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NATO C2 in Libya: Coherence from Diversity

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Abstract

Having identified Complex Endeavors as a crucial set of circumstances where command and control (C2) is particularly challenging, the community is now engaged in determining how to go about these efforts. Complex endeavors involve a large number of disparate entities who come together for a limited time and to pursue what they perceive to be common interests. The 2011 NATO effort to support the rebels and bring about regime change in Libya was a classical complex endeavor. This paper deals with the NATO effort during 2011, divided into political and military (command and control) issues across four phases spanning March 2011 through the successful conclusion of the effort in October 2011. The key issues of what approaches were taken, what obstacles encountered, and what new insights emerge from the analysis form the concluding sections. This paper introduces a new key concept epitomized by NATO C2 in Libya: Coherence from Diversity.

Purpose

Having identified Complex Endeavors¹ as a crucial set of circumstances where command and control (C2) was particularly challenging, the community is now engaged in determining how to go about these efforts. Complex endeavors involve a large number of disparate entities who come together for a limited time and to pursue what they perceive to be common interests. Past work² has suggested that these missions are likely to involve a variety of different military coalition partners, interagency partners from several different civilian departments, international organizations, non-governmental organizations (NGO), as well as local authorities who may be tribal, clan, religious, or political party leaders. Complex endeavors are also complicated by the need to deal with media, both local and international. These operations are almost never purely military operations, but rather political-military activities.

The 2011 NATO effort to support the rebels and bring about regime change in Libya was a classical complex endeavor. Moreover, the need for NATO, an international organization, to simultaneously draw upon its member nations, represent the larger international community, support rebel groups within a sovereign state, provide humanitarian support, explain its actions to both the Libyan population and the world, while conducting a military operation with no “boots on the ground” provides us with a rich opportunity to gain insight into how these challenges can be overcome.

¹ Hayes, Richard E. It's an Endeavor, Not a Force. *The International C2 Journal*, 1(1), Washington, DC: CCRP, 2007. http://www.dodccrp.org/files/IC2J_v1n1_05_Hayes.pdf; Alberts and Hayes, *Planning: Complex Endeavors*, Washington, DC: CCRP, 2007.

² Alberts and Hayes, *Understanding Command and Control*, Washington, DC: CCRP, 2006; NATO SAS-065 Research Group. *NATO NEC C2 Maturity Model*. Washington, DC: CCRP, 2010.

This paper deals with the NATO effort during 2011, divided into political and military (command and control) issues across four phases spanning March 2011 through the successful conclusion of the effort in October 2011. The reporting here is factual and based on open source materials. Once those facts have been laid out, the focus returns to C2 in Complex Endeavors. The key issues of what approaches were taken, what obstacles encountered, and what new insights emerge from the analysis form the concluding sections. This paper introduces a new key concept epitomized by NATO C2 in Libya: Coherence from Diversity.

Background

The Libyan Civil War erupted from anti-government protests in February 2011. During the uprisings, Libyan government forces opened fire on civilians including aerial bombings over Tripoli. In response to this event and on the heels of defecting Libyan diplomats, UN Resolution 1970 was brought to the Security Council for a vote. On February 26, 2011, Resolution 1970 was passed, effectively freezing assets of key Libyan personnel, imposing travel bans on such personnel and enacting an arms embargo preventing weapons from being exported to or out of Libya.³

During this time, NATO increased its surveillance operation. On March 8, 2011, NATO deployed AWACS to provide observation and enforce UN Resolution 1970. This operation, coordinated from NATO's Allied Air Command in Turkey, gave NATO detailed information on Libya's air movements. On March 10, 2011, the decision was made to move ships into the region to bolster and enforce the maritime aspects of the operation.⁴

This did not deter Gaddafi and his forces from continuing to attack civilians throughout Libya in order to retain control. In response to Gaddafi's action on March 17, 2011, UN Resolution 1973 was passed which authorized member states to establish and enforce an arms embargo, a no-fly zone over Libya and to use all means necessary, short of foreign occupation, to protect Libyan civilians.⁵

Throughout this period, countries begin to pledge their support for the effort. The first to commit personnel and aircraft was Sweden, a non-NATO country. According to the Guardian newspaper, they pledged their support in January of 2011. The next country to follow was Canada on February 28, 2011.⁶ Canada's Lt. General Charles Bouchard was later announced as the combined Joint Commander for Operation Unified Protector on March 28, 2011.

³ United Nations Security Council, "Resolution 1970 (2011)." February 26, 2011. <http://www.icc-cpi.int/NR/rdonlyres/2B57BBA2-07D9-4C35-B45E-EED275080E87/0/N1124558.pdf>

⁴ NATO. "NATO and Libya-Operation Unified Protector" Last updated October 25, 2011. http://www.nato.int/cps/en/natolive/topics_71652.htm

⁵ United Nations Security Council. "Resolution 1973 (2011)." March 17, 2011. http://www.jfcnaples.nato.int/resources/24/Documents/UNSCR_1973.pdf

⁶ Guardian. "NATO Operations in Libya: data journalism breaks down which country does what," May 22, 2011. <http://www.guardian.co.uk/news/datablog/2011/may/22/nato-libya-data-journalism-operations-country>

Phase I—March 17-23, 2011

US and Coalition: NATO Operation Active Endeavour engaged under Resolution 1970 & 1973

Operation Active Endeavour is NATO's response to the war on terror. In October 2001, in response to the September 11th attacks, NATO deployed ships to the Mediterranean. The primary goal of these ships was to deter the movement of illegal weapons, militants, and weapons of mass destruction (WMDs). These ships were initially called upon by NATO to provide the backdrop for what would become Operation Unified Protector.

