiger , The Grumman F11F / F-11 Tiger was a supersonic, single-seat, carrier-based fighter aircraft, known for its speed and agility. The Grumman F11F / F-11 Tiger, a U.S. Navy jet fighter, was introduced in 1956. Powered by a Wright J65-W-18 afterburning turbojet engine, the Tiger achieved a maximum speed of 750 mph and a service ceiling of 41,896 ft. With a length of 14.31 meters and a wingspan of 9.64 meters, it was armed with four 20mm Colt Mk 12 cannons and had provisions for AIM-9 Sidewinder missiles. The aircraft featured a swept-wing design and was capable of supersonic speeds, marking a significant advancement in naval aviation. Its design included full-span leading-edge slats, spoilers for roll control, and foldable wings for carrier operations. The Grumman F11F / F-11 Tiger played an important role in the advancement of naval aviation, representing a leap in technology and performance for carrier-based fighters during the 1950s. The development of the Grumman F11F Tiger began in 1952 as a modernization effort of the F9F Cougar. The aircraft underwent significant design changes, incorporating the area rule for improved performance at supersonic speeds. The Tigers maiden flight took place on 30 July 1954 with a non-afterburning engine, and it nearly reached Mach 1. The second prototype, equipped with an afterburning engine, became the second supersonic U.S. Navy aircraft. Grumman proposed several models, including reconnaissance and trainer versions, and an advanced variant called the F11F-1F Super Tiger. The Super Tiger, equipped with a General Electric J79 engine, demonstrated superior performance but did not enter production due to limited interest from the U.S. Navy. The Grumman F11F / F-11 Tiger featured a swept-wing design with full-span leading-edge slats and spoilers for roll control, instead of conventional ailerons. The wings could be folded for carrier operations. The aircraft was powered by a Wright J65 turbojet engine, a license-built version of the British Armstrong Siddeley Sapphire. The Tigers design included a cylindrical fuselage and wings swept back at 35 degrees, providing good high-speed performance. The Grumman F11F / F-11 Tigers performance was notable for its era. The Wright J65-W-18 afterburning turbojet engine enabled a maximum speed of 750 mph and a service ceiling of 41,896 ft. The aircraft had a range of 1,270 miles and a rate of climb of 5,130 ft/min. However, its performance was hampered by short range and reliability issues related to the J65 engine. The main variants of the Tiger included the F11F-1 (single-seat fighter version), F11F-1P (proposed reconnaissance version), and F-11A (redesignated F11F-1 models after 1962). The F11F-1F Super Tiger was a proposed improved variant with two prototypes completed. The Grumman F11F / F-11 Tiger was operated by seven U.S. Navy squadrons and was used on seven carriers, including the USS Forrestal. It served as a frontline fighter for four years before being withdrawn from carrier duties in 1961 due to performance and reliability issues. The Tiger continued to be used for training and by the Blue Angels aerobatic team until 1968. The aircraft was never exported. The Grumman F11F / F-11 Tiger, despite its short operational service life, marked a significant advancement in naval aviation during its time. Its development showcased the rapid progress in jet aircraft design and the increasing demands for carrier-based supersonic fighters. The Tigers legacy is remembered for its technological achievements and contributions to naval aviation history. Back to theFighter Jetsection. Share copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. 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Quick Facts On loan from the National Museum of the Marine Corps The F11F Tiger was quite different from its predecessors, the Grumman Panther and Cougar a thin wing (swept), engine intakes on the fuselage, landing gear to rear of the fuselage, low-mounted tail plane, and an afterburner turned it into a post-Korean War supersonic fighter interceptor. The most important difference is the "coke-bottle" fuselage that is constricted in the center. This application of the Area Rule was to reduce drag by as much as 25% . The Tiger has the unique distinction of being one, if not the only, aircraft to have shot itself down! On Sept. 21, 1956, test pilot Tom Attridge, while in super-sonic flight and a shallow dive, fired a three second burst of 20mm cannon rounds. A sudden flameout forced him to crash land, fracturing several of his vertebrae. It was deemed that due to the speed of the aircraft, the Tiger had overtaken the cannon rounds which had rapidly decelerated after leaving the cannon muzzles. The Tiger ingested them into its air intake, destroying its engine. Unfortunately, the Tiger's engine (Wright J65-W-18) never was able to develop its full potential for the airframe. Also the range of the aircraft was limited due to high fuel consumption and inadequate fuel carrying capacity. The Tiger was also limited to day operations as radar was never installed. With these deficiencies, it could not compete with the F8 Crusader and was used mostly for training. The Air Zoo's Tiger This Aircraft was acquired by the U.S. Navy on Oct 11, 1958 and was assigned to Pensacola Navel Air Station for its entire career. It was used by the Blue Angels flight demonstration team and flown by Commander Zeb Knott as the #1 plane. It is on long term loan to the Air Zoo and has been painted as plane #5 for USMC Lt. Thomas Jefferson, one of the two solo performers with the Blue Angels at that time, at the request of the Marine Corps Air & Ground Museum. Manufacturer: Grumman Designation: F11F/F-11 Tiger Role: Day Fighter Crew: 1 Length: 45 ft 10.5 in (13.983 m) Wingspan: 31 ft 7.5 in (9.639 m) Width: 27 ft 4 in (8.33 m) wing-tips foldedHeight: 13 ft 2.75 in (4.0323 m) Powerplant: 1 Wright J65-W-18 afterburning turbojet engine, 7,450 lbf (33.1 kN) thrust at 8,300 rpm, military power dry, 10,500 lbf (47 kN) with afterburner Armament: Guns: 4 20 mm (.79 in) Colt Mk 12 cannon, 125 rounds per gun, Hardpoints: 4 with a capacity of , with provisions to carry combinations of: Rockets: Aero 6A or Aero 7A "Rocket Package" Missiles: AIM-9 Sidewinder Other: 150 US gal (570 l) drop tank Page 2 Quick Facts On loan from the National Museum of the Marine Corps The F11F Tiger was quite different from its predecessors, the Grumman Panther and Cougar a thin wing (swept), engine intakes on the fuselage, landing gear to rear of the fuselage, low-mounted tail plane, and an afterburner turned it into a post-Korean War supersonic fighter interceptor. 