2.2 Operation Desert Storm (Iraq 1991)

2.2.1 General Description of the Operational Environment

On August 2, 1990, Iraqi President, Saddam Hussein invaded the sovereign nation of Kuwait and claimed it as an Iraqi state as it had been in past history. Believing Iraq’s aggression would not be satiated by its conquest of Kuwait, US President Bush initiated Operation Desert Shield. At the end of this build-up there were over 2,400 fixed-wing Coalition aircraft in Theater, along with their support entourages, in place ready for war. After sanctions and political negotiations failed to persuade the Iraqis to leave Kuwait, the United Nations passed a resolution approving the use of force to eject the Iraqis from Kuwait.

Operation Desert Storm began on January 17, 1991 with an USAF-led air campaign and ended on February 28, 1991 after a four-day combined ground and air assault. Coalition forces expelled Iraqi forces from Kuwait and destroyed much of Baghdad’s military machine. From the outset, U.S. air power was central to the success of the campaign; it enabled the Coalition to deploy its forces and cripple Iraqi military capabilities, paving the way for Baghdad’s unambiguous defeat on the battlefield.

2.2.1.1 The Physical Environment

The Southwest Asia environment presented a series of problems for waging a modern war. The first was blowing dust and sand, lowering visibility on the ground and forcing aircraft maintainers to find new ways to keep grit and fine sand particles out of the aircraft parked out in the elements. Maintenance difficulties for sophisticated aircraft, munitions, and armored vehicles were abundant. The harsh arid desert was suited for neither aircrew survival nor evasion—the land provided no food, and little water; the temperatures reached extreme highs during the day, and extreme lows at night; the terrain was flat and featureless, providing no terrain or vegetation for concealment; and few landmarks existed for help in navigation.

The weather over Iraq during Desert Storm was the worst in fourteen years, twice as bad as the climatological history of the region would have suggested. The conditions, in fact, approximated
a rainy European summer, not the kind of blue-skies conditions one normally associates with desert warfare. Cloud cover exceeded 25% percent at 10,000 feet over central Iraq on 31 days of the 43-day war; it exceeded 50 percent on 21 of those days, and 75 percent on 9 days. Accompanying this cover were occasionally violent winds and heavy downpours that played havoc with targeting and bomb damage assessment. Eventually, about half of all sorties to Iraq were affected by weather, resulting in cancellations or diversions. The weather problem proved very serious, particularly because the Coalition's rules of engagement (ROE) demanded stringent identification of targets before weapons release.\textsuperscript{114}

**KUWAIT**

Kuwait is one of the world's smallest countries, occupying only 6,880 square miles (about two-thirds the size of New Hampshire) at the point where Iraq, Saudi Arabia, and Iran converge. Its greatest distance from north to south is 120 miles, and is no more than 110 miles from east to west. The terrain consists of flat desert with some small rolling hills, and is covered in sand of a very fine consistency. Kuwait also includes several offshore islands, the largest of which is Bubiyan, a muddy, uninhabited island near the Iraqi border. Faylakah Island, several miles south, is smaller, but populated with fishermen and light industry. Kuwait has no lakes and rivers and few sources of fresh water. Drinking water is available only from underground aquifers and through desalination of seawater. Although the climate is extremely hot in the summer, the average temperature during the war was 56°F. Annual rainfall is typically less than 5 inches per year, and almost all of it falls in the cooler winter.

Kuwait has an estimated population of 1.8 million. The average population density at the time was 264 per square mile, with most of the population concentrated in cities along the Persian Gulf coast. Slightly fewer than 40 percent of the people are native Kuwaitis, with the remainder of the population composed largely of foreign workers.

**IRAQ**

Iraq is bounded on the north by Turkey; on the east by Iran; on the south by Saudi Arabia, Kuwait, and the Persian Gulf; and on the west by Jordan and Syria. Iraq has an area of 168,000 square miles (about the size of Minnesota, Iowa, and Wisconsin combined), and a population of about 21.4 million. The estimated overall population density is about 126 per square mile, although the density varies markedly, with the largest concentrations in the area of the river systems. In Western Iraq, population density over vast stretches averages less than one person per square mile. The population is about 70 percent urban and Baghdad is the country's capital and largest city.

The northern portion of Iraq, known as Al Jazîra, is mountainous. Elevations of nearly 7,000 feet above sea level are found near the Turkish border, and in the northeastern part of the country peaks range to 11,811 feet atop Jabal Ibrahîm, the highest point in Iraq. Farther south the country slopes downward to form a broad, central alluvial plain, which encompasses the valley of the Tigris and Euphrates rivers. The extreme southeastern portion of Iraq is a low-lying, marshy area adjacent to the Persian Gulf, on which Iraq fronts for a distance of about 25 miles. West of the Euphrates, the land rises gradually to meet the Syrian Desert.

