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SAUDI ARABIA'S USE
OF AIR POWER CAPABILITIES
TO SECURE ITS NATIONAL SECURITY ASSETS
IN THE NORTHERN PERSIAN GULF ARENA

BY

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THESIS

Submitted to the University of New Hampshire
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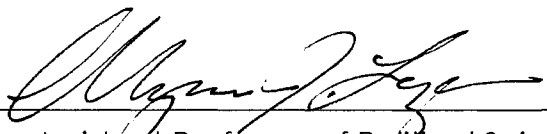
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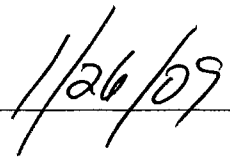

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ABSTRACT
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Ian M. Raimundo
University of New Hampshire, May 2009

Iran represents the primary threat to Saudi Arabia's foreign national security interests. Iranian hostility originates in the 1979 Iranian Islamic Revolution and also consists of threats to Saudi Arabia's internal security.¹ Saudi Arabia's strategy to safeguard its national security assets, including petroleum processing and export facilities vital to the smooth flow of crude oil, relies on an advanced air defense capability to provide early warning of an aircraft or ballistic missile attack.

In contrast to the expected outcome of Robert Jervis' theory, a greater quantity of weapons but an overall decreased level of security, Saudi Arabia has increased their foreign security with respect to the Iranian combat aircraft threat to their national security interests in the Persian Gulf. Current developments by the two sides indicates an increasing downwards 'spiral of hostility' as each side acquires arms to offsets the others' increase in security.

INTRODUCTION

Iran represents the primary threat to Saudi Arabia's foreign national security interests. Iranian hostility originates in the 1979 Iranian Islamic Revolution and also consists of threats to Saudi Arabia's internal security.¹ Saudi Arabia status as 'the world's largest producer and exporter of total petroleum liquids' depends on two petroleum processing and export facilities.² Protection of these facilities from conventional and unconventional attacks is essential to Saudi Arabia's ability to process and export crude and should therefore be of foremost concern to consumers of Saudi Arabian crude oil.

Chapter 1 discusses case and theory justifications for this research. The importance of Saudi Arabia as a reliable producer of crude oil to global markets and the need to safeguard two petroleum processing and exporting facilities, Saudi Arabia's primary national security assets is explained. As the House of Saud, the dynasty that governs Saudi Arabia,

must counter unconventional threats to the internal stability and security of the state, including organized militant Islamic groups that have targeted the Kingdom's oil facilities, a brief overview of the importance of internal security is outlined. More detailed information regarding the internal security and stability is provided in the endnotes section.³

Robert Jervis' theory expects when states acquire arms to increase their security, other states are inadvertently threatened, and also acquire arms, leading to an overall decrease in security. Jervis' theory is used to explore Saudi Arabia's security policy, which center on the capabilities of air power, to evaluate whether the Kingdom's defense acquisitions have increased, or, as the theory expects, decreased its security when compared to the capabilities of Iran, the Kingdom's foremost adversary.

Chapter 2 discusses Saudi Arabia's security policy and compares the capabilities of the Royal Saudi Air Force and Air Defense Forces to the Iranian Air Force. In the 1970s Saudi Arabia relied on the Shah of Iran to provide air security for its northern and eastern territories, including the

Persian Gulf oil-producing region.⁴ The 1979 Iranian Islamic Revolution and outbreak of the Iran-Iraq Conflict in September 1980 altered Iran's status as the Kingdom's security provider to the foremost security threat.⁵ In response to the newly hostile Iran, Saudi Arabia procured an advanced early-warning air defense capability from the United States that continues to serve as the Kingdom's primary means to safeguard its national security assets and population centers.

One aspect of Jervis' theory that does not apply concerns the presence of a regional hegemon. In 1980 President Carter declared the Persian Gulf oilfields as vital to the national security interests of the United States.⁶ The presence of the United States as the regional hegemon in the Persian Gulf is an important element of Saudi Arabia's foreign and internal security.⁷

Chapter 3 discusses the measures taken by Saudi Arabia to increase its foreign security in response to the conventional Iranian aircraft and ballistic missile threat. Although there are two spirals of hostility

between the two sides, the spirals originate from a common source, the 1979 Iranian Islamic Revolution. Furthermore, the second spiral is the direct result of Iran's over-dependence on the United States for military hardware, support, and training services; the results of Iran's efforts to indigenously produce ballistic missile have only recently coming to fruition since 1998.⁸

The second spiral involves the reaction of Saudi Arabia and the five other member states of the Gulf Cooperation Council (GCC) to Iran's ballistic missile program. The GCC states are acquiring the most advanced terminal-area anti-ballistic missile system and networking their air defense assets to improve coordination and overall effectiveness.⁹ Further indicative of a developing 'spiral of hostility,' the GCC states are pursuing additional combat aircraft despite their already uncontested air supremacy over Iran.¹⁰

CHAPTER 1

CASE AND THEORY JUSTIFICATIONS

This research is an examination of Saudi Arabia's foreign security policy, concentrating on measures adopted to safeguard its petroleum processing and export facilities from the threat of an air strike. Robert Jervis' theory expects states attempting to increase their security by acquiring weaponry to experience a decrease, not increase, in their overall security. Jervis terms the mutual action-reaction process a security dilemma, and the concept is applied to evaluate whether Saudi Arabia's defense acquisitions have increased or decreased its foreign security when compared to the capabilities of a specific adversary.

Saudi Arabia is a global heavyweight in the realm of crude oil production.¹¹ The Kingdom's crude oil resources are the single largest

concentration of crude oil and consist of an estimated 267 billion barrels of crude oil, which is between one-fifth and one-quarter of the world's total known reserves; Saudi Arabia also maintains the largest crude production capacity in the world, estimated at 10.5 to 11 million barrels per day in 2007.¹² Saudi Arabia's importance as a reliable oil producer is expected to increase as long-term global crude oil consumption continues to grow.¹³

The House of Saud, Saudi Arabia's ruling dynasty, have proved themselves to be reliable custodians of their petroleum resources since 1973 and have generally sided with United States policy in the intra and extra Persian Gulf arenas.¹⁴ Maintaining the primacy of the House of Saud and the internal stability and security of Saudi Arabia, although outside the focus of this research, should also be of importance to consumers of crude oil. Should violent regime change remove the Al-Saud from power, their successors may reduce or entirely shut-off the flow of oil, as was the case after the 1979 Iranian Islamic Revolution, with disastrous consequences to the American and global economy.¹⁵

Section 1: The Economic Criticality of Crude Oil

'Saudi Arabia is the world's largest producer and exporter of total petroleum liquids and is currently the world's second largest crude oil producer behind Russia.'¹⁶ In 2002 Saudi Arabian and United States intelligence discovered Al-Qaeda sympathizers 'had infiltrated Saudi ARAMCO and were planning to destroy key Saudi oil facilities.'¹⁷

As a raw feedstock, crude oil is a versatile commodity that can be chemically altered for use in a variety of applications from combustion in aircraft engines to the manufacturing of pharmaceuticals to asphalt used for paving roads and highways.¹⁸ In the realm of transportation, which accounts for nearly two-thirds of America's total petroleum consumption, refined derivatives of crude oil, including aviation kerosene, gasoline, or diesel fuels provides 97% of the raw energy input required.¹⁹

The United States consumes approximately 20 million barrels of crude oil per day, nearly one-quarter of daily global oil consumption.²⁰

Crude oil is therefore a critical component of the American economy, the high price of which can exert a 'calamitous' effect on the American way of life; 'nine of the last ten U.S. recessions were preceded by an increase in crude oil prices, and statistical tests have demonstrated that this was not coincidental.'²¹ The United States currently imports nearly two-thirds of its crude oil from foreign sources.²² In 2006 and 2007 Saudi Arabia exported an average of 1.46 and 1.49 million barrels per day, respectively, to the United States, accounting for 12% of the United States' total crude imports.²³

Domestic crude oil production from sources in the continental United States and Gulf of Mexico peaked in December 1970 at slightly over 10 million barrels per day.²⁴ Afterwards, U.S. crude production entered a 'steady and relentless decline,' ending the 'century-long run during which the United States dominated global oil supply,' despite the addition of crude extracted from reservoirs in Alaska.²⁵ As United States oil production steadily declined, Saudi Arabian production steadily increased, due largely to naturally high reservoir pressures at five highly

prolific fields.²⁶ The Oil and Gas Journal, a petroleum industry publication, assesses that Saudi Arabia contains approximately 267 billion barrels of crude oil, amounting to nearly one-fifth of the world's proven reserves.²⁷ Nearly two-thirds of Saudi Arabian crude is considered Arabian Light or Arabian Extra Light, grades considered economically desirable due to their lower processing costs.²⁸ The Kingdom 'maintains the world's largest crude oil production capacity, estimated to be around 10.5-11 million barrels per day.'²⁹³⁰

Although the smooth flow of Saudi Arabian crude to global energy markets depends on a network of more than 9,000 miles of pipeline, dozens of gas-oil separator plants, pumping stations, and individual wellheads, two specific facilities are of critical importance.³¹ Measured in terms of volume, Saudi ARAMCO's Abqaiq stabilization facility, 30 miles inland from the Persian Gulf, is the world's most productive oil processing facility.³² Abqaiq processes more than 7 million barrels per day of Arabian Light and Arabian Extra Light crude from southern area oil wells, removes hydrogen sulfur and other contaminants, reduces vapor pressure, and

forwards the majority of the processed crude to Ras Tanurah for export.³³

The processing operations at Abqaiq are essential for the safe transport of crude. Kenneth Pollack describes the criticality of the Abqaiq facility to the global economy as 'the beating heart,' further claiming 'if there is any one facility on Earth whose loss could cause massive, widespread economic damage, Abqaiq is it.'³⁴ In February 2006 Saudi Arabian authorities foiled an attempt by Al-Qaeda to destroy the Abqaiq facility using explosives mounted in trucks.³⁵ Should an attack on the Abqaiq facility inhibit the ability to process crude there is no alternative facility to process nearly two-thirds of valuable Arabian Light and Arabian Extra Light crude oils and Saudi Arabia's ability to export crude will at best be reduced or at worst completely cease.³⁶

The Kingdom exports more than 75% of its crude oil from Saudi ARAMCO's Ras Tanurah maritime complex, the world's largest crude export facility at Ras Tanurah and Juyaymah on the Persian Gulf coast, which has an export capacity of 6 million barrels per day. The Kingdom's current export capacity is estimated at between 14-15 million barrels per

day.³⁷ After the outbreak of the Iran-Iraq Conflict in September 1980, Iran targeted 'Saudi Arabia's oil facilities, exports, and territory throughout the 1980s, and specifically targeted the Ras Tanurah export complex.³⁸