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This article will explore the history, specifications, features, and the lasting impact of the F-11 Tiger on naval aviation. HistoryDesigned to replace the successful F9F Panther, the F-11 Tiger first flew on July 30, 1954, and entered service with the U.S. Navy in 1956. It was notable for being Grummans first aircraft to feature afterburners, which significantly enhanced its speed and maneuverability in both subsonic and supersonic flight regimes. The F-11 Tiger was developed during a period of rapid advancements in jet technology, as the United States sought to maintain air superiority during the Cold War. The Tiger was primarily deployed as a carrier-based fighter and reconnaissance aircraft. Its development marked a significant advancement in naval aviation, as it introduced several new technologies and design principles that would influence future jet fighters. Despite its relatively short service life, the F-11 Tigers contributions to jet fighter performance and technology were profound. Development and InnovationThe development of the F-11 Tiger began with a focus on improving the capabilities of naval jet fighters. The U.S. Navy required an aircraft that could achieve higher speeds and better maneuverability than its predecessors. Grumman responded with the F11F-1, which incorporated several innovative features to meet these requirements. One of the key innovations of the F-11 Tiger was its use of afterburners. The Pratt & Whitney J57-P-4A turbojet engine with afterburner provided the necessary thrust to achieve supersonic speeds. This technology allowed the Tiger to reach speeds of up to 1,100 mph (1,770 km/h), making it one of the fastest aircraft of its time. The afterburner also improved the aircrafts acceleration and climb rate, enhancing its overall performance in combat situations. Another significant feature of the F-11 Tiger was its advanced avionics. The aircraft was equipped with a sophisticated radar system and fire-control system, allowing it to engage both air and ground targets with precision. These systems represented a significant leap forward in avionics technology, providing the Tiger with enhanced situational awareness and targeting capabilities. Specs & FeaturesThe Grumman F-11 Tiger was equipped with several notable features: Engine: One Pratt & Whitney J57-P-4A turbojet engine with afterburner, providing 10,200 pounds of thrust.Top Speed: Approximately 1,100 mph (1,770 km/h), making it a supersonic fighter.Range: Around 1,300 miles (2,100 km), allowing for extended missions over both land and sea.Armament: Four 20mm Colt Mk 12 cannons, AIM-9 Sidewinder missiles, and various bomb configurations.Crew: Single pilot, with a cockpit designed for excellent visibility and advanced avionics.The Tigers sleek design and powerful engine allowed it to achieve impressive speeds and perform tight maneuvers, essential for combat operations in both air superiority and ground attack roles. Its advanced avionics and weapon systems provided it with the capabilities needed to engage a wide range of targets effectively. OperationsThe F-11 Tiger saw operational service with the U.S. Navy in the late 1950s to the early 1960s. It was deployed primarily as a carrier-based fighter, tasked with defending naval assets and engaging enemy aircraft. The Tigers supersonic speed and advanced avionics made it well-suited for these roles, and it quickly became a key component of the Navys air power. One of the most notable aspects of the F-11 Tigers operational history was its use by the Blue Angels, the Navys flight demonstration squadron. The Tiger served as the Blue Angels primary aircraft from 1957 to 1969, showcasing its impressive performance and agility in aerial demonstrations. The aircrafts sleek design and powerful engine made it a favorite among pilots and spectators alike. Despite its advanced capabilities, the F-11 Tiger faced challenges in operational service. The introduction of more advanced fighters, such as the McDonnell Douglas F-4 Phantom II, led to the Tigers gradual phase-out from frontline service by the early 1970s. However, the Tigers contributions to naval aviation and its influence on subsequent aircraft designs were significant. Technological ImpactThe Grumman F-11 Tiger represented a technological milestone in naval aviation, pushing the boundaries of speed and agility in jet fighter design. Its introduction of afterburner technology and advanced avionics set a new standard for future aircraft, ensuring its place in history as a pivotal aircraft of the Cold War era. The Tigers use of afterburners demonstrated the potential for achieving supersonic speeds in naval aircraft, influencing the development of subsequent fighters. The advanced avionics systems on the Tiger provided a foundation for future advancements in radar and fire-control technology, enhancing the capabilities of later jet fighters. Additionally, the F-11 Tigers design principles, such as its sleek aerodynamics and powerful engine, influenced the development of subsequent naval aircraft. The lessons learned from the Tigers operational service and technological innovations helped shape the future of naval aviation, contributing to the development of more advanced and capable jet fighters. Frequently Asked QuestionsQ: What advancements did the F-11 Tiger introduce to jet fighter technology?A: The F-11 Tiger was notable for being one of the first fighters to incorporate afterburners, significantly enhancing its speed and maneuverability capabilities. It also featured advanced avionics, including a sophisticated radar and fire-control system. Q: How did the F-11 Tiger perform in combat situations?A: While primarily a