Most of Iraq has a continental climate with extremes of heat and cold. The mountainous northern portion of the country has cool summers and cold winters, often accompanied by snow.

\textsuperscript{114} HQ USAF, Section 2, "The Weather Factor."
In central Iraq the summers are long and hot and the winters short and cool. During the war, S/Es were exposed to wind, rain, and cool daytime temperatures below 50°F.

### 2.2.1.2 Operational Environment

This war was fought over sparsely populated desert and mountain environments as well as densely populated and heavily defended urban areas. The Iraqis had just completed a long and bloody war with Iran in 1988 and had grown in stature to the world's fourth largest Army. Most of their weaponry was Soviet-built and, although it was not state-of-the-art, Coalition war planners believed Iraqi soldiers and equipment to be very capable in a wartime environment. The following points excerpted from the Gulf War Air Power Survey provide a succinct summation of key operational factors:

- The military forces that seized Kuwait in August 1990 were traditional mechanized forces backed by a relatively modern industrial infrastructure in Iraq. Hence, Iraq and its military presented the kinds of targets that have traditionally been vulnerable to air attack, and in marked contrast to the Korean and Vietnam wars, Iraq was largely isolated from external sources of armaments for its war effort.
- The Gulf War took place in open, desert terrain well suited to the effective employment of air power.
- Once Desert Storm began, Iraqi air and air-defense forces proved unable to mount any serious opposition to Coalition control of the air.
- Coalition air forces had significant equipment and technological advantages over the opposition – advantages that were further magnified by the far-superior aircrew training, operational concepts, and doctrine of Coalition forces.
- The air campaign neither incurred significant losses of Coalition aircraft and crews nor inflicted widespread collateral damage or civilian casualties on Iraq.

The United States sent more than 400,000 troops of its own, and more than 200,000 additional troops came from Saudi Arabia, Great Britain, France, Kuwait, Egypt, Syria, Senegal, Niger, Morocco, Bangladesh, Pakistan, the United Arab Emirates, Qatar, Oman, and Bahrain. Other countries contributed ships, air forces, and medical units. Survival training and equipment varied greatly among US forces and the addition of Coalition forces into the equation further complicated the situation for rescuers.

### 2.2.2 Characteristics of Isolating Incidents

By the time the war was over, the USAF Central Command (USCENTAF) JRCC had tracked 56 combat incidents, launched 13 rescue missions in efforts to rescue 77 personnel, and ultimately recovered three individuals. Combined with a recovery by US Army ground forces of a two-person AH-64 crew, the total aircrew recovered under combat conditions during Desert Storm is five (see Figure 2-43). In the end, the Iraqis had captured 21 Americans and 10 Allied airmen.

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115 In terms of friendly losses, the contrast between Desert Storm and the strategic bombing of Germany, which cost the American and British air forces more than 150,000 personnel and 38,000 aircraft lost in action, is stark [D'Olier, et al., The United States Strategic Bombing Survey: Over-all Report (European War), p x]. Nor did Desert Storm witness anything remotely comparable to the incineration of enemy cities like Hamburg, Dresden, and Tokyo that occurred during World War II.

116 GWAPS, Vol V, Section II, Day C+206.
2.2.2.1 Causes of Isolating Incidents

Loss rates for Coalition aircraft were very low relative to historic averages, consistent with a declining trend observed since World War II. The Coalition’s aggressive Suppression of Enemy Air Defenses (SEAD) defeated most Iraqi radar systems. This enabled Coalition aircraft to conduct operations in the middle altitudes (about 15,000 feet) in relative safety because they were less vulnerable to infrared (IR)-guided SAMs or unguided AAA. One of the greater dangers Coalition pilots faced was from IR- or electro-optically (EO) guided SAMs while they were flying at relatively low altitudes supporting Coalition ground forces.\footnote{Conduct of the Persian Gulf War, p. 178.}

![Figure 2-43: Causes of Fixed-Wing Combat Losses in Desert Storm](Source: Gulf War Air Power Survey, Vol. V, p. 641)
As evidenced by pilots' accounts and low-level losses that continued throughout the war, Coalition aircraft were not able to defeat the AAA or portable IR SAM threats because of the very large number of these systems and the difficulty in finding such small, mobile, non-emitting systems. This meant that while Coalition aircraft had a high-altitude sanctuary, medium- and especially low-altitude deliveries remained hazardous throughout the war.\textsuperscript{118}

The primary threat to aircrews was from IR SAMs, accounting for 46 percent of US losses, and 38 percent of losses overall in cases where the cause was known.\textsuperscript{119} Of US fixed-wing losses known to have been caused by IR SAMs, 14 percent are attributed to SA-9/13 and 71 percent were known or probable MANPADS kills.\textsuperscript{120} Figure 2-44 depicts the altitudes and airspeeds of US fixed-wing aircraft hit by IR SAMs (for encounters where altitude and airspeed are known).

