

MIDDLE EAST/AFRICA

Date Posted: 21-Mar-2011

Jane's Defence Weekly

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## Libya: Allied aircraft roll out SEAD operations over Libya

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### Key Points

- Aircraft from 10 countries have conducted complex interdiction operations over Libya despite a rudimentary command structure
- The early emphasis of air sorties has been on neutralising the country's fixed integrated air defence system

More than 200 aircraft have been deployed by 10 NATO nations in operations in Libyan airspace since 19 March, with further deployments expected in support of the UN resolution providing "all necessary means" to cease attacks by Moammar Ghadaffi's loyalist forces against civilians.

Day-to-day command of the more than 80 aircraft committed by the US to the operation known as 'Odyssey Dawn' is held by Admiral Sam Locklear, commander of the US Joint Task Force, a spokesperson for the US Africa Command (AFRICOM) told *Jane's* on 21 March.

"The coalition allies are co-ordinating amongst themselves. As the mission evolves, coalition leadership will be determined," AFRICOM spokesman Vince Crawley said. "The US is on the record that it does not seek to be the long-term leader of the coalition."

Most of the allied effort has sought to neutralise Libya's fixed integrated air defence system (IADS), in line with the emphasis within the UN resolution on protecting civilians from loyalist ground forces, however, there is likely to be a shift towards escorting allied close air support aircraft with suppression of enemy air defences (SEAD) assets.

US Chairman of the Joint Chiefs of Staff Admiral Mike Mullen said on 20 March that a major aim of the air operations was to enable combat air patrols (CAPs) by close air support (CAS) aircraft to be sustained around the clock over eastern Libya to protect the rebel stronghold of Benghazi. Once that was in place, the allies would establish a second ring of protection over Misrata, to the west of the capital Tripoli.

A briefing from the UK Ministry of Defence on March 21 could signal a potential change of operational tempo over Libya, cuing a transition to a more traditional no-fly zone policing operation.

Air Vice Marshal Phil Osborn, Air Officer Commanding the Royal Air Force's 2 Group, stated that "operations today will start to switch to a forward presence and an even more substantive commitment to the no-fly zone, with [Eurofighter] Typhoon already forward and the UK looking to deploy Tornado in the near future, depending on the operational demand".

As Typhoon is still not cleared for air-to-ground operations, its role as a pure fighter suits an established forward position such as 906 Expeditionary Air Wing (EAW) at Gioia del Colle airbase in Italy, from where it can conduct combat air patrols.

By contrast, the fact that the UK Panavia Tornados may only be deployed if there is an "operational demand" may point to the fact that the opening offensive air-to-ground operations are now expected to subside because air defences have been suppressed, clearing the way for the fighters to impose the no-fly zone. Operations so far have been conducted from the GR.4's home base of RAF Marham in eastern England, which necessitated an eight-hour round trip of roughly 3,000 miles and four tanking connections.

Images emerging from Benghazi suggest that loyalist forces are protected by radar-guided 9K33 OSA (SA-8 'Gecko') and 2K12 Kub (SA-6 'Gainful') self-propelled surface-to-air missiles; ZSU-23-4 radar-guided anti-aircraft guns and an array of vehicle-mounted or man-portable surface-to-air missiles. This has required substantial SEAD and electronic intelligence-gathering to support the allied air forces and "open a window" over the CAP station.

*Jane's* has compiled an account of the assets contributed by the individual nations in support of the allied operation and the operations they have engaged in since 19 March. Below is a nation-by-nation account of activities up until the morning of 21 March.

## US

Included in the US deployment are Northrop Grumman B-2 Spirit stealth bombers and McDonnell Douglas (Boeing) AV-8B Harriers, being flown from three main airbases: Naval Air Station Sigonella in Sicily, Naval Support Activity Souda Bay in Greece and Aviano airbase in northern Italy.

US Navy Lockheed Martin P-3C Orion maritime patrol aircraft (MPA) are also monitoring the arms embargo against Libya from Sigonella, operating alongside Italian Breguet Atlantic MPAs. Electronic warfare and reconnaissance assets are concentrated at Souda Bay and include USAF Boeing RC-135 Rivet Joint, Lockheed Martin EC-130H Compass Call and EC-130J Commando Solo II special mission aircraft. US Navy Lockheed Martin EP-3E Aries II electronic intelligence aircraft are also operating from Souda Bay.

Combat aircraft that have arrived at Aviano to complement the permanent fleet of 42 Lockheed Martin F-16C Fighting Falcons include Boeing F-15E Strike Eagles and F-15C Block 50s, along with a detachment of US Navy Boeing EA-18G Growler electronic warfare aircraft.

US Air Force (USAF) Boeing KC-135R Stratotanker and McDonnell Douglas KC-10A Extender air-to-air refueling (AAR) aircraft, meanwhile, have been forward deployed to Rota in Spain, Royal Air Force (RAF) Base Mildenhall in the UK and Souda Bay.

The US Marine Corps' AV-8B Harriers have flown combat missions from the Wasp-class amphibious assault ship USS *Kearsage* in the central Mediterranean, making their first strike on the morning of 20 March on loyalist armoured vehicles near Benghazi.

US forces launched strategic strikes against IADS sites and airbases in the west around Tripoli to enable air operations in support of rebel-held areas in the west.

The Arleigh Burke-class guided-missile destroyers USS *Stout* and USS *Barry* and Los Angeles-class nuclear submarines USS *Providence*, USS *Scranton* and the converted Ohio-class guided missile carrier USS *Florida* have also been deployed. Thus far, a total of 112 Raytheon Tomahawk Land Attack Missiles (TLAM) have been fired against loyalist IADS targets.