Political

Eight British Special Forces soldiers were briefly taken captive by Libyan rebel forces in the east of the country, according to British news reports on March 6, 2011. The soldiers, from the elite Special Air Service, had been part of a team escorting a British diplomat to meet with Libyan rebels, according to The Sunday Times of London, which first reported on the incident. The newspaper cited anonymous Libyan and British sources and said the men had been held at a military base over the weekend.⁷

On March 17, 2011, an international coalition was established in response to the UN Resolution 1973 with international air and maritime forces deployed to the region. Countries began to dedicate forces to the coalition: Belgium (March 18); Denmark, France, Greece, Norway, Spain, Turkey, UK, US (March 19); Italy and Romania (March 22); Bulgaria, Qatar (March 23); Jordan, UAE (March 24). There was, however, some concern during this time. Countries made demands upon the coalition, and then NATO, with regards to their involvement and in what activities their troops would or would not engage. For example, Turkey would not engage in any air strikes resulting in Libyan casualties. This was just one aspect that slowed the decision for NATO to become more involved under the umbrella of a coordinated NATO effort.⁸

During this time, President Obama said on March 21, 2011 that the actions of the United States would set the stage for the US' coalition partners to take further action.⁹

NATO ambassadors met on March 22, 2011 to determine if the 28-nation alliance should get involved. Questions arose concerning whether Gaddafi was a legitimate target. Other concerns for the NATO members (particularly Germany) were whether this conflict had anything to do with the defense of Europe. This question resulted in Germany withdrawing its support. Others (Turkey) suggested that air strikes had gone beyond the UN Mandate. In the end, the last holdouts (France and Turkey) were placated with a compromise. It was decided that strikes against Gaddafi loyalists would not come under the NATO umbrella, but would part of a coalition undertaking. This would allow the continuation of

⁷ Fahim, Kareem. Rebel Advance in Libya Set Back by Heavy Assault. *NY Times*, March 6, 2011. <http://www.nytimes.com/2011/03/07/world/africa/07libya.html?pagewanted=all>

⁸ Guardian. Ibid.

⁹ The White House. "Letter from the President regarding the commencement of operations in Libya," March 21, 2011. <http://www.whitehouse.gov/the-press-office/2011/03/21/letter-president-regarding-commencement-operations-libya>

strikes unimpeded by vetoes from reluctant NATO members.¹⁰ In the end, in NATO's intervention in Libya, only eight NATO countries would agree to launch raids with the bulk of the airstrikes coming from Canada, France and the UK.¹¹

Command and Control

Alongside the coalition, the United States proceeded to take out the air defense system in Libya in the opening part of the operation, effectively setting the ground work for a coalition and later NATO mission.¹² U.S. forces also targeted the Libyan command and control structures and other capabilities used to attack civilians and civilian populated areas.

The most significant coalition coordinated attack occurred over Libya on March 19, 2011. Operation Odyssey Dawn, the US contingent of the international effort against Libya, officially got underway. Following a meeting in Paris of NATO and coalition partners, the first joint effort occurred with the US and UK firing Tomahawks from ship to shore. It is also at this point that the bulk of countries agreed to commit personnel and weaponry.

On March 22, 2011, NATO acted to enforce the arms embargo. By the 23rd, NATO was actively engaged in stopping and searching vessels believed to be carrying arms or mercenaries.

Phase II--March 23-31, 2011

Operation Unified Protector (NATO) Takes Over

Coordination among US and NATO began to migrate from US and Coalition forces to that of a NATO controlled mission necessitating some strong lines of communication. Additionally, the US needed to be sure that while enforcing the no-fly zone and targeting Ghaddafi's forces, they would avoid hitting any rebel targets. These issues are addressed in this section.

¹⁰ MailOnline. "Who's in Charge? Germans Pull Forces Out of NATO as Libyan Coalition Falls Apart," March 23, 2011. <http://www.dailymail.co.uk/news/article-1368693/Libya-war-Germans-pull-forces-NATO-Libyan-coalition-falls-apart.html>

¹¹ Guardian. Ibid.