There were two reported instances of helicopter incidents involving IR SAMs. Both were AH-64 encounters with MANPADS, resulting in one lost and one damaged helicopter.\textsuperscript{121}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2-44.png}
\caption{Outcome of US Fixed-Wing Encounters With IR Missiles During Desert Storm}
\textit{(Source: Crosthwaite, Slides 4-6)}
\end{figure}

\begin{itemize}
\item \textsuperscript{118} GAO, Appendix III 9.2.1.
\item \textsuperscript{119} Gulf War Air Power Survey, Vol. V, p. 641.
\item \textsuperscript{120} Crosthwaite, Slides 4-6. Crosthwaite documents 14 US losses to IR SAMs, which differs from official Gulf War Airpower Survey results by inclusion of one additional A-6 and one additional AV-8B loss attributed to IR SAMs (MANPAD category).
\item \textsuperscript{121} Crosthwaite, Slide 4.
\end{itemize}
2.2.2.2 **Types of Assets Lost**

Fighter-type aircraft represented 97 percent of fixed-wing combat losses (37 out of 38). The single exception was an AC-130 that lingered past dawn in an area with a known SAM threat.

![Figure 2-45: Fixed-Wing Combat Losses During Desert Storm](Source: Gulf War Air Power Survey, Vol. V, p. 641)

2.2.2.3 **Type of Mission Being Conducted When Asset Was Lost**

The following figure shows the distribution of Desert Storm combat losses by mission type.

![Figure 2-46: Fixed-Wing Losses by Mission Type](Source: JSSA, “Gulf War Combat Losses”)
2.2.2.4 Frequency of Isolating Incidents

LOSS RATES

From 17 January 1991 through 28 February 1991 US and Coalition forces lost 38 fixed-wing aircraft to the enemy in combat, and 48 others were damaged. 122 Optimists predicted losing one-half of one percent of all sorties, (150 aircraft over a 30,000 sortie campaign, a .005 loss rate) with roughly a quarter of all shot-down aircrews killed, a quarter captured, and half rescued or able to return to friendly territory. Thoughtful pessimists estimated losses at 2% (which the Israelis had suffered in their spectacularly successful campaign of 1967), or possibly 3%. Dire pessimists--and there were some--forecast losses as high as 10%, equivalent to the casualties experienced by RAF Bomber Command and the 8th Air Force during the worst days of 1943. General Buster Glosson, an architect of the Desert Storm air war, had greater confidence than this; in October, during a briefing to President Bush, he predicted that the coalition would certainly lose no more than 80, and probably less than 50, aircraft in the entire campaign. In actuality, the Air Force loss rate in Desert Storm was .00047--one twentieth of one percent--per combat sortie. That rate reflected a strategic commitment to avoiding aircraft losses and associated casualties. For the first three weeks of the war, for example, Glosson restricted attack aircraft from descending below 8,000 feet to avoid dense antiaircraft fire that had proven so murderous in previous wars. 123

Table 2-16 describes combat loss rates by aircraft type (aircraft types that experienced no losses are not included). Due to the low loss numbers, relative differences in the loss rates should not be overvalued.

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123 USAF, Strategic Air Campaign Section
### Table 2-16: Desert Storm Aircraft Combat Attrition Rates
(Source: GWAPS, Vol. V. p. 651)

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Combat Sorties Flown</th>
<th>Losses</th>
<th>Losses per 1000 Sorties</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-10</td>
<td>7983</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>A-4</td>
<td>651</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>A-6E</td>
<td>5593</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>AC-130</td>
<td>101</td>
<td>1</td>
<td>9.9</td>
</tr>
<tr>
<td>AV-8B</td>
<td>3349</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>EF-111F</td>
<td>1105</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>F/A-18</td>
<td>9250</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>F-14</td>
<td>3916</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>F-15E</td>
<td>2142</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>F-16</td>
<td>13066</td>
<td>3</td>
<td>0.2</td>
</tr>
<tr>
<td>F-4G</td>
<td>2678</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>F-5</td>
<td>1129</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>GR-1</td>
<td>2482</td>
<td>9</td>
<td>3.6</td>
</tr>
<tr>
<td>OA-10</td>
<td>657</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>OV-10</td>
<td>482</td>
<td>2</td>
<td>4.1</td>
</tr>
</tbody>
</table>
Figure 2-47 shows the distribution of fixed-wing combat losses over time during Desert Storm. Although sortie rates were relatively constant, approximately half of its fixed-wing combat losses occurred during either the first week of Operation Desert Storm (17 aircraft), before enemy defenses had been suppressed, or during the last week (eight aircraft), when aircraft were operating at lower altitudes in the IR SAM threat region.124