reconnaissance and interceptor aircraft, the F-11 Tiger demonstrated its combat prowess during various Cold War-era exercises and deployments. Its speed, agility, and advanced avionics made it a formidable opponent in aerial engagements. Q: What led to the retirement of the F-11 Tiger from active service?A: The introduction of more advanced fighters, such as the F-4 Phantom II, and changing strategic requirements led to the gradual phase-out of the F-11 Tiger from frontline service by the early 1970s. However, its technological contributions and influence on future aircraft designs were significant. ConclusionThe Grumman F-11 Tiger represented a technological milestone in naval aviation, pushing the boundaries of speed and agility in jet fighter design. Its introduction of afterburner technology and advanced avionics set a new standard for future aircraft, ensuring its place in history as a pivotal aircraft of the Cold War era. The Tigers combination of sleek design, powerful engine, and advanced avionics made it a standout aircraft in its time. Its contributions to the development of supersonic jet fighters and its influence on subsequent aircraft designs highlight its enduring legacy. The lessons learned from the F-11 Tigers development and operational service continue to shape the future of naval aviation, demonstrating the importance of innovation and technological advancement in military aircraft. The Grumman F-11 Tiger was a supersonic fighter aircraft developed for the United States Navy in the late 1950s. Recognized for its speed, agility, and advanced avionics, the F-11 Tiger represented a significant leap forward in jet fighter technology during the Cold War era. This article will explore the history, specifications, features, and the lasting impact of the F-11 Tiger on naval aviation. HistoryDesigned to replace the successful F9F Panther, the F-11 Tiger first flew on July 30, 1954, and entered service with the U.S. Navy in 1956. It was notable for being Grummans first aircraft to feature afterburners, which significantly enhanced its speed and maneuverability in both subsonic and supersonic flight regimes. The F-11 Tiger was developed during a period of rapid advancements in jet technology, as the United States sought to maintain air superiority during the Cold War. The Tiger was primarily deployed as a carrier-based fighter and reconnaissance aircraft. Its development marked a significant advancement in naval aviation, as it introduced several new technologies and design principles that would influence future jet fighters. Despite its relatively short service life, the F-11 Tigers contributions to jet fighter performance and technology were profound. Development and InnovationThe development of the F-11 Tiger began with a focus on improving the capabilities of naval jet fighters. The U.S. Navy required an aircraft that could achieve higher speeds and better maneuverability than its predecessors. Grumman responded with the F11F-1, which incorporated several innovative features to meet these requirements. One of the key innovations of the F-11 Tiger was its use of afterburners. 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The lessons learned from the F-11 Tigers development and operational service continue to shape the future of naval aviation, demonstrating the importance of innovation and technological advancement in military aircraft. The aircraft evolution of the 1950s created many ambitious ideas and designs. The United States and the Soviet Union were locked in an arms race and were trying to outdo each other as the tensions were high. War between the two was a real possibility.The Soviet MiG-15 possessed a new threat, one which the US needed to address. The Soviet plane, which was capable of sonic flight and was also the best in the class. It could eliminate US carriers, which was a significant strategic advantage over the US.Four Grumman F11F-1 Tiger fighters of fighter squadron VF-21 Mach BustersRivalWork began to create a new plane that could rival the Mig-15. Grumman Aircraft Engineering Corporation was up for the task. In 1952 a privately funded project began to modernize the F-9 cougar. This particular aircraft was already designed to be carrier based. As Grumman was working on modernization, jet aircraft technologies were developing at a very fast rate, which led to man reiterations, and eventually, the modified aircraft would be so different that it became its own model.MiG 15TigerIt would become known as the F-11, and following the established tradition of naming this type of aircraft after felines, Tiger was added to its name. The plane had little resemblance to the F-9, which it was supposed to be based on. Among the new features was the area rule, which improved its performance at supersonic speeds. To be able to take off from the shorter runways of carriers, the plane also had full-span leading-edge slats.Two U.S. Navy Grumman F11F-1 Tiger fighters in flight in 1960Designed to be foldedAmong other innovations were the spoilers, which controlled the aircrafts roll; these were used instead of the more conventional ailerons.To minimize the space that it would take on aircraft, its wings were designed to be folded. Although this fold wasnt as dramatic as in some modern aircraft, it was basically the tip of the wing that could be lifted.To achieve a speed that could rival that of the MiG-15, the F-11 was powered by the Wright J65 turbojet engine. The same engine was used for other aircraft like the Martin B-57 Canberra and Douglas A-4 Skyhawk.U.S. Navy Grumman F11F-1 Tiger fighters of attack squadron VA-43PrototypesThe F-11 looked promising, and the Navy ordered two prototypes named the XF9F-8. The name was a bit misleading because it made it sound like the new plane was a modified F-9, which it wasnt. When they renamed it instead of giving it a more unique name, they just made it more confusing by calling it XF9F-9, with a variant of the Cougar being given the name XF9F-8.Two U.S. Marine Corps Grumman F9F-8T CougarsFirst flightThe first prototype was flyable before the afterburning J65 engine was ready, so it made its first flight in 1954 with a different engine. Even without the