The unimpeded operation of processing and export facilities at Abqaiq and Ras Tanurah are essential to the national security of Saudi Arabia and the United States. Should a conventional or unconventional attack prevent the export of crude from the Ras Tanurah complex, the export facility at Yanbu, on the Red Sea coast, is reportedly not utilized to full capacity and is capable of exporting 4.5 million barrels per day of crude.³⁹ The Kingdom's current export capacity is estimated at between 14-15 million barrels per day.⁴⁰

Section 2: The Importance of Internal Security

Although this research focuses on Saudi Arabia's security policy to counter a foreign threat to its national security interests, a brief discussion of the criticality of internal security and stability is included to highlight the challenges posed to the Kingdom's national security interests by unconventional threats.⁴¹ In addition to protecting the country from foreign invasion, maintaining 'the domestic stability of the Al-Saud' is Saudi Arabia's secondary foreign policy objective.⁴² Although the Iranian unconventional threat to Saudi Arabia's internal security and stability has remained constant unlike the fractured spiral dynamics of the conventional threat, the Iranian Islamic Revolution remains the common source for both threats.⁴³ The Iranian government explicitly challenged the legitimacy of the Saudi Arabian government, incited the Saudi Shi'a in the oil-producing Persian Gulf regime to revolt against their government, and utilized the annual Hajj to disseminate anti-Saudi propaganda.^{44,45}

Although Iran appears to have abandoned its practice of overtly inciting Shi'a elements of the Saudi population, which constitute an estimated 6% of the Saudi population, to revolt against their government and using the Hajj to attack the House of Saud, evidence continues to highlight Iran's involvement to subvert governments in the region by aiding internal opposition groups.⁴⁶ Iran directed the June 1996 bombing of Khobar Towers, a U.S. military housing complex in the Eastern Province, which killed 19 U.S. servicemen.⁴⁷

The internal security and stability of Saudi Arabia and the dominance of the House of Saud as the Kingdom's governors is of utmost importance to the United States.⁴⁸ 'For decades, the basis of state-society relations has been the provision of goods and services by the state to society, with little but political loyalty expected in return.'⁴⁹ Saudi Arabia is a rentier state that remains highly dependant on its petroleum resources for revenue.⁵⁰ Oil revenue accounts for approximately 90% of total export earnings, 75% of state budget revenue and 45% of the gross domestic product.⁵¹ As Saudi oil revenue steadily increased in the late 1950s, 'oil

money came to supplement, and then to supplant, Wahhabism as the glue that keeps the Saudi realm together.⁵² Saudi oil policy, therefore, 'has to provide the government with the money necessary to support the system of social services, government employment, and security spending that undergirds the regime.'⁵³

The Supreme Council for Petroleum and Minerals, which consists of members of the Al-Saud, industry leaders, and government ministers, formulates Saudi Arabia's petroleum policy.⁵⁴ Kenneth Pollack describes the Al-Saud Dynasty, governors of Saudi Arabia, as 'the ideal custodians of the world's largest oil reserves and (at most times) the largest percentage of global oil exports' because they 'just really want to make money.'⁵⁵ The House of Saud 'understand that their oil wealth can keep their subjects happy and themselves living like princes for many decades' and therefore have a long-term interest in maintaining moderate oil pricing.⁵⁶ The western reaction to the 1973 Arab oil embargo, which Riyadh participated in, defined Saudi Arabia's long-term strategy as a moderate, reliable producer.⁵⁷ Saudi Arabian decision makers realized

that threats to curtail exports to the United States, their primary market, only accelerated efforts to increase efficiency and create alternative sources of energy.⁵⁸ As a result, through conservation and research into alternative sources of energy, the United States reduced dependence on Saudi Arabian crude, thereby threatening the House of Saud's long-term outlook of maintaining dependency on crude exports to afford themselves and their citizens a comfortable lifestyle.⁵⁹ Afterwards the Saudis decided 'that they would never do something so foolish again, a position they have kept to ever since.'⁶⁰ Saudi Arabia's oil policy 'has thus regained the central role it held in the 1930s and 1940s for regime security as the vital source of revenue for the government.'⁶¹

Saudi Arabia must also counter the unconventional threat to its key oil processing and export facilities. 'In December 2004, Usama bin Ladin explicitly called for attacks on oil facilities in the Persian Gulf and Caspian Sea-including on civilians working at these facilities.'⁶² Bin Laden believes the unequal distribution of oil wealth has resulted in 'political and social corruption in the 'Umma (the Islamic Community).⁶³ Bin Laden has

promised to increase the price of oil should his Islamist movement come to power in Saudi Arabia to a 'fair' level; 'There is little reason to think that what bin Laden considers fair would not prove disastrous for the global economy.'⁶⁴ Pollack also mentions that more extreme Islamist movements might adopt the position of Khomeini and entirely shut-off the flow of Saudi Arabian oil, instantly removing 11-13% of the global oil supply, with even more disastrous consequences to the global economy.⁶⁵

In addition to dire economic consequences, Kenneth Pollack argues that a successful attempt to overthrow the House of Saud would pose catastrophic implications for regional security and stability and the effects of regime change would be graver than those of the Iranian Islamic Revolution.⁶⁶ The Al-Saud have a long-term strategy of maintaining temperate oil-pricing and have 'generally allowed market forces to prevail and at times have even used their excess production capacity to maintain an orderly market.'⁶⁷ After the 1979 Iranian Islamic Revolution, believing Iran's oil wealth resulted in problems ranging from 'cultural corruption of Iranian society to Western intervention in Iranian

politics,' under Khomeini's directive, Iranian oil production dropped from 5.9 million barrels per day in 1978 to 1.3 million barrels per day in 1980.⁶⁸ The impact of Khomeini's policy 'crippled the Iranian economy and caused the worst recession in post-World War II U.S. history.'⁶⁹ Pollack argues a 'Saudi Khomeini' who pursued the same policy 'could do far worse damage.'⁷⁰ So important are the Al-Saud to the national security of the United States that should a serious internal rebellion or uprising occur within Saudi Arabia, Pollack believes the United States will act militarily to protect the authority of the House of Saud.⁷¹

The National Guard is the means the House of Saud uses to secure 'the domestic stability of the Al-Saud regime.'⁷² The Guard is also responsible for protecting Saudi oil facilities against unconventional attacks.⁷³ A paramilitary organization, the Guard consists of 75,000 soldiers and an additional 25,000 tribal reserves, and is equipped with an assortment of armored personnel carriers, light infantry fighting vehicles, and towed artillery pieces to defeat unconventional threats.⁷⁴ In November 2007, Saudi Arabia announced the creation of an Industrial

Security Force for additional protection of its oil facilities against an unconventional attack.⁷⁵ Currently at 9,000 members, the Industrial Security Force is expected to grow by 8,000 soldiers per year to 32,000.⁷⁶

Section 3: The Capabilities of Air Power

The Royal Saudi Air Force is the primary means Saudi Arabia uses to secure the primary foreign policy objective, protecting the country from foreign domination and/or invasion.¹⁷⁷ Measured in terms of land area, at 829,780 square miles, or slightly larger than one-fifth the land area of the United States, the Kingdom of Saudi Arabia is the 13th largest sovereign state in the world.⁷⁸ Its overall climate is harsh and characterized by large extremes in temperature differences.⁷⁹ Uninhabitable, sandy desert constitutes nearly half of the country's land area; only 1.67% of the land area is classified as arable.⁸⁰ Frequent dust and sand storms are a constant occurrence and their severity inhibits land transportation.⁸¹

Nadav Safran argues 'the constraints of vast space and scarce manpower' are two constraints the House of Saud must overcome in defending their state.⁸² Raymond Hinnebusch details Saudi Arabia's

principle vulnerability as a 'function of its large sparsely settled territory, with long, difficult-to-defend borders.'⁸³ J.E. Peterson argues the size of the state and length of Saudi Arabia's frontiers further precludes 'reliance on land-based defense nearly impossible, even if it were not for the manpower restrictions faced by the Kingdom.'⁸⁴ Kathleen McInnis offers a similar assessment, detailing 'the sheer size of Saudi Arabia coupled with its small population renders the physical defense of its territory extremely difficult.'⁸⁵

Given the challenging geographic conditions, it is little surprise that since the 1920s, when the House of Saud, the dynastic rulers of Saudi Arabia, witnessed Royal Air Force aircraft pursue and destroy Ikhwan warriors deep into the desert, they have 'been immensely impressed by the capabilities of air power and have viewed it as the key to their defense problems' and have desired 'to create a credible military deterrence based on the strength of the Royal Saudi Air Force.'⁸⁶ The House of Saud desires the RSAF to be the foremost element of their foreign

security strategy and seeks the force to be 'realistically dominated by Saudi princes' and loyal recruits.⁸⁷

Saudi Arabia has chosen to protect its national security interests against a conventional Iranian air attack with a sophisticated air defense network. Saudi Arabia's strategy for internal and external defense has its roots in a 1974 field survey conducted by the Department of Defense.⁸⁸ The survey, implemented over a 10-year time span, specified the 'defense of the Kingdom's oil resources, facilities, and transit routes against external attacks' as the primary objective to be defended by a highly capable air defense network centered around Dhahran.⁸⁹ The same survey specified the deployment of the Army to military cities constructed at 'great expense' to the Kingdom's sparsely settled frontier regions, in close proximity to foreign overland access routes, and the deployment of the National Guard to protect oil installations in the Eastern Province, within the urban regions, as well as to form a barrier between the Army and the Al-Saud powerbase in the Najd central region.⁹⁰

Section 4: Theory Justification

Robert Jervis's article Cooperation Under the Security Dilemma discusses the effects of uncertainty and arms acquisitions by states that may lead to armed conflict between them. The theory posits that states are uncertain of the motives behind other states' acquisition of weapons, tend to focus on the capabilities of these weapons rather than on the intent to use them, and consequently are threatened by their arming. Motivated by fear and uncertainty, the state is likely to react and acquire additional arms 'not because they are contemplating aggression, but because they fear attack from the first state.'⁹¹

Jervis defines this situation as a security dilemma, which may exist when 'many of the means by which a state tries to increase its security decrease the security of others.'⁹² The security dilemma is characterized by an action-reaction competition between states, the outcome of which may leave states with a greater quantity of arms but decreased overall

security. Since states concentrate on the capabilities rather than the intent to use them, when one state arms the other is compelled to achieve at least a similar level of capability to achieve parity. The continual action-reaction process sets up a spiral dynamic that may trend towards a 'zero-sum' game unless the spiral is interrupted. According to Jervis, states that do not understand how the security dilemma operates, and who engage in arms competition may find themselves 'if not in a war, then at least in a relationship of higher conflict than is required by the objective situation.'⁹³

The theory discussion will concentrate on 'subjective security requirements,' which may set off 'spirals of hostility' between states. The theory is utilized to explore Saudi Arabia's security policy in order to evaluate whether there are any negative implications to the Kingdom's massive military acquisitions, as the theory suggests. In order to assess a net increase or decrease in security, Saudi Arabia's capabilities must be compared to the capabilities of a specific adversary, in this case Iran.