Figure 2-47 also demonstrates that the peak demand on any given day was four losses. Regarding simultaneous incidents, there were four cases in which two loss incidents occurred within 60 minutes of each other, including one case of near simultaneous shootdown of a flight lead and his wingman. Although some calendar days showed instances of multiple loss events, there was no case in which rescue forces had to respond to more than two incidents in any four-hour period. Table 2-17 lists the intervals between shootdowns and the total instances of near simultaneous shootdowns.

Table 2-17: Estimated Simultaneous Isolating Incidents125

<table>
<thead>
<tr>
<th>Interval Between Shootdowns (in minutes)</th>
<th>Total Instances of Near Simultaneous Shootdowns</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
<td>1</td>
</tr>
<tr>
<td>15-30</td>
<td>1</td>
</tr>
<tr>
<td>30-60</td>
<td>2</td>
</tr>
<tr>
<td>60-240</td>
<td>4</td>
</tr>
</tbody>
</table>

124 Conduct of the Persian Gulf War, Chapter 6, p. 178.
125 JSSA, Calculated from shootdown times listed in “Gulf War Combat Losses.”
2.2.2.5 Injuries to Survivors/Evaders

During Desert Storm, 60 percent of downed airmen were known to have been killed during the shootdown phase of the isolating incident.\textsuperscript{126} That figure represents a sharp increase in shootdown fatalities when compared with a 24 percent rate in Vietnam.\textsuperscript{127} The immediate fate of an additional 31 percent is not known, although all were subsequently proven or pronounced KIA.\textsuperscript{128} It should also be noted that, of the 68 airmen killed in combat losses, one incident alone (Spirit 03) accounted for 14 of the fatalities.

2.2.2.6 Number of Survivors/Evaders per Incident

Although several loss incidents involved aircraft with large crews (AC-130, UH-60), in each of those cases, the entire crew perished in the crash. The largest fixed-wing crew available for recovery following combat loss (i.e. not KIA) was two people. Including helicopter losses, the largest crew available for recovery included the three surviving members of an original UH-60 crew of eight. In the end, more than 90 percent of incidents produced only one or two candidates for rescue (see Figure 2-48).

![Figure 2-48: Size of Crew Available for Rescue in Desert Storm [n=15]](source: JSSA, "Gulf War Combat Losses")

2.2.2.7 Distribution by Range

Figure 2-49 shows the geographic distribution of POWs and combat recoveries in Desert Storm.

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\textsuperscript{126} GWAPS, Tables 205 and 209; If Spirit 03 is not included (14 KIA), the total KIA would be 50 percent. Keep in mind that the small size of the population has a low confidence level and is very sensitive to perturbations.

\textsuperscript{127} Granville, Table 15.

\textsuperscript{128} Arnold, p. C-10.
Figure 2-49: Geographic Distribution of POWs and Combat Recoveries in Desert Storm
(Source: Compiled from data in JSSA “Gulf War Combat Losses” summary, Tyner, Arnold, and GWAPS references)
2.2.3 Enemy Reaction to Isolating Incidents

Although Iraq placed emphasis on capturing downed aircrew quickly, there was apparently no effort to use the S/E as "bait" for a SAR trap. There were basic jamming and spoofing efforts throughout Iraq using VHF Guard (121.5 MHz) and UHF Guard (243.0 MHz), and there is anecdotal evidence suggesting the Iraqis attempted, sometimes successfully, radio direction-finding of S/E using survival radios.

2.2.4 Duration of Survivor/Evader Exposure

The Joint Services SERE Agency (JSSA) debriefed S/E from Desert Storm and collected data on isolating event times, duration of evasion, locations, and evader physical conditions for all twenty three fixed-wing aircrew that evaded over land until capture or recovery. JSSA noted that experiences were similar to those recorded by evaders in North Africa during World War II. Although the general pattern is not dissimilar to that seen in Vietnam (Figure 2-50), the small number of isolating incidents during Desert Storm permits few statistical conclusions to be drawn from the operation. One notable exception may be the effect of darkness on the evasion process. No evader who was isolated during daylight hours was able to evade capture for more than ten minutes, while every evader who was isolated at night was able to evade for at least two hours prior to his capture or recovery. Of eighteen losses over land resulting in S/E that were available for rescue, only four of those airmen were rescued (two by opportune ground forces), and the remainder became POWs.