afterburners, the aircraft managed almost to break the sound barrier. When the F-11 was finally fitted with the J65 engines, it became the second Navy aircraft to fly faster than the speed of sound.While the Aircraft had an impressive start, it would go on to earn an exclusive and embossing title of being the first plane to shoot down itself.VA-156 F11F at NAS Moffett Field on a rainy day in May 1957 Photo: Bill LarkinsCrash landingIn 1965, during a live-firing test, pilot Tom Attridge fired the Tigers 20 mm cannons while performing a dive. The rounds, after flying for a while, began to fall to the earth; unfortunately, they coincided with the flight path of the aircraft, damaging it and forcing Attridge to crash land.The aircraft had a relatively short carer in the Navy. Entering service in 1956 and retiring in 1961. the Tiger was held back by short-range and reliability issues, and only 200 were built. The strong competition from Vought F-8 Crusader also contributed to the early retirement of the F-11. The Crusader outperformed the Tiger in every way that mattered.A Vought F-8E Crusader (BuNo 150328) of U.S. Marine Corps all weather fighter squadron VMF(AW)-235 at Da Nang, South Vietnam, in April 1966It wouldnt fade into obscurity, far from it. The F-11 became the aircraft of choice for the famous Blue Angels until 1968, a privilege that only a few aircraft ever received. Share copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. Skip to content How can financial brands set themselves apart through visual storytelling? Our experts explainhow.Learn MoreThe Motorsport Images Collections captures events from 1895 to todays most recentcoverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of EditorsPicks.Browse Editors' FavoritesHow can financial brands set themselves apart through visual storytelling? Our experts explainhow.Learn MoreThe Motorsport Images Collections captures events from 1895 to todays most recentcoverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of EditorsPicks.Browse Editors' FavoritesHow can financial brands set themselves apart through visual storytelling? Our experts explainhow.Learn MoreThe Motorsport Images Collections captures events from 1895 to todays most recentcoverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of EditorsPicks.Browse Editors' FavoritesThe Grumman F-11 Tiger was a supersonic fighter aircraft developed for the United States Navy in the late 1950s. Recognized for its speed, agility, and advanced avionics, the F-11 Tiger represented a significant leap forward in jet fighter technology during the Cold War era. This article will explore the history, specifications, features, and the lasting impact of the F-11 Tiger on naval aviation. HistoryDesigned to replace the successful F9F Panther, the F-11 Tiger first flew on July 30, 1954, and entered service with the U.S. Navy in 1956. It was notable for being Grummans first aircraft to feature afterburners, which significantly enhanced its speed and maneuverability in both subsonic and supersonic flight regimes. The F-11 Tiger was developed during a period of rapid advancements in jet technology, as the United States sought to maintain air superiority during the Cold War. The Tiger was primarily deployed as a carrier-based fighter and reconnaissance aircraft. Its development marked a significant advancement in naval aviation, as it introduced several new technologies and design principles that would influence future jet fighters. Despite its relatively short service life, the F-11 Tigers contributions to jet fighter performance and technology were profound. Development and InnovationThe development of the F-11 Tiger began with a focus on improving the capabilities of naval jet fighters. The U.S. Navy required an aircraft that could achieve higher speeds and better maneuverability than its predecessors. Grumman responded with the F11F-1, which incorporated several innovative features to meet these requirements. One of the key innovations of the F-11 Tiger was its use of afterburners. The Pratt & Whitney J57-P-4A turbojet engine with afterburner provided the necessary thrust to achieve supersonic speeds. This technology allowed the Tiger to reach speeds of up to 1,100 mph (1,770 km/h), making it one of the fastest aircraft of its time. The afterburner also improved the aircrafts acceleration and climb rate, enhancing its overall performance in combat situations. Another significant feature of the F-11 Tiger was its advanced avionics. The aircraft was equipped with a sophisticated radar system and fire-control system, allowing it to engage both air and ground targets with precision. These systems represented a significant leap forward in avionics technology, providing the Tiger with enhanced situational awareness and targeting capabilities. Specs & FeaturesThe Grumman F-11 Tiger was equipped with several notable features: Engine: One Pratt & Whitney J57-P-4A turbojet engine with afterburner, providing 10,200 pounds of thrust.Top Speed: Approximately 1,100 mph (1,770 km/h), making it a supersonic fighter.Range: Around 1,300 miles (2,100 km), allowing for extended missions over both land and sea.Armament: Four 20mm Colt Mk 12 cannons, AIM-9 Sidewinder missiles, and various bomb configurations.Crew: Single pilot, with a cockpit designed for excellent visibility and advanced avionics.The Tigers sleek design and powerful engine allowed it to achieve impressive speeds and perform tight maneuvers, essential for combat operations in both air superiority and ground attack roles. Its advanced avionics and weapon systems provided it with the capabilities needed to engage a wide range of targets effectively. OperationsThe F-11 Tiger saw operational service with the U.S. Navy in the late 1950s to the early 1960s. It was deployed primarily as a carrier-based fighter, tasked with defending naval assets and engaging enemy aircraft. The Tigers supersonic speed and advanced avionics made it well-suited for these roles, and it quickly became a key component of the Navys air power. One of the most notable aspects of the F-11 Tigers operational history was its use by the Blue Angels, the Navys flight demonstration squadron. The Tiger