

## Notes

### Introduction

<sup>1</sup>The CENTCOM commander in chief had five service components (MARCENT, ARCENT, NAVCENT, SOCCENT, and CENTAF). He had responsibility for 18 countries in the Middle East and Africa, all in an area about the size of the United States. They varied from countries on the Horn of Africa (Somalia, Sudan, Ethiopia, Kenya) to those on the Arabian Peninsula. The operational chain of command for U.S. forces extended from the President to the Secretary of Defense through the Chairman of the Joint Chiefs of Staff to the unified commander in chief (in this case the CENTCOM commander) and down to the service commander.

<sup>2</sup>Frank N. Schubert and Theresa L. Krause, ed., *The Whirlwind War: The United States Army Operations in Desert Shield and Desert Storm*, [draft], p. 92; Department of Defense, *Conduct of the Persian Gulf War: Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991*, Apr 1992, p. 33 (hereafter cited as Title V Report); Michael R. Gordon and Gen. Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1995), pp. 41–43.

<sup>3</sup>Brig. Gen. Robert H. Scales, Jr., et al., *Certain Victory: The U.S. Army in the Gulf War* (Washington: Office of the Chief of Staff, U.S. Army, 1993), pp. 43–46, 48; Schubert and Krause, *Whirlwind War*, [draft], pp. 93–94; Gordon and Trainor, *The Generals' War*, pp. 44–45.

<sup>4</sup>“The Persian Gulf—Excerpts from President Bush’s press conference, 30 Nov 1990,” Misc Msg #5: OACE Reference Files; Schubert and Krause, *Whirlwind War*, [draft], p. 96; Gordon and Trainor, *The Generals' War*, pp. 51–52.

<sup>5</sup>Powell Statement, 3 Dec 1990; Headquarters, U.S. Army Forces Command (FORSCOM) public affairs pamphlet, “Commander Praises Mobilization Efforts,” 14 Mar 1991, p. 2, FORSCOM Engineer Files; Association of the U.S. Army, “Special Report: Operations Desert Shield and Desert Storm: The Logistics Perspective,” Sep 1991, pp. 3–4; Title V Report, p. 20.

<sup>6</sup>Interv, author with John Braden, Riyadh, Saudi Arabia, 30 Mar 1991, pp. 6–8.

<sup>7</sup>Gordon and Trainor, *The Generals' War*, p. 56.

<sup>8</sup>Lt. Col. F. Marion Cain, III, "Force Projection: Building Desert Storm Force Structure," *Military Review*, Jul 1993, p. 22; Braden interv, p. 10; Scales, *Certain Victory*, p. 50; Schubert and Krause, *Whirlwind War*, [draft], pp. 101–103; Gordon and Trainor, *The Generals' War*, pp. 54–55.

<sup>9</sup>Braden interv, p. 14; Lt. Gen. John J. Yeosock, "Army Operations in the Gulf Theater," *Military Review*, Sep 1991, pp. 3–4, 7; interv, Lt. Gen. William G. Pagonis by Lt. Col. Wesley V. Manning and Maj. Glen R. Hawkins, Dhahran, Saudi Arabia, 17 Feb 1991 (U.S. Army Center of Military History), pp. 20, 23. See also, *Whirlwind War*, [draft], pp. 105–108; 22d SUPCOM Command Report, n.d., DSDS Files: 22d SUPCOM; Lt. Gen. William G. Pagonis and Maj. Harold E. Raugh, Jr., "Good Logistics is Combat Power," *Military Review*, Sep 1991, pp. 29–30; Gordon and Trainor, *The Generals' War*, p. 56. On 19 December the ARCENT SUPCOM (Provisional) became the 22d SUPCOM.

<sup>10</sup>Interv, author with Lt. Col. James Walter, Riyadh, Saudi Arabia, 1 Apr 1991, p. 1.

## Chapter 1. Shaping the Engineer Force

<sup>1</sup>See Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report*, (Washington, D.C.: Government Printing Office, 1993) for a discussion of the air war.

<sup>2</sup>John R. Brinkerhoff, "Engineer Support at Echelons Above Corps: The 416th Engineer Command," [draft], Mar 1992, pp. 7–8 (hereafter cited as The 416th Engineer Command); Braden interv, p. 43; Title V Report, pp. 442–43.

<sup>3</sup>Interv, author with Col. Philip Carroll, Fort McPherson, Georgia, 5 Dec 1990, pp. 5–7.

<sup>4</sup>Brinkerhoff, "The 416th Engineer Command," pp. 3–6; Headquarters, Department of the Army, FM 5–100, *Engineer Combat Operations*, Nov 1988, pp. 12–19.

<sup>5</sup>Maj. Gen. Terrence D. Mulcahy, "Engineer Support in the COMMZ," *Military Review*, Mar 1992, p. 14.

<sup>6</sup>Col. Richard M. Swain, "'Lucky War' Third Army in Desert Storm," [draft], 29 Mar 1993, pp. 53–55.

<sup>7</sup>Cain, "Building Desert Storm Force Structure," pp. 23–24.

<sup>8</sup>Swain, "Lucky War," pp. 56–59.

<sup>9</sup>Cain, "Building Desert Storm Force Structure," p. 23; Swain, "Lucky War," p. 53; interv, author with Jim Johnston, Fort McPherson, Georgia, 5 Dec 1990.

<sup>10</sup>Carroll interv, 5 Dec 1990, p. 5; Brinkerhoff, "The 416th Engineer Command," p. 8; "Lucky War," pp. 58, 60; Braden interv, pp. 16–19; AFKE-CG-EN-FE (416th ENCOM), Memorandum for Record, [draft], subj: "Desert Shield/Storm Engineer 'Hot Wash,'" 7 Apr 1991, DSDS: Engineer School Materials; U.S. Army Engineer School,

“Engineer After Action Report: [final draft], Operations Desert Shield and Desert Storm,” May 1993, p. 48; *ibid.*

<sup>11</sup>Brinkerhoff, “The 416th Engineer Command,” pp. 8–9; msg, Cdr, Forces Command to ARCENT engineer (Forward), 1 Sept 1990.

<sup>12</sup>Braden interv, pp. 21–24.

<sup>13</sup>Carroll interv, 5 Dec 1990, pp. 8, 11; Braden interv, pp. 54–57, 60.

<sup>14</sup>Carroll interv, 5 Dec 1990, pp. 12–14; Braden interv, p. 40.

<sup>15</sup>Memo, Lt. Col. Donald M. Tomasik for Chief of Staff, TUSA, 20 Aug 1990, TAD Incoming Message File #2.

<sup>16</sup>Col. Robert Flowers, 20th EN BDE Briefing, DSDS: Flowers Briefing; interv, Col. Robert Flowers by Lt. Col. Reardon, Fort Bragg, North Carolina, 3 Jun 1991.

<sup>17</sup>Flowers interv, pp. 5–7.

<sup>18</sup>Interv, author with Lt. Col. Kenneth Cargill, Dhahran, Saudi Arabia, 25 Mar 1991, pp. 60, 68–69; interv, author with Lt. Gen. William G. Pagonis, Dhahran, Saudi Arabia, 27 Mar 1991, pp. 3, 11.

<sup>19</sup>“Operation Desert Shield/Storm Recap,” *U.S. CENTCOM Engineer Newsletter*, v. 2, no. 1, Jul 1991, p. 5.

<sup>20</sup>CENTCOM Engineer Summary (ENSUM), 16 Aug. 1990, TAD Incoming Message File #4; Frank C. Carlucci, Deputy Secretary of Defense, DOD Directive #4270.5, subj: “Military Construction Responsibilities,” 2 Mar 1982, DSDS: 1982 DOD Directive.

<sup>21</sup>Braden interv, pp. 65–67; interv, author with Maj. Gen. Terrence Mulcahy, Riyadh, Saudi Arabia, 1 Apr 1990, p. 4; memo, Jim Johnston to Charles Thomas, 12 Sep 1990, SAD/Forces Command Liaison Book #2.

<sup>22</sup>Memo, Mulcahy for Gen. Edwin H. Burba, Jr., 9 Sep 1990, Misc Msg #2: OACE Reference Files.

<sup>23</sup>Mulcahy, “Engineer Support in the COMMZ,” p. 14; memo, Col. Alan J. Berg for ARCENT SUPCOM (Provisional) G–3, 12 Nov 1993, TAD Incoming Message File #24.

<sup>24</sup>Braden interv, p. 67; Flowers interv, p. 16.