![Figure 2-50: Cumulative Percent of Survivors/Evaders Captured Over Time](image)

(Source: Vietnam Data: 7602 AIG, p. 10; Desert Storm Data: Mohan, p. 4)
Table 2-18: Summary of Successful Rescues Under Combat Conditions

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Time to Rescue</th>
<th>Rescued by:</th>
<th>Notes</th>
</tr>
</thead>
</table>
| F-16 WOLF 01 | 30 minutes     | USN helicopter (SH-60)  | (Maj Ball)  
Controlled bailout over the Persian Gulf.  
Ejection was tracked by AWACS  
Recovery was unopposed |
| AH-64        | 4.5 hours      | US Army ground forces   | (CW2 Rogers and CW2 Kurinj)  
Two-man crew  
Rescue was completed about four hours after initial radio contact had been established |
| F-16 BENJI 53| 2 hours        | 160 SOAR helicopter (CH-47) | (Capt Thomas)  
C2 failure delayed launch of recovery forces  
PRC-90 malfunctioned. Was able to signal forces with strobe-light only |
| F-14 SLATE 46| 7 hours        | AFSOC helicopter (MH-53) | (Lt Jones and Lt Slade)  
Jones and Slade were separated by about 15 miles after ejection. Jones was rescued, Slade was captured. |

While it is unlikely that any Combat Rescue CONOPS or readiness posture could have changed the outcome for those that were captured during the day, our failure to locate and recover those S/E that had evaded capture for two hours or more is troubling. The now famous case of Corvette 03 is a particularly egregious example in which the two crewmembers were caught and imprisoned after successfully evading capture for more than 48 hours. Even the cases of the two successful helicopter recoveries over land do not offer much opportunity for satisfaction—a full two hours had elapsed before the first recovery had been accomplished, and seven hours had elapsed for the other.

2.2.5 Types of Recovery Forces

During Desert Storm, Air Force Special Operations Command Central Command (AFSOCCENT) was tasked to be the single manager for all CSAR aviation. In that capacity, AFSOCCENT provided mission guidance to Air Force Special Operations Forces (AFSOF) and to the Army’s 160th Special Operations Aviation Regiment (SOAR). All assets responded to the Joint Recovery Coordination Cell (JRCC) at Riyadh. By the time Desert Storm began, aircraft supporting CSAR were located at five forward operating locations in Saudi Arabia and two in Turkey.129 Background on the use of Special Operations aviation forces for conventional CSAR is described in the Gulf War Air Power Survey:

129 GWAPS, Vol. IV, p. 301. Operating locations in Saudi Arabia included King Khalid Military City (KKMC), Raffa, Al Jouf, Ar’Ar, and Ras al Mishab. Operating locations in Turkey included Diyarbakir and forward.
"None of the Services possessed forces trained and equipped solely to conduct classic combat rescue missions. In Desert Storm, SOF aviation assets were the only forces with the requisite capabilities to penetrate enemy territory, recover a downed pilot, and egress safely. Special Operations Forces, however, are equipped and trained for night missions. A 24-hour on-call search and rescue mission could put Special Operations Forces in enemy territory during daylight hours—a circumstance they were taught to avoid."

2.2.5.1 **Dedicated vs. Opportune Recovery Forces**

AFSOCCENT aircraft were responsible for on-call CSAR in Kuwait and Iraq, south of 33 degrees, 30 minutes north latitude, and Air Force Special Operations Command, European Command (SOCEUR) aircraft in Turkey covered the area north of the 33 degree 30 minute latitude line. Dedicated Combat Rescue forces during Desert Storm were made up of eight AFSOCCENT MH-60G Pavehawks operating out of Saudi Arabia. They were reinforced by eight MH-53 Pave Lows available in support of Combat Rescue and other special operations taskings. Providing a secondary capability were several MH-60Ks and CH47s from the US Army’s 160th Special Operations Aviation Regiment (SOAR). Also available were five HH-3s from the Air Force Reserve’s 71st Special Operations Squadron. Arriving immediately prior to the start of the war, the HH-3s sat alert at Ras al Mishab, focused primarily on the over-water Combat Rescue mission. They also participated in several Special Operations missions and at least one medical evacuation. The US Navy also committed to have two HH-60Hs on alert around the clock for rescue operations beyond 12 miles from shore in the Gulf and in the Red Sea, and four dedicated Navy Strike Rescue HH-60Hs on the ground at Al Jouf that were assigned to the CSAR mission under SOCCENT. Five additional MH-53s operating out of Turkey (and assigned to SOCEUR) were available for recoveries in the northern region, if the MH-60Gs could not be used.