¹² United States Mission to NATO, "Remarks to the Press on Libya and Operation Unified Protector," September 8, 2011. <http://nato.usmission.gov/libya-oup-90811.htm>



Operation UNIFIED PROTECTOR - Area of Operation

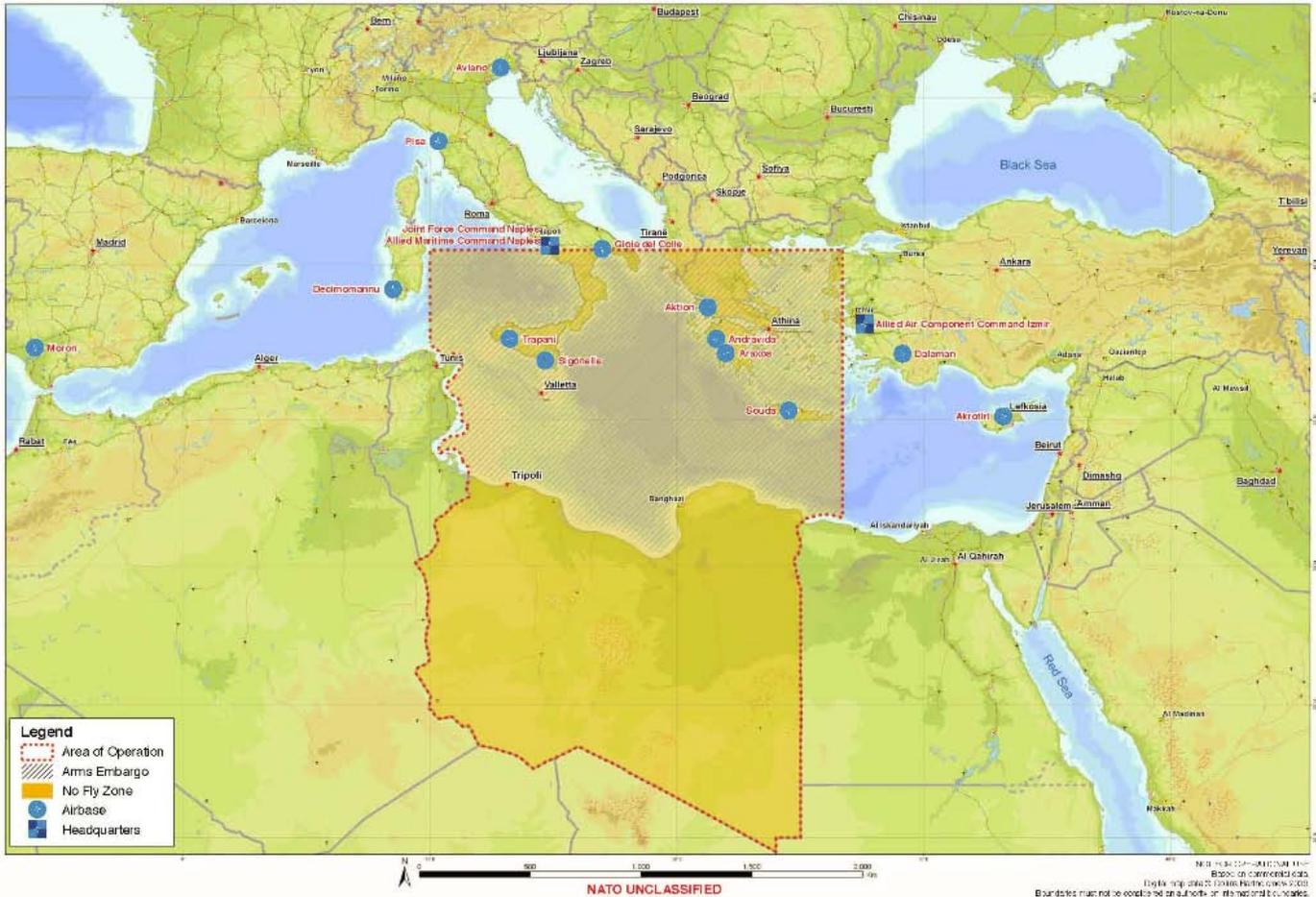


Figure 1. Operation Unified Protector-Area of Operation

Political

NATO warships and aircraft began patrolling the waters on March 23, 2011 with a mission of reducing the flow of arms and mercenaries into Libya as provided for under UN Security Council Resolution 1973. Operation Unified Protector was the NATO contribution to the international effort to protect Libya's citizens from the Ghaddafi regime. NATO stated to the international community, however, that there would still be a coalition and a NATO operation. When confronted about the possibility that information was being leaked from rebels to the US regarding possible positions of regime forces, a news article in *The Guardian* (March 23, 2011) cited Rear Admiral Gerard Hueber, Chief of Staff of Operation Odyssey Dawn:

“Hueber found himself in difficulty when questioned about whether the US was coordinating its attacks with rebel forces, which might be in breach of the UN mandate. Initially, he confirmed that US forces were consulting the rebels about their movements but later in the press

conference he backtracked, saying: "I misstated that". He said that the US had communication lines to the Gaddafi regime warning them to pull back their forces."¹³

NATO announced it would enforce the no fly zone on March 24, 2011. As part of the operation, naval vessels and surveillance aircraft, including NATO's AWACS, provided real-time monitoring and coordination of air activity over the Libyan airspace. They were also responsible for detecting any aircraft that entered the No-Fly Zone without prior authorization. NATO fighter planes stood ready to intercept any aircraft that violated the No-Fly Zone and to engage them if they presented a threat. In enforcing the No-Fly Zone, force would only be used as a last resort. As is standard in military operations, NATO's fighters had the right to self-defense against attacks from the air or the ground. NATO announced it was actively considering taking over the UN mandate.¹⁴

