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Airstrikes on Abqaiq Reveal Fragility of Global Oil Supply, Demonstrate Need for United States to Reduce Oil Dependence

"The United States should never rely upon any single foreign nation for a critical resource and should move boldly to disentangle American national and economic security from the chaos in the Middle East that drives global oil price volatility. The goal of oil security can be achieved by enlisting America's abundant domestic energy resources to diversify the fuels that power our cars and trucks. Major oil producers in the Middle East are hurtling toward conflict. The United States should act now."

- FedEx Chairman & CEO Frederick W. Smith and General James Conway, 34th Commandant of the U.S. Marine Corps

Summary

- On September 14, airstrikes crippled the Abqaiq oil processing facility—the largest such facility in the world—and the Khurais oil field, forcing state-owned Saudi Aramco to immediately halt 5.7 million barrels per day in oil production. The attacks at the heart of Saudi Arabia's oil production facilities will likely serve as a catalyst for heightened tensions in the region, and also between the United States and Iran. A further spark in this highly-charged environment holds the potential to set off a chain reaction with significant implications for security throughout the Middle East and for global oil markets.
- The strikes on Abqaiq may increase oil price volatility, but thus far prices have been tempered by a number of factors, including a well-supplied market and slower global economic growth. However, if escalating tensions further threaten oil supplies the impact would be magnified, negatively affecting the U.S. economy and testing American foreign and military policy.
- The latest attacks should serve as a warning to policymakers. If a similar oil production outage occurred under different conditions, the result could prove to be catastrophic. The United States relies on oil to power 92 percent of its transportation system, a figure that has remained more or less unchanged over decades. A lack of diversity in our transportation fuels means consumers have nowhere to turn if oil prices spike. The United States should do more to support fuel diversity in the transportation sector, and electric vehicles in particular.
- The U.S. military spends \$81 billion every year to secure the global oil supply, due to America's status as the world's largest oil consumer. Our overwhelming dependence on oil is, in large part, why the United States has a substantial and permanent military footprint in the Gulf region.
- The Strategic Petroleum Reserve (SPR) should be recognized as a strategic asset for the nation, not a mechanism to balance the federal budget. Events like the recent attacks are the types of situations for which the SPR was designed. The SPR remains the best short-term defense against supply disruptions and is a critical part of our national and economic security infrastructure.

Background

On September 14, airstrikes crippled the world's largest oil processing facility, Abqaiq, and the Khurais oil field, forcing state-owned Saudi Aramco to immediately halt 5.7 million barrels per day (Mbd) in oil production. The attacks represent the largest-ever oil production outage from a single event.¹ While the damage is still being assessed and it is unknown whether Aramco facilities will remain offline for days, weeks, or even months, the immediate consequence is that more than 5 percent of the global oil supply has been disrupted. Initial market reactions were bullish, with Brent futures surging nearly \$12 on the market's Monday opening, from \$60 per barrel to \$72.² Longer term, the strikes may signal the return of a geopolitical risk premium.

Following the attacks, Saudi Arabia stated that it hoped to quickly restore 2.0 Mbd and did not expect significant disruptions to exports due to existing stockpiles.³ While Saudi Arabia is reported to have approximately 26 days of crude exports in storage, a prolonged outage would undoubtedly inject greater uncertainty in the market.⁴ Regardless of how quickly Saudi Aramco can repair their facilities and resume normal operations, the attacks highlight the physical vulnerabilities of oil supply lines throughout the Middle East and raise questions about Saudi Arabia's ability to protect its infrastructure. Despite spending billions of dollars on missile defense systems, Saudi Arabia was unable to prevent the attacks. While Saudi Arabia is already planning military reforms, there is no guarantee that the country will successfully defend against future attacks.⁵ This may prove particularly damaging to Saudi Aramco as it prepares for its initial public offering (IPO).

While the Iran-aligned Houthi group in Yemen claimed responsibility for the attacks, there was some initial uncertainty regarding where the attacks originated. The U.S. government declassified satellite images that show aerial strikes hitting at least 17 locations, with some officials claiming that the images implicate Iran.⁶ United States Secretary of State, Mike Pompeo, accused Iran directly, tweeting that "...Iran has now launched an unprecedented attack on the world's energy supply. There is no evidence the attacks came from Yemen." While Iran has thus far adamantly denied involvement in the attacks, Saudi Arabia's Ministry of Foreign Affairs issued a statement saying that initial investigations show Iranian weapons were used to attack the Aramco facilities.⁷

Figure 1: Attacks on Saudi Oil Infrastructure



¹ See, e.g., David Sheppard, Anjli Raval, Hudson Lockett, "Oil prices soar after attacks halve Saudi output," *Financial Times*, September 16, 2019.

