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REPORT

Promoting International Energy Security

Volume 1, Understanding Potential Air Force Roles

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Prepared for the United States Air Force

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Summary

This volume briefly examines the world oil market, how developments in that market might affect "wholesale" supplies of jet fuel, and what measures the Air Force might take to protect itself against high fuel prices and supply disruptions. To better examine the potential Air Force role in promoting international energy security, we conducted three exploratory studies. The first of these focused on measures the U.S. Air Force could take to improve energy security in Turkey and the Caspian Basin (Weiss et al., 2012), the second on the energy sea-lanes from Hormuz to Asia (Henry et al., 2012), and the third on the Gulf of Guinea (Johnson et al., forthcoming). For these exploratory studies, we purposely selected topic areas outside of the Middle East because there is already an active U.S. military presence in the Persian Gulf and the Strait of Hormuz.

The World Oil Market

Global demand for liquid fuels is about 87 million barrels per day (bpd). At present, over 98 percent of this demand is met by petroleum products derived from crude oil and, to a much smaller degree, liquid hydrocarbons coproduced with natural gas. Over one-half of global crude oil production enters the international oil trade.

As with many other commodities, oil prices are subject to large variations. For petroleum, price volatility is especially pronounced for three reasons:

1. It takes a fairly long time to bring new production on line in response to price signals—generally at least six years and often much longer.
2. Once new production is brought on line, the marginal cost of continuing production is fairly low.
3. Over the short term, petroleum demand is fairly unresponsive to prices.

These three factors account for the persistent high petroleum prices during most of the 1970s and early 1980s and the 17 years of low prices beginning in 1985. The low petroleum prices during the late 1980s and 1990s resulted in what, in retrospect, turned out to be an underinvestment in new petroleum production, leading to historically high crude oil prices in 2007 and 2008.

Complicating this structural picture of the world petroleum market are two major institutional problems. First, an international oil cartel, the Organization of the Petroleum Exporting Countries (OPEC), has a strong interest in keeping world crude oil prices high and in reducing price volatility. The history of oil prices since 1973, however, shows that OPEC has had mixed success meeting both objectives. In fact, the net result of OPEC's existence may

be increased crude oil price volatility: The organization's attempts to maintain high oil prices when prices are already high tend to promote overinvestment in new oil production in nations, including some members of OPEC, that do not conform to OPEC's production quotas.

The second institutional problem stems from the location of the world's petroleum resources. While most of the world's conventional petroleum resources are located in nations astride the Persian Gulf, many other locations also have appreciable resources. But nearly all the major oil exporting nations outside the Persian Gulf, as well as a few inside, suffer from governance problems that seriously impede investment in additional productive capacity. The notable exceptions are Canada and Norway. By presenting a barrier to investment in petroleum (and natural gas) production, governance shortfalls make world oil prices more volatile and higher than they would otherwise be. For example, in just two countries, Iraq and Nigeria, continuing conflict is causing daily production to be millions of barrels below what the two nations' resource base is able to support. In most of the other important oil exporting countries, governance shortfalls center on corruption, the lack of the rule of law, and persistent violations of human rights.

Responding to the Oil Market

While the Department of Defense (DoD) is one of the world's largest fuel users, its consumption of about 340,000 bpd is a small fraction (less than one-half of 1 percent) of global petroleum demand. Considering that the United States produces over 8 million barrels of oil per day domestically and imports an additional 3 million bpd from secure supplies in Canada and Mexico, we can find no credible scenario in which the military would be unable to access the 340,000 bpd of fuel it needs to defend the nation.

While DoD and the services will have access to the wholesale fuel supplies they require, the purchase price may be uncomfortably high. As fuel consumers, DoD and the services have only one effective option to deal with high petroleum prices: to reduce use of petroleum fuels overall. This can be accomplished by purchasing equipment that is more energy efficient; by adopting maneuvers schemes that are more energy efficient; and, in the short term, by implementing energy conservation measures to reduce petroleum use. Alternative liquid fuels do not offer DoD a way to appreciably reduce fuel costs.

Promoting Energy Security

As fuel purchasers, neither the U.S. Air Force nor DoD has enough power to influence the world oil market. But as part of the armed forces of the United States, the Air Force plays an important and productive role in the world oil market. The armed services are the backbone of the U.S. national security policy that ensures access to the energy supplies of the Persian Gulf and the stability and security of key friendly states in the region. Moreover, the U.S. Navy's global presence ensures freedom of passage in the sea-lanes that are crucial to international trade in petroleum and natural gas.

Can more be done? Is there a productive role for the Air Force and, more broadly, DoD in further promoting energy security? These two questions motivated our three exploratory studies.