Dedicated rescue forces performed two of the four successful combat recoveries during Desert Storm. Although two opportune attempts were successful, opportune recovery was not without risk. One opportune mission to recover an F-16 pilot was attempted by Bengal-15, a US Army Blackhawk. It resulted in the shootdown of the rescue helicopter, yielding five fatalities and three POWs. Aircrew on that mission explained that they attempted it because Air Force Special Operations Command (AFSOC) forces were not in the area. In fact, the area was “too hot and Special Operations Forces (SOF) described it as a ‘RED’ zone that made rescue unlikely and probably impossible in daylight operations.” See Section 2.2.8, "Recovery Force Losses," for more information.

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130 GWAPS, Vol. IV, p. 300.
131 According to Lt Col Trask, MH-53s supporting the Combat Rescue mission were exclusively assigned to that mission, and did not provide their services as a “secondary capability,” available on an “as capable” basis, as suggested by some sources. Those suggestions are flatly denied by Lt Col Trask.
132 Tyner, p. 38.
133 Bergeron, p. 48 and p. 105
134 Conduct of the Persian Gulf War, Chapter 6, pp. 533 and 728.
135 Trask, no page number
136 Tyner, p. 46.
2.2.6 Terminal Area Characteristics

2.2.6.1 Physical Environment

Three of the four successful combat recoveries took place in the deserts of Southern Iraq. The terrain is mostly flat, has little or no vegetation, and provides little or no cover for evaders on the ground. Because of the arid climate and lack of vegetation, brownout conditions during helicopter landing could be severe, with dust clouds blowing as high as 75 feet and visibility inside the cloud of less than 5 feet. Although the environment was not suited for evasion or survival, it was very well suited for search and recovery where the flat terrain, and dry climate enhanced both visual and electronic search methods. Unfortunately, survival radio malfunctions were epidemic and, when the radios worked, the conditions benefited the enemy as well as friendly forces.

2.2.6.2 Terminal Area Operations

SLATE 46 (January 21, 1991)

The first successful Combat Rescue was a daylight recovery of a Lt Jones, a USN F-14 pilot, on the ground 130 miles inside Iraq. The mission had been impacted by delays in locating and authenticating the survivor that were attributed to limitations of the survival radio issued to the S/E. Before his eventual recovery, at least one failed mission had been launched to find the crew, and both fixed and rotary-wing assets were forced to conduct visual searches in enemy territory during daylight hours in a desperate effort to locate him. Once Lt Jones was finally located, the support package for his recovery became much larger than was expected because bad weather had prevented many aircraft from expending their ordnance on their assigned targets. At one point there were twelve F-16s, four A-10s, and two F-15s standing by to assist the AFSOCCECENT helicopters.

Finally, under cover provided by two A-10s, an MH-53 Pave Low arrived in the terminal area, landed, and recovered the airman. The potential for armed opposition during the recovery was presented in the form of an Iraqi truck driving straight for the SIB as the MH-53 approached. An A-10 on station quickly engaged with its cannon and immediately destroyed the truck. By the time they recovered to Al Jouf, the MH-53s that rescued Slate 46 had flown six and a half hours inside Iraq.

BENJI 53 (February 17, 1991)

The only other land recovery by helicopter (a CH-47) occurred on February 17, 1991, in which a downed F-16 pilot (Capt Thomas) was recovered 2 hours after being shot down. There were no significant complicating factors during the mission, and when the helicopter arrived in the terminal area the S/E was unable to establish communications using his PRC-90 survival radio. He resorted to using his strobe light to highlight his position to the helicopter. His wingman and Airborne Warning and Control System (AWACS) accomplished the initial location and

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137 Initial coordinates passed to the recovery forces were about 50 miles away from the location of the actual recovery several hours later [Trask, no page number].
138 Bergeron, p. 93.
139 GWAPS, Volume IV, pp. 302 and 3.
identification tasks. It was reported later that the helicopter’s radar warning receiver was used to detect and avoid a threat on their return and two IR missiles had been fired (and missed).\(^{140}\)

**AH-64 (February 20, 1991)**

The last land rescue under combat conditions was that of CW2 Rogers and Kurinij, both an AH-64 Apache crew. Originally part of an 8-ship package, the weather was so severe that seven of the Apaches aborted the mission. While attempting to continue the mission the others had aborted, the eighth Apache flew into the ground under instrument meteorological conditions (IMC). Using PRC-90 survival radios, the crew established radio contact with airborne C2 aircraft but, because of the weather and proximity to friendly lines, ground forces were dispatched to recover the aircrew.