² See, e.g., David Sheppard, Anjli Raval, Demetri Sevastopulo, "Oil price spikes as fears mount over Saudi supply disruption," *Financial Times*, September 16, 2019.

³ *Ibid.*

⁴ See, e.g., Anthony Dipaola, Javier Blas, Will Kennedy, "Aramco to Face Weeks Without the Majority of Abqaiq's Oil Output," *Bloomberg*, September 16, 2019.

⁵ See, e.g., Adam Taylor, "Billions spent on U.S. weapons didn't protect Saudi Arabia's most critical oil sites from a crippling attack," *The Washington Post*, September 17, 2019.

⁶ Eric Schmitt, Farnaz Fassihi, David Kirkpatrick, "Saudi Oil Attack Photos Implicate Iran, U.S. Says; Trump Hints at Military Action," *New York Times*, September 16, 2019.

⁷ See, e.g., Sharif Paget, "Saudi officials say Iranian weapons were used in attack," *CNN*, September 16, 2019.

Iran's potential role in the attacks come at a time when the Trump administration is still exploring its options after withdrawing from the Iran nuclear deal. Senator Lindsey Graham (R-SC), has suggested that the United States should consider attacking Iranian oil refineries in retaliation, though President Trump has stated that he wishes to avoid war.⁸ The president has not taken an escalatory intervention off the table, tweeting that the United States remains "locked and loaded." However, President Trump has already ordered new sanctions on the country as evidence builds that Iran was behind the strikes.⁹

The attacks at the heart of Saudi Arabia's oil production facilities will likely serve as an unexpected catalyst of heightened tensions in the region, and also between the United States and Iran. A further spark in the newly intensified environment could set off a chain reaction with significant implications for security throughout the Middle East and for global oil markets.

If the Abqaiq attacks lead to additional threats or retaliatory actions, oil prices will be more volatile and include a higher risk premium. Due to continued and extreme dependence on oil in its transportation sector, U.S. businesses and consumers will ultimately pay the price. Until steps are taken to achieve greater fuel diversity, America will remain constrained in its foreign policy and military options and consumers will remain hostage to conflicts in the Middle East and throughout the world.

Oil Market Implications

The attacks on Saudi Aramco's Abqaiq oil processing plant mirror a 2011 simulation developed by Securing America's Future Energy (SAFE) in its Oil Shockwave exercise.¹⁰ The simulation gamed out the effects on oil prices and U.S. policy options if Al-Qaeda attacked the Abqaiq oil facility, with the participants—former administration officials with decades of energy and security policy experience—ultimately concluding that the United States has few options to counter a short-term crisis on this scale.

Eight years later, the Abqaiq scenario is unfolding in the real world with serious consequences for global stability if decision makers act imprudently. Even with expectations of slower global economic growth and a well-supplied market with ample commercial stocks, the attacks still caused record price increases.¹¹ Oil prices have now moderated following their highs earlier this week, but the current economic landscape should not mask the importance of this event or provide false assurances that similar events will not have much more serious consequences.

The price of Brent increased nearly 20 percent on the first day of trading following the strikes, its biggest gain in percentage terms since 1991.¹² AAA estimates that \$70 crude would translate to at least \$3 gasoline for U.S. consumers.¹³ Still, the potential for the situation to deteriorate further should not be taken lightly given the important role the Middle East plays in the global oil market or broader problems it portends.

⁸ See, e.g., Maegan Vazquez, "President Trump: 'We pretty much already know' who was behind Saudi Arabia oil attack," CNN, September 16, 2019.

⁹ See, e.g., James Politi, Peter Wells, Ahmed Al Omran, "Trump orders 'substantially' tougher sanctions on Iran," Financial Times, September 18, 2019.

¹⁰ See, e.g., Chris Landers, "War Game Exposes Grim Reality: Few Oil Crisis Options," National Geographic, July 15, 2011.

¹¹ See, e.g., Benoit Faucon, Summer Said, Amrith Ramkumar, "Attacks on Saudi Oil Facilities Spark Supply Worries," Wall Street Journal, September 15, 2019.

¹² See, e.g., Serene Cheong and Dan Murtaugh, "Oil Prices Jump Most on Record After Saudi Arabia Strike," Bloomberg, September 16, 2019.