In the discussion of offensive versus defensive weapons, Jervis is utilizing the concept of capabilities. Expanding on Jervis' theory, Charles L. Glaser defines capabilities as 'the state's ability to perform military missions, not to the size of its forces or its total military assets.'⁹⁴ The capability definition, however, is only useful to assess an increase or decrease in foreign security when compared to the capabilities of a specific adversary.

The Saudi Arabian government has acquired amongst the most sophisticated weapons systems produced by American and Western European manufacturers. A report issued by the Congressional Research Service dated August 18, 1982 asserts the transfer of the most sophisticated weapons systems in the American military's arsenal are generally restricted to NATO members and major industrial allies.⁹⁵ The same report declares 'only seven Third World countries appear to be receiving U.S. weapons of similar sophistication,' stating Saudi Arabia ranks second behind Israel in terms of total sophistication.⁹⁶ Examples of sophisticated aircraft acquired include F-15C/D air superiority aircraft in

1979; the E-3 Sentry Airborne Warning and Control System (AWACS), the KE-3A aerial refueling aircraft, and F-15C/D upgrades in 1981; Tornado air superiority and strike aircraft in 1985 and 1988; multi-role F-15S aircraft in 1992; finally the multi-role Eurofighter Typhoon, deliveries expected to start in late 2008.⁹⁷

Saudi Arabia has also expended massive financial outlays to create and maintain a defense establishment. From the time period from 1972 to 1988, Saudi Arabia's military expenditures accounted for 17% of its Gross Domestic Product (GDP), the highest it has spent on defense expenditures.⁹⁸ From 1950 to 1997, the Kingdom spent approximately \$93.8 billion in defense expenditures from the United States alone, although only 21% of this figure accounted for 'lethal equipment;' 32%, the largest portion, went towards support services, and 19% for the construction of bases and facilities.⁹⁹ The highest defense spending for equipment purchases occurred between 1985 and 1992, during the context of the Iran-Iraq Conflict, when Riyadh signed weapons transfer agreements worth \$63.6 billion, an average of \$6.5 in annual transfers,

which represented nearly 19% of all acquisitions by the developing world.¹⁰⁰ Defense expenditures for 2005, the most recent figures available, indicate the Kingdom is tied with Qatar the world's 2nd foremost spender of defense expenditures, which account for 10% of the Kingdom's GDP.¹⁰¹

Conclusion

The ability of the House of Saud to protect Saudi Arabia's petroleum infrastructure from an attack, foreign or domestic should be of concern to states that depend on crude oil for their energy needs. Since the House of Saud determine the Kingdom's petroleum policy, permit market forces to determine the pricing of crude, and are committed to a long-term strategy of reliably supplying crude to world markets, it is imperative to the global economy that they maintain control of the state.

Long-term forecasts indicate pressure on oil exporting states to increase crude oil production is expected to increase as global crude oil consumption is projected to increase by 50% from 2005 to 2030.¹⁰² Since the Persian Gulf states have the greatest actual and potential capacity to

increase crude oil production, global reliance on Persian Gulf oil is expected to increase from 27% in 2007 to 35% by 2030.¹⁰³ Because of its massive crude reserves, production, expansion, and export capacity, Saudi Arabia is expected to encounter increasing pressure to increase production commensurate with global demand.¹⁰⁴

CHAPTER 2

SECURITY POLICY AND CAPABILITIES

One area where Jervis' theory does not seem to apply concerns the presence of an 'international sovereign.' In the Persian Gulf, the United States, an important element of Saudi Arabia's security policy, serves as the regional hegemon, extends conventional and nuclear deterrence, and is the foremost supplier of advanced weaponry to the Saudis.¹⁰⁵ The United States deems the security of Saudi Arabian oilfields to be a vital American national security interest and has demonstrated its intent to protect the oilfields during three crises; in the mid 1960s during the Egyptian campaign in Yemen, after the outbreak of the Iran-Iraq Conflict in 1980, and during the First Persian Gulf Conflict of 1990-1991.¹⁰⁶

The 1979 Iranian Islamic Revolution defined Saudi Arabia's security policy which capitalizes on the capabilities of air power to provide a

security umbrella over the Kingdom. Formerly dependant on Iran for security of its northern and eastern territories, as well as the Persian Gulf coastal waters, which includes the oil producing areas, the emergence of a hostile threat after the Islamic Revolution in close proximity to vulnerable facilities and population centers compelled the Saudis to acquire an air defense capability to safeguard their national security assets.¹⁰⁷

Saudi Arabia's air defense capability, regarded as one of the most advanced air defense networks outside of the NATO arena, is the primary means the Kingdom utilizes to secure its national security assets from a foreign air attack.¹⁰⁸ An overall assessment finds the air forces of the Persian Gulf states as far superior to that of Iran.¹⁰⁹ In regards to the capabilities of Saudi Arabia and Iran, a recent military analyst declares that 'despite the manpower imbalance between forces, Arab Gulf states are better equipped to damage Iran and resist counter-strikes.'¹¹⁰ Iran has conceded defeat in the realm of air power capabilities, decided that reinvestment in their air power capabilities is futile, and is instead pursuing a program to indigenously produce medium range ballistic missiles.¹¹¹

Section 1: Security Policy

Pre-1979 Iranian Islamic Revolution

Robert Jervis theorizes that in the international system, due to the absence of an 'international sovereign,' an 'institution or authority that can make and enforce international laws,' states are not mandated to cooperate in order to peacefully resolve disputes.¹¹² This aspect of Jervis' theory does not readily conform to the Persian Gulf, however, as the region has witnessed the intermittent presence of a regional hegemon since the United Kingdom sponsored a 'maritime truce' in 1835.¹¹³ The premise of the treaty amongst Bahrain, Qatar, Oman, the Trucial Sheikhdoms (currently the United Arab Emirates) and the United Kingdom recognized London as regional mediator and security provider.¹¹⁴ The presence of the British also tempered Ibn Saud's expansionist ambitions towards the smaller coastal states, with many Saudis believing 'they would be ruling over the entire peninsula today.'¹¹⁵ In January 1968 the United

Kingdom announced its intent to depart the Persian Gulf area and cease providing security by the end of 1971.¹¹⁶

Iran's central geographic location within the region, coastline that spans the entire length of the Persian Gulf, abundant petroleum resources, and 'old and territorially established civilization' are four principle factors contributing towards Iran's long-standing foreign policy characteristic of 'the drive towards regional supremacy.'¹¹⁷ Iran's perception as a 'natural' state in the Middle East, 'uniquely qualified to determine, at the very least, the destiny of the Gulf subregion,' furthers Iran's belief that it 'can and should have influence beyond its borders.'¹¹⁸ Claiming Iran's 'historic responsibilities,' Shah Reza Pahlavi promptly volunteered to function as the primary regional security provider as proposed by Nixon's 'Twin Pillars' policy in 1969.¹¹⁹

Saudi Arabia's security policy in the 1970s is characterized by its dependence on Iran as a foreign security provider. Under the Shah, in the 1970s Iran 'embarked on the largest military buildup in the region' with assistance from the United States for military hardware, training, and

support services.¹²⁰ In cooperation with American defense corporations Northrop, Bell, and Vickers, in the early 1970s the Shah initiated programs to natively produce 'helicopters, aircraft, guided missiles, electronics, and tanks.'¹²¹ For nearly one decade, with Washington's and Riyadh's approval, Iran provided security for Saudi Arabia's northern and eastern frontiers, including the oil producing areas and tanker transit routes through the Strait of Hormuz.¹²²

Saudi Arabia's reliance on Iran for security in the 1970s permitted the initiation of programs for internal development. Declared unified by Ibn Saud in 1932, the Saudis had 'overwhelming work to do at home' after the initiation of the First Five-Year Development Plan, a comprehensive strategy to develop the Kingdom's social services, organize and develop the government, and construct infrastructure, which were essentially non-existent until the initiation of First Five-Year Plan.¹²³

Post 1979 Iranian Islamic Revolution Security Policy

Saudi Arabia's security problems with Iran originate with the 1979 Iranian Islamic Revolution, which defined Saudi Arabia's domestic and foreign security policy. The 'Twin Pillars' policy collapsed after the 1979 Iranian Islamic Revolution and altered Iran's status from Saudi Arabia's 'strategic shield to a major threat' in the Persian Gulf.¹²⁴

Saudi Arabia seeks to preserve its sovereignty in the Middle East by avoiding international isolation and balancing with regional states to prevent the emergence of a strong regional hegemon.¹²⁵ Within the Arabian Peninsula, which the Kingdom perceives as its sphere of influence, Saudi Arabia tends to adopt a hegemonic role amongst the smaller GCC states, who generally defer to Saudi leadership.¹²⁶

Iran's political system in the post revolutionary period is characterized by factionalism, fragmentation, institutional competition, and consists of hard-liners, nationalists, and pragmatists.¹²⁷ Iran's long term objective in the Middle East is to replace American hegemony.¹²⁸

Pollack argues 'convincing the Iranian regime to give up its most radical, anti-status quo policies is going to be very difficult,' believing the hard-liners will not agree to more moderate policies.¹²⁹ The hard-liners constitute a powerful faction of the government, command the loyalty of the military, promote an aggressive, anti-American, anti-status quo foreign policy, and oppose 'any accommodation with the United States and our allies in the region (from Saudi Arabia to Egypt to Israel).'¹³⁰ On July 8, 2008, an aide to Ayatollah Ali Khamenei, Iran's supreme leader, threatened to 'burn Tel Aviv and American ships in the Gulf, and strike at America's vital interests around the globe' if it were attacked.¹³¹ Earlier in 2008 Iran threatened to retaliate for military strikes on its suspected nuclear enrichment facilities by 'closing the Strait of Hormuz, the passage for roughly 40% of the world's traded oil, and striking at neighbouring countries.'¹³²

Section 2: The U.S. Role in Saudi Arabian Security

The United States features prominently in Saudi Arabia's security policy and functions as the regional hegemon in the Persian Gulf.¹³³ The defense of the Persian Gulf oilfields have been a foremost priority for the United States military since President Carter declared the Persian Gulf as 'a vital American interest during his 1980 presidential address;' successive American administrations have adopted similar policies towards Saudi Arabia.¹³⁴ In the 1980s and 1990s the U.S. achieved its strategic objectives of reaching agreements permitting access to naval bases and airfields, the prepositioning of military supplies, joint training exercises, and the transfer of military equipment with several GCC states.¹³⁵ The foremost U.S. objective of 'Pax Americana', the new world order, centered on securing 'unconstrained access to Gulf oil at "acceptable prices."¹³⁶ Although there is no formal defense treaty between the two states, since the 1950s Washington has unofficially guaranteed Riyadh's security

against external and internal threats and is the foremost supplier of high-technology weaponry.¹³⁷ The basis of security cooperation between Washington and Riyadh is a February 15, 1951 U.S. State Department policy brief that represented a 'definitive statement of American policy on, and aspirations for, the Kingdom and the House of Saud,' the majority of policies and guidance remain in effect.¹³⁸