<sup>25</sup>CINCFOR Sitrep #29, 5 Sep 1990; ARCENT SUPCOM (Provisional) Logsitrep #32, 6 Sep 1990; *ibid.*, #36, 10 Sep 1990; *ibid.*, #41, 15 Sep 1990; CINCFOR Sitrep #28, 4 Sep 1990.

<sup>26</sup>Record of phone conversation, FORSCOM Engineer with Lt. Col. Tomasik, 17 Sep 1990, FORSCOM Engineer Files; record of phone conversation, FORSCOM Engineer with Lt. Col. Cargill, 14 Sep 1990, FORSCOM Engineer Files.

<sup>27</sup>U.S. Army Engineer School Briefing, Apr 1991, DSDS: Engineer School Materials.

<sup>28</sup>ARCENT SUPCOM (Provisional), Logsitrep #77, 21 Oct 1990; CINCCENT Sitrep, 24 Oct 1990; U.S. Army Engineer School Briefing, April 1991.

<sup>29</sup>Cain, "Building Desert Storm Force Structure," pp. 24–25.

<sup>30</sup>CINCCENT Sitrep, 15 Nov 1990; COMUSARCENT Main SITREP, 26 Nov 1990.

<sup>31</sup>Carroll interv, 5 Dec 1990, pp. 1–2.

<sup>32</sup>CINCCENT Sitrep, 20 Nov 1990.

<sup>33</sup>Swain, "Lucky War," pp. 119–121; Association of the U.S. Army, "Special Report," p. 12; Lt. Gen. William G. Pagonis and Col. Michael D. Krause, "Observations on Gulf War Logistics," *Army Logistician*, Sept–Oct 1992, pp. 7, 8.

<sup>34</sup>Mulcahy interv, p. 6; record of phone conversation, Mulcahy with Lt. Gen. John Yeosock, FORSCOM Engineer Files.

<sup>35</sup>Memo, Lt. Col. Patrick Barry, 13 Nov 1990, TAD Incoming Message File #24.

<sup>36</sup>Interv, author with Cpt. Steve Adams, Riyadh, Saudi Arabia, 31 Mar 1991, pp. 43, 45; Mulcahy, "Engineer Support in the COMMZ," p. 17.

<sup>37</sup>"Operation Desert Shield/Storm Recap," pp. 5–6.

<sup>38</sup>Mulcahy interv, pp. 15–16; Mulcahy, "Engineer Support in the COMMZ," pp. 17–18.

<sup>39</sup>Interv, author with Brig. Gen. Richard E. Storat, Dhahran, Saudi Arabia, 22 Mar 1991, pp. 2–6; Col. Anthony R. Kropp, "Engineers Build For Victory In Operation Desert Storm," p. 6, DSDS: 411th EN BDE.

<sup>40</sup>Storat interv, pp. 5–6, 8, 10.

<sup>41</sup>Memo, Storat to Commander ARCENT, subj: Command Report, Operation Desert Shield Activities, 26 Feb 1991, DSDS: 22d SUPCOM.

<sup>42</sup>Mulcahy, "Engineer Support in the COMMZ," p. 20; Title V Report, p. 444.

<sup>43</sup>U. S. Army Engineer School Briefing, April 1991; ARCENT Main Logstat Report #144, 27 Jan 1991.

<sup>44</sup>CINCCENT Sitrep, 28 Jan 1991; interv, author with Col. Philip Carroll, Riyadh, Saudi Arabia, 1 Apr 1991, p.11; interv, author with Lt. Col. Gilbert Van Sickle, Dhahran, Saudi Arabia, 26 Mar 1991, p. 42.

<sup>45</sup>U.S. Army Engineer School, Engineer After Action Report, p. 139, DSDS: Engineer School Materials.

<sup>46</sup>Title V Report, p. 444; Braden interv, pp. 61, 90; Mulcahy, “Engineer Support at Echelons Above Corps,” p. 21; AFKE-GC-EN-FE (416th ENCOM), Memorandum for Record, subj: “Desert Shield/Storm Engineer ‘Hotwash,’” 7 Apr 1991, [draft], DSDS: Engineer School Materials.

<sup>47</sup>Storat interv, p. 27.

## Chapter 2. The Corps of Engineers Responds

<sup>1</sup>Middle East/Africa Projects Office, Public Affairs Office, “Corps Facts,” v. 1, no. 9, 24 Sep 1990, DSDS: Articles on Saudi Construction; see also John Greenwood, “Diplomacy Through Construction: The U.S. Army Corps of Engineers in Saudi Arabia,” USACE Office of History, pp. 1–6, *ibid.*; Joan F. Kibler, *The Military Engineer*, no. 527, Mar/Apr 1989, pp. 81–84.

<sup>2</sup>Transatlantic Division, “Briefing to House Appropriations Committee,” n.d.; Lt. Gen. Henry J. Hatch and Janet A. McDonnell, “Corps of Engineers: Laying the Groundwork for Theater Operations,” *Military Review*, Mar 1992, pp. 3–4.

<sup>3</sup>Interv, author with Lt. Gen. Henry J. Hatch, Washington, D.C., 10 Feb 1992, p. 6; The White House, *National Security Strategy of the United States* (Washington: Government Printing Office, August 1991), p. 2.

<sup>4</sup>Interv, author with Ceasar Santucci, Kuwait City, Kuwait, 5 Apr 1991, pp. 2–7; *Engineer Update*, v. 15, no. 2, Feb 1991, pp. 4–5.

<sup>5</sup>*Transatlantic News*, Mar 1993, p. 13; interv, author with Chito Gomez, Dhahran, Saudi Arabia, 28 Mar 1991, pp. 3–7, 16–17, 21–25, 27–28.

<sup>6</sup>“Memorandum of Agreement between Third United States Army and the U.S. Army Corps of Engineers,” 29 Sep 1986, DSDS: TUSA–MOA with Corps; interv, author with Col. William Miller, Atlanta, Georgia, 21 Nov 1991, pp. 2–3.

<sup>7</sup>Interv, author with Lt. Col. Charles S. Cox, Winchester, Virginia, 21 May 1991, pp. 2–4; msg, SAD to CECW-OE, 091130Z Aug 1990, DSDS: Deployment; msg, SAD CDR to CINCCENT, MacDill/CC J4/7, 161330Z Aug 1990, *ibid.*; Cox interv, 21 May 1991, pp. 6–9; interv, author with Ben Wood, Kuwait City, Kuwait, 6 Apr 1991.

<sup>8</sup>William Miller interv, pp. 4–6; Wood interv.

<sup>9</sup>In a 14 August letter indicating that the MEAPO team was ready for deployment, Col. Emory Pylant told the CENTCOM J–8, “It would be irresponsible to not take advantage of the expertise and emergency contracting capabilities of the MEAPO team.” (memo, Col. Julian E. Pylant for CENTCOM J–8, 14 Aug 1990, SAD/FORSCOM Liaison Files); Cargill interv, pp. 8–11; Wood interv; William Miller interv, p. 7.

<sup>10</sup>Msg, Cdr, FORSCOM to Cdr, USACE/CECW-OE-EOC, 111922Z Aug 1990; Sitrep #2, 15 Aug 1990, SAD/FORSCOM Liaison Files; Pagonis interv, 27 Mar 1991, p. 15; Braden interv, p. 46; record of phone conversation, FORSCOM Engineer with Lt. Col. Elrick, 24 Sep 1990, FORSCOM Engineer Files; record of phone conversation, Maj. Treadway with Lt. Col. Elrick, 25 Sep 1990, *ibid.* Since TUSA/ARCENT resisted

funding MEAPO operations, Hatch decided to fund the deployment of 30 people until 30 September. The Corps ended up funding its own operations in the theater. MEAPO normally operated with minimum Operations and Maintenance, Army (OMA) funds. Most of its funding came from supervision and administration (S&A) reimbursement from the military construction (MILCON) projects it managed for the U.S. government and from the foreign military sales cases with nations in the region.

<sup>11</sup>Interv, author with Col. Brent Laurence and Lt. Col. Anthony Jayjock, Riyadh, Saudi Arabia, 2 Apr 1991, pp. 14, 16, 26–27; Cox interv, 21 May 1991, p. 14; msg, MEAPO Emergency Operations Center (EOC) to SAD and HQUSACE EOCs, 15 Aug 1990, DSDS: Personnel.

<sup>12</sup>Cox interv, 21 May 1991, pp. 10, 15–16; Cargill interv, p. 11.