On March 25, 2011, concerns erupted over NATO's decision to set up dual command centers. US commanders remained responsible for ensuring that the NATO protective flights did not conflict with planned combat missions under the US Command.¹⁵

The Coalition announced on March 27, 2011 that it would take on a broader role of protecting civilians. NATO announced it would take over all the Libyan operation in the region on March 31, 2011. At this point, Supreme Allied Command under the direction of Admiral Stavridis in Belgium launched Operation Unified Protector as the responsible actor in the international effort to uphold Resolutions 1970 and 1973. All military activities were led from Naples by General Charles Bouchard (Canada). The transition of units to NATO authority was a national decision for individual countries.

Command and Control

US/UK Intelligence Provide Information from the Ground

The New York Times published a story entitled, "C.I.A. Agents in Libya Aid Airstrikes and Meet Rebels" (March 30, 2011). The article cited the presence of CIA and MI6 operatives on the ground weeks before in an attempt to gather firsthand knowledge as well as information from informants cultivated in 2003 as part of Gaddafi's claim to give up nuclear ambitions.

The results: MI6 operatives helped direct British airstrikes and gather intelligence about the whereabouts of Libyan government tank columns, artillery pieces and missile installations. American operatives were able to report the location of munitions depots and the whereabouts of government

¹³ McGreal, Chris, MacAskill, Ewen, and Norton-Taylor, Richard. "Libya: Allied air strikes secure Misrata for rebels," *The Guardian*. March 23, 2011. <http://www.guardian.co.uk/world/2011/mar/23/libya-allied-air-strikes-misrata>

¹⁴ NATO. "NATO Secretary General's Statement on Libya No-Fly Zone," March 24, 2011. http://www.nato.int/cps/en/natolive/news_71763.htm

¹⁵ Capitol Hill Blue. "NATO Lead in Libya Does Not End US Combat Role," March 25, 2011. <http://www.capitolhillblue.com/node/39934>

troops in towns. An unidentified US spokesman also commented that CIA operatives were meeting with rebels to understand their command structure and identify their leaders.¹⁶

On the same day the above mentioned story appeared, Libya's foreign minister defected to Britain with information about Gaddafi's remaining regime and forces.¹⁷

US Integration into NATO's Structure

During this phase of the operation, the primary concern of those involved was centered on duplicative efforts and maintaining clear lines of communications between the US, coalition partners and NATO. In essence, how do you maintain command and control in an extremely fluid environment? On March 24, 2011, this question was addressed by Vice Admiral Rinaldo Veri, Allied Maritime Commander in Naples, IT.

"I can say that the coalition is keeping us informed on what they are doing and to that point I would like to make very clear what Admiral Locklear's position is. Like his predecessors in Naples, he is dual-hatted. In his US Command role as Commander, U.S. Naval Forces Europe and Africa, Admiral Locklear has been designated Joint Task Force Commander for operation Odyssey Dawn. In this capacity, he has overall command, control and coordination of the U.S. National forces engaged in protecting the people of Libya in accordance with the Security Council Resolution. As commander, in his other hat, in his NATO hat, as Commander, Joint Force Command Naples, which is this present location, he has operational responsibility for the new NATO mission Unified Protector. So his position is very clear and it is through him that we can get the coordination."¹⁸

Throughout the chain of command, US integration and coordination is seen at all levels of operation. US commanders were present as the lead at Allied Air Command as well as Supreme Headquarters in Belgium. In addition, US Commanders with decision making capabilities were stationed at all three strategic locations: Turkey, Italy and Belgium. The chance for duplication of effort or conflict resulting in casualties in allied forces was, therefore, significantly reduced.

NATO's Command and Control Structure

The following chart represents the operational command structure for Operation Unified Protector.

¹⁶ Somayia, Ravi and Sanger, David E. "C.I.A. Agents in Libya Aid Airstrikes and Meet Rebels," *The New York Times*. March 30, 2011. <http://www.nytimes.com/2011/03/31/world/africa/31intel.html>

¹⁷ Chivers, C.J. and Kirkpatrick, David. "Retreat for Rebels; Libyan Foreign Minister Quits." *The New York Times*. March 30, 2011. <http://www.nytimes.com/2011/03/31/world/africa/31libya.html?ref=africa>

¹⁸ NATO. "News Conference on NATO-led operations in support of the United Nation Security Resolution (UNSCR) 1970 and 1973." March 24, 2011. http://www.manp.nato.int/operations/unified_protector/Transcript/transcript_01_11.html