¹³ Jeffrey Bair and Ari Natter, "Gasoline Pump Prices in U.S. Set to Jump After Saudi Attack," Bloomberg, September 16, 2019.

The market reaction to the attack reinforces Saudi Arabia's central role in global oil production. The Middle East region produces more oil than any other region in the world, totaling approximately 31 percent of the world's total supply in 2018.¹⁴ Nearly 40 percent of Middle East supply comes from Saudi Arabia, which has traditionally held the vast majority of the world's spare oil production capacity.¹⁵ Following the attacks, Saudi Arabia may now utilize its more than 2.2 Mbd of spare capacity, leaving little spare capacity across the global market.¹⁶ Following reassurances by Saudi Arabia, the Organization of the Petroleum Exporting Countries (OPEC) and Russia decided to hold off pumping more oil, which is further evidence that the United States remain dependent on other nations collaborating to make decisions on the direction of the market.¹⁷

The possibility of sustained higher oil prices poses significant risks to the United States and world economies. Goldman Sachs is estimating that prices are likely to rise above \$75 a barrel if the outages at Abqaiq last more than six weeks.¹⁸ With tensions now higher between Saudi Arabia and Iran, there may be an increased likelihood of further supply disruptions in the region. The Persian Gulf, lying between them, is home to the Strait of Hormuz through which approximately 30 percent of daily global maritime oil trade flows (the volumes ranged from 15.7 Mbd to 18.5 Mbd between 2009 and 2016).¹⁹ Thus, the quantities of oil that must pass through the waters between these two embittered rivals is sufficient to pose a further risk to global oil prices. The global nature of the oil market means that insecurity in the Middle East region poses a risk to oil prices everywhere, including in the United States.

In addition to the prospect of continued and potentially greater price volatility, any further escalations or retaliatory actions would likely result in a larger, more enduring risk premium attached to the prevailing global price of crude oil due to fears of deepening regional instability, terrorism, and possibly war. Given the vulnerabilities of Saudi oil infrastructure, another attack taking meaningful amounts of Saudi oil off the market would be incredibly harmful. Further attacks and disruptions in the region or elsewhere around the world would not only cause prices to skyrocket, but oil scarcity would have further geopolitical implications as nations scramble to maintain access to suddenly limited energy resources.

Impact on U.S. National Security

It is now clear that the global oil market, upon which the U.S. and global economy depends, is much more fragile than previously believed. This fragility reinforces the fact that the United States' dependence on oil remains a significant national security concern. The U.S. military has long accepted the burden of protecting maritime oil supply routes and vulnerable energy infrastructure across the globe, both for itself and its allies. The United States has also actively sought to prevent domination of Persian Gulf petroleum-producing states by powers hostile to its interests and has even gone to war to prevent such domination, while also being confronted with terrorism—often funded by oil revenues.

The cost of protecting the global oil supply is substantial, and requires American taxpayers and the U.S. military to accept responsibility for securing these supply lines at an estimated cost of \$81 billion

¹⁴ SAFE analysis based on data from U.S. EIA.

¹⁵ See, e.g., Reuters, "Explainer: Attack on Saudi leaves world without spare oil capacity," September 15, 2019.

¹⁶ Ibid.

¹⁷ See, e.g., "Benoit Faucon, Summer Said, Georgi Kantchev, "OPEC, Russia Hold Off Pumping More Oil After Saudi Attack," Wall Street Journal, September 16, 2019.

¹⁸ See, e.g., Serene Cheong and Dan Murtaugh, "Oil Prices Jump Most on Record After Saudi Arabia Strike," Bloomberg, September 16, 2019.

¹⁹ EIA, "World Oil Transit Chokepoints," July 25, 2017.

annually.²⁰ This is approximately 16 percent of recent U.S. Department of Defense base budgets. Spread out over the 19.8 million barrels of oil consumed daily in the United States in 2017, the implicit subsidy for all petroleum consumers is approximately \$11.25 per barrel of crude oil, or \$0.28 per gallon.²¹ A more extensive estimate suggests the costs could be greater than \$30 per barrel, or over \$0.70 per gallon.²² If one carries this expense out for a decade, costs rise to almost \$1 trillion. The country could clearly make better use of the resources devoted to this purpose, including reallocation toward more pressing military priorities.

Despite our position as the primary guardian of the global oil supply, we nonetheless are affected by events around the world that are outside of our control. Following the Abqaiq attacks, the United States' foreign policy options are limited. For example, the importance of Saudi Arabia's oil means little is likely to change in terms of U.S. support for the country, despite its record of human rights abuses.