served as the Blue Angels primary aircraft from 1957 to 1969, showcasing its impressive performance and agility in aerial demonstrations. The aircrafts sleek design and powerful engine made it a favorite among pilots and spectators alike. Despite its advanced capabilities, the F-11 Tiger faced challenges in operational service. The introduction of more advanced fighters, such as the McDonnell Douglas F-4 Phantom II, led to the Tigers gradual phase-out from frontline service by the early 1970s. However, the Tigers contributions to naval aviation and its influence on subsequent aircraft designs were significant. Technological ImpactThe Grumman F-11 Tiger represented a technological milestone in naval aviation, pushing the boundaries of speed and agility in jet fighter design. Its introduction of afterburner technology and advanced avionics set a new standard for future aircraft, ensuring its place in history as a pivotal aircraft of the Cold War era. The Tigers use of afterburners demonstrated the potential for achieving supersonic speeds in naval aircraft, influencing the development of subsequent fighters. The advanced avionics systems on the Tiger provided a foundation for future advancements in radar and fire-control technology, enhancing the capabilities of later jet fighters. Additionally, the F-11 Tigers design principles, such as its sleek aerodynamics and powerful engine, influenced the development of subsequent naval aircraft. The lessons learned from the Tigers operational service and technological innovations helped shape the future of naval aviation, contributing to the development of more advanced and capable jet fighters. Frequently Asked QuestionsQ: What advancements did the F-11 Tiger introduce to jet fighter technology?A: The F-11 Tiger was notable for being one of the first fighters to incorporate afterburners, significantly enhancing its speed and maneuverability capabilities. It also featured advanced avionics, including a sophisticated radar and fire-control system. Q: How did the F-11 Tiger perform in combat situations?A: While primarily a reconnaissance and interceptor aircraft, the F-11 Tiger demonstrated its combat prowess during various Cold War-era exercises and deployments. Its speed, agility, and advanced avionics made it a formidable opponent in aerial engagements. Q: What led to the retirement of the F-11 Tiger from active service?A: The introduction of more advanced fighters, such as the F-4 Phantom II, and changing strategic requirements led to the gradual phase-out of the F-11 Tiger from frontline service by the early 1970s. However, its technological contributions and influence on future aircraft designs were significant. ConclusionThe Grumman F-11 Tiger represented a technological milestone in naval aviation, pushing the boundaries of speed and agility in jet fighter design. Its introduction of afterburner technology and advanced avionics set a new standard for future aircraft, ensuring its place in history as a pivotal aircraft of the Cold War era. The Tigers combination of sleek design, powerful engine, and advanced avionics made it a standout aircraft in its time. Its contributions to the development of supersonic jet fighters and its influence on subsequent aircraft designs highlight its enduring legacy. The lessons learned from the F-11 Tigers development and operational service continue to shape the future of naval aviation, demonstrating the importance of innovation and technological advancement in military aircraft. BlackGreenYellowPurple(PRODUCT)REDWhite Width: 2.98 inches (75.7 mm)Height: 5.94 inches (150.9 mm)Depth: 0.33 inch (8.3 mm)Weight: 6.84 ounces (194 grams) Liquid Retina HD display6.1-inch (diagonal) all-screen LCD Multi-Touch display with IPS technology1792-by-828-pixel resolution at 326 ppi1400:1 contrast ratio (typical)True Tone displayWide color display (P3)Haptic Touch625 nits max brightness (typical)Fingerprint-resistant oleophobic coatingSupport for display of multiple languages and characters simultaneouslyThe iPhone 11 display has rounded corners that follow a beautiful curved design, and these corners are within a standard rectangle. When measured as a standard rectangular shape, the screen is 6.06 inches diagonally (actual viewable area is less). Rated IP68 (maximum depth of 2 meters up to 30 minutes) under IEC standard 60529 A13 Bionic chip6-core CPU with 2 performance and 4 efficiency cores4-core GPU8-core Neural Engine Dual 12MP Wide and Ultra Wide camerasWide: /1.8 apertureUltra Wide: /2.4 aperture and 120 field of view2x optical zoom outDigital zoom up to 5xPortrait mode with advanced bokeh and Depth ControlPortrait Lighting with six effects (Natural, Studio, Contour, Stage, Stage Mono, High-Key Mono)Optical image stabilization (Wide)Sixelement lens (Wide); fiveelement lens (Ultra Wide)True Tone flash with Slow SyncPanorama (up to 63MP)Sapphire crystal lens cover100% Focus Pixels (Wide)Night mode (Wide)Deep Fusion (Wide)Next-generation Smart HDR for photosWide color capture for photos and Live PhotosAdvanced redeye correctionAuto image stabilizationBurst modePhoto geotaggingImage formats captured: HEIF and JPEG 4K video recording at 24 fps, 25 fps, 30 fps, or 60 fps1080p HD video recording at 25 fps, 30 fps, or 60 fps720p HD video recording at 30 fpsExtended dynamic range for video up to 60 fpsOptical image stabilization for video (Wide)2x optical zoom outDigital zoom up to 3xAudio zoomTrue Tone flashQuickTake videoSlomo video support for 1080p at 120 fps or 240 fpsTimelapse video with stabilizationCinematic video stabilization (4K, 1080p, and 720p)Continuous autofocus videoTake 8MP still photos while recording 4K videoPlayback zoomVideo formats recorded: HEVC and H.264Stereo recording 12MP camera/2.2 aperturePortrait mode with advanced bokeh and Depth ControlPortrait Lighting with six effects (Natural, Studio, Contour, Stage, Stage Mono, High-Key Mono)Animoji and Memoji4K video recording at 24 fps, 25 fps, 30 fps, or 60 fps1080p HD video recording at 25 fps, 30 fps, or 60 fpsSlomo video support for 1080p at 120 fpsNextgeneration Smart HDR for photosExtended dynamic range for video at 30 fpsCinematic video stabilization (4K, 1080p, and 