<sup>13</sup>Cox interv, 21 May 1991, p. 16; Santucci interv, pp. 10, 12; Cargill interv, p. 13; South Atlantic Division (SAD) Sitrep #15, 21 Aug 1990.

<sup>14</sup>Walter interv, pp. 4, 7; Wood interv; Cargill interv, p. 28; Cox interv, 21 May 1991, pp. 16–22; SAD Sitrep #14, 20 Aug 1990; msg, CINCFOR to CDR MEAPO, 202213Z Aug 1990, DSDS: Deployment; SAD Sitrep #17, 23 Aug 1990; Miller interv, p. 8.

<sup>15</sup>Santucci interv, p. 10; Cox interv, 21 May 1991, pp. 32–36.

<sup>16</sup>Santucci interv, pp. 12–13, 29–30. Eventually the tasking system became more formal. Corps personnel developed a computer data base listing the assignments that the Dhahran Area Office was working on, along with the command's priorities. The office coordinated closely with the ARCENT SUPCOM.

<sup>17</sup>William Miller interv, pp. 9–10; Notebook, Col. William Miller Files; interv, author with Maj. Gen. John Sobke, Atlanta, Georgia, 3 Dec, 1990, pp. 1, 3.

<sup>18</sup>William Miller interv, pp. 10–11; Miller, Periodic Report #1, 3 Sep 1990.

<sup>19</sup>Miller, Periodic Report #3, 7 Sep 1990; "The DAO News," 12 Sep 1990, TAD Incoming Message File #8.

<sup>20</sup>Miller interv, pp. 14–15; fax, Cox to Miller, 4 Sep 1990, OPD: Miller Files #4; Cox interv, 21 May 1991, pp. 26–27; C.C. Miller interv, p. 7.

<sup>21</sup>Miller, Periodic Report #4, 10 Sep 1990; Miller interv, 14–17.

<sup>22</sup>"Operation Desert Shield/Storm Recap," p. 6.

<sup>23</sup>Msg, COMUSARCENT Main/EN to DAEN-CG, 311700Z Oct 1990, TAD Incoming Message File #22.

<sup>24</sup>Miller, Periodic Report, #14, 2 Nov 1990.

<sup>25</sup>Memo, Cecil E. Hutchinson for Ron Rhodes, 1 Sep 1990, TAD Outgoing Message File #6; MEAPO(F) Sitrep #2, 24 Aug 1990, TAD Incoming Message File; Adams interv, pp. 33, 36; interv, author with Lt. Col. Charles S. Cox, Winchester, Virginia, 24 Aug 1991, pp. 44–46.

<sup>26</sup>Miller, Periodic Report #6, 16 Sep 1990; Cox interv, 21 May 1991, p. 56; interv, author with Maj. James Brooks, Dhahran, Saudi Arabia, 26 May 1991, pp. 39–40; Wood interv; fax, Miller to Roger Thomas, 8 Dec 1990, TAD Incoming Message File #30.

<sup>27</sup>SAD, “Civilian Personnel Plan,” 1 Sep 1990, DSDS: Personnel.

<sup>28</sup>SAD Sitrep #109, 19 Dec 1990; interv, author with Ron Magnuson and Hal Faulkner, Atlanta, Georgia, 3 Dec 1990, pp. 5, 9, 29–31, 53, 47.

<sup>29</sup>Magnuson and Faulkner interv, pp. 22, 43–45; memo, Miller for Distribution, 31 Aug 1990, “Policy for Temporary Duty Assignments for Operation Desert Shield,” DSDS: Personnel; memo, Ralph Loschialpo for Hatch, 29 Nov 1990, *ibid.*; msg, ARCENT MAIN G–3 to AIG 11743, 080900Z Nov 1990, *ibid.*; fax, Miller for Lt. Col. Brown, 1 Dec 1990, *ibid.*; SAD Sitrep #102, 3 Dec 1990.

<sup>30</sup>Msg, Headquarters PERSCOM to AIG 7406, 11 Oct 1990, DSDS: Personnel; msg, Deputy Chief of Staff for Operations and Plans (DAMO/TAPC/DAPE) to AIG 9150, *ibid.*; memo, Stephen Arnold for Director of Human Resources, subj: Desert Shield/Desert Storm, 18 Feb 1993, *ibid.*; Schubert and Krause, *Whirlwind War*, [draft], p. 373.

<sup>31</sup>Interv, author with Bruce Garwood, Winchester, Virginia, 12 Oct 1990, pp. 11–12; memo, Leo R. Lavinka for Chief of Staff, USACE, 12 Sep 1990, DSDS: POR; memo, Lavinka for CECW-OE, 13 Sep 1990, *ibid.*

<sup>32</sup>Memo, Ralph Loschialpo for Human Resource Director, SAD, [draft], n.d., *ibid.*

<sup>33</sup>Memo, Col. Andrew L. Austin, U.S. Total Army Personnel Command, for See Distribution, 6 Dec 1990, DSDS: Personnel; msg, DAPE-ZA, 211800Z Dec 1990, TAD Incoming Message File #33.

<sup>34</sup>Memo, Maj. Gen. C. Ernest Edgar for PERSCOM Director of Mobilization Operations, 10 Dec 1990, DSDS: Personnel; fax, Cox to Lt. Col. Brown, 8 Dec 1990, TAD Incoming Message File #30.

<sup>35</sup>AMC chose to continue processing its civilians at the Aberdeen Proving Ground. Memo, Stephen E. Arnold for Col. Herndon, 15 Jan 1991, DSDS: Personnel; memo, Arnold for Hatch, 25 Jan 1991, *ibid.*

<sup>36</sup>Memo, Edward C. Massimo for Crisis Management Team, 17 Jan 1991, DSDS: POR; memo, Massimo for CECS, 19 Feb 1991, *ibid.*

<sup>37</sup>Miller, Periodic Report #8, 23 Sep 1990; Magnuson and Faulkner interv, pp. 36–37; Miller interv, pp. 38–41; Notes from Crisis Management Team Briefing, 11 Jan 1991, DSDS: Author's Notes.

<sup>38</sup>Msg, DAPE/DAMO to AIG 9150, subj: Desert Shield Personnel Policy Message no. 38, 4 Jan 1991, DSDS: Personnel; William Miller interv, pp. 38–41; Cox interv, 24 Aug 1991, pp. 53–55.

<sup>39</sup>Stephen E. Arnold, Fact Sheet, subj: Emergency-Essential Civilians, 21 Aug 1990, DSDS: Personnel; msg, Cdr USACE to AIG 9181, 152249Z Jan 1991, *ibid*; msg, DAPE/DAMO to AIG 9150, 4 Jan 1991, *ibid*.

<sup>40</sup>William Miller interv, pp. 43–46; Cox interv, 24 Aug 1991, p. 61; Brooks interv, p. 51.

### Ordnance Program Division

<sup>1</sup>Laurence and Jayjock interv, pp. 1–3, 6, 10–12, 25.

<sup>2</sup>OPD Commander Update #37, 27 Aug 1990, TAD Incoming Message File #4; “A Look Back: Operation Desert Storm/Kuwait Recovery,” *Transatlantic News*, v. 6, no. 7, Aug–Sep 1991, p. 7.

<sup>3</sup>Lt. Col. Jayjock, Fact Sheet, 26 Feb 1991; OPD Weekly Update, 18 Feb 1991, OPD: Miller Files #26.

<sup>4</sup>Jayjock, Fact Sheet, 26 Dec 1990, TAD Incoming Message File #34; Lawrence and Jayjock interv, pp. 28, 37.

<sup>5</sup>Jayjock, Fact Sheet, 26 Dec 1990; OPD Weekly Update, 11 Feb 1991, OPD: Miller Files #26.

<sup>6</sup>OPD, “OPD’s Accomplishments in Support of the Gulf War,” n.d.

<sup>7</sup>Laurence and Jayjock interv, pp. 49–50.

### Individual Mobilization Augmentees

<sup>1</sup>Memo, John F. Wallace for Chief of Staff, 21 Feb 1991, DSDS: IMA; msg, ARPERCEN to AIG 12417, 140905Z Aug 1990, *ibid*.; memo, Col. Michael V. Marengo, 28 Jan 1991, *ibid*.; msg, DAMO-ODM-AOC to CDR AMC, 261425Z Aug 1990, *ibid*.; memo, MG Glynn C. Mallory for CDR USACE, 30 Jan 1991, *ibid*; interv, author with Maj. Gen. Gary Stemley, Washington, D.C., 21 Dec 1990, p. 1.