If tensions continue to escalate between Saudi Arabia and Iran, and eventually evolve into a more open conflict, the United States would be unlikely to avoid committing significant military assistance to Riyadh, and there is a real possibility of more meaningful U.S. involvement.

Following the Abqaiq attacks, policymakers on both sides of the aisle expressed a desire to avoid retaliation or any U.S. involvement, which might be difficult to avoid given oil's important role in the global economy.²³ While President Trump has not taken any military options off the table, he initially indicated a willingness to use the United States' Strategic Petroleum Reserve (SPR) in the event that outages begin to meaningfully impact prices.

The strategic stockpile of 645 million barrels of oil, established in 1975 after the Arab Oil Embargo two years earlier, is a cushion against emergencies in the oil market.²⁴ In the past, the SPR has been used as a buffer against physical disruptions caused by hurricanes and geopolitical turmoil, and while the reserve is designed to provide cover for a certain number of days of oil imports, its true function is not as a substitute for imports, but a backstop in the event of emergencies such as those currently unfolding. The SPR contributed to helping protect our economic and national security interests during the first Gulf War, Hurricanes Katrina and Rita, Libyan unrest in 2011, as well as smaller events like weather and accident-related disruptions to oil transport.

While a release in response to the Abqaiq attack is the textbook situation for which the SPR was developed, there have been several sales of SPR oil in recent years to raise revenue. Treating the SPR as a source of funding for non-energy initiatives suggests that Congress underappreciates the value the SPR can play in calming the oil market in turbulent moments and the effect that oil dependence has on both our economic and national security. Following this experience, Congress should exercise greater scrutiny before approving any future selloffs.

America's Enduring Energy Security Challenge & the Need for Greater Fuel Diversity

Almost 40 percent of total U.S. primary energy demand is met by oil, giving it an economic significance unmatched by any other fuel.²⁵ The transportation sector accounts for more than 70 percent of the approximately 20 million barrels per day (Mbd) the United States consumes, and the 260 million

²⁰ Securing America's Future Energy, "The Military Cost of Defending Global Oil Supplies," September 20, 2018.

²¹ Ibid.

²² Ibid.

²³ See, e.g., Josh Wingrove and Daniel Flatley, "Trump's Suggestion of Iran Strike Raises Bipartisan Alarm," Bloomberg, September 16, 2019.

²⁴ U.S. Department of Energy, "Strategic Petroleum Reserve Inventory," September 13, 2019.

²⁵ SAFE analysis based on data from EIA.

registered light-duty vehicles account for more than 60 percent of that consumption. The transportation sector relies on oil for 92 percent of its total energy consumption, a figure unchanged in decades.²⁶

A lack of diversity in our transportation fuel mix means consumers have nowhere to turn if oil prices spike, even in the current environment of rising trade war tensions and expectations of slower economic growth. While it is uncertain how recent events will affect prices over the medium term, the Abqaiq attacks should serve as a stark reminder that the United States remain vulnerable to supply disruptions across the globe that are outside of our control.

The United States has made genuine progress toward advancing energy security since the country first became aware in the early 1970s of the risks posed by oil dependence. The oil intensity of the economy has been reduced by roughly 50 percent since that time. Although the United States has faced serious challenges over the past several decades as a result of its oil dependence, these would have been more severe without the progress made to improve the fuel efficiency of light-duty vehicles. Continued advances in fuel efficiency should remain a national priority.

Yet, further strengthening U.S. energy security requires a transportation system no longer predominantly beholden to the global oil market and its structural volatility. Advanced fuel vehicles powered by non-petroleum energy sources—electricity, natural gas, or hydrogen—are the best solution. Electric vehicles, for example, draw energy from the electrical grid's existing generation, transmission, and distribution infrastructure. This electricity is generated from a diverse set of largely domestic fuels including coal, natural gas, nuclear, and renewables. The United States must continue to lead on advanced vehicle technologies, and incentives like the EV tax credit remain one of our most effective policy tools to combat the dangers of our enduring dependence on oil.

True energy security can only be achieved through diversity of transportation fuel supplies, and Abqaiq is only the latest reminder of the perils of relying on a volatile global oil market. It is time to prioritize our economic and national security interests and break oil's stranglehold on the transportation sector. After all, until steps are taken to meaningfully reduce our dependence on oil, America will remain constrained in its foreign policy and its military options and consumers will remain hostage to conflicts and tensions in the Middle East and throughout the world.

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²⁶ Ibid.