720p)QuickTake videoWide color capture for photos and Live PhotosRetina FlashAuto image stabilizationBurst mode Enabled by TrueDepth camera for facial recognition Pay with your iPhone using Face ID in stores, within apps, and on the webSend and receive money in Messages with Apple Cash4Complete purchases made with Apple Pay on your MacPay for your ride using Express Transit5Learn more about Apple PayLearn more about Apple Cash Model A2111*FDDLTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 29, 30, 66, 71)TDLTE (Bands 34, 38, 39, 40, 41, 42, 46, 48)CDMA EVDO Rev. A (800, 1900 MHz)UMTS/HSPA+/DCHSDPA (850, 900, 1700/2100, 1900, 2100 MHz)GSM/EDGE (850, 900, 1800, 1900 MHz)All modelsGigabit-class LTE with 2x2 MIMO and LAA6802.11ax WiFi 6 with 2x2 MIMOBluetooth 5.0 wireless technologyUltra Wideband chip for spatial awareness7NFC with reader modeExpress Cards with power reserveFor details on LTE support, contact your carrier and see apple.com/iphone/LTE. Built-in GPS/GNSSDigital compassWiFiCellulariBeacon microlocation FaceTime video calling over cellular or WiFiFaceTime HD (1080p) video calling over WiFiShare experiences like movies, TV, music, and other apps in a FaceTime call with SharePlayScreen sharingPortrait mode in FaceTime videoSpatial audioVoice Isolation and Wide Spectrum microphone modesZoom with rearfacing camera FaceTime audioVoice over LTE (VoLTE)6WiFi calling6Share experiences like movies, TV, music, and other apps in a FaceTime call with SharePlayScreen sharingSpatial audioVoice Isolation and Wide Spectrum microphone modes Supported formats include AAC, MP3, Apple Lossless, FLAC, Dolby Digital, Dolby Digital Plus, and Dolby AtmosSpatial audio playbackUserconfigurable maximum volume limit Supported formats include HEVC and H.264Supports Dolby Vision, HDR10, and HLGUp to 4K HDR AirPlay for mirroring, photos, and video out to Apple TV (2nd generation or later) or AirPlay 2enabled smart TVVideo mirroring and video out support: Up to 1080p through Lightning Digital AV Adapter and Lightning to VGA Adapter (adapters sold separately)9 Use your voice to send messages, set reminders, and moreActivate handsfree with only your voice using Hey SiriUse your voice to run shortcuts from your favorite appsLearn more about Siri Volume up/downRing/SilentSide buttonBuilt-in stereo speakersLightning connectorBuilt-in microphones Video playback: Up to 17 hoursVideo playback (streamed): Up to 10 hoursAudio playback: Up to 65 hoursFastcharge capable: Up to 50% charge in 30 minutes12 with 20W adapter or higher (sold separately)Built-in rechargeable lithiumion batteryWireless charging (works with Qi chargers13)Charging via USB to computer system or power adapter Face IDBarometerThreeaxis gyroAccelerometerProximity sensorAmbient light sensor iOSiOS is the worlds most personal and secure mobile operating system, packed with powerful features and designed to protect your privacy.See whats new in iOS Built-in accessibility features supporting vision, mobility, hearing, and cognitive disabilities help you get the most out of your iPhone. Learn more about AccessibilityFeatures include: Voice ControlVoiceOverZoomMagnifierRTT and TTY supportSiri and DictationType to SiriSwitch ControlClosed CaptionsAssistiveTouchSpoken ContentBack Tap CameraPhotosHealthMessagesPhoneFaceTimeMailMusicWalletSafariMapsSiriCalendariTunes StoreApp StoreNotesNewsContactsBooksHomeWeatherRemindersClockTVStocksCalculatorVoice MemosCompassPodcastsWatchTipsFind My SettingsFilesMeasureMagnifierShortcutsTranslate Pages, Numbers, Keynote, iMovie, GarageBand, Clips, and Apple Store app are preinstalled.iMoviePagesNumbersKeynoteGarageBandApple StoreTrailersiTunes RemoteClipsSupport Dual SIM (nano-SIM and eSIM)14iPhone 11 is not compatible with existing micro-SIM cards.eSIM not supported in all regions. Learn more about eSIM on iPhone. Viewable document types.jpg, .tiff, .gif (images); .doc and .docx (Microsoft Word); .htm and .html (web pages); .key (Keynote); .numbers (Numbers); .pages (Pages); .pdf (Preview and Adobe Acrobat); .ppt and .pptx (Microsoft PowerPoint); .txt (text); .rtf (rich text format); .vcf (contact information); .xls and .xlsx (Microsoft Excel); .zip; .ics; .usdz (USDZ Universal) Apple ID (required for some features)Internet access15Syncing to a Mac or PC requires: macOS Catalina 10.15 or later using the FindermacOS El Capitan 10.11.6 through macOS Mojave 10.14.6 using iTunes 12.8 or laterWindows 7 or later using iTunes 12.10.10 or later (free download from itunes.com/download) Operating ambient temperature: 32 to 95 F (0 to 35 C)Non-operating temperature: 4 to 113 F (20 to 45 C)Relative humidity: 5% to 95% noncondensingOperating altitude: tested up to 10,000 feet (3000 m) Language supportEnglish (Australia, Canada, India, Singapore, UK, U.S.), Chinese (Simplified, Traditional, Traditional Hong Kong), French (Canada, France), German, Italian, Japanese, Korean, Spanish (Latin America, Mexico, Spain), Arabic, Catalan, Croatian, Czech, Danish, Dutch, Finnish, Greek, Hebrew, Hindi, Hungarian, Indonesian, Malay, Norwegian, Polish, Portuguese (Brazil, Portugal), Romanian, Russian, Slovak, Swedish, Thai, Turkish, Ukrainian, VietnameseQuickType keyboard supportEnglish (Australia, Canada, India, Singapore, UK, U.S.), Chinese - Simplified (Handwriting, Pinyin QWERTY, Pinyin 10 Key, Shuangpin, Stroke), Chinese - Traditional (Cangjie, Handwriting, Pinyin QWERTY, Pinyin 10 Key, Shuangpin, Stroke, Sucheng, Zhuyin), French (Belgium, Canada, France, Switzerland), German (Austria, Germany, Switzerland), Italian, Japanese (Kana, Romaji), Korean (2-Set, 10 Key), Spanish (Latin America, Mexico, Spain), Ainu, Albanian, Amharic, Arabic (Modern Standard, Najdi), Armenian, Assamese, Assyrian, Azerbaijani, Bangla, Belarusian, Bodo, Bulgarian, Burmese, Cantonese - Traditional (Cangjie, Handwriting, Stroke, Sucheng), Catalan, Cherokee, Croatian, Czech, Danish, Dhivehi, Dogri, Dutch, Emoji, Estonian, Faroese, Filipino, Finnish, Flemish, Fula (Adlam), Georgian, Greek, Gujarati, Hawaiian, Hebrew, Hindi (Devanagari, Latin, Transliteration), Hungarian, Icelandic, Igbo, Indonesian, Irish Gaelic, Kannada, Kashmiri (Arabic, Devanagari), Kazakh, Khmer, Konkani (Devanagari), Kurdish (Arabic, Latin), Kyrgyz, Lao, Latvian, Lithuanian, Macedonian, Maithili, Malay (Arabic, Latin), Malayalam, Maltese, Manipuri (Bangla, Meetei Mayek), Maori, Marathi, Mongolian, Navajo, Nepali, Norwegian (Bokml, Nynorsk), Odia, Pashto, Persian, Persian (Afghanistan), Polish, Portuguese (Brazil, Portugal), Punjabi, Rohingya, Romanian, Russian, Sanskrit, Santali (Devanagari, Ol Chiki), Serbian (Cyrillic, Latin), Sindhi (Arabic, Devanagari), Sinhala, Slovak, Slovenian, Swahili, Swedish, Tajik, Tamil (Anjal, Tamil 99), Telugu, Thai, Tibetan, Tongan, Turkish, Turkmen, Ukrainian, Urdu, Uyghur, Uzbek (Arabic, Cyrillic, Latin), Vietnamese, WelshQuickType keyboard support with autocorrectionArabic (Modern Standard), Arabic (Najdi), Bangla, Bulgarian, Catalan, Cherokee, Chinese - Simplified (Pinyin QWERTY), Chinese - Traditional (Pinyin QWERTY), Chinese - Traditional (Zhuyin), Croatian, Czech, Danish, Dutch, English (Australia), English (Canada), English (India), English (Japan), English (Singapore), English (UK), English (U.S.), Estonian, Filipino, Finnish, Dutch (Belgium), French (Belgium), French (Canada), French (France), French (Switzerland), German (Austria), German (Germany), German (Switzerland), Greek, Gujarati, Hawaiian, Hebrew, Hindi (Devanagari), Hindi (Transliteration), Hungarian, Icelandic, Indonesian, Irish Gaelic, Italian, Japanese (Kana), Japanese (Romaji), Korean (2-set), Latvian, Lithuanian, Macedonian, Malay, Marathi, Norwegian (Bokml), Norwegian (Nynorsk), Persian, Persian (Afghanistan), Polish, Portuguese (Brazil), Portuguese (Portugal), Punjabi, Romanian, Russian, Serbian (Cyrillic), Serbian (Latin), Slovak, Slovenian, Spanish (Latin America), Spanish (Mexico), Spanish (Spain), Swedish, Tamil (Anjal), Tamil (Tamil 99), Telugu, Thai, Turkish, Ukrainian, Urdu, VietnameseQuickType keyboard support with predictive inputEnglish (Australia, Canada, India, Singapore, UK, U.S.), Chinese (Simplified, Traditional), French (Belgium, Canada, France, Switzerland), German (Austria, Germany, Switzerland), Italian, Japanese, Korean, Spanish (Latin America, Mexico, Spain), Arabic (Modern Standard, Najdi), Cantonese (Traditional), Dutch, Hindi (Devanagari, Latin), Portuguese (Brazil, Portugal), Russian, Swedish, Thai, Turkish, VietnameseQuickType keyboard support with multilingual inputEnglish (U.S.), English (Australia), English (Canada), English (India), English (Singapore), English (UK), Chinese - Simplified (Pinyin), Chinese - Traditional (Pinyin), French (France), French (Belgium), French (Canada), French (Switzerland), German (Germany), German (Austria), German (Switzerland), Italian, Japanese (Romaji), Portuguese (Brazil), Portuguese (Portugal), Spanish (Spain), Spanish (Latin America), Spanish (Mexico), Dutch (Belgium), Dutch (Netherlands), Hindi (Latin)QuickType keyboard support with contextual suggestionsEnglish (U.S.), English (Australia), English (Canada), English (India), English (Singapore), English (UK), Chinese (Simplified), French (Belgium), French (Canada), French (France), French (Switzerland), German (Austria), German (Germany), German (Switzerland), Italian, Spanish (Latin America), Spanish (Mexico), Spanish (Spain), Arabic (Modern Standard), Arabic (Najdi), Dutch (Belgium), Dutch (Netherlands), Hindi (Devanagari), Hindi (Latin), Russian, Swedish, Portuguese (Brazil), Turkish, VietnameseQuickPath keyboard supportEnglish (U.S.), English (Australia), English (Canada), English (India), English (Singapore), English (UK), Chinese (Simplified), French (Canada), French (France), French (Switzerland), German (Austria), German (Germany), German (Switzerland), Italian, Spanish (Latin America), Spanish (Mexico), Spanish (Spain), Portuguese (Brazil), Portuguese (Portugal), Dutch (Belgium), Dutch (Netherlands), Swedish, VietnameseSiri languagesEnglish (Australia, Canada, India, Ireland, New Zealand, Singapore, South Africa, UK, U.S.), Spanish (Chile, Mexico, Spain, U.S.), French (Belgium, Canada, France, Switzerland), German (Austria, Germany, Switzerland), Italian (Italy, Switzerland), Japanese (Japan), Korean (Republic of Korea), Mandarin Chinese (China mainland, Taiwan), Cantonese (China mainland, Hong Kong), Arabic (Saudi Arabia, United Arab Emirates), Danish (Denmark), Dutch (Belgium, Netherlands), Finnish (Finland), Hebrew (Israel), Malay (Malaysia), Norwegian (Norway), Portuguese (Brazil), Russian (Russia), Swedish (Sweden), Thai (Thailand), Turkish (Trkiye)Dictation languagesEnglish (Australia, Canada, India, Indonesia, Ireland, Malaysia, New Zealand, Philippines, Saudi Arabia, Singapore, South Africa, United Arab Emirates, UK, U.S.), Spanish (Argentina, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, Spain, Uruguay, U.S.), French (Belgium, Canada, France, Luxembourg, Switzerland), German (Austria, Germany, Luxembourg, Switzerland), Italian (Italy, Switzerland), Japanese, Korean, Mandarin (China mainland, Taiwan), Cantonese (China mainland, Hong Kong, Macao), Arabic (Kuwait, Qatar, Saudi Arabia, United Arab Emirates), Catalan, Croatian, Czech, Danish, Dutch (Belgium, Netherlands), Finnish, Greek, Hebrew, Hindi (India), Hungarian, Indonesian, Malaysian, Norwegian, Polish, Portuguese (Brazil, Portugal), Romanian, Russian, Shanghainese (China mainland), Slovak, Swedish, Thai, Turkish, Ukrainian, VietnameseDefinition dictionary supportEnglish (UK, U.S.), Chinese (Simplified, Traditional), Danish, Dutch, French, German, Hebrew, Hindi, Italian, Japanese, Korean, Norwegian, Portuguese, Russian, Spanish, Swedish, Thai, TurkishBilingual dictionary supportArabic English, Chinese (Simplified) English, Chinese (Traditional) English, Dutch English, French English, French German, German English, Gujarati English, Hindi English, Indonesian English, Italian English, Japanese English, Japanese Chinese (Simplified), Korean English, Polish English, Portuguese English, Russian English, Spanish English, Tamil English, Telugu