Major Findings from the Case Studies

Turkey and the Caspian

In the Caspian Region, the major security threat to energy infrastructure stems from the ongoing tensions between Russia and Georgia. The Russian invasion of Georgian territory in 2008 caused a precautionary multiweek shutdown of the pipelines carrying oil and natural gas from Azerbaijan to Turkey. We found that energy infrastructures in the remaining nations in the Caspian region are being addressed fairly well, especially considering the current low threat level.

Turkey appears as a special case because of its geostrategic location, status as a NATO member, and long relationship with the U.S. Air Force. Kurdish terrorists have been able to execute numerous successful attacks on oil pipelines traversing eastern Turkey. While these attacks do not significantly threaten the national security of Turkey, they do lead investors to weigh pipeline security risks when considering the investments that will be required for Turkey to realize its goal of becoming an energy hub between Europe and both the Caspian and the Middle East. Another important Turkish energy transit issue is the oil tanker traffic through the Bosporus Strait. From the Turkish perspective, concerns center on the potential damage from a major oil spill. From the oil industry's perspective, concerns center on the possibility of a terrorist attack that could block tanker passage for many months. Considering its state of development and military capabilities, Turkey certainly has the wherewithal to address pipeline attacks and the concerns regarding the Bosporus. However, the U.S. Air Force could play a productive, albeit limited, role in promoting technology transfer and best practices on infrastructure protection, with the main motivation being to strengthen the U.S. and USAF relationship with Turkey.

Sea-Lanes to Asia

Another potential role for the Air Force is in assisting the U.S. Navy in sea-lane protection. Asia's sea-lanes are a growing security concern because of the increasing dependence of rapidly expanding Asian economies on imported energy sources. Unfortunately, regional security mechanisms have not kept pace and are no longer commensurate with the region's growing significance.

On this topic, our first major finding is that a joint approach, in which the Air Force provides meaningful assistance to the Navy, offers a more efficient and effective application of U.S. defense assets than the current approach, which relies almost solely on Navy assets. By capitalizing on interdependencies between the Air Force and Navy, a joint approach would lay a foundation for addressing more strategic concerns, including the overall role of the U.S. Air Force in ensuring access to global commons, and the collaborative development of an interdependent force posture. Our second, and more significant, finding is that overall U.S. interests are best served by a multinational approach to the protection of the energy sea-lanes to Asia. This approach provides a much better mechanism for addressing potentially serious threats that might arise if one or more of the countries along the sea-lane fails or goes rogue. Additionally, multinational cooperation in sea-lane protection provides a means of dampening the simmering tensions and lingering disputes that prevail within Asia. From the U.S. Air Force perspective, a multinational approach provides new opportunities for interaction, building partnerships, and ensuring access.

The Gulf of Guinea

Nigeria is an important oil exporter, and recent developments indicate that appreciable exports may soon be flowing from Ghana. Security shortfalls are a significant impediment to hydrocarbon production and transport in Nigeria. Our examination of the security situation in Nigeria and other nations bordering the Gulf of Guinea indicates that current and future U.S. Air Force capabilities in building partnership capacity offer security improvements that could promote greater production of petroleum and natural gas. However, any efforts to build military partnerships in this region must consider broader U.S. goals, especially the risks that U.S.–provided military capabilities might be applied to local civilian populations. While there are signs of improved governance in Nigeria, these considerations suggest that Ghana, an emerging petroleum producer with considerably better governance, may be a more attractive partner.

Key Findings

Three key findings emerged from the results of our examination of the world oil market and from our three exploratory studies. First, as fuel purchasers, neither the U.S. Air Force nor DoD has appreciable power to affect the world oil market. Their only effective option for reducing fuel expenditures is to use less fuel.

Second, where security shortfalls impede hydrocarbon production or transport, current and future U.S. Air Force partnership-building capabilities offer security improvements that could promote greater production of petroleum and natural gas resources. Notable examples of nations where security shortfalls are significantly impeding investment and production are Nigeria; Iraq; Sudan; and, most recently, Libya. Unless addressed, pipeline security issues will impede investment in Turkey.

Although current and future Air Force partnership-building capabilities offer security improvements, partnerships associated with energy infrastructure protection are impeded by concerns that U.S. assistance will threaten the sovereignty of the host country. Additionally, U.S. government concerns about human rights violations and corruption may impede partnership building in such countries as Nigeria.

Our third key finding is that the vulnerability of the petroleum supply chain can be leveraged to achieve broader U.S. objectives, such as diffusing tensions along the Asian sea-lanes, where our primary concern is the potential for conflict between the two regional pillars, India and China. Energy security concerns also may help strengthen existing partnerships (e.g., Turkey) or building new partnerships (e.g., India) with current and prospective allies.