SEAD aircraft, such as the F-16CJ and EA-18G, are working to establish an orbit near the CAP station to jam or engage loyalist anti-aircraft radars using Raytheon AGM-88 High Speed Anti-aircraft Missiles (HARMs).

AV-8B Harriers have also launched air attacks on Libyan armoured columns moving towards Benghazi. To support these strikes, US Navy Growlers launched twice from Aviano airbase to "open" a SEAD window for the Harriers. The Growlers remained on station but no reports have emerged of them firing High-Speed Anti-Radiation Missiles (HARMs) against any mobile Libyan air defence systems.

## UK

The UK RAF pre-positioned Boeing E-3D Sentry Airborne Warning and Control System (AWACS), Vickers VC10 AAR and Nimrod R.1 aircraft at its base at RAF Akrotiri on Cyprus before the UN resolution it co-sponsored was endorsed 17 March. Those aircraft were reinforced by two Raytheon Sentinel R.1 airborne stand-off radar (ASTOR) aircraft the following day.

Four Panavia Tornado GR.4 aircraft from 9 Squadron armed with MBDA Storm Shadow stand-off cruise missiles participated jointly with the US in attacks on IADS sites on 19 and 20 March, flying from their home base at RAF Marham in Norfolk, with VC10 and Lockheed TriStar tanker support.

Ten RAF Eurofighter Typhoons deployed from RAF Coningsby in Lincolnshire to Gioia Del Colle in southern Italy on 20 March. On the same day, UK Defence Secretary Liam Fox said that RAF Tornado GR.4s would also deploy to the base as the UK's Operation 'Ellamy' expands, though AVM Osborn's comments the following day may overshadow this.

AVM Osborn, however, said that the attack portion of the UK's effort remains based on the GR.4 carrying Paveway IV, MBDA's Air-Launched Anti-Radiation Missile (ALARM) and the anti-armour dual-mode Brimstone variant. He confirmed that the Tornados that called off an attack on the night of 20 March, citing the potential for collateral damage, were carrying the long-range Storm Shadow missile.

The Royal Navy Trafalgar-class nuclear submarine HMS *Triumph* also participated in 19 and 20 March strikes.

## France

French aircraft opened the manned phase of ground attack when the French Air Force dispatched a strike package of eight Dassault Rafale, two Dassault Mirage 2000-5 and two Dassault Mirage 2000D combat aircraft to support Operation 'Harmattan' on 19 March. The Rafales established a CAP over Benghazi to stop the advance of loyalist ground forces, with the support of six Boeing C-135FR tankers from the GRV 02.091 Bretagne squadron at Istres-Le Tubé airbase on the French Mediterranean coast.

The tankers were joined by a single Boeing E-3F AWACS aircraft from the 36th EDCA squadron from Avord airbase in central France, plus a single Transall C-160G Gabriel signals intelligence (SIGINT) aircraft operated by the 01.054 Dunkerque squadron from Metz-Frescaty airbase in northeast France. This aircraft carries a SIGINT payload to record information relating to radar operating frequencies, as well as communications and imagery intelligence payloads.

French aircraft have destroyed four loyalist armoured vehicles and are working to degrade and destroy Libyan ground-based air defence assets.

French Air Force operations are expected to be supported by French Naval Aviation aircraft flying from the *Charles de Gaulle* aircraft carrier by 23 March. The ship departed its home port of Toulon on the Mediterranean coast on 20 March. In addition to its complement of eight Rafale-M and 12 Dassault Super Étendard Modernisé combat aircraft, *Charles de*

*Gaulle* will carry two Northrop Grumman E-2C Hawkeye AWACS aircraft to co-ordinate naval combat aircraft operations and to provide early warning for the Charles de Gaulle battle group.

A pair of air force Eurocopter EC 725 Caracal helicopters from the EH 01.067 Pyrénées and a Eurocopter SA 330Ba Puma helicopter will support search-and-rescue operations.

The Charles de Gaulle battle group includes the *Jean Bart* and *Forbin* 'Cassard'- and 'Horizon'-class air defence frigates. Away from metropolitan France, French air operations are being sustained from Solenzara airbase in Corsica. This facility is tasked with recovering combat aircraft returning from missions above Libya.

## Italy

Italy has reinforced air defences in Sicily with Typhoon aircraft, which have been flying combat air patrols since 19 March. Tornado Interdiction and Strike (IDS) and Electronic Combat and Reconnaissance (ECR) aircraft have forward deployed to Trapani on Sicily to support air strikes against Libya.

Italian Navy operations are mostly concentrating on enforcing the naval blockade, but the aircraft carrier ITS Giuseppe Garibaldi is also off the Libyan coast, along with its AV-8B air groups. Other assets on station include the Horizon-class air defence destroyer ITS *Andrea Doria* and the *San Giorgio* amphibious assault ship.

Italian bases at Trapani, Sigonella and Decimomannu on Sardinia are, meanwhile, acting as hubs for NATO air forces.

## Norway

Six F-16s and one C-130J Hercules with a 120-strong advance party of support personnel operated by the Royal Norwegian Air Force (RNoAF) left Bodø airbase on 21 March to deploy for up to three months. Any requests for further Norwegian contributions to the operation will be evaluated, including the possible deployment of a P-3C Orion maritime surveillance aircraft or naval vessels.

After two hours in the air heading for Sigonella the six F-16s were redirected to Crete, where they are to be deployed until further notice. The C-130J will either join them there or be based out of Sigonella.

## Denmark

Four Danish F-16s and a C-130J arrived at Sigonella on 19 March. The F-16s conducted their first mission on 20 March, according to Danish Broadcasting, although the Danish Ministry of Defence has not confirmed that mission.

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