### Funding the Corps

<sup>1</sup>“Memorandum of Agreement between Third U.S. Army and the U.S. Army Corps of Engineers,” 7 Oct 86, Resource Management (RM) Files; William Miller interv, pp. 3–6.

<sup>2</sup>Memorandum for Record, Bronel Jerrell, 12 Aug 1991, RM Files; interv, author with Larry Graham, Winchester, Virginia, 16 Oct 1990, pp. 4–7; Miller interv, p. 8; Cox interv, 21 May 1991, p. 12; DSDS: Author’s Notes, 27 Aug 1990.

<sup>3</sup>Msg, CECW-OE-P to CENTCOM (MacDill AFB) AFRD-EN, Funding: OACE Reference Files; CINCFOR Sitrep #27, 030400Z Sep 1990.



<sup>4</sup>Memo, Lt. Gen. Ellis D. Parker for Principal Officials of HQDA, Headquarters, Department of the Army (HQDA), Guidance/Instructions: RM Files.

<sup>5</sup>Memo, Maj. Gen. C.E. Edgar for Col. D. Berg, 20 Aug 1990, RM Files; memo, Gen. Gordon R. Sullivan for HQDA officials, 18 Sep 1990, RM Files.

<sup>6</sup>Graham interv, pp. 6, 18–19, 25; interv, author with William Richardson, Atlanta, Georgia, 6 Dec 1990, pp. 2–4.

<sup>7</sup>U.S. Cong., House Committee on Armed Services, House Report to Accompany H.R. 1175, “National Defense Supplemental Authorization Act for Fiscal Year 1991,” 7 Mar 1991, pp. 2–3; U.S. Congress, House, Committee on the Budget, Hearing, “Cost of the War in the Gulf,” 27 Feb 1991, 102d Cong., 1st sess., p. 69; memo, John Wallace to Hatch, 11 Dec 1990, DSDS: Workload/Saudi Funding: RM Files; memo, Col. Thomas J. Sheehy for Assistant Chief of Engineers, 19 Dec 1990, DSDS: Funding, OACE Reference Files; House Committee on Armed Services, “Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991,” 102 Cong., 1st sess., 21 Mar 1991, p. 51.

<sup>8</sup>House, Committee on the Budget, Hearing, 27 Feb 1991, pp. 1–3; “National Defense Supplemental Authorization Act for Fiscal Year 1991, to Accompany H.R. 1175,” pp. 2–3; msg, SAFM-ZB to et. al., 152200Z Jan 1991, HQDA Guidance/Instructions: RM Files; memo, Joseph Hemphill to MACOMs, 15 Jan 1991, DSDS: Funding; “Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991,” p. 51; Information Paper, John Jones, 11 Jan 1991, DSDS: Funding.

### Chapter 3. Saudi Arabian and Japanese Support

<sup>1</sup>Title V Report, pp. 401, 635; CINCCENT Sitrep 151745Z Aug 1990; Gen. H. Norman Schwarzkopf, *The Autobiography: It Doesn't Take A Hero*, (London: Bantam Books, 1992), p. 364. MEAPO officials had anticipated that for host nation support they would be dealing with the General Directorate of Military Works, the people they had been dealing with for the past 20 years in its Saudi construction program. They looked forward to this because they had established good personal relationships with the directorate's officials and the directorate had some organizational similarities with the Corps. But the Saudi government decided that the Saudi Air Defense Corps' Directorate of Engineering and Housing would provide the support. The command had less experience at this type of contract construction and tended to be slow. (Cox interv, 24 Aug 1991, pp. 27–30); Adams interv, pp. 53–54; Richard J. Kaplan, “Saudi Arabian Host Nation Support For Operation Desert Shield/Storm,” [draft], Aug 1991, pp. 3–7, DSDS: HNS—Rand Corporation Report (hereafter cited as HNS Report).

<sup>2</sup>Memo, Lt. Gen. William G. Pagonis for ARCENT Commander, subj: “Command Report, Operation Desert Shield, 22d SUPCOM,” 23 Mar 1991, DSDS: 22d SUPCOM After Action Documents; Schubert and Krause, *Whirlwind War*, [draft], pp. 113–115; interv, Lt. Col. Donald L. Trautner by Lt. Col. Wesley Manning and Maj. Glen Hawkins, Dhahran, Saudi Arabia, 10 Feb 1991, CMH; Lt. Col. Norman F. Hubler,

USAR, "Civil Affairs and Wartime Host Nation Support," *Military Review*, July 1992, pp. 73, 75. Scarse was followed by Lt. Col. Donald L. Trautner, from early October to early January, and finally by Col. Robert H. Sholly.

<sup>3</sup>Memo (unsigned), Frederick C. Smith for Deputy Sec Def, n.d., Foreign Gifts: RM Files; Kaplan, HNS Report, pp. 7–9.

<sup>4</sup>Kaplan, HNS Report, p. 16; interv, author with Maj. Gen. James W. Ray, Washington, D.C., 28 Nov 1990, pp. 1–2.

<sup>5</sup>Memo, Lt. Gen. Henry J. Hatch for ASA/FM, 14 Sep 1990, Lt. Col. Michael Fisher Files.

<sup>6</sup>Ray interv, p. 3; SAD Sitrep #71, 16 Oct 1991.

<sup>7</sup>Kaplan, HNS Report, pp. 16–17; memo, Lt. Gen. Michael P. C. Carns to Maj. Gen. Ray, n.d., DSDS: HNS.

<sup>8</sup>Ray interv, p. 4. Because no bank in Riyadh could accept a check for that amount, an officer was put on a plane to Paris so he could catch the Concord and get to the Federal Reserve Bank in New York to deposit the check on the same day. The cost of the trip would be recovered in the interest (\$250,000 per day) on the money. Memorandum for Record, Col. Robert Herndon, 31 Oct 1990, DSDS: HNS; Kaplan, HNS Report, pp. 18–20.

<sup>9</sup>Kaplan, HNS Report, p. 24; "Implementation Plan for Logistics Support of U.S. Forces in Defense of the Kingdom of Saudi Arabia," 5 Nov 1990, DSDS: HNS.

<sup>10</sup>Memorandum for Record, Col. Stewart H. Bornhoft, 26 Oct 1990, DSDS: HNS; msg, CINCCENT J4/7 to Director/Joint Chiefs of Staff, 051400Z, 9 Nov 1990, Foreign Gifts: RM Files; msg, D/JS to DAMO-ZA, 192050Z Nov 1990, *ibid*.

<sup>11</sup>SAD Sitrep #89, 5 Nov 1990; *ibid*, #91, 7 Nov 1990; CENTCOM Regulation 415–1, Appendix G, "Procedures for Construction in the Kingdom of Saudi Arabia," 6 Nov 1990, DSDS File: CENTCOM Regulation 415–1.

<sup>12</sup>Msg, CINCCENT J4/7 to CENTAF et al., 020500Z Nov 1990, HNS Agreement: Miller Files #18; Braden interv, pp. 75–76, 88–89.

<sup>13</sup>Memorandum for Record, AFRD-EN, 17 Nov 1990, Misc Info: Lt. Col. Kenneth Cargill Files #39; SAD Sitrep #100, 26 Nov 1990; Miller, Periodic Report #15, 27 Nov 1990; interv, author with Brig. Gen. Pat Stevens IV Riyadh, Saudi Arabia, 1 Apr 1991, p. 15.

<sup>14</sup>Cox interv, 24 Aug 1991, pp. 20, 23–24; Adams interv, p. 56; Walter interv, pp. 26–27.

<sup>15</sup>Memo, Col. John M. Downey, "Minutes of Meeting at the Ministry of Defense and Aviation, 27 October 90," 30 Oct 1990, DSDS: HNS.

<sup>16</sup>Memo, George M. Kingsley to CESAI-OC, 29 Oct 1990, TAD Incoming Message File, #21; memo, Kingsley and Allan M. Tyrrell for CDR DAO, 6 Nov 1990, Contract Turnover: Miller Files #19.

<sup>17</sup>Memo, Col. Raymond C. Ruppert, CENTCOM Staff Judge Advocate, for Col. John M. Downey, 1 Nov 1990, TAD Incoming Message File #24.

<sup>18</sup>Memo, Col. Miller to Matt Thomason, 1 Dec 1990, Contract Turnover: Miller Files #19.