The Islamic Revolution marked the initiation of the United States as a regional hegemon in the Persian Gulf. In February 1979 U.S. Secretary of Defense Harold Brown 'pledged support for the kingdom against external threats, and proposed to base U.S. forces in Saudi Arabia to assist in its defense.'¹³⁹ In October 1980, shortly after the outbreak of the Iran-Iraq conflict, Washington deployed four AWACS early-detection aircraft to monitor hostilities between the two states which served as an intermediate solution until 1986 when the first RSAF AWACS aircraft arrived following the October 1981 AWACS agreement.¹⁴⁰

U.S. –Extended Conventional Deterrence

The United States extended conventional deterrence and established its credibility during four crises. During the Yemen conflict Washington signaled its broad willingness to 'intervene militarily if necessary to protect the Kingdom and secure the oil fields' as well as support the House of Saud from internal threats arising from the conflict.¹⁴¹ As part of Operation Hardsurface, six U.S. Air Force F-100Ds were deployed to Dhahran in July 1963 after the outbreak of the Yemen conflict to deter Egyptian air attacks in the Eastern Province.¹⁴² In February 1979 U.S. Secretary of Defense Harold Brown 'pledged support for the kingdom against external threats, and proposed to base U.S. forces in Saudi Arabia to assist in its defense.'¹⁴³ The next month the United States offered to send armed F-15 Eagle interceptors to the Kingdom in response to hostilities between North and South Yemen.¹⁴⁴ Washington also deployed AWACS aircraft to Riyadh to monitor the border war between the two Yemens in 1979, which remained in the Kingdom after the Iranian

Revolution and Iran-Iraq Conflict.¹⁴⁵ The aircraft remained in the Kingdom until the RSAF AWACS and air defense network became operational in 1986.¹⁴⁶

Due to domestic pressure and the rise of militant Islamic extremism within the Kingdom it is highly unlikely the U.S. will station a large contingent of forces on Saudi soil.¹⁴⁷ The House of Saud perceives the presence of large contingents of foreign troops as more a liability than an asset, as it undermines the legitimacy of their regime.¹⁴⁸ To support conventional deterrence, the U.S. maintains rapid-deployment power projection capabilities and a number of large bases in Europe. (USAF European Command Headquarters at Mildenhall, United Kingdom; US Army Europe Headquarters at Heidelberg, Germany; USAF 16th Air Force at Aviano, Italy; USAF 16th Air Force at Incirlik, Turkey; US Navy 5th Fleet in the Persian Gulf and Indian Ocean; US Navy 6th Fleet in the Mediterranean Sea).¹⁴⁹

U.S.-Extended Nuclear Deterrence¹⁵⁰

The U.S. nuclear umbrella serves as a necessary deterrent due to the massive size of Iran's manpower resources; Army, 350,000; Reserve Army, 350,000; Islamic Revolutionary Guard Corps, 125,000, Paramilitary, 40,000; Basij Resistance Force/Paramilitary militia, between 1,000,000 to 2,500,000.¹⁵¹ Furthermore, Iran has further demonstrated its ability to assemble large contingents of ground forces 'at short notice when it feels that its vital interests are threatened.'¹⁵²

Iran's ability to absorb sustained damage over a prolonged period of time further necessitates U.S.-extended nuclear deterrence.¹⁵³ The Iranians are 'military professionals' who have gained valuable experience from their eight-year conflict with Iraq and closely observed the American military involvement with Iraq.¹⁵⁴ Saudi Arabia cannot utilize its primary strike aircraft, the F-15S, without extensive U.S. logistical and material support, thereby limiting the ability to deter Iran by threat of severe retaliation.¹⁵⁵

Section 3: Saudi Arabian and Iranian Fixed-Wing Capabilities

Saudi Arabian Capabilities

The Saudi Arabian Peace Shield is a highly advanced network of 80 air defense radars, consisting of long-range air surveillance radars, missile defense radars, and five E-3A AWACS aircraft.¹⁵⁶ Peace Shield is a means to integrate, coordinate, and control airborne, ground, and naval resources in real-time.¹⁵⁷ Peace Shield air defense capabilities are optimized for 'defense-in-depth' against combat aircraft and cruise missiles and are considered one of the most advanced air defense networks outside the NATO arena.¹⁵⁸ The system is arranged in three layers, to provide redundant coverage of outer, intermediate, and immediate distances from the Dhahran area.¹⁵⁹

For outer, intermediate, and immediate periphery defenses, Saudi Arabia operates 27 F-15S Eagles optimized for interception missions, 66 F-15C Eagles and 18 F-15D Eagles.¹⁶⁰ The F-15C/Ds are equipped with Conformal Fuel Tanks (CFTs) that increase mission endurance time by 65%

to 93% depending on the mission profile.¹⁶¹ The RSAF operates 7 Boeing KE-3A tankers and 8 KC-130H Hercules aerial refueling aircraft.¹⁶²

Saudi Arabia's strike aircraft include 43 multi-role F-15S and 75 Panavia Tornado Interdictor/Strike (IDS) aircraft.¹⁶³ Contrary to initial plans at the time of its sale in December 1992, Washington imposed no restrictions or limitations to the offensive capabilities of the F-15S.¹⁶⁴ In the wake of budget cuts which affected its overall capability following the First Persian Gulf Conflict, the RSAF has improved its readiness, combat effectiveness, joint warfare, and cooperation with other services; the RSAF is further improving its 'readiness, training, and maintenance' to the level of effectively exploiting its resources.¹⁶⁵

For interception of aircraft and missiles in the intermediate and immediate vicinity, the Air Defense Forces operate 16 batteries of Patriot Advanced Capability-2 (PAC-2) air defense missiles and 16 batteries of Improved-Hawk (I-Hawk) air defense missiles.¹⁶⁶

Iranian Air Capabilities

Iran operates a network of air surveillance radars but coverage of the entire state is believed to be severely deficient.¹⁶⁷ Tehran is attempting to develop its air defense radar network, although the results of its efforts are unclear; the 2007 edition of *The Military Balance* reports a denial issued by Ukraine regarding transfer of the Kolchuga, a radar system with a reported range of 370 miles.¹⁶⁸

The Iranian Air Force is a mix of 281 American, Western European, Russian, and Chinese combat aircraft, mostly sourced during the reign of the Shah in the 1960s and 1970s, and now aged, mostly obsolete, and of a low serviceability level.¹⁶⁹ The IISS deems serviceability levels of Iran's aircraft at 60% for American and West European warplanes and 80% for Russian and Chinese models.¹⁷⁰ The ordinance supplied for American and Western European aircraft include a stock of some 3,000 AGM-65 Maverick air-to-surface missile and AIM-54 Phoenix air-to-air missiles, but

due to their age and environmental storage conditions reliability of the missiles' electrical and propulsion components are low.¹⁷¹

Similar to its combat aircraft, Iran's current SAM inventory consists of a mix of Western and Russian systems, also mostly obsolete.¹⁷² Iran is reportedly attempting to procure the Russian S-300/SA-20 SAM system, although the system does not appear the Military Balance 2008 inventory.¹⁷³ In 2007 Iran reportedly received 29 SA-15 Guideline and 10 Pantsyr air defense systems.¹⁷⁴

Iran has chosen not to reconstruct its air force. The Iranian leaders are aware of the 'overwhelming air superiority of potential new adversaries,' and believe their overall air defense and air strike capabilities have degraded to the point that investment in them would be futile, and are instead pursuing a program of military self-sufficiency.¹⁷⁵ Although Iran has the ability to acquire new aircraft, developments to improve its air power capabilities are minimal, and funding to develop an indigenous combat aircraft is low.¹⁷⁶ The 2001-2002 Military Balance

predicted Iran would purchase the Su-27 or Su-30 aircraft; however the type is not listed in the 2008 Military Balance.¹⁷⁷

Conclusion

The 1979 Iranian Islamic Revolution defined Saudi Arabia's security policy, shifting the Kingdom away from complete reliance on a foreign power towards greater security independence. The Kingdom's strategy to protect its national security assets depends on an air defense capability that can quickly detect, identify, and intercept a hostile aircraft. The strategy is not completely independent, however, as Riyadh depends on Washington to train, service, supply its armed forces, and function as the security provider for Saudi Arabia's foreign and domestic security.¹⁷⁸

Iran is aware of the superiority of Saudi Arabia's air power capabilities and the inferiority of their own air power capabilities and have decided that reinvestment in them is futile. Iran's strategy to regain its military strength is the pursuit of an independent ballistic missile program, which sets up the current pattern of spiral dynamics between Iran and the six GCC states.¹⁷⁹

CHAPTER 3

SPIRAL DYNAMICS

An important element Jervis contends is necessary to evaluate whether states can formulate compatible security policies is the concept of subjective security requirements. Security policies that mandate high security requirements to gain increments of security increase the probability of downwards 'spirals of hostility,' thereby reducing the probability of formulating compatible security policies.¹⁸⁰

As a result of the 1979 Islamic Revolution and conflict with Iraq, Iran's fixed-wing air capabilities have degraded to the point that Iran's military leadership no longer believes investment in them is cost effective.¹⁸¹ Consequently Iran believes an indigenous ballistic missile production capability is essential to restoring its military strength.¹⁸²

In a clear reflection of the expected outcome of Jervis' theory, a greater quantity of arms but overall decreased levels of security, arms acquisitions between Iran and the GCC states appears to indicate an increasingly developing downward spiral of hostility between the two sides. In response to Iran's first successful test of a ballistic missile in 1998, shortly afterwards, in 2000, the six GCC states initiated measures to implement a comprehensive anti-ballistic missile defense network.

Measures taken by the GCC to ensure connectivity of all assets, from anti-missile defense systems to strike aircraft are particularly noteworthy since the five smaller Arab Persian Gulf states have historically been weary of Saudi Arabian hegemony. In addition, planned acquisitions of additional combat aircraft by Saudi Arabia, the United Arab Emirates, and Oman appear to suggest high subjective security requirements, especially since the GCC air forces are assessed to have uncontested air superiority over Iran's fixed-wing air capabilities.

