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USQ-113(V) - Archived 3/2011

Outlook

- Even though production of the U.S. Navy's USQ-113 communications jammer has ended, the system will remain in service for some time – at least until its primary platform, the EA-6B Prowler, is retired in 2012
- As long as the USQ-113 system is active, funding will continue for software improvements to enable the EA-6B to face evolving threats
- EA-6B's replacement, the EA-18G Growler, will feature an upgraded communications jammer other than the USQ-113

Orientation

Description. The USQ-113 is a communications jammer.

Sponsor

United States Navy
Naval Air Systems Command
NAVAIR HQ
47123 Buse Road, Unit IPT
Patuxent River, MD 20670-1547
USA
Tel: + 1 (301) 342-3000
Web site: <http://www.nawcad.navy.mil>

Status. In production, ongoing logistics support.

Application. The UST-104 (see **Variants/Upgrades**) equips large aircraft, ships, and ground vehicles. The USQ-113 equips the EA-6B.

Price Range. According to U.S. Department of Defense documents, the average price of a USQ-113 is between \$250,000 and \$300,000. The system is typically included as part of an electronic warfare suite.

Contractors

Prime

BAE Systems Electronics & Integrated Solutions	http://www.baesystems.com/Businesses/EIS/ , 65 Spit Brook Rd, Nashua, NH 03061-0868 United States, Tel: + 1 (603) 885-4321, Fax: + 1 (603) 885-2772, Prime
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USQ-113(V)**Technical Data****Characteristics**

Frequency range	
Basic system	20 to 500 MHz
Limited versions	100 to 500 MHz
	225 to 400 MHz
Modes	C3CM
	ESM
	Communications
Units	5 (with antenna and control unit)

Design Features. The UST-104/USQ-113(V) combines off-the-shelf receiver/transmitter technology with advanced software in an easy-to-use system capable of high-performance electronic support measures/electronic countermeasures (ESM/ECM). The UST-104(V) was derived from the ARC-171(V) radio and designed to be a complete stand-alone communications and communication countermeasures system. It utilizes traditional hardware and advanced software so the separate functions of ESM/ECM and communications are integrated into a single unit. The system features high-power amplification, and a long-range remote by wire or microwave link is possible.

It operates in the VHF/UHF communications band and can scan and display target signals throughout the entire frequency range. The transmissions are omnidirectional.

In the C3CM mode, the system monitors communications and can jam audio or data communications. It can automatically jam active frequencies or blindly jam swatches of spectrum. The communications mode allows normal voice or Imitative Communications Deception.

To assist the operator in determining equipment status, the USQ-113(V) incorporates built-in test equipment. Originally a built-in printer allowed the operator to print out a minute-by-minute record of monitored or jammed frequency activity. In the Improved Capability (ICAP) III EA-6B, the USQ-113(V) is integrated into the new displays.

Operational Characteristics. Operating in the VHF/UHF region, the USQ-113(V) gives the EA-6B aircraft an expanded capability in communications monitoring and jamming. It can be set to share power among several signals to create a high level of disruption.

Noise and deception jamming can disrupt an opponent's operations. By linking the system to an external modulator, the system can be optimized to counter a particular network. The communications mode gives operators the opportunity to insert false, misleading, or confusing information into a targeted link.

EA-6B crews have praised the performance of the USQ-113(V), noting that it was a badly needed capability. In the Afghan theater, the communications jammer turned out to be the main system used in what became a new Information Warfare mission.

Variants/Upgrades

The UST-104A configuration was developed for large aircraft and shipboard applications.

The UST-104B is used in tactical aircraft and ground mobile/vehicular applications.

USQ-113(V)2 is the Phase III upgraded version of the system. The Phase III system consists of new receivers, power amplifiers, and transmitters to extend the frequency range of the system. New operator panels feature an improved LCD that runs Windows-based software. It is a key part of the EA-6B ICAP III upgrade.

USQ-113(V)3. This version features reliability upgrades and has become fleet standard. Initial plans

were to procure 119 systems. It is being modified to transmit over two ARC-210 radios with an extended frequency range.