English, Thai English, Urdu English, Vietnamese EnglishThesaurusEnglish (UK, U.S.), Chinese (Simplified)Spell checkEnglish, French, German, Italian, Spanish, Arabic, Arabic Najdi, Danish, Dutch, Finnish, Korean, Norwegian, Polish, Portuguese, Russian, Swedish, TurkishApple Pay supported regionsArmenia, Australia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Brazil, Bulgaria, Canada, China mainland,16 Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Georgia, Germany, Greece, Greenland, Guernsey, Hong Kong, Hungary, Iceland, Ireland, Isle of Man, Israel, Italy, Japan, Jersey, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macao, Malta, Mexico, Monaco, Montenegro, Netherlands, New Zealand, Norway, Palestine, Poland, Portugal, Qatar, Romania, San Marino, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, UK, Ukraine, United Arab Emirates, U.S., Vatican City iPhone 11USB-C to Lightning CableDocumentationAs part of our efforts to reach our environmental goals, iPhone 11 does not include a power adapter or EarPods. Included in the box is a USBC to Lightning cable that supports fast charging and is compatible with USBC power adapters and computer ports.We encourage you to reuse your current power adapters and headphones that are compatible with this iPhone. But if you need any new Apple power adapters or headphones, they are available for purchase. iPhone 11 is designed with the following features to reduce its environmental impact:17See the iPhone 11 Product Environmental ReportsMade with better materials100% recycled rare earth elements in the Taptic Engine18100% recycled tin in the solder of the main logic board35% or more recycled plastic in multiple componentsEnergy efficientMeets U.S. Department of Energy requirements for battery charger systems19Smarter chemistry20Arsenic-free display glassMercury-, BFR-, PVC-, and berylliumfreeGreen manufacturingApples Zero Waste Program helps suppliers eliminate waste sent to landfillAll final assembly supplier sites are transitioning to 100% renewable energy for Apple productionResponsible packaging100% of virgin wood fiber comes from responsibly managed forests90% or more fiber-based packagingApple and the EnvironmentWere committed to making our products without taking from the earth, and to become carbon neutral across our entire business, including products, by 2030.See Apples commitment Available space is less and varies due to many factors. A standard configuration uses approximately 12GB to 17GB of space, including iOS 15 with its latest features and Apple apps that can be deleted. Apple apps that can be deleted use about 4.5GB of space, and you can download them back from the App Store. Storage capacity subject to change based on software version, settings, and iPhone model.Size and weight vary by configuration and manufacturing process.iPhone 11 is splash, water, and dust resistant and was tested under controlled laboratory conditions with a rating of IP68 under IEC standard 60529 (maximum depth of 2 meters up to 30 minutes). Splash, water, and dust resistance are not permanent conditions. Resistance might decrease as a result of normal wear. Do not attempt to charge a wet iPhone; refer to the user guide for cleaning and drying instructions. Liquid damage not covered under warranty.To send and receive money with Apple Pay, you must be at least 18 years old and a resident of the United States. If youre under 18 years old in the United States, your family organizer can set up Apple Cash for you as part of Apple Cash Family. Then you can send and receive money with Apple Pay. Sending and receiving money with Apple Pay and the Apple Cash card are services provided by Green Dot Bank, Member FDIC. Learn more about the Terms and Conditions.Available only in select cities and transit systems. Requires eligible device and OS version. See here for details.Data plan required. Gigabitclass LTE, VoLTE, and WiFi calling are available in select markets and through select carriers. Speeds are based on theoretical throughput and vary based on site conditions and carrier. For details on LTE support, contact your carrier and see apple.com/iphone/cellular.Ultra Wideband availability varies by region.FaceTime calling requires a FaceTimeenabled device for the caller and recipient and a WiFi connection. Availability over a cellular network depends on carrier policies; data charges may apply.Standard Dynamic Range video content only.Siri may not be available in all languages or in all areas, and features may vary by area. Internet access required. Cellular data charges may apply.All battery claims depend on network configuration and many other factors; actual results will vary. Battery has limited recharge cycles and may eventually need to be replaced. Battery life and charge cycles vary by use and settings. See apple.com/batteries and apple.com/iphone/battery.html for more information.Testing conducted by Apple in August 2019 using preproduction iPhone 11, iPhone 11 Pro, and iPhone 11 Pro Max units and software and accessory Apple USBC Power Adapters (18W Model A1720, 29W Model A1540, 30W Model A1882, 61W Model A1947 and 87W Model A1719). Fastcharge testing conducted with drained iPhone units. Charge time varies with environmental factors; actual results will vary.Qi wireless chargers sold separately.Use of eSIM requires a wireless service plan (which may include restrictions on switching service providers and roaming, even after contract expiration). Not all carriers support eSIM. Use of eSIM in iPhone may be disabled when purchased from some carriers. See your carrier for details. To learn more, visit broadband recommended; fees may apply.In China mainland, you can use Apple Pay on the web in Safari only on compatible iPhone and iPad models using iOS 11.2 or later.Data accurate as of product launch.The Taptic Engine represents about 25% of the total rare earth elements used in the product.Efficiency performance is based on the U.S. Department of Energy Federal Energy Conservation Standards for Battery Chargers.Apple defines its restrictions on harmful substances, including definitions for what Apple considers to be free of, in the Apple Regulated Substances Specification. Every Apple product is free of PVC and phthalates with the exception of AC power cords in India, Thailand (for two-prong AC power cords), and South Korea, where we continue to seek government approval for our PVC and phthalates replacement.

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