<sup>19</sup>CINCCENT Sitrep 032115Z Dec 1990; memo, Cox for Col. Pryor, n.d., JFSU Actions: Miller Files #19A; Actions; memo, Ali Saad Zehefa to William R. Brewer, 1 Jan 1991, *ibid.*; Brewer to Zehefa, 1 Jan 1991, *ibid.*; Cox interv, 24 Aug 1991, pp. 24–26; William Brewer comments, June 1995.

<sup>20</sup>Fax, Miller to Cox, 6 Jan 1991, JFSU Actions: Miller Files #19A; fax, Miller to Cox, 7 Jan 1991, *ibid.*

<sup>21</sup>Fax, Miller to Cox, 9 Jan 1991, *ibid.*; fax, Miller to Roger Thomas, 24 Jan 1991, TAD Incoming Message File #41.

<sup>22</sup>“Memorandum of Agreement between JFSU and MEAPO for construction quality assurance, technical oversight and contract administration,” 29 Jan 1991, DSDS: HNS.

<sup>23</sup>Fax, Maj. Gen. Starling to MEAPO [draft], 11 Dec 1990, DSDS: GOJ-GPF; MEAPO Point Paper, 11 Jan 1991, *ibid.*

<sup>24</sup>Title V Report, p. 635; msg, COMUSJapan to USCINCCENT J4/7, 070404Z Sep 1990, DSDS: GOJ-GPF. On 1 September, the commander of the U.S. Pacific Command (CINCPAC) authorized COMUSJapan to coordinate directly with CINCCENT for the Japanese government’s offers of assistance. Navy Commander Steve Johnson served as liaison. (Msg, JCS J4 to USCINCCENT J4/7, 082334Z Nov 1990, DSDS: GOJ-GPF; msg, CINCCENT J4/7 to COMUSARCENT Main et al., 121200Z Sep 1990, TAD Incoming Message File #8; CINCCENT Sitrep, 122115Z Sep 1990; *ibid.*, 142115Z Sep 1990.

<sup>25</sup>Msg, Joint Staff (J-4) to USCINCCENT J4/7, 272229Z Sep 1990, Foreign Gifts: RM Files; msg, USCINCCENT J4/7 to COMUS Japan Command Center, Yokota Air Base, 170830Z Sep 1990, *ibid.*; CCJ4/7-E, “Fact Paper,” 17 Nov 1990, Misc: Miller Files; Title V Report, p. 637.

<sup>26</sup>Cox interv, 24 Aug 1991, pp. 1–3; SAD Sitrep #67, 12 Oct 1990.

<sup>27</sup>CCJ4/7-E “Fact Paper,” 17 Nov 1990; memo, Maj. Christopher S. Prinslow for ARCENT Main EN, 10 Nov 1990, Cargill Files #39; fax, Miller to Lt. Col. Ashhurst, 8 Jan 1991, TAD Incoming Message File #36.

<sup>28</sup>Cox interv, 24 Aug 1991, p. 5; Miller interv, p. 56; Braden interv, pp. 78–80, 95; memo, Cox to Braden, 11 Nov 1990, DSDS: GOJ-GPF; memo, Matthew D. Thomason, III, for Cox, 9 Nov 1990, DSDS: GOJ-GPF.

<sup>29</sup>Miller interv, pp. 57–58; memo, Cox for Dick Wiles/M. Thomason, 8 Nov 1990, TAD Incoming Message File #24; fax, Miller for Wiles, 11 Dec 1990, TAD Incoming Message File #50.

<sup>30</sup>Msg, USCINCCENT J4/7 to CESAI-DE, 181130Z Dec 1990, TAD Incoming Message File #32.

<sup>31</sup>Memorandum for Record, Faye M. Steffes, 7 Jan 1991, DSDS: GOJ-GPF; memo, Cecil Hutchinson for Col. Miller, 2 Dec 1990, *ibid.*; SAD Sitrep #115, 7 Jan 1991.

<sup>32</sup>Fax, Miller to Hutchinson, 13 Jan 1991, TAD Incoming Message File #37; memo, Miller for Braden, 18 Jan 1991, *ibid.*, #39; fax, R.D. Bryan to Ox Van Hoften, 18 Jan 1991, DSDS: GOJ-GPF.

<sup>33</sup>Memo, Miller to Bechtel International Systems, Inc., 23 Jan 1991, TAD Incoming Message File #41; Miller, Periodic Report #21, 25 Jan 1991 Periodic Reports; CINCCENT Sitrep, 222115Z Jan 1991; fax, Miller to Roger Thomas, 24 Jan 1991, TAD Incoming Message File #41.

<sup>34</sup>Fax, Miller to MEAPO Emergency Operations Center, 8 Feb 1991, TAD Incoming Message File #45; Cox interv, 24 Aug 1991, pp. 9–11; msg, CESAI-CD to CENTCOM J4/7, 101500Z Jan 1991, DSDS: GOJ-GPF; memo, Miller for Braden, 12 Jan 1991, TAD Incoming Message File #37; memo, Maj. Gen. James W. Ray for Maj. Gen. John Sobke, 19 Feb 1991, *ibid.*, #48.

<sup>35</sup>“Gulf Peace Fund Work Nears Completion,” *Transatlantic News*, v. 6, no. 8, Oct 1991, p. 3; Information Paper, “Gulf Peace Fund Contract” n.d., DSDS: GOJ-GPF.

<sup>36</sup>“Operation Desert Shield/Storm Recap,” p. 2; letter, Lt. Gen. Calvin Waller to Lt. Gen. Khalid Bin Sultan Bin Abdul Aziz, 8 Mar 1991, Misc: Miller Files.

<sup>37</sup>Cox interv, 24 Aug 1991, pp. 12–13; “Gulf Peace Fund Work Nears Completion,” p. 3; memo, Cpt. Carey S. Hill to D/Cdr DAO, 18 Mar 1991, TAD Incoming Message File #55.

<sup>38</sup>Memo, Col. Gaines B. Hall for DAO, 3 Apr 1991, *ibid.*, #59.

<sup>39</sup>Cox interv, 24 Aug 1991, pp. 15–18; Miller interv, pp. 59–60; Braden interv, pp. 93, 95. The abrupt end to the war meant that the demand for construction and services was less than anticipated. The cap on the Gulf Peace Fund was lowered from \$100 million to \$50 million, which CENTCOM put into the U.S. Treasury.

<sup>40</sup>Memorandum for Record, Col Lee Pryor, 416th ENCOM, 7 Apr 1991, p. 7; memo, Col. Charles D. Bartlett for Hdq, 22d SUPCOM, 22 Apr 1991; Col. Charles D. Bartlett, Jr, interviewed by Lt. Col. Wesley Manning and Maj. Glen Hawkins, Dhahran, Saudi Arabia, 10 Feb 1991, pp. 12–14, 19–21.

<sup>41</sup>Title V Report, p. 444.

<sup>42</sup>*Ibid.*, pp. 402, 634; “Gulf Peace Fund Work Near Completion,” p. 3; Scales, *Certain Victory*, p. 65.

#### Chapter 4. Engineer Construction

<sup>1</sup>Headquarters, Department of the Army, FM 5–116, *Engineer Operations: Echelons Above Corps*, Mar 1989, pp. 6–7; msg, CINCCENT J4/7, 11 Nov 1990, TAD Incoming Message File #25.

<sup>2</sup>South Atlantic Division (SAD), “Engineer Support, Echelons Above Corps, Southwest Asia,” [draft], 28 Sep 1990, DSDS: Command and Control; FM 5–116, pp. 6, 22; Army Regulation 415–1, “Military Construction/Engineering in the U.S. CENTCOM Area,” [draft], n.d., DSDS: CENTCOM Regulation 415–1.

<sup>3</sup>Memo, CENTCOM J4/7–E, “Macro Lessons Learned for Operation Desert Shield/Storm,” p. 3, 25 Mar 1991, TAD Incoming Message File #57 (hereafter cited as “Macro Lessons Learned”); SAD “White Paper: Engineer Support, Echelons Above Corps, Southwest Asia,” 1 Oct 1990, DSDS: Command and Control; Braden interv, pp. 34, 76. The regional contingency construction management cell eventually included four representatives from the 416th Engineer Command—Majors Prinzlow, Ryzek, and Yarzumbeck, and Captain Alexander.

<sup>4</sup>CENTCOM ENGRSUM, 28 Aug 1990, DSDS: CENTCOM ENGRSUM; *ibid.*, 31 Aug 1990; “Operation Desert Shield/Storm Recap,” pp. 1–2; SAD Sitrep #23, 29 Aug 1990; AFKE-GC-EN-FE, Memorandum for Record, 7 Apr 1991.