EA-6B ICAP III. ICAP III is an upgraded suite with an improved ALQ-99(V) jamming system and tactical display system with improved reliability. The USQ-113(V)3 is fully integrated into the suite so that data can be viewed through the main display system. A new display system will be installed to combine onboard and offboard data. The ICAP III upgrades improve situational awareness and help jam and suppress enemy air defenses by integrating offboard surveillance information, and by providing better communications connectivity.

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EA-18G. The EA-18G is the U.S. Navy's replacement for the EA-6B. The aircraft will be equipped with the ICAP III electronic warfare suite from the EA-6B. The Navy wants about 90 aircraft with an Initial Operational

Capability planned for 2009. The EA-18G will not be equipped with the USQ-113. Instead, a modified version, known as the ALQ-227 will equip the new aircraft.



EA-6B

Source: Northrop Grumman

Program Review

The USQ-113(V) was developed as a replacement for the ULQ-19(V) (RACJAM) tactical battlefield communications jammer in some applications. It has expanded applications, particularly for tactical aircraft.

Initial production began in 1989, based on an original contract for 70 systems, half of which would go to EA-6B applications and half to other users. In FY90, the U.S. Marines began to install some of the systems on unmanned air vehicles (UAVs) to disrupt communications behind enemy lines. The most significant recent procurement action was the result of the EA-6B upgrade program.

In FY97, the conference committee authorized \$11 million for 24 USQ-113(V) jammers. In October 1998, Sanders (now part of Lockheed Martin) received a \$12.9 million contract to upgrade the USQ-113(V) communications jammer on the EA-6B Prowler. Under the contract, Sanders would develop three pre-production systems during a non-recurring EMD phase. The contract also called for the upgrade of 30 existing USQ-113(V) systems.

Congressional Action on EA-6B

The FY03 congressional appropriation added \$10.5 million for USQ-113(V) jammers. The FY03 Un-funded Requirements List sent to Congress by the Chief of Naval Operations in February 2002 specified a

need for \$35 million for 57 additional USQ-113(V)s. The rationale was that since the current inventory only supported deployed squadrons and since the units could not be easily cross-decked, more were needed to fully support operations. Another \$2 million was needed to fund four units to buy out the USMC requirement. The list also included \$30 million in additional RDT&E funding for the EA-6B follow-on.

EA-6B Operations in Kosovo

In 1999, 26 aircraft were deployed to support operations in Kosovo. Five Prowlers flew from CVN-71, stationed off Yugoslavia. It was the first EA-6B support of NATO.

The mission focus was on breaking the air picture for the Yugoslavian integrated air defense system (IADS), disrupting the Serbian force's communications links, and killing air defense weapons systems.

"Kill box" scenarios were the most common mission, where EA-6Bs stood off and jammed steadily for 45 to 60 minutes while strikes ran into a particular area. This made for long windows of vulnerability. Prowlers accompanied all F-117 missions. Typically, EA-6Bs flew 22 sorties a day, logging 90 flight-hours per airplane and 123 flying hours per crew per month. The Marine squadrons averaged 97 hours per crew. Air Force crews were completely integrated into the operational units and performed exceptionally well.

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USQ-113 Proves Worth in Afghanistan

In November 2001, VAQ-137s sailed with the USS *Theodore Roosevelt* (CVN-71) toward East Asia for use in the war in Afghanistan. The Prowlers deployed were the first of the newest updates to see combat operations. The aircraft were night vision-capable (a first) and carried the USQ-113(V) communications jammer.

There was little ground radar activity on which the EA-6Bs could focus, but operators used Prowlers to jam Taliban and al-Qaeda communications links, often in conjunction with EC-130H Compass Call aircraft. Compass Call crews would monitor the communications bands, using discrete jamming from their onboard systems to shut down individual communications systems, and assign the EA-6Bs to attack broader frequency bands.

This was a new mission, but the four aircraft from the *Roosevelt* successfully jammed these links, providing

protection for the Special Operations Forces operating on the ground. A major concern was that the Prowlers would unintentionally jam the control link to the Predator UAVs, the joint direct attack munitions, or joint stand-off weapons.