### 2.2.7 Factors Affecting the Rescue Operations

**COALITION ISSUES**

In the beginning of Desert Storm, Pave Lows and other Special Operations Forces assets deployed in Southeastern Turkey were not permitted to fly in Turkish airspace until a political agreement was reached with the US. This action essentially “froze” these assets for three days at the start of the war.\(^{141}\) This delay had a certain impact on the recovery of the Corvette 03 by delaying their availability until January 20, 12 hours after the shootdown. Although they never materialized, Coalition language differences and equipment interoperability issues (particularly with respect to survival radios and signaling devices) represented other potential problems of significance during Desert Storm.

**ABSENCE OF SPECIALLY TRAINED COMBAT RESCUE FORCES**

After Vietnam, the USAF allowed its Combat Rescue force to wither away, and most Combat Rescue aircraft were assigned special operations roles. Although, by the early 1990s, Air Rescue Service had just begun to establish deployable MH/HH-60G Combat Rescue squadrons, none were yet available when the war broke out.\(^{142}\) Consequently, SOF aviation assets were the only forces with the requisite capabilities to recover a downed pilot under combat conditions, and they were tasked with the Combat Rescue mission. Although they did the best they could, conventional CSAR was not a mission for which the SOF community trained, nor did their doctrine and tactics at the time anticipate those operations.

This arrangement was problematic in several ways. First, C2 relationships were established that deviated from the concept of Unity of Command. Specifically, final mission approval authority did not rest with the Joint Forces Air Component Commander (JFACC), but with AFSOCCENT in the South\(^ {143}\) and SOCEUR in the North.\(^ {144}\) Such complex information paths can be expected to fail, as in the case of the pilot of Benji 53 (Capt. Thomas). Although he contacted AWACS before bailing out, and talked to his wingman on his PRC-90 after hitting the ground, recovery assets were not launched until after his wingman returned to base and started asking about what

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\(^{140}\) Tyner, p. 45.

\(^{141}\) Tyner, p. 38.

\(^{142}\) Tyner, p. 40.

\(^{143}\) GWAPS, Vol. IV, p. 301.

\(^{144}\) Tyner, p. 38.
was happening to rescue Thomas. Fortunately, the Iraqis were also slow in reacting and Capt Thomas was safely recovered.

Second, SOF planners were uncomfortable with immediate, daytime missions, and generally unfamiliar with CAF tactics, terminology, and conventional fixed-wing support capabilities. Detection avoidance and secrecy were primary planning factors, and general integration with CAF airpower was, by definition, not a typical component of their concepts of operations. While suitable for special operations missions, that employment concept was at odds with the rest of the air campaign in which the significant majority of missions (and majority of shootdowns) happened during daylight. It should be noted that some AFSOC crews that were in Southwest Asia during the conflict do not agree with that characterization. Lt Col Tom Trask, MH-53 flight-lead for the rescue of Slate 46, commented, “Though we...believed that flying at night was certainly safer than flying during the day, we also knew, and had re-learned only months before in Panama, that we must be prepared to fight in the daytime.” Notwithstanding that observation, aircrew awareness of tactical-level requirements was not supported by doctrine or formal training. Emphasis on “detection avoidance,” for example, during the planning process after Corvette 03 was lost (described below), may have had a decisive negative outcome.

Finally, although they are the best in the world for the Special Operations mission, AFSOC helicopter crews had little corporate expertise in supporting conventional Combat Rescue or in integration with conventional Combat Air Force (CAF) operations. Their task was made more difficult by the loss of institutionalized rescue knowledge as the Air Rescue and Recovery service was dismantled after Vietnam. After decades of neglect, conventional Combat Rescue experience was limited to the few aircrew that had flown rescue missions in Vietnam, relying on concepts that had not benefited from reassessment when technology and air power theory evolved. For example, because AFSOC crews were generally unfamiliar with CSARTF tactics, that capability was neither developed nor exercised during Desert Shield. Lt Col Weaver, Chief of Operations Plans for the 1st Special Operations Wing (deployed to Al Jouf during the air war), illustrated the extent of the training deficiency in a remarkable statement when he said, “We started working with the A-10s as Sandys with much more enthusiasm after we deployed to Al Jouf and realized what a great CSAR asset they were.” Although some individual aircrew members had familiarity with the CSARTF concept (having been previously assigned to HH-53, HH-3, or HH-1 CSAR squadrons), their numbers were too few, and the training too perfunctory, to sway the CONOPS towards more robust integration. Because the “corporate memory” had been dismantled, even forces that had been “trained” in conventional Combat Rescue were victims of wildly varied tactics, procedures, and quality of instruction. Some units and