<sup>5</sup>See FM 5–116, p. 54; DAEN-ZCM, Information Paper, 23 Aug 1990, DSDS: Construction Management; CENTCOM ENGRSUM, 28 Aug 1990; “Operation Desert Shield/Storm Recap,” p. 1.

<sup>6</sup>Mulcahy interv, p. 8.

<sup>7</sup>Brinkerhoff, “The 416th Engineer Command,” pp. 23–24; Braden, “Macro Lessons Learned.”

<sup>8</sup>Cox interv, 21 May 1991, p. 32; Cargill interv, p. 68; Adams interv, p. 36; msg, Paul Des Roches to Col. Braden, 25 Oct 1990, Desert Storm Information #2/3 FORSCOM Engineer Files; William Miller interv, p. 22.

<sup>9</sup>Adams interv, pp. 37, 40; MEAPO(F) Sitrep #39, 17 Oct 1991.

<sup>10</sup>Brooks interv, pp. 24–27; Cox interv, 21 May 1991, pp. 29–30, 41; interv, author with Cpt. Lee Stabb, Dhahran, Saudi Arabia, 27 Mar 1991, p. 5; William Miller interv, pp. 19–21.

<sup>11</sup>Stevens interv, p. 25.

<sup>12</sup>Brinkerhoff, “The 416th Engineer Command,” p. 26; memo, Col. Lee Pryor, 3 Jan 1991, DSDS: Construction Management.

<sup>13</sup>MEAPO, Point Paper, subj: Kingdom of Saudi Arabia Support to Operation Desert Shield/Storm, Feb 1991; William Miller interv, p. 24; C.C. Miller interv, p. 2.

<sup>14</sup>Braden interv, p. 86; Stevens interv, pp. 25–26; memo, Col. Braden for ARCENT EN and MEAPO(SWA), 20 Feb 1990, TAD Incoming Message File #48.

<sup>15</sup>Miller interv, pp. 24–26; Miller, Periodic Report #15, 27 Nov 1990.

<sup>16</sup>Cox interv, 21 May 1991, p. 29; Miller interv, pp. 21, 26–28.

<sup>17</sup>MEAPO, Point Paper, “Kingdom of Saudi Arabia Support.”

<sup>18</sup>U.S. Army Engineer School, “Engineer After Action Report,” p. 81, DSDS: Engineer School Materials.

<sup>19</sup>Msg, CINCFOR to ARCENT EN, 1 Sep 1990; CENTCOM ENGRSUM, 2 Sep 1990; Joint Chiefs of Staff Publication #3, Appendix to Section 3, Chapter 6, "Suggested Construction Standard for Military Construction and Civil Engineering Support of Joint Contingency Operations," DSDS: Construction; msg, CINCCENT J4/7 to COMUSARCENT Main, 6 Sep 1990, TAD Incoming Message File #6; FM 5-116, p. 52.

<sup>20</sup>CENTCOM ENGRSUM, 12 Sep 1992.

<sup>21</sup>Record of phone conversation with Lt. Col. James Walters, ARCENT(F), 1 Sep 1990, DSDS: FORSCOM Engineer Files; Title V Report, p. 442.

<sup>22</sup>Msg, USCINCCENT J4/7 to COMUSARCENT Main, 16 Sep 1990, DSDS: Construction Management; Lt. Col. Gordon Quesenberry, Information Paper, 26 Sep 1990, DSDS: Misc Msg, OACE Reference Files #3.

<sup>23</sup>CINCCENT Sitrep, 14 Dec 1990; msg, CINCCENT J4/7 to COMUSARCENT Main, 11 Dec 1990, DSDS: Construction Management.

<sup>24</sup>Brooks interv, p. 63; Van Sickle interv, pp. 57, 60; AFKE-GC-FE (Brig. Gen. Storat), Memorandum for Record, 7 Apr 1991, p. 4; Wood interv.

<sup>25</sup>Ben F. Wood, Fact Sheet, 2 Dec 1990, TAD Incoming Message File #28.

<sup>26</sup>FM 5-116, p. 51; memo, Col. T. J. Sheehy for DALO-AV, 10 Nov 1990, DSDS: Base Development, OACE Reference Files; U. S. Army Engineer School, "Engineer After Action Report," p. 80, Engineer School Materials.

<sup>27</sup>Braden, "Macro Lessons Learned."

<sup>28</sup>Santucci interv, pp. 20-21; Wood interv.

<sup>29</sup>Santucci interv, p. 15.

<sup>30</sup>Ibid, p. 19; Brooks interv, pp. 60-61; Cox interv, 21 May 1991, pp. 47-48; memo, Maj. Gen. John Sobke for CECW, subj: "Lessons Learned in Operation Desert Shield/Desert Storm," 3 June 1991, DSDS: After Action Report—SAD.

<sup>31</sup>Interv, author with Adam "Ollie" Werner, Winchester, Virginia, 10 Oct 1990, p. 34; memo, CESAI-ED-MC, 15 Sep 1990, TAD Outgoing Message File #16.

<sup>32</sup>MEAPO, "Operation Desert Shield Design Support," 29 Nov 1990, DSDS: Funding.

<sup>33</sup>SADvR 1110-3-1 and Engineer Regulation 1110-345-100; memo, K.R. Akers for CESAI-ED, 10 Oct 1990, TAD Incoming Message File #19.

<sup>34</sup>Stabb interv, pp. 4-6; Braden interv, p. 47; interv, author with Cpt. Paul R. Cudney, Dhahran, Saudi Arabia, 28 Mar 1991, p. 25.

<sup>35</sup>Memo, Sobke for CECW, 13 June 1991.

<sup>36</sup>Van Sickle interv, pp. 8, 11-12; Cox interv, 21 May 1991, p. 46; Santucci interv, pp. 20-21; Stabb interv, pp. 4, 7-8.

<sup>37</sup>Stabb interv, p. 14; Brinkerhoff, "The 416th Engineer Command," p. 27; U. S. Army Engineer School, "Engineer After Action Report," p. 65.

<sup>38</sup>SAD Sitrep #15, 21 Aug 1990; CENTCOM ENGRSUM, 22 Aug 1990; Braden, "Macro Lessons Learned;" "Operation Desert Shield/Storm Recap," p. 3; AFKE-GC-EN-FE (416th ENCOM), Memorandum for Record, subj: "Desert Shield/Storm Engineer 'Hotwash,'" 7 Apr 1991, [draft], DSDS: Engineer School Materials.

<sup>39</sup>411th EN BDE, S-1 Section Report for Command Report, DSDS: 22d SUPCOM.

<sup>40</sup>U. S. Army Engineer School, "Engineer After Action Report," pp. 65–66; Brinkerhoff, "The 416th Engineer Command," p. 42.

<sup>41</sup>Task Force 43 After Action Report, DSDS: Engineer School Materials.

<sup>42</sup>Mulcahy, "Engineer Support in the COMMZ," p. 19.

<sup>43</sup>"Operation Desert Shield/Storm Recap," p. 2.

<sup>44</sup>Braden interv, pp. 70–71; Van Sickle interv, pp. 9, 21–22, 68–69.

<sup>45</sup>U.S. Army Engineer School Briefing.

<sup>46</sup>Storat interv, p. 12.

<sup>47</sup>Van Sickle interv, pp. 80, 31–32.

<sup>48</sup>"Title 10, United States Code, Armed Forces (As Amended Through December 31, 1988)" Committee Print, 101st Cong., 1st sess., no. 2, Feb 1989, DSDS: Construction Funding.

<sup>49</sup>Memo, Maj. Gen. Peter J. Offringa for Comptroller of the Dept of Defense, 23 Aug 1990, DSDS: Funding, OACE Reference Files. The Corps also deferred two projects (Fort Ord, California, and Fort Riley, Kansas) to fund planning and design. DAEN-ZCR (Mr. Landahl), Information Paper, subj: "MILCON Requirements in Support of Desert Storm," 7 Feb 1991, *ibid*.

<sup>50</sup>Memo, Sean O'Keefe to Sen. Jim Sasser, 24 Aug 1990, TAD Incoming Message File #28; memo, Sasser to O'Keefe, 27 Aug 1990, DSDS File: Funding-Reprogramming.

<sup>51</sup>ARCENT SUPCOM (Provisional) Sitrep #65, 092300C Oct 1990.