Section 1: The First Spiral

The first spiral occurred after the outbreak of the Iran-Iraq Conflict in September 1980. The Conflict 'dramatically altered the security environment on Saudi Arabia's eastern shores.'¹⁸³ With no early warning capabilities, Saudi Arabian facilities and population centers, 150 miles across the Persian Gulf from Iranian airbases at Busheir, 'presented an easy and inviting target' which could be struck 'with virtually no warning' from Iranian strike aircraft in as little as 16 minutes.¹⁸⁴ The flat topography and low terrain prevalent in the Eastern Province provides little in the way of geographical protection.¹⁸⁵ The Saudis perceived their coastal and inland hydrocarbon processing and export facilities as too vulnerable to an Iranian air attack, and voiced broad concern for the safety of their crude oil tankers transiting through the Strait of Hormuz.¹⁸⁶

As the Conflict escalated, the Kingdom expressed 'unprecedented concern' with protecting its Eastern Province facilities and population centers on the Persian Gulf from an Iranian air attack.¹⁸⁷ Throughout the

course of the conflict, Iran threatened 'Saudi Arabia's oil facilities, exports, and territory throughout the 1980s, and specifically targeted Ras Tanurah, the primary maritime export facility for Saudi Arabian crude.¹⁸⁸ In 1984 Iranian aircraft struck Saudi crude oil tankers in Persian Gulf waters.¹⁸⁹

The first spiral is marked by a series of acquisitions by Saudi Arabia to construct a sophisticated early warning network to reduce the likelihood of a successful Iranian air attack on its coastal petroleum facilities and population centers. Iran constructed its military under the Shah with extensive American assistance, and therefore the requisite capabilities to strike Saudi Arabia were in place when a hostile Iran emerged after the Islamic Revolution.¹⁹⁰ A quid-pro-quo process, therefore, does not mark the first spiral, where one side reacts to developments the other side is pursuing. The air defense agreement signed in October 1981 included five E-3A Sentry AWACS, 18 ground based radars, 8 KE-3A aerial refueling tankers, conformal fuel tanks and AIM-9L Sidewinders for F-15s, and the construction of support facilities.¹⁹¹ In September 1985 Riyadh signed the first phase of the Al-Yamamah (the Dove) Agreement with London, initially

valued at \$5 billion, which included the advanced Tornado IDS strike aircraft.¹⁹²

Termination of the First Spiral

The 1979 Islamic Revolution aborted the spiral by inhibiting Iran's ability to compete with Saudi Arabia in a mutual action-reaction process. At the time of the Islamic Revolution, programs initiated by the Shah in cooperation with American defense corporations to indigenously produce military hardware were incomplete, American military advisors departed, and ties with the United States severed.¹⁹³ The Tehran hostage crisis resulted in Iran's international isolation through 'general condemnation, hostile UNSC resolutions, US-engineered economic sanctions and the seizure of Iranian assets.'¹⁹⁴ Rachael Bronson describes the effects of 'Operation Staunch,' Washington's strategy to pressure partners and allies to stem the flow of weapons to Iran and Iraq, to Iran's military as 'particularly deleterious.'¹⁹⁵ Although directed towards both Iran and Iraq, in practice Washington applied 'significantly more effort' to

cease the flow of weapons to Iran than Iraq.¹⁹⁶ Kenneth Pollack assess the effects of the Islamic Revolution 'crippled' the Iranian military after Washington severed military cooperation and American military advisors departed, further assessing that military 'has never regained the strength it once had.'¹⁹⁷ The eight-year conflict between Iran and Iraq reduced the strength of Iran's conventional forces by 50-60%, and 'significant wear from harsh climate conditions and insufficient funding further deteriorated its military.'¹⁹⁸

Section 2: The Second Spiral

Iran's Medium-Range Ballistic Missile Program

The second spiral is the result of Iran's inability to compete with the GCC states immediately after the Islamic Revolution. A direct result of the Islamic Revolution, the term 'Khod kafaye (self-sufficiency) refers to Iran's 'deep desire to reduce its economic dependence on Western powers and outside economic forces.'¹⁹⁹ To counter the negative effects of the Islamic Revolution on their military, the Iranians initiated military cooperation with North Korea.²⁰⁰ The IISS theorizes the effects of international sanctions left Iran with little choice but to initiate a path of independent production capabilities.²⁰¹ The partnership with North Korea evolved to the field of ballistic missile development, whereby in exchange for providing missile components, North Korea received data from Iranian test flights.²⁰²

Iran's leaders believe achieving an independent missile production capability is a central element to restoring their military strength.²⁰³ Over the past 20 years Iran has steadily progressed towards an independent research, development, and production capability of a broad variety of military products, including cruise and medium-range ballistic missiles.²⁰⁴ Iran's military industry currently produces nearly 2,000 defense products and exports to over 30 countries.²⁰⁵

Iran's strategic missiles are under the command of the Islamic Revolutionary Guard Corps Air Force, and consists of one brigade of six single launchers, each with four Shahab-3 (Meteor) medium-range ballistic missiles, Iran's most advanced medium-range ballistic missile, and one brigade of Shahab 1/2 with 12-18 launchers.²⁰⁶ The Shahab-3A/M, also known as the Ghadr-101, has an estimated range of 1,050 miles, allowing Iran to deploy the missile at any point in the state and strike the Dhahran area.²⁰⁷ Western sources estimate the payload of the Shahab-3 at 2,204 pounds and do not believe Iran's ballistic missiles currently have multiple independently targetable reentry vehicle capability.²⁰⁸ The IISS

estimates Iran is capable of producing 10 Shahab-3 medium range ballistic missiles per year.²⁰⁹ Iran's latest advance in medium-range ballistic missile technology is the successful test in November 2008 of advanced semi-solid fuel propulsion systems that increases the declared range of the Shahab to over 1,250 miles.²¹⁰

GCC Cooperation to Improve Anti-Missile Capabilities

In what appears to be a clearly defined 'quo' reaction to the threat presented by Iran's ballistic missiles, the GCC states are increasing interoperability of their air defense network in order to improve anti-ballistic missile defense capabilities.²¹¹ Although the elements are not yet entirely in place, the spiral appears to be approaching the point of full development; only when the GCC anti-ballistic missile components are actually acquired and deployed to their territory can the spiral be considered as developed.

The strategy of increasing and improving collective air defense capabilities is particularly interesting because of the historical friction

between the GCC states and Saudi Arabia. Saudi Arabia perceives the Arabian Peninsula as its 'natural sphere of influence,' and until the Iranian Revolution and Iran-Iraq Conflict, the GCC states 'resisted formal acknowledgement of Riyadh's leadership role' and have been as weary of Saudi Arabian as Iranian hegemony.²¹² The GCC states have been discussing increasing the size of 'Peninsula Shield, ' formed in 1986, from 5,000 soldiers to at least 25,000 soldiers since December 2000.²¹³ In November 2007 the GCC states once again discussed increasing the size of 'Peninsula Shield' to 22,000 soldiers and implementation of a joint-command structure.²¹⁴ To date the enlargement of 'Peninsula Shield' has not occurred.

In contrast to discussions to expand 'Peninsula Shield,' the GCC has made substantial improvements in the realm of anti-missile defense capabilities. In December 2001 the six GCC states established a system, 'Hizam al Taawun' (Cooperation Belt) to integrate their early warning air defense radar for broader coverage along the Persian Gulf.²¹⁵ According to Lieutenant General Staff Pilot Prince Abdul Rahman Bin Fahed Al-Faisal,

Commander of the Royal Saudi Air Force, the objective is to interconnect member states with digital data links 'to commonly recognize air targets, and to distribute the relevant missions amongst their respective national Air Force and air defense assets.²¹⁶ The IISS predicts the system can simultaneously track several hundred targets and is being developed to provide early warnings of ballistic and cruise missile launches.²¹⁷ The premise behind the system is to allow each state to acquire radar information from the other states, providing broad area coverage from Egypt to Oman, and permit command-and-control decisions made in one state to serve as a master decision for the other states.²¹⁸ Lieutenant General Staff Pilot Prince Al-Faisal further emphasizes the need for the GCC states to 'improve the system's swiftness in performance, and to add the technical requirements necessary to enable the member states of the Gulf Council getting the highest level of coordination between their operations centres.'²¹⁹

Major General Mohammed bin Saed Al-Qamzi, the United Arab Emirates Air Force Commander, deems a major priority of the U.A.E.

armed forces is to improve anti-ballistic missile capabilities to deter the threat posed by ballistic missiles.²²⁰ Similar to Saudi Arabia's strategy, the U.A.E. is pursuing a layered defense strategy and fielding multiple systems.²²¹ In September 2008 the U.A.E. announced its intent to acquire the Terminal High Altitude Air Defense (THAAD) and Patriot PAC-3 air defense systems, two American systems designed specifically to intercept ballistic missile.²²² The UAE is the first foreign state to acquire the THAAD, the most advanced terminal area anti-ballistic missile system.²²³ The United Arab Emirates is expected to network the THAAD into Hizam al Taawun, giving personnel in any GCC state command and control ability to launch an anti-ballistic missile missile deployed in the U.A.E. to intercept a ballistic missile converging on any GCC state.²²⁴

The principle question Jervis seeks to answer is whether states can adopt compatible security policy, meaning 'can one state construct security policy that will not inadvertently threaten another state?' Jervis notes 'decision makers act in terms of vulnerability they feel, which can differ from the actual situation' and introduces the concept of subjective

security requirements as 'the price they are willing to pay to gain increments of security.'²²⁵ If a state places a premium on their security, they are likely to 'be sensitive to even minimal threats, and to demand high levels of arms, which 'run the danger of setting off spirals of arms races and hostility.'²²⁶

Subjective Security Requirements

Indicative of high subjective security requirements, the GCC states are acquiring additional arms beyond those necessary for anti-ballistic missile defense. In December 2007 Kuwait announced its intent to acquire the Patriot PAC-3.²²⁷ Saudi Arabia is also in discussions to acquire the PAC-3.²²⁸ Saudi Arabia has also completed Link-16 communications upgrades on its AWACS aircraft, permitting secure, near-real time exchanges of battlefield information.²²⁹ The U.A.E. is also acquiring 80 F-16 multi-role aircraft and pursuing Link-16 data links for its existing air defense capabilities and combat aircraft.²³⁰ Oman is also acquiring 12 F-16 multi-role aircraft with Link-16 connectivity. The RSAF is acquiring 72 Eurofighter Typhoon multirole strike fighter aircraft. As the Kingdom is reportedly keen to receive the new aircraft, deliveries allocated to the RAF are being diverted to the RSAF and expected to commence towards the end of 2008, continuing through 2011.²³¹ The RSAF is also implementing the Tornado IDS GR.4 upgrade to significantly improve covert, all-weather,

deep-strike capabilities of the Tornado IDS fleet.²³² The aircraft are being configured for advanced stand-off capabilities, including the Storm Shadow air-launched cruise missile and the Brimstone anti-armor missile.²³³

The second dimension of subjective security involves threat perception, 'the estimate of whether the other will cooperate.'²³⁴ Recent examples of cooperation between the two sides do not include any discussions of security policy. Jervis mentions cooperation as a means to reduce uncertainty and alleviate fear. In the realm of security cooperation, treaties, inspection mechanisms, and mutual defense pacts are mentioned; none of these exist to reduce fear between either sides. In late 2008 Saudi Arabia invited Iranian President Ahmadinejad for the annual Hajj; the GCC states invited President Ahmadinejad to attend their annual summit meeting; on October 28 GCC Secretary-General Abdel Rahman Attiya visited Tehran and expressed hope for 'cementing and consolidating' relations.²³⁵ To date, however, President Ahmadinejad has not been invited to the February 2009 meeting, and Secretary-General Attiya compared Iran's occupation of Abu Musa, and the Greater and

Lesser Tunubs, in the Strait of Hormuz, to the Israeli occupation of Palestinian territory.²³⁶ In February 2009 Ali Akber Nateq Nouri, a conservative high-level advisor declared Bahrain to be Iran's 14th Province, reviving Iran's claim to sovereignty over Bahrain dating from the 14th century.²³⁷

Conclusion

The 1979 Iranian Islamic Revolution is the source for both spirals of hostility. Although the first spiral did not fully develop and has a clear termination, the second spiral started in the time frame immediately following the Islamic Revolution, as Iran sought to restore its military strength after its international isolation. For some 20 years, therefore, some degree of overlap between the two spirals existed until Iran commenced testing its ballistic missiles in 1998.²³⁸ Iran's efforts to restore its military strength through an independent medium range ballistic missile production capability triggered the GCC reaction to acquire additional arms, principally anti-ballistic missile systems and additional combat aircraft. Furthermore, in a significant break from its historically limited military cooperation, the GCC states are closely cooperating to network their air defense assets.