End of the Line for New USQ-113s, But Improvements Continue

PE#0604270N EW Development

Project E0556 – EW Counter Response (EA-6B Advanced Capability). This PE funds the continuing development and integration of all EW systems, as well as USQ-113 software improvements for the EA-6B.

The U.S. Navy has decided to equip its new EA-18Gs with a modified version of the USQ-113. The new system, known as the ALQ-227, will be all digital and able to jam more complex waveforms over a broader frequency range.

Funding

U.S. FUNDING								
	FY09 QTY	FY09 AMT	FY10 QTY	FY10 AMT	FY11 QTY	FY11 AMT	FY12 QTY	FY12 AMT
RDT&E (U.S. Navy)								
PE#0604270N EW Development								
0556 EW Counter Response –								
ICAP III Update	-	7.8	-	8.4	-	0.0	-	0.0
	FY13 QTY	FY13 AMT						
RDT&E (U.S. Navy)								
PE#0604270N EW Development								
0556 EW Counter Response –								
ICAP III Update	-	0.0						

All \$ are in millions.

Source: FY10 U.S. budget documents. Amounts for FY11-FY13 not included in FY10 budget

Contracts/Orders & Options

(Contracts over \$5 million)

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Sanders, a Lockheed Martin Co	13.0	Aug 1998 – FFP contract for the procurement of 33 USQ-113(V)2 Phase III radio countermeasures sets, spares, two improved operator control panels, and associated support data and material for the EA-6B aircraft. Completed Aug 2000. (N00019-97-C-0039)

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<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
BAE Systems	13.0	Jul 2004 – ID/IQ contract for procurement of up to 57 USQ-113(V) radio countermeasures sets for the EA-6B. Completed Sep 2006. (N00019-04-D-0081)
BAE Systems	8.0	Aug 2004 – Contract for 25 USQ-113(V)3 communications jammers for the EA-6B aircraft to support deployment and training requirements.
BAE Systems	9.5	Sep 2005 – A letter contract for up to 30 USQ-113(V)3 system upgrades to support simultaneous transmission on both ARC-210 radios, as well as an extended frequency range. Completed by Jan 2008. (N00019-05-C-0078)

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Summer	1994	First operations with EA-6B squadrons
	FY96	USQ-113(V) full-rate production
4Q	FY97	EA-6B ICAP III Milestone II
4Q	FY98	USQ-113(V) connectivity upgrades begun
Oct	1998	Contract for 33 Phase III systems
Early	1999	USQ-113(V) connectivity final FOT&E and IOC approved
3Q	FY99	ICAP III PDR
	FY00	Begin EA-6B upgrades
Nov	2001	First flight of an ICAP III EA-6B; EF-18 makes first demonstration flight
2Q-4Q	FY02	ICAP III DT
Dec	2003	EA-18G production contract
1Q	FY04	ICAP III LRIP decision, contract award
4Q	FY04	Complete ICAP III OPEVAL
1Q	FY05	Low band Tx Milestone C, IOC, full-rate production decision, FRP start
2Q	FY05	ICAP III Milestone III, FRP award
2Q-4Q	FY05	FOT&E 1
3Q	FY05	ICAP III IOC
1Q-3Q	FY06	FOT&E 2
	2009	IOC of the EA-18G
	2015	Planned retirement and replacement of the EA-6B

Worldwide Distribution/Inventories

The USQ-113 is operated by the **United States**.

Forecast Rationale

As a key part of the soon-to-be-retired EA-6B Prowler electronic attack aircraft, the USQ-113 has come to the end of its production run. The U.S. Navy will equip its Prowler replacement, the EA-18G, with a more modern system, known as the ALQ-227. However, USQ-113s will continue to serve on EA-6Bs. As such, software improvements are likely to continue.

Communications jamming has been a particularly crucial element in the wars in Iraq and Afghanistan. Insurgents have made effective use of portable communications, most notably cell phones, to organize as well as to set off roadside bombs. The EA-6B, utilizing the USQ-113, has been used to disrupt communications and stop bombs from killing allied troops.

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Ten-Year Outlook

Since production has stopped for the USQ-113, the forecast chart has been removed.

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