<sup>52</sup>Memo, Offringa for D/ASA(I&H), 31 Oct 1990, DSDS: Funding, OACE Reference Files.

<sup>53</sup>"Water Wells," n.d., Construction Funding: Cargill Files #2; SAD Sitrep #52, 27 Sep 1990; memo, Maj. Gen. William G. Pagonis for Lt. Gen. John Yeosock, 29 Sep 1990, TAD Incoming Message File #14; msg, Commander FORSCOM to Commander USACE, 071632Z Oct 1990, Construction Funding: Cargill Files #2.

<sup>54</sup>ARCENT SUPCOM (Provisional) Sitrep #63, 7 Oct 1990; CINCFOR Sitrep, 23 Oct 1990.

<sup>55</sup>Msg, CINCCENT J4/7 to Joint Staff, 090945Z Oct 1990, Desert Shield Funding: Miller Files #17; msg, CINCCENT to Chairman, JCS, n.d., *ibid*.

<sup>56</sup>Msg, JCS/J4 to CINCCENT J4/7, 170017Z Oct 1990; Miller, Periodic Report #12, 21 Oct 1990.

<sup>57</sup>Memo, Maj. Gen. John Sobke for Commander MEAPO, 5 Oct 1990, TAD Incoming Message File #15.

<sup>58</sup>Memo, Lester Edelman for Acting Director, Military Programs, 21 Aug 1991, DSDS: Funding.

<sup>59</sup>Memo, Lt. Col. William Hagan for ARCENT Staff Judge Advocate, 1 Oct 1990, DSDS: Construction Funding, Cargill Files #2.

<sup>60</sup>Memo, Col. Tonu Toomepuu for ARCENT Chief of Staff, 3 Oct 1990, *ibid*.

<sup>61</sup>Memo, Lt. Col. William David Brown for Director, Military Programs, 12 Oct 1990, DSDS: Funding; memo, Cox to MEAPO Cdr, 12 Oct 1990, *ibid*.

<sup>62</sup>Memo, Sobke to Director, Military Programs, 12 Oct 1990, DSDS: Funding; memo, Maj. Gen. James W. Ray for Commander SAD, 12 Oct 1990, *ibid*.

<sup>63</sup>Memo, Sobke to Ray, 23 Nov 1990, Desert Shield Funding: Miller Files #17.

<sup>64</sup>Memo, CECC-J for Director, Military Programs, 7 Dec 1990, DSDS: Funding.

<sup>65</sup>Memo, Matt Reres to Office of the Chief of Engineers, 17 Dec 1990, subj: Legislative Proposal for Funding Support of Construction Performed by the Kingdom of Saudi Arabia for Operation Desert Shield, DSDS: Funding; memo, Maj. Gen. Ray for Commander, USACE, 10 Jan 1991, *ibid*; memo, Lt. Gen. J. Hatch for ASA(ILE) 10 Jan 1991, *ibid*.

<sup>66</sup>Memo, Ray for Commander SAD, 29 Mar 1991, TAD Incoming Message File #57; Transatlantic Division Briefing Slide, 1 Mar 1991, "Operation Desert Storm: Transatlantic Division Expenditures," DSDS: Briefing Slides.

<sup>67</sup>Memo, Col. William Miller for SAT-DE, "Lessons Learned," 16 Mar 1991, TAD Incoming Message File #53.

<sup>68</sup>Memo, Col. Miller for SAT-DE, "Lessons Learned," 16 Mar 1991, TAD Incoming Message File #53; Point Paper, Julian E. Pylant, 22 Mar 1991, SAD Emergency Operations Center, Desert Storm, Message Reading File, Book #6.

<sup>69</sup>Pagonis and Krause, "Observations on Gulf War Logistics," p. 8.

<sup>70</sup>U. S. Army Engineer School, "Engineer After Action Report," p. 84; Title V Report, p. 444.

<sup>71</sup>Procedures changed somewhat after the Gulf War ended and the regional contingency construction management cell departed. With redeployment underway, CENTCOM and the services engineer offices could coordinate the few remaining construction requirements. ARCENT assumed responsibility for theater construction management for the remaining requirements. Each service would continue to manage the remaining CENTCOM-approved projects with existing Japanese government



contracts or with Saudi-funded construction or material contracts. New redeployment projects requiring host nation or Japanese contract support would be submitted through DD Form 1391 to ARCENT for review and approval in accordance with the redeployment construction guidance contained in a 23 March 1991 CENTCOM message. ARCENT would coordinate host nation funding and reimbursement for approved redeployment construction requirements. Msg, CINCCENT J4/7 to ARCENT MAIN/EN, 3 Apr 1991, Misc: Miller Files; “Operation Desert Shield/Storm Recap,” p. 5; Braden, “Macro Lessons Learned;” Title V Report, p. 444.

## Chapter 5. Construction Contracts

<sup>1</sup>Van Sickle interv, pp. 35, 27, 60; Dhahran Area Office (DAO) Sitrep #87, 21 Jan 1991; memo, Lt. Col. Philip M. Jones, Jr., for COMUSARCENT, subj: After Action Report, 43d Engr Bn (Cbt Hvy), 22 Apr 1991, DSDS: Engineer School Materials.

<sup>2</sup>Memo, Col. James Frederick for Commander ARCENT(F), 29 Aug 1990, DSDS: Life Support Area #5, Cargill Files.

<sup>3</sup>Author’s DSDS notes, 6 Apr 1991; Bill Brasse, Memorandum for Record, 31 Aug 1990, DSDS: Construction Management; memo, Maj. Jay Treadway for Forces Command Engineer, 1 Sep 1990, in SAD/FORSCOM Liaison Sitreps.

<sup>4</sup>Miller, Periodic Report #5, 13 Sep 1990; msg, Commander, Forces Command to CJCS, subj: FORSCOM Sitrep #39, 15 Sep 1990; memo, Maj. Gen. Peter Offringa for Director of Military Programs, HQUSACE, 14 Sep 1990, DSDS: Fiscal Year 1990 Reprogramming and Base Camps, Fisher Files.

<sup>5</sup>Miller, Periodic Report #8, 23 Sep 1990, TAD Incoming Message File #11; Roger L. Thomas, Memorandum for Record, 25 Sep 1990, TAD Outgoing Message File #15; memo, Maj. Gen. William Pagonis to Maj. Gen. Saleh Bin Ali Al-Mohaya, 17 Sep 1990, DSDS: Life Support Area #5, Cargill Files; memo, Lt. Gen. John J. Yeosock to Lt. Gen. Khalid Bin Sultan, n.d. (unsigned), *ibid.*; memo, Maj. Gen. Dane Starling to Lt. Gen. Khalid Bin Sultan Bin Abdul Aziz, n.d., Base Camp: Miller Files.

<sup>6</sup>Memo, Julius E. Bounds for MEAPO Commander, 12 Sep 1990, TAD Incoming Message File #10; memo, Col. William Miller to Lt. Col. Brown, 18 September 1990, TAD Incoming Message File #9.

<sup>7</sup>Fax, Ben Wood to Maj. Gen. James W. Ray, 18 Sep 1990, TAD Incoming Message File #9; memo, Lt. Col. Gordon S. Quesenberry for Maj. Gen. Gary Stemley, 17 Sep 1990, DSDS: Contract Construction; Santucci interv, p. 46.

<sup>8</sup>Memo, Robert W. Page to MEAPO, 18 Sep 1990, DSDS: Maj. Gen. Ernest Edgar File; memo, Page for Director of Military Programs, HQUSACE, 19 Sep 1990, TAD Outgoing Message File #13.

<sup>9</sup>George M. Kingsley, Memorandum for Record, 20 Sep 1990, DSDS: Contracting; Col. Miller, Memorandum for Record, 20 Sep 1990, TAD Incoming Message File #10.

<sup>10</sup>Page memo, 19 Sep 1990.

<sup>11</sup>Kingsley memo, 20 Sep 1990; note from ASA(CW), 21 Sep 1990, DSDS: Edgar File.

<sup>12</sup>Memo, K.R. Akers for Commander, USACE, 27 Sep 1990; Wood interv.

<sup>13</sup>Akers memo, 27 Sep 1990; memo, Susan Livingstone for Director of Military Programs, HQUSACE, 26 Sep 1990, DSDS: Life Support Area.

<sup>14</sup>SAD Sitrep #87, 1 Nov 1990.