CONCLUSION

Saudi Arabia's ability to protect its national security interests from foreign and domestic threats are paramount to the stability of the global economy. The House of Saud have demonstrated their resolve not only to maintain the continuous flow of crude but to adhere to market pricing; the ability of the House of Saud to defend themselves from internal challenges should also be of paramount concern to consumers of Saudi Arabian crude oil.²³⁹

What Parts of Jervis' Theory do not Appear to Apply?

Two areas of Jervis' theory do not apply to the case involving Saudi Arabia's foreign security policy. First and foremost is the presence of the United States as a regional hegemon that guarantees Saudi Arabia's foreign security and internal stability. 'Pax Americana,' the United States military presence in the Persian Gulf after the outbreak of the Iran-Iraq Conflict, continues to the present time, in the form of continued arms sales and support services to the GCC states. The rise of organized Islamic

fundamentalism in Saudi Arabia poses the greatest threat to the Kingdom's internal security.²⁴⁰ Saudi Arabia's strategy to rely on a technologically heavy air force rather than a large conscripted army necessitates a close, long-term relationship with the United States. Although Saudi Arabia seeks to distance its dependence on the United States for security due to criticism of fundamental Islamic groups, which claim the House of Saud is deviating from purist Islamic beliefs the regime is founded on, Saudi Arabia's dependence on the United States to supply, train, and maintain its armed forces will only increase as technology advances and the need for Kingdom's need to secure its vital assets remains constant.

The second area concerns Jervis' definition of two variables of the theory, the offense-defense balance and offense-defense differentiation. Jervis proposes to measure the first variable, the offense-defense balance, by asking 'does the state have to spend more or less than one dollar on defensive forces to offset each dollar spent by the other side on forces that could be used to attack' and 'with a given inventory of forces, is it

better to attack or to defend?'²⁴¹ A state has the 'offensive advantage' when it is easier to destroy the others' military and annex territory, whereas 'defensive advantage' means it is easier to defend territory from an attack. The offense-defense balance is of little use because Saudi Arabia's national security assets comprise a geographically minute area; should an adversary desire to inflict extensive damage, Abqaiq and Ras Tanurah would be ideal targets. (Recall Iran's attempts to target Ras Tanurah in the 1980s and the foiled attack on Abqaiq in February 2006 by Al-Qaeda)

Utilizing the concept of offense-defense differentiation, the second variable, is also of little value. Jervis defines differentiation as 'whether weapons and policies that protect the state also provide the capability for attack.'²⁴² Jervis questions the ability to concisely define differentiation, conceding 'no simple and unambiguous definition is possible and in many cases no judgment can be reached.'²⁴³

Technological improvements commencing in the 1980s enabled aircraft manufacturers to produce multi-role aircraft that merged the role of

offense and defensive capabilities. The benefit to merging defensive and offensive capabilities is increased flexibility, reduced aircrew and support services training, leading to decreased costs. Saudi Arabia's strategy for external security relies on a high-technology air force; since modern combat aircraft blur the distinction between offensive and defensive capabilities it is difficult to apply the concept to this case.

What the Case Tells Us About Jervis' Theory

The case involving Saudi Arabia's security policy illustrates that the general premise of the theory, states that attempt to increase their security may inadvertently threaten others and suffer a decrease in security, appears to apply despite the inability to use two central variables of the theory. By deploying an advanced air defense capability, Saudi Arabia and the five other GCC states have removed an air attack as a viable option for Iran to attack, compelling Iran to seek alternate means to threaten them. The Iranian Islamic Revolution distilled in Iran the importance of achieving an independent arms development, production,

and maintenance capability; the Islamic Revolution terminated the first spiral but also initiated the second spiral. Finding itself isolated and unable to support their American-supplied Air Force after the Iranian Islamic Revolution, Iran decided to pursue an independent ballistic missile production capability to regain its military strength. There is no need to utilize offense-defense balance and differentiation in this case; this case is indicative in a more fundamental sense that states will pursue measures they perceive as necessary to increase their security regardless of whether these measures will inadvertently threaten other states.

What Jervis' Theory Tells Us About the Case

Iran's pursuit of a nuclear program, specifically the allegations leveled that the objective of its nuclear enrichment program is to produce weapons-grade uranium useful in an atomic device is certainly alarming. As Jervis' theory expects states to continue to pursue measures to increase their security, the nuclear developments are, however, the logical step for Iran to pursue. Although no international verification of

Iran's claim that its nuclear program is for peaceful purposes has occurred, Iran's actual behavior is inconsistent with a peaceful nuclear program.²⁴⁴ Iran appears to be pursuing a nuclear weapons delivery capability.²⁴⁵ One of the Iranian regime's cardinal fears is an American invasion; in light of the rapid fall of the Iraqi regime to American forces, Iran perceives a strong deterrent is necessary to safeguard the regime.²⁴⁶

Fearful that a nuclear-capable Iran will pursue an aggressive foreign policy, other states in the region, particularly Saudi Arabia, may pursue their own nuclear weapons capability as a deterrence, intensifying the current downwards spiral.²⁴⁷ A nuclear-capable Iran will have profound consequences on Saudi Arabia's foreign and internal security. Statements from officials of GCC member states indicates their high level of concern of a nuclear-capable Iran. An unnamed official from an declares 'If the military option happens, we will have no problem with that,' in reference to American or Israeli airstrikes on Iran's suspected nuclear facilities; the same official states 'If we reach a point where the choice is living with a

nuclear Iran or suffering the consequences of an attack, we would choose the latter.'²⁴⁸

Saudi Arabia and the GCC states will be compelled to react since their air defense capabilities may not be able to defeat a determined barrage of Iranian missiles; Iran may also chose to deliver the warhead through unconventional means, completely bypassing conventional delivery methods. Saudi Arabia will therefore experience additional pressure on its internal security. Any deterrent advantage Saudi Arabia has due to its advanced, albeit limited airstrike capabilities may therefore be rendered useless if Iran is declared a nuclear capable state. A readily available option may be to enlist the services of other declared nuclear states, namely Pakistan in order to obtain an immediate deterrent; the Kingdom has utilized the services of the Pakistani military in the past.²⁴⁹

It is in the interest of all world actors to prevent an all-out nuclear arms race in the Persian Gulf, especially states that depend on Saudi Arabia for crude oil. To this end, as the regional hegemon and because the United States deems the continuous flow of reasonably priced crude

oil as a vital national security interest, the United States will be compelled to adopt a leadership position to prevent the current spiral from taking on an atomic dimension. Unfortunately, since both sides appear intent on adding more weapons to their arsenal, breaking the current spiral may prove more difficult than the previous spiral.

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APPENDIX A: ENDNOTES

- ¹ (Pollack, 363)
- ² (Energy Information Administration 2008, 1)
- ³ (Pollack, 21)
- ⁴ (Holden and Johns 1981, 302)
- ⁵ (Bronson 2006, 146, 152)
- ⁶ (Bronson, 191)
- ⁷ (Hinnebusch and Ehteshami, *The Foreign Policies of Middle East States* 2002, 195-196)
- ⁸ (The International Institute for Strategic Studies 2006, 173)
- ⁹ (The International Institute for Strategic Studies 2003, 278)
- ¹⁰ (The Economist Newspaper Limited 2008, 58)
- ¹¹ (Energy Information Administration, 1)
- ¹² (Energy Information Administration, 2)
- ¹³ (Energy Information Administration, 2)
- ¹⁴ (Pollack, 18)
- ¹⁵ (Pollack, 12, 21)
- ¹⁶ (Energy Information Administration, 1)
- ¹⁷ (Pollack, 16)
- ¹⁸ (Pollack, 5)
- ¹⁹ (Pollack, 5)
- ²⁰ (Pollack, 6)
- ²¹ (Pollack, 6)
- ²² (Pollack, 6-7)
- ²³ (Energy Information Administration, 9)
- ²⁴ (Simmons 2005, 45)
- ²⁵ (Simmons, 45)
- ²⁶ (Simmons, 48)
- ²⁷ (Energy Information Administration, 2)
- ²⁸ (Energy Information Administration, 2)

²⁹ (Energy Information Administration, 2)

³⁰ Saudi Arabian oilfields are unique due to their naturally high reservoir pressure. The importance of naturally high reservoir pressure at Saudi Arabian oil fields to compensate for the decline in United States production cannot be understated; production from the Ghawar oil field, the single largest crude oil reservoir in the world, increased from 906,000 barrels per day in 1965 to 4,653,000 barrels per day in 1974, a growth rate unmatched by any other oil reservoir in the world. (Simmons, 48)

³¹ (Energy Information Administration, 10)

³² (Energy Information Administration, 6)

³³ (Energy Information Administration, 6)

³⁴ ((Pollack, 16)

³⁵ (Energy Information Administration, 8)

³⁶ (Energy Information Administration, 6), (Pollack, 16)

³⁷ (Energy Information Administration, 10)

³⁸ (Bronson, 154, 164)

³⁹ (Energy Information Administration, 10)

⁴⁰ (Energy Information Administration, 10)

⁴¹ The following is a brief verse on the relationship between state formation and the necessity to protect its national security assets from foreign and domestic threats.