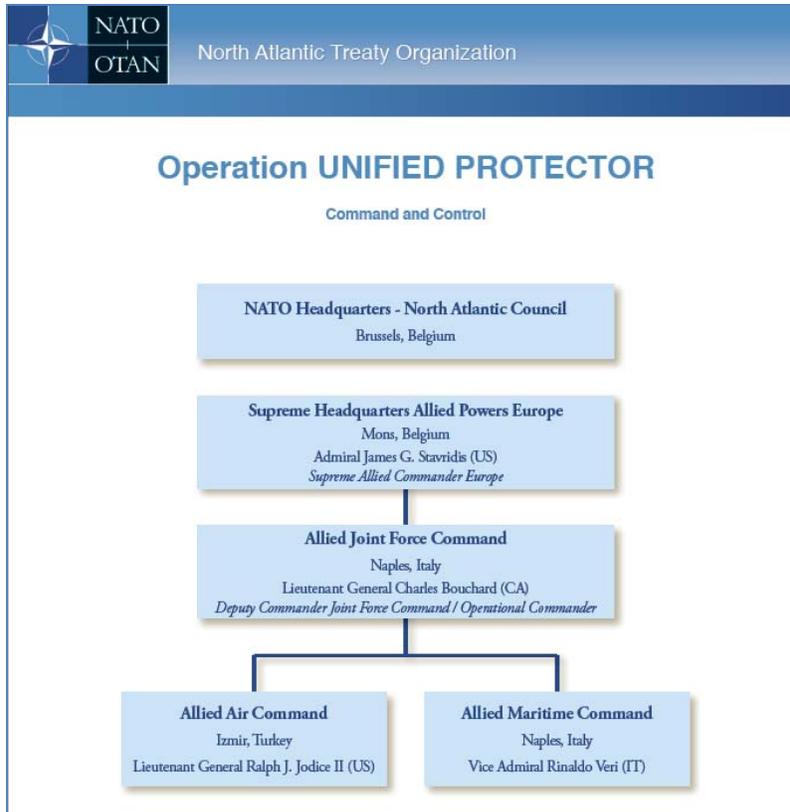


Figure 2. Operation Unified Protector Command and Control

NATO Allied Air Command, located in Izmir, Turkey, coordinated the initial air effort in February 2011 through early March 2011 under the direction of the Supreme Allied Command in Belgium. Command of the maritime and later the overall Allied Joint Forces Command operation, including the air command, was run from Joint Forces Command in Naples, IT. The overall coordinating effort rested in Belgium at Supreme Headquarters Allied Powers Europe, with Admiral James Stavridis (US) in command. (See Figure 2) Following a United Nations mandate to protect civilians, NATO began bombing military targets in March 2011. NATO was already present in the Mediterranean (2001) under Operation Active Endeavour, making it relatively easy to turn on Operation Unified Protector, NATO's operation enforcing UN mandates 1970 and 1973.

Phase III—March 31, 2011 - June 9, 2011

NATO Takes Sole Command of International Air Operations Over Libya

Political

A coalition consisting of some members of the North Atlantic Treaty Organization (NATO) plus partner countries such as Sweden, the United Arab Emirates, and Qatar, was supporting military operations to protect civilians, enforce the arms embargo, and/or enforce the no-fly zone in support of Resolution

1973. On March 31st, NATO assumed command for all three components of the coalition operations in the form of Operation Unified Protector (US Congressional Research Service, 25 April 2011).

On April 5, the head of Libya's rebel army, Abdel Fattah Younes, expressed disappointment, condemning NATO for its slow chain of command in ordering air strikes to protect civilians, saying the alliance was "letting the people of Misrata die every day."¹⁹ This was days after reports of the first major friendly fire incident (air strike), which claimed the life of 14 rebels. NATO denied any contact with the ITNC, Interim Transitional National Council (rebels), even though France, Italy, and Qatar had done so. They acknowledged, however, possible contacts on a political level in London. When asked about Younes's remarks, NATO spokesman Oana Lungescu said: "The facts speak for themselves. The pace of operations since NATO took over has not abated. We have conducted 851 sorties in the past six days ... we are fulfilling our mandate."

As of April 25, U.S. and coalition officials stated that coalition military operations had destroyed the ability of the Libyan military to control Libyan airspace and had reduced the capability of Libyan ground forces by roughly 30%-40%. The no-fly zone called for in Resolution 1973 was in place and was being enforced (see Figure 3 below) with U.S. support. Some air strikes were ongoing against pro-Gaddafi ground forces that continued to besiege opposition-held towns and against targets supporting operations by those Libyan military units. Coalition officials continued to reiterate their calls for Libyan government forces to stand down (US Congressional Research Service, 25 April 2011).