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145 Boucher, p. 2.
146 GWAPS, Summary Report, p. 201 (Figure 33).
147 Trask, no page number
148 Tyner, p. 41. Once Desert Storm began, several large scale exercises were conducted that involved CSARTF operations and involved crews from around the theater [Trask, no page number]
149 Tyner, p. 45.
150 As late as 1995, the formal training syllabus at the MH/HH-60G Replacement Training Unit, the 512th Special Operations Squadron, continued to emphasize special operations modes (close formation, pre-planned missions to meet a precise time-over-target, totally comm.-out radio procedures, and general absence of CSARTF training), even when conventional Combat Rescue pilots were being trained there. The MH-53 syllabus had even less exposure to conventional rescue concepts.
individuals excelled. Others did not. There was no uniformity across the community, and no baseline CONOPS.

SOF unfamiliarity with the breadth of support available to them from CAF assets may have been a direct contributor to the capture of the crew of Corvette 03, an F-15E crew shot down on the night of January 19, 1991. In that incident, the first scheduled recovery mission was originally planned for execution during darkness, but was cancelled before takeoff when diplomatic airspace coordination delays prevented a night recovery. SOCEUR’s rationale for canceling the mission was that the threat was too high and would only permit a night recovery. There was additional concern that they had almost no possibility of getting to the western part of Iraq “without detection.” In the end, despite having successfully evaded capture for more than 48 hours, both members of Corvette 03’s crew were seized by the Iraqis, and spent the rest of the war as POWs. By the time recovery forces arrived on scene (the night of January 22), the Iraqis were waiting for them and greeted them with a barrage of AAA.

The failure to recover Corvette 03 after they had spent so long on the ground did not go unnoticed by the warfighters in Southwest Asia. Lt Col Trumbull, 550th Tactical Fighter Squadron, had the following comments when interviewed by Gulf War Air Power Survey researchers in June 1991:

“The other thing I think was missing was SAR (Search and Rescue). Our DO and his backseater were on the ground for three and one half days in western Iraq. Nobody’d go in and pick them up, and eventually they became prisoners of war. The advertised special operations guys that came down to talk to us before the war said, ‘no sweat, we’ll come get you wherever you are.’ That from my perspective was a big lie. When I’ve got guys on the ground for three and one-half days and they don’t go pick them up, we basically decided at that point that if anybody went down, you were on your own. Nobody was going to come get you.”

At this point, one can only speculate about the outcome if recovery forces had employed sooner, using Combat Rescue tactics that exploited CAF firepower. It is possible that a properly assembled CSARTF could have sufficiently suppressed the threat, and made moot the requirement for “detection avoidance.” Regardless, the delay was costly. Colonel Ben Josey, Batman’s FOL commander, stated, “...I think we would have picked Corvette 03 up had we been able to get out the night before.”

2.2.8 Recovery Force Losses

Rescue force losses were limited to one US Army UH-60L lost due to enemy fire while on an opportune Combat Rescue mission. There were a number of significant factors in the chain of events leading to this incident. The Army planners planned the mission to go to the last known position of the downed aircraft. No one had established radio contact with the downed pilot after ejection, and he was never located, identified, or authenticated during the planning and execution of the attempted recovery. In fact, the pilot had been captured a few minutes after reaching the ground.

151 Tyner, p. 42.
152 GWAPS, Vol. IV, p. 302 (Footnote 154).
153 Tyner, p. 42.
Intelligence personnel briefed mission planners on the threat on the ground, and they sensibly planned the mission around a major concentration of ground forces. As was standard Army practice at the time, the mission plan was passed from the Battalion planning staff down to a MEDEVAC aviation company for execution which meant that the crews that flew the mission were not involved in its planning. The mission included one MEDEVAC UH-60L, carrying an Army Flight Surgeon and a four-man Pathfinder Team, and two AH-1 gunships for escort. There was no fixed-wing component to the CSARTF that was assembled. Once airborne, the formation contacted Airborne Battlefield Command and Control Center (ABCCC) for flight following and C2. The ABCCC, lacking situational awareness (SA) of the ground order of battle, cleared the package to fly direct to the objective, rather than the circuitous planned route. The UH-60 crew, unfamiliar with ABCCC’s limitations, and unfamiliar with the command relationship, deviated from their planned route in accordance with ABCCC clearance. The new route took the package directly over an Iraqi infantry division. Upon coming under heavy enemy fire, the two Cobras immediately turned and egressed the area. Before the Blackhawk could escape, it was shot down. Five of the eight crew aboard were killed in the crash. The other three were seriously injured and trapped in the wreckage of the crushed and inverted helicopter. All three were extracted from the wreckage by their Iraqi captors, and became POWs along with the pilot they were attempting to rescue.