Declared unified by Abdul Aziz ibn Abdul Rahman Al-Saud on September 23, 1932, Saudi Arabia is a relatively new state. Ibn Saud created the modern Saudi Arabian state in the early 20th century by conquest. (Hinnebusch and Ehteshami, *The Foreign Policies of Middle East States*, 199) The four geographical areas of the state have 'rarely, since the time of the Prophet Muhammad, been united under one rule' and 'retain strong senses of regional identity.' (Hinnebusch and Ehteshami, *The Foreign Policies of Middle East States*, 199-200) According to Ghassane Salameh and Vivian Steir, 'the tribe has consistently provided

the basis for social and political organization in the Arabian Peninsula. Any attempt to increase power beyond the tribe has invariably been based on religion.' (Salameh and Steir 1980, 5) To increase the size of his empire, Ibn Saud drew on 'the long historical association between the Al-Saud and the puritanical, reformist Islamist strain known in the West as "Wahhabism.'" (Hinnebusch and Ehteshami, 200) In exchange for guarantees of security from their rivals, descendants of Muhammad ibn Al-Wahhab afforded the Al-Saud 'an association which lifted it above other merely tribal powers,' providing Ibn Saud with the 'ideological justification for the expansion of Saudi rule.' (Salameh and Steir, 5)

The regionalized nature of the new Saudi empire caused many of Ibn Saud's new subjects to be weary of Saudi hegemony. (Hinnebusch and Ehteshami, 200) Al-Wahhab and his descendents regarded the Shi'a, concentrated in the Al-Hasa and Qatif regions in the oil-producing Persian Gulf region, as 'little better than unbelievers;' in the western Hijaz region, 'many Hijazis, accustomed to more liberal social mores, chafed under the Puritanism of the Wahhabi interpretation of Islam.' (Hinnebusch and Ehteshami, 200)

The expectation for little but political loyalty in exchange for providing a plethora of free or low-cost government services, including security, no taxation, health care, education, loans, housing, and employment is creating its set of growing problems. (Pollack, 81) Accustomed to foreigners performing skilled and unskilled tasks has created a 'crippling work culture,' whereby 'two-thirds of the workers in the Gulf region are expatriates while much of the population is either unemployed or does not participate in the workforce at all.' (Pollack, 81-82) 2008 data from the IISS estimates expatriate workers constitute 27% of the Saudi population. (The International Institute for Strategic Studies 2008, 260) 2003-2004 data from unofficial sources estimated unemployment in Saudi Arabia at between 25 to 30 percent, whereas government sources claimed unemployment at 13 percent. (Pollack, 75) Data from 2007

illustrate that Saudi Arabia's population is disproportionately young (38.2% are between the ages of 0-14, 59.4% are between the ages of 15-64) and is growing rapidly (2.06%) (Central Intelligence Agency, 3)

Accustomed to undemanding government or private sector jobs as a reward for political loyalty is expected and pervasive although these highly sought positions are becoming increasingly sparse. (Pollack, 105) The rapid population growth 'has contributed to some of the highest levels of unemployment in the world and relatively low employment-to-population ratios.' (The International Institute for Strategic Studies 2008, 232) High unemployment, in turn, is breeding restlessness and religious extremism while the rapidly growing population increases the burden of the state to provide material benefits to keep the population submissive. (Pollack, 107)

⁴² (Hinnebusch and Ehteshami, 193)

⁴³ Kenneth Pollack writes 'Paranoia is a guiding principle of all of the Muslim Middle Eastern regimes, to a greater or lesser extent.' (Pollack, 103) James Quinlivan asserts the House of Saud has successfully applied balancing mechanisms to 'coup-proof' the regime, a mission 'best accomplished by a ground-based parallel military'. (Quinlivan 1999, 142) Data from 2008 validates Quinlivan's assertion. The Army has 75,000 soldiers, whereas the National Guard has 75,000 full-time soldiers and 25,000 reserves. (The International Institute for Strategic Studies 2008, 260, 262) A review of the staffing levels of other states in the Middle East suggests not only is Saudi Arabia's conventional Army to parallel military staffing ratio is high but the size of the conventional Army appears disproportionately small. Bahrain (6000 to 2000), Kuwait (11,000 to 6,600), and Oman (25,000 to 4,000) are three other GCC member states with parallel militaries. (The International Institute for Strategic Studies 2008, 238, 250-251, 257-258) At 88,000 soldiers, Jordan's conventional Army is 17% larger than Saudi Arabia's; even the United Arab Emirates' Army has

44,000 soldiers, 59% the size of Saudi Arabia, which is approximately 2.5 times the geographic size and has roughly five times the population of either state. (The International Institute for Strategic Studies 2008, 248, 266)

Ghassane Salameh and Vivian Steir assert the House of Saud faces a 'dilemma between defending the country and defending the monarchy,' further writing 'the monarchy, anxious to defend its wealth, seems to fear the potentially high political price of a strong army.' (Salameh and Steir, 9) F. Gregory Gause III argues 'experience with several attempted Arab-nationalist military coups in the 1960s undermined the regime's confidence in the likely political reliability of a large military,' further stating 'Residual suspicion of Hijazis and Shi'ites add to the regime's reluctance to expand the size of the Saudi military, an argument shared by Salamah and Steir (Hinnebusch and Ehteshami, 202) Hinnebusch argues the military is the most common instrument of regime change in the Middle East, and that the House of Saudi perceives its ability to survive depends on its ability to control the military and organized labor, 'the two groups that were the potential vehicles of opposition,' citing a defection of Saudi pilots to Egypt in the 1960s and the crushing of a Libyan-inspired plot as adding to the suspicion of the House of Saud. (Hinnebusch, 124-125)⁴³ Citing Gause, Hinnebusch theorizes the House of Saud has not increased the size of the Army 'from fear that a conscripted population would demand political rights or that a large Army would inevitably recruit from more plebian ranks of society whose loyalty to the monarchy could be suspect.' (Hinnebusch, 128)

At the present time there is no shortage of native manpower to increase the size of the conventional Army, the size of which, measured in terms of staffing, has not increased since 2000. (The International Institute for Strategic Studies 2000, 230) through (The International Institute for Strategic Studies 2008, 260) Improved medical care as a result of the oil boom that started in the early 1970s lead to rapidly increasing population,

and currently the Kingdom's population is disproportionately young. (Pollack, 70-72) Presently there are 7.4 million males between the age of 18-49 fit for military service and each year some 272,000 males reach the military service age. (Central Intelligence Agency, 11)

⁴⁴ For an overview of Iranian challenges to Saudi Arabia's Islamic credentials after the Iranian Revolution see: (Badeeb, 91) discusses a 'Joint Islamic Committee' proposed by Iran, who claimed the House of Saud is incapable of managing the affairs of Meccah and Madinah; (Bronson, 146) claims Khomeini 'challenged Saudi Arabia's position as the international mouthpiece for the Prophet Muhammad;' (Hinnebusch, 194) mentions efforts by the Iranian government to 'discredit Saudi Arabia as an alternative (and conservative) centre of Islam in Sunni Muslim opinion;' (Korany and Dessouki, 343) states Khomeini repeatedly declared 'that monarchy is incompatible with the Qur'an's basic tenets;' finally, (Ramazani, 92) states 'the Saudis believe that the Islamic basis of the legitimacy of their state and rule has been challenged.'

⁴⁵ For an overview of Iranian attempts to subvert the government of Saudi Arabia see: (Badeeb, 90), (Bronson, 146-147), (Hinnebusch and Ehteshami, 197), and (Sandwick, 170) discuss attempts by the Iranian government to incite Saudi Shi'a in the Eastern Province to overthrow the Saudi Arabian government. (Bronson, 146-147) further suggests 'religious empowerment in Iran' as a contributing factor of labor unrest in the Eastern province in 1977 and 1978. Iranian-sanctioned demonstrations during the annual Hajj season are detailed in (Badeeb, 91) and (Ramazani, 95). Terrorist attacks with suspected official sanction by Iran, including the 1996 bombing of Khobar Towers, are discussed by (Badeeb, 92), (Bronson, 216), and (Pollack, 170). Iran did not limit its intent to export its revolution solely to Saudi Arabia; (Hinnebusch, 195-196), (Ramazani, 90), (Safran, 376), and (Sandwick, 151) discuss Iranian attempts to destabilize the governments of Kuwait and Bahrain.

⁴⁶ (The International Institute for Strategic Studies 2008, 260), (Pollack, 359, 363)

⁴⁷ (Pollack, 170)

⁴⁸ The Saudi Arabian Government is expanding its internal security forces. See (The International Institute for Strategic Studies 2007, 216) for expansion of the Saudi Arabian National Guard.

For more information on Project MIKAS, a sophisticated border surveillance system intended to detect land and sea incursions, see (The International Institute for Strategic Studies 2007, 214)

For information on the newly created Industrial Security Forces, who will share joint responsibility with the National Guard to protect oil installations, see (The International Institute for Strategic Studies 2008, 262).

The Special Emergency Forces are the Kingdom's primary anti-terrorism forces: see (Cordesman and Al-Rodhan, *The Gulf Forces in an Era of Assymetric Warfare: Saudi Arabia* 2006, 66) for more information.

Three recent publications discuss unconventional means the Saudi Arabian Government is utilizing to rehabilitate citizens accused or suspected of participating in unconventional warfare, and theorize measures taken appear to be effective. See 'Powers of Persuasion' in *The Economist*, July 17, 2008, 'The Struggle against al-Qaeda' in *The Economist*, October 25, 2008, and 'Deprogramming Jihadists' in *The New York Times*, November 7, 2008.

⁴⁹ (Hinnebusch and Ehteshami, 202)

⁵⁰ (Hinnebusch and Ehteshami, 202)

⁵¹ (Energy Information Administration, 1)

⁵² (Hinnebusch and Ehteshami, 201)

⁵³ (Hinnebusch and Ehteshami, 202)

⁵⁴ (Energy Information Administration, 1)

⁵⁵ (Pollack, 18)

⁵⁶ (Pollack, 18)

- 57 (Pollack, 18)
- 58 (Pollack, 18)
- 59 (Pollack, 18)
- 60 (Pollack, 18)
- 61 (Hinnebusch and Ehteshami, 202)
- 62 (Pollack, 16)
- 63 (Pollack, 20)
- 64 (Pollack, 21)
- 65 (Pollack, 12, 21)
- 66 (Pollack, 219, 287)
- 67 (Pollack, 18)
- 68 (Pollack, 15)
- 69 (Pollack, 15)
- 70 (Pollack, 15)
- 71 (Pollack, 201)
- 72 (Hinnebusch and Ehteshami, 193)
- 73 (Quinlivan 1999, 143-144)
- 74 (The International Institute for Strategic Studies 2008, 262)
- 75 (Thomson Reuters 2007)
- 76 (The International Institute for Strategic Studies 2008, 262)
- 77 (Hinnebusch and Ehteshami, 193)
- 78 (Central Intelligence Agency, 2) converted into square miles
- 79 (Library of Congress-Federal Research Division 2006, 6) converted into degrees Fahrenheit
- 80 (Library of Congress-Federal Research Division, 6)
- 81 (Library of Congress-Federal Research Division, 6)
- 82 (Safran 1988, 228)
- 83 (Hinnebusch, 123)
- 84 (Sandwick 1987, 175)
- 85 (McInnis, 175-176)
- 86 (Safran, 193), (Ramazani 1986, 8, 101)

⁸⁷ ((Hinnebusch, *The International Politics of the Middle East*, 128),(Mackey, 309)

⁸⁸ (Safran, 206)

⁸⁹ (Safran, 207)

As an example of 'great cost,' (Mackey 2002, 305) Details the cost of King Khalid Military City, completed in 1985 and located in the Kuwait-Iraq border area, in excess of \$5.2 billion).