¹⁹ MacSwan, Angus. Libyan rebels condemn NATO over Gaddafi advance. *Reuters*, 5 April 2011. <http://www.reuters.com/article/2011/04/05/us-libya-idUSTRE7270JP20110405>

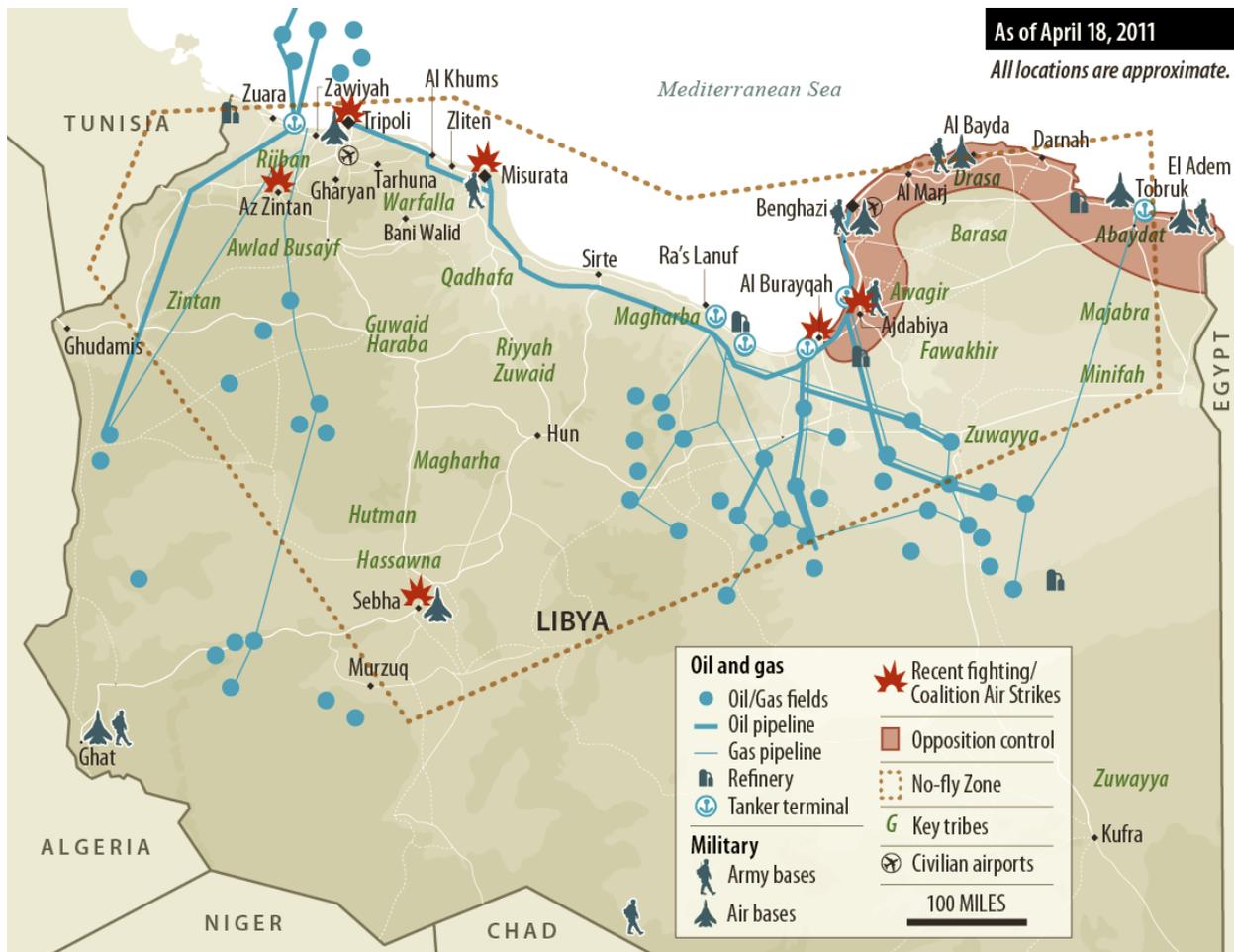


Figure 3. Map of Libyan Military Facilities, Energy Infrastructure, and Conflict²⁰

ITNC

Opposition groups formed an Interim Transitional National Council (ITNC) that was seeking international recognition as the representative of the Libyan people from its base in Benghazi.²¹ The extent of the group's domestic political legitimacy and authority was unclear, although its stated aspirations and appeals were addressed to all Libyans and its claims had been endorsed by some Libyans abroad, including some Libyan expatriate groups in Europe and the United States. The ITNC stated that many of the local and regional Libyan citizen councils that formed had endorsed the Council and its agenda. However, only limited information was available about the ITNC's relationships with many emergent opposition leaders, particularly in western Libya, whose identities ITNC leaders had claimed needed to remain secret for their protection. As of April 25th, France, Italy, Qatar, Kuwait, and the Maldives had formally recognized the ITNC as the legitimate diplomatic representative of the Libyan people (US Congressional Research Service, 25 April 2011).

²⁰ Source US Congressional Research Service (CRS), 25 April 2011.

²¹ Some basic information from the ITNC can be found on its website, <http://ntclibya.org/english/>

Command and Control

As of April 5, 17 NATO member states and partner countries, including the United States, had committed military forces to the NATO mission.²² On April 7, U.S. Africa Command Commander General Carter Ham testified that as a result of coalition strikes “the regime has a significantly degraded ability to continue to attack civilians” although a stalemate appeared more likely given recent developments. General Ham also warned of difficulties created by shifts in tactics by pro-Gaddafi forces and estimated that “many” of the “as many as 20,000” man-portable air defense system missiles (MANPADs, shoulder-fired surface-to-air missiles) that were thought to be in Libya before the conflict started “are now not accounted for.”

On April 21, The White House announced that it had approved the use of missile-armed Predator drones to help NATO target Colonel Gaddafi forces in Libya. Their ability to hone in on targets using powerful night-vision cameras was considered to be one way of helping rebels in the besieged city of Misrata, where a humanitarian crisis had unfolded in the last week. US Defense Secretary, Robert Gates, told a Pentagon news conference that the Predator was an example of the unique US military capabilities that the President was willing to contribute while other countries enforced a no-fly zone. Gates said Obama continued to be opposed to sending US ground forces into Libya and there were no plans to send US trainers to augment NATO forces already working with rebel forces.²³ And on April 23, the US carried out its first drone strike on Libya, the Pentagon said. US officials refused to give details of the hit by the Predator drone, but NATO claimed that the use of the unmanned aircraft would mean more precise targeting in populated areas.

From March 31 through April 21, NATO-led air forces conducted 3,148 air sorties and 1,311 strike sorties to “identify and engage” targets in Libya.²⁴ This included 195 aircraft and 18 naval vessels. After taking over command of military operations, allied fighter planes had conducted an average of approximately 150 sorties daily, over one-third of which were to either identify or strike ground targets.²⁵ On May 11, 2011 NATO reported that since the beginning of the operations nearly 6,000 sorties had been conducted. Over 2,300 of them were strike missions on approved targets.²⁶ Brigadier General Claudio Gabellini (Chief Operations Officer, Operation Unified Protector) stated “every day we observe a changing situation on the ground, and we make adjustments to our operations to ensure that our effort has the maximum effect.”

²² CRS 25 April 2011, Ibid.

²³ Shalal-Esa, Andrea. U.S. begins using armed drones in Libya, Gates says. *Reuters*, April 21 2011. <http://us.mobile.reuters.com/article/topNews/idUSTRE73K73620110421?irpc=932>

²⁴ NATO JFC Naples, Operation UNIFIED PROTECTOR – Key Facts and Figures, April 5, 2011

http://www.jfcnaples.nato.int/resources/24/Daily%20MU/OUP%20Daily%20MU_5april2011.pdf

²⁵ CRS 25 April 2011, Ibid.

²⁶ NATO Press briefing on Libya, May 10, 2011. http://www.nato.int/cps/en/natolive/opinions_73660.htm

Phase IV—June 10, 2011 – October 31, 2011

NATO Extends Mission

Political

On June 29, France became the first NATO country to openly acknowledge arming rebels seeking to topple Gaddafi, who had continued to resist a three-month bombing campaign that has strained alliance and rebel firepower.²⁷

Secretary of State Hilary Clinton officially recognized the TNC on July 15, describing the group as “the legitimate governing authority for Libya.”

National Transition Council fighters launched their first attack on the capital, Tripoli, in coordination with NATO air support on August 20. Gaddafi's compound was seized three days later, and the longtime leader dropped out of sight.

On September 21, NATO member state officials and partner country representatives announced the extension of military operations for an additional 90 days beyond September 30, if necessary.

Command and Control

On June 15, officials in NATO member states stressed that “open source” intelligence picked up online was being used in addition to a large number of information channels, ranging from unmanned aerial drones to television news channels. NATO intelligence analysts were turning to Twitter, YouTube, and other social media channels to help determine potential targets for Libyan airstrikes—and to assess their success.²⁸ This exploitation of civilian media and communications provided some timely data, though the sourcing must also be considered with caution.

Rebels in the mountains, Misurata and Benghazi, said on June 16 that they had managed to smuggle in and distribute satellite telephones that had allowed them to improve their communication from disparate corners of the country. At the same time that NATO's bombing raids had severely damaged the Gaddafi forces' communication abilities. Rebel fighters were also now equipped with high-frequency radios that allowed better coordination in the field, the rebels said.²⁹

U.S. military forces continued to support all three elements of the NATO mission: maritime arms embargo enforcement, no-fly zone patrol, and civilian protection. However, most U.S. air operations had shifted from air strikes against Libyan ground targets toward missions where the US had unique capabilities: refueling; intelligence, surveillance, and reconnaissance (ISR); electronic warfare; and

²⁷ Charbonneau & Hassan. France Defends Arms Airlift to Libyan Rebels. *Reuters*, June 30, 2011.

<http://uk.reuters.com/article/2011/06/29/uk-libya-idUKTRE75O1ER20110629>

²⁸ Bradshaw, T., & Blitz, J. NATO draws on Twitter for Libya strikes. *The Washington Post*, June 15, 2011.

http://www.washingtonpost.com/world/nato-draws-on-twitter-for-libya-strikes/2011/06/15/AGLJpTWH_story.html

²⁹ Kirkpatrick, D. Libyan Rebels Trumpet Coordination in Attacks. *NY Times*, June 16, 2011.