⁹⁰ (Quinlivan, 143-144)

⁹¹ (Jervis 1978, 181)

⁹² (Jervis, 169)

⁹³ (Jervis, 182)

⁹⁴ (Glaser 1997, 175)

⁹⁵ (Stork and Paul, *Arms Sales and the Militarization of the Middle East 1983*, 10)

⁹⁶ (Stork and Paul, 10)

⁹⁷ (The International Institute for Strategic Studies 2008, 232-233)

⁹⁸ (Sadowski 1992, 7)

⁹⁹ (Lippman 2004, 297)

¹⁰⁰ (Krause, 84)

¹⁰¹ (Central Intelligence Agency, 11)

¹⁰² (Energy Information Administration, 1)

¹⁰³ (Energy Information Administration, 30)

¹⁰⁴ (Energy Information Administration, 30)

¹⁰⁵ (Hinnebusch and Ehteshami, 195)

¹⁰⁶ (Bronson, 91)

¹⁰⁷ (Holden and Johns, 302)

¹⁰⁸ (Wall, *Gulf Links*, 1)

¹⁰⁹ (The Economist Newspaper Limited 2008)

¹¹⁰ (The Economist Newspaper Limited 2008)

¹¹¹ (The International Institute for Strategic Studies 2006, 170)

¹¹² (Jervis, 167)

- ¹¹³ (Safran, 16)
- ¹¹⁴ (Safran, 16)
- ¹¹⁵ (Hinnebusch and Ehteshami, 198)
- ¹¹⁶ (Safran, 134)
- ¹¹⁷ (Hinnebusch and Ehteshami, 286)
- ¹¹⁸ (Hinnebusch and Ehteshami, 286)
- ¹¹⁹ (Bronson, 110), (Hinnebusch and Ehteshami, 287)
- ¹²⁰ (Bronson, 164), (Stork and Paul, Arms Sales and the Militarization of the Middle East 1983, 5), (Safran, 178)
(The International Institute for Strategic Studies 2006, 169)
- ¹²¹ (Stork and Paul, Arms Sales and the Militarization of the Middle East 1983, 6)(Hinnebusch, 193), (The International Institute for Strategic Studies 2006, 170)
- ¹²² (Hinnebusch, The International Politics of the Middle East 2003, 287), (Holden and Johns 1981, 302), (Pollack 2008, xxxv), (Sandwick 1987, 10), (Safran 1988, 134-135, 275)
- ¹²³ (Mackey 2002, 43-45), (Sandwick, 25)
- ¹²⁴ (Bronson 2006, 25, 146, 152), (Ramazani 1986, 107), (Sandwick 1987, 9-10, 149), (Safran 1988, 234)
- ¹²⁵ (Hinnebusch and Ehteshami, 196)
- ¹²⁶ (Hinnebusch and Ehteshami, 198)
- ¹²⁷ (Hinnebusch and Ehteshami, 292), (Pollack, 357)
- ¹²⁸ (Pollack, 358)
- ¹²⁹ (Pollack, 368)
- ¹³⁰ (Pollack, 370), (The International Institute for Strategic Studies 2002, 121)
- ¹³¹ (The Economist Newspaper Limited, 58)
- ¹³² (The Economist Newspaper Limited 2008, 58)
- ¹³³ The United States desires close relations with the Al-Saud for reasons other than reliable access to their massive petroleum resources. Kenneth Pollack explains the 'perspective of the Al-Saud,' who have 'opposed violent change in the region...opposed the Soviet Union as godless

atheists and a source of instability...opposed revolutionary ideology of every kind, from Nasserism to Khomeninism....supported the status quo throughout the region in and, to a great extent, throughout the world in the belief that their lives were as good as they could get and change could only threaten their paradisaical existence.' (Pollack 2008, 51)

¹³⁴ (Bronson, 191)

¹³⁵ (Hinnebusch and Ehteshami, 73)

¹³⁶ (Hinnebusch and Ehteshami, 73)

¹³⁷ (Bronson, 3), (Hinnebusch and Ehteshami, 195)

¹³⁸ (Lippman, 279)

¹³⁹ (Safran, 303)

¹⁴⁰ (Ramazani, 108), (Safran, 367), (Sandwick, 176), (Stork, AWACS in the Gulf 1987, 38)

¹⁴¹ (Lippman, 277)

¹⁴² (Hart 1998, 210)

¹⁴³ (Safran, 303)

¹⁴⁴ (Safran, 304)

¹⁴⁵ (Safran, 367) (Stork, AWACS in the Gulf 1987, 38)

¹⁴⁶ (Sandwick, 176)

¹⁴⁷ (McInnis, 180)

¹⁴⁸ (Sadowski, 11)

¹⁴⁹ (The International Institute for Strategic Studies 2007, 38-42)

¹⁵⁰ The Saudis are believed to have a close military alliance with Pakistan. For more information see 'Iran and Saudi Arabia: An Odd Couple', March 5, 2007 available to Economist.com subscribers. (Bronson, 253) and (Safran, 362-363) also discuss the Pakistani connection.

¹⁵¹ (The International Institute for Strategic Studies 2008, 242, 244)

¹⁵² (The International Institute for Strategic Studies 2000, 120)

¹⁵³ (The International Institute for Strategic Studies 2006, 174)

- ¹⁵⁴ (The International Institute for Strategic Studies 2006, 175)
- ¹⁵⁵ (Jane's Information Group 2008, 653), (Pollack, 55, 276)
- ¹⁵⁶ (The International Institute for Strategic Studies 2008, 262)
- ¹⁵⁷ (Wall, Systems Analysis: Gulf States Seek to Upgrade ISR and Missile Defense 2007)
- ¹⁵⁸ (Stein, 204), (Wall 2007)
- ¹⁵⁹ (Bronson, 165), (Ramazani, 109)
- ¹⁶⁰ (The International Institute for Strategic Studies 2008, 261)
- ¹⁶¹ (Safran, 437)
- ¹⁶² (The International Institute for Strategic Studies 2008, 261)
- ¹⁶³ (The International Institute for Strategic Studies 2008, 261)
- ¹⁶⁴ (Jane's Information Group 2008, 653)
- ¹⁶⁵ (Cordesman and Al-Rodhan, The Gulf Forces in an Era of Assymetric Warfare: Saudi Arabia 2006, 44) Used with permission.
- ¹⁶⁶ (The International Institute for Strategic Studies 2008, 262)
- ¹⁶⁷ (Barrie, 2)
- ¹⁶⁸ (The International Institute for Strategic Studies 2007, 213)
- ¹⁶⁹ (Safran, 178), (Barrie, 1), (The International Institute for Strategic Studies 2008, 244)
- ¹⁷⁰ (The International Institute for Strategic Studies 2008, 244)
- ¹⁷¹ (Barrie, 4), (McInnis, 171)
- ¹⁷² (Barrie, 2-3)
- ¹⁷³ (The International Institute for Strategic Studies 2002, 124)
- ¹⁷⁴ (The International Institute for Strategic Studies 2008, 231)
- ¹⁷⁵ (The International Institute for Strategic Studies 2006, 170)
- ¹⁷⁶ (The International Institute for Strategic Studies 2006, 170)
- ¹⁷⁷ (The International Institute for Strategic Studies 2002, 124)
- ¹⁷⁸ (Pollack, 55, 276)
- ¹⁷⁹ (The International Institute for Strategic Studies 2006, 172)
- ¹⁸⁰ (Jervis 1978, 175)
- ¹⁸¹ (The International Institute for Strategic Studies 2006, 170)

- 182 (The International Institute for Strategic Studies 2006, 172)
- 183 (Bronson, 164)
- 184 (Ramazani, 108), (Safran, 367, 436)
- 185 (Ramazani, 8, 101)
- 186 (Bronson, 145), (Ramazani, 92)
- 187 (Ramazani, 10)
- 188 (Bronson, 154, 164)
- 189 (Bronson, 164), (Ramazani, 73, 76-77, 104), (Safran, 366-369), (Sandwick, 173, 183)
- 190 (Bronson, 164), (Stork and Paul, 5), (Safran, 178)
(The International Institute for Strategic Studies 2006, 169)
- 191 (Safran, 436)
- 192 (Bronson, 166)
- 193 (The International Institute for Strategic Studies 2006, 170)
- 194 (Hinnebusch, 193)
- 195 (Bronson, 164)
- 196 (Bronson, 165)
- 197 (Pollack, 276)
- 198 (McInnis, 171)
- 199 (Hinnebusch and Ehteshami, 285-286)
- 200 (Hinnebusch, 193)
- 201 (The International Institute for Strategic Studies 2006, 169)
- 202 (The International Institute for Strategic Studies 2006, 172), (The International Institute for Strategic Studies 2000, 120)
- 203 (The International Institute for Strategic Studies 2006, 170, 174)
- 204 (The International Institute for Strategic Studies 2006, 172)
- 205 (The International Institute for Strategic Studies 2006, 169)
- 206 (The International Institute for Strategic Studies 2008, 242)
- 207 (The International Institute for Strategic Studies 2006, 175)
- 208 (Fulghum, Doyle and Covault 2008)
- 209 (The International Institute for Strategic Studies 2006, 175)

- 210 (The Economist Newspaper 2008)
- 211 (Wall, 1)
- 212 (Hinnebusch and Ehteshami, 198), (The Economist Newspaper Limited 2008, 65)
- 213 (The International Institute for Strategic Studies 2002, 121)
- 214 (The International Institute for Strategic Studies 2007, 214)
- 215 (The International Institute for Strategic Studies 2003, 278)
- 216 (Ismail, 20)
- 217 (The International Institute for Strategic Studies 2003, 278)
- 218 (Wall, 2)
- 219 (Ismail, 1)
- 220 (Wall, 1)
- 221 (Wall, 1)
- 222 (Defense Security Cooperation Agency 2008)
- 223 (The Economist Newspaper Limited 2008, 65)
- 224 (The International Institute for Strategic Studies 2003, 278)
- 225 (Jervis 1978, 174)
- 226 (Jervis 1978, 174)
- 227 (Defense Security Cooperation Agency 2007)
- 228 (Wall, 1)
- 229 (Aviation Week & Space Technology 2007)
- 230 (Wall, 2)
- 231 (The International Institute for Strategic Studies 2008, 232-233)
- 232 (The International Institute for Strategic Studies 2008, 232)
- 233 (The International Institute for Strategic Studies 2008, 232)
- 234 (Jervis 1978, 174)
- 235 (The Economist Newspaper Limited 2008, 65)
- 236 (The Economist Newspaper Limited 2008, 65)
- 237 (Arab News 2009), (Safran, 134)
- 238 (The International Institute for Strategic Studies 2006, 173)
- 239 (Pollack, 18)

- 240 (Hinnebusch and Ehteshami, 200-201)
- 241 (Jervis, 188)
- 242 (Jervis, 199)
- 243 (Jervis 1978, 201)
- 244 (Pollack, 361)
- 245 (Pollack, 365)
- 246 (Pollack, 362)
- 247 (Pollack, 364)
- 248 (The Economist Newspaper Limited 2008, 65)
- 249 (Salameh and Steir 1980, 10), (Stork and Paul, Arms Sales and the Militarization of the Middle East 1983, 8)