<http://www.nytimes.com/2011/06/17/world/africa/17libya.html?pagewanted=all>

suppression of enemy air defenses (SEAD) for NATO aircraft performing no-fly zone patrol missions.³⁰ Through August 22, 2011, U.S. aircraft had flown 5,316 sorties, of which 1,210 were strike sorties. Of those strike sorties, 262 dropped ordnance on targets. In addition, 101 Predator drone strikes had taken place. Manned U.S. aircraft also remained “on call” to potentially participate in civilian protection strike missions. However, U.S. participation required the prior approval of the Secretary of Defense.³¹

Reports from August 23 indicated that a number of serving British special forces soldiers, as well as former SAS troopers, were advising and training rebel forces, although their presence was officially denied. They had been acting as forward air controllers—directing pilots to targets—and communicating with NATO operational commanders. They had also been advising rebels on tactics, a task they reportedly had not found easy.³²

On October 20, NATO air support backed TNC fighters in their final assault on Moammar Gaddafi's hometown, Sirte. Gaddafi tried to escape in a convoy that was struck from the air. Later, he was captured and killed by rebel forces.

Libya's provisional leaders declared the country liberated from 42 years of rule by Moammar Gaddafi on October 22. Tens of thousands of Libyans celebrated in Tripoli and in Benghazi, the eastern city where the rebellion was born.

NATO military operations in Libya ended at midnight local time on October 31. Sixteen countries provided air support during the operation. Estimates of those killed - including pro-Gaddafi forces, "rebel" forces and civilians - vary between 2,000 and 30,000 (BBC, 31 October 2011).

Conclusion

Having already had a strong foothold off the coast of Libya, the US and Coalition forces (and subsequently NATO) decision to actively engage the UN Mandates as set forth in Resolutions 1970, and later 1973, did not compromise either actor. In fact, it built upon the resources they already had in the region. In order to accomplish the mission effectively, however, both actors would need the assistance of the global community in coordinating political and military actions.

As cited previously in “Complex Endeavors”, actors need political mechanisms to bring together goals and resources. In this case, the UN acted as the catalyst, but it was first the US, along with Coalition partners, who were able to come together to actively engage the military command and control structure in place and to begin patrolling the region in the sea and in the air. In addition, the Coalition actors coordinated the effort of acquiring military supplies and personnel to enhance the robustness of the mission in anticipation of becoming the primary stakeholders. However, the critical assumption of a complex endeavor is that the mission itself will be brought together for a finite time and purpose. In this case, it was ousting the regime in 90 days. These two factors are keys to contributing to its success.

³⁰ CRS, September 29, 2011. <http://fpc.state.gov/documents/organization/175868.pdf>

³¹ Reuters, “Factbox: Pentagon says U.S. stepped up pace of Libya air strikes,” August 22, 2011

³² Norton-Taylor, Richard. SAS troopers help co-ordinate rebel attacks in Libya. *The Guardian*, 23 August, 2011. <http://www.guardian.co.uk/world/2011/aug/23/sas-troopers-help-coordinate-rebels>

Another key aspect is the role of the US and UK and the information gathering done on the ground as the rebels were engaging Gaddafi's forces. The ability of MI6, CIA, and SAS operatives to work in what appears to be a coordinated effort to gather intelligence and information regarding targets and ammunition greatly enhanced the chances of success and minimizing casualties. The Libyan rebel forces benefitted greatly from improved communications equipment, trainers, and advisors, as well as the focus on operations. Following the initial surge into Libya, the US turned the mission over to NATO. In return, the US pulled back both militarily and politically, with regards to force, but remained embedded in the command and control structure of NATO, creating enhanced situational awareness, the ability to continue to coordinate accordingly, and continued to provide key air capabilities.

Reviewing the open source materials about the political and military aspects of NATO's efforts during the Libyan rebellion makes it clear that this was a true Complex Endeavor. From NATO's perspective, the core of the endeavor was those countries who participated directly in the effort – from the very visible air operations to the less visible, but also vital, maritime effort and the small number of operators on the ground. The necessary political effort was built upon UN resolutions, NATO's formal decision making structures, the ad hoc coalition that included Sweden, Qatar, and others who contributed air assets, and the formation of the ITNC to represent the variety of participants in the rebellion. The international community, including NGOs and private volunteers who worked with the coalition to provide assistance (medical, food, etc.) to those civilians caught up in the fighting also contributed effectively.

From a military perspective, the variety of Libyan fighters and their disparate command structures (and sometimes lack thereof) were also crucial. Some of these groups were literally geographic in their focus—from a particular city and primarily interested in defending that location. Others were tribal or clan based. Finding ways to communicate with these very disparate groups and providing them with the training, communications equipment, and weapons necessary for them to perform their key role was a challenging, but vital part of the operation. Eventually, a system emerged that took advantage of NATO's relatively high technology tools for situation awareness and targeting, used focused interactions with rebels, and also took advantage of social media to generate better information and ensure effective targeting.

All of this was, of course, done very rapidly. The variety of actors involved, and the wide range of functions necessary for success, made the whole effort messy and uneven, but it got done—the mission was accomplished. Reviewing this case suggests a new way to think about command and control in complex endeavors—they are an effort to create Coherence from Diversity. This is a theme we expect to develop in more detail and to apply to other contexts.

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