<sup>15</sup>Cargill interv, pp. 52–54; Miller, Periodic Report #10, 10 Oct 1991; Norman Schwarzkopf, *It Doesn't Take a Hero*, pp. 355–56

<sup>16</sup>Memo, Darrell Crawford to Col. Emory Pylant, n.d., SAD/FORSCOM Liaison Sitreps; Werner interv, pp 13–17; interv, author with Kay Bauer, Atlanta, Georgia, 4 Dec 1990, p. 17; interv, author with Bennie Stephens, Atlanta, Georgia, 3 Dec 1990, pp. 26, 22.

<sup>17</sup>SAD Sitrep #72, 17 Oct 1990; *ibid.*, #73, 18 Oct 1990; *ibid.*, #84, 29 Oct 1990; *ibid.*, #86, 31 Oct 1990; *ibid.*, #91, 7 Nov 1990; *ibid.*, #94, 13 Nov 1990.

<sup>18</sup>SAD Sitrep #115, 7 Jan 1991; memo, Dwight Burns to Maj. Mohammad Shonaify, 13 Mar 1991, Base Camp: Miller Files; Burns to Shonaify, 18 March 1991, *ibid.*; Larry Ems to Shonaify, 1 May 1991, Contract Turnover: Miller Files #19.

<sup>19</sup>Stephens interv, p. 22; Bauer interv, p. 18; Cudney interv, p. 20.

<sup>20</sup>Scales, *Certain Victory*, pp. 76–77.

<sup>21</sup>Braden, “Macro Lessons Learned;” CINCCENT Sitrep, 12 January 1991.

<sup>22</sup>John R. Brinkerhoff, “The 416th Engineer Command,” p. 36; 411th Engineer Brigade, Command Report, Brig. Gen. Richard E. Storat to Commander, ARCENT, 25 Feb 1991, DSDS: 411th EN BN.

<sup>23</sup>Van Sickle interv, pp. 2–3, 6–7.

<sup>24</sup>Carroll interv, p. 10.

<sup>25</sup>U. S. Army Engineer School, “Engineer After Action Report,” p. 65; Van Sickle interv, pp. 13–17.

<sup>26</sup>Cox interv, 21 May 1991, p. 59.

<sup>27</sup>U.S. Army Engineer School Briefing, April 1991; Cargill interv, p. 46.

<sup>28</sup>U. S. Army Engineer School, “Engineer After Action Report,” p. 65.

<sup>29</sup>Maj. Michael F. Hullihan, “Dust Control in Saudi Arabia,” *Engineer*, Jan 1991, pp. 10–12.

<sup>30</sup>Memo, Lt. Col. Donald Tomasik for MEAPO(SWA), 7 Sep 1990, TAD Incoming Message File #6; CESAI-ED-F, Memorandum for Record, 17 Sep 1990, TAD Outgoing Message File #12; fax, “Dust Control,” J. R. Ramos to Gary Kula, 4 Oct 1990, TAD Incoming Message File #15.

<sup>31</sup>Msg, FORSCOM/FCCS to COMUSARCENT Main, 29 Oct 1990, DSDS Reading File, SAD Emergency Operations Center; Tomasik, memo for See Distribution, 9 Oct 1990, TAD Incoming Message File #20; MEAPO Emergency Operations Center Tasker #419, 2 Oct 1990, TAD Outgoing Message File #17.

<sup>32</sup>Research and Development Directorate Fact Sheet, 30 Oct 1990, DSDS: Dust Control, R&D Files; WES Fact Sheet, “Dust Control Options for Helipads in Saudi Arabia,” 2 Nov 1990, *ibid.*

<sup>33</sup>Memo, Lt. Col Kenneth R. Ashhurst for Col. Miller, 6 Nov 1990, Reading File, SAD EOC; Roger A. Brown, Memorandum for Record, 9 Nov 1990.

<sup>34</sup>Cudney interv, p. 1; Roger A. Brown, Memorandum for Record, subj: Dust Palliative Experiences in Operation Desert Shield, 7 Dec 1990; DSDS: Dust Control.

<sup>35</sup>SAD Sitrep #78, 23 Oct 1990; Brown, Memorandum for Record, 7 Dec 1990; DAO Sitrep #7, 10 Dec 1990; SAD Sitrep #109, 19 Dec 1990.

<sup>36</sup>Roger A. Brown, Memorandum for Record, 12 Dec 1990; DAO Sitrep #71, 10 Dec 1990; SAD Sitrep #100, 26 Nov 1990.

<sup>37</sup>Storat interv, p. 22; Van Sickle interv, p. 57; U. S. Army Engineer School, “Engineer After Action Report,” p. 65.

<sup>38</sup>Msg. Maj. Gen. Donald R. Williamson for Maj. Gen. Peter J. Offringa, 26 Oct 1990, DSDS: Facility Requirements, OACE Reference Files.

<sup>39</sup>SAD Sitrep #55, 30 Sep 1990; *ibid.*, #63, 8 Oct 1990; Tomasik, Fact Sheet, 5 Nov 1990, Cargill Files #30.

<sup>40</sup>Information Paper, Lt. Col. Gordon Quesenberry, 2 Nov 1990, DSDS: Base Development, OACE Reference Files; Mulcahy, “Engineer Support in the COMMZ,” p. 18; CINCCENT Sitrep, 19 Dec 1990.

<sup>41</sup>Cargill interv, pp. 33, 36; Miller, Periodic Report, #19, 8 Jan 1991; Walter interv, p. 12.

<sup>42</sup>Cox interv, 21 May 1991, pp. 61–62; fax, Cox to Roger Thomas, 3 Dec 1990, TAD Incoming Message File #29.

<sup>43</sup>Adams interv, pp. 59, 66, 70, 72.

<sup>44</sup>DAO Sitrep #120, 8 Apr 1991; Cargill interv, pp. 39–42; Adams interv, pp. 59–60, 62.

<sup>45</sup>DAO Sitrep #86, 18 Jan 1991; *ibid.*, #97, 13 Feb 1991; Cargill interv, pp. 42–44; Adams interv, pp. 63–64.

<sup>46</sup>Adams interv, p. 66; SAD Sitrep #132, 20 Feb 1991; DAO Sitrep #100, 20 Feb 1991; *ibid.*, #103, 27 Feb 1991.

<sup>47</sup>Cargill interv, p. 39; Cox interv, 21 May 1991, pp. 63–64.

<sup>48</sup>Cargill interv, p. 18.

<sup>49</sup>Brinkerhoff, “The 416th Engineer Command,” p. 44; Van Sickle interv, pp. 53, 45.

<sup>50</sup>U. S. Army Engineer School, “Engineer After Action Report,” p. 73; Van Sickle interv, pp. 53, 54, 55; Brinkerhoff, “The 416th Engineer Command,” p. 46.

<sup>51</sup>Memo, Richard Bennett for SAI-ED-ME, 14 Sep 1990, TAD Outgoing Message File #11; SAD Sitrep #71, 16 Oct 1990; *ibid.*, #88, 2 Nov 1990; *ibid.*, 26 Nov 1990.

<sup>52</sup>DAO Sitrep #84, 14 Jan 1991; SAD Sitrep #107, 12 Dec 1991; *ibid.*, #117, 9 Jan 1991; TAD Briefing, “Operation Desert Storm, Kuwait Emergency Recovery, and Operation Provide Comfort Update,” 12 Jul 1991.

<sup>53</sup>CINCCENT Sitrep, 24 Dec 1990; *ibid.*, 31 Dec 1990; msg, CINCCENT J4/7 to ARCENT Main/AFRD-EN et al., 9 Jan 1991, DSDS: Contracting.

<sup>54</sup>CINCCENT Sitrep, 14 Jan 1991; Van Sickle interv, p. 23; CINCCENT Sitrep, 17 Jan 1991; *ibid.*, 21 Jan 1991; *ibid.*, 28 Jan 1991; Brinkerhoff, “The 416th Engineer Command,” p. 29.

<sup>55</sup>Msg, FORSCOM EN to SAD EOC, n.d., SAD/FORSCOM Liaison Book #11; Braden, “Macro Lessons Learned.”

<sup>56</sup>TAD Briefing, 15 Mar 1991; *Transatlantic News*, v. 6, no. 7, Aug–Sep 1991, p. 8.

<sup>57</sup>Pagonis and Krause, “Theater Logistics in the Gulf War,” p. 6.

<sup>58</sup>Memo, Col. Miller to J4/7–E, 11 Mar 1991, TAD Incoming Message File #52; memo, Braden to MEAPO(SWA), *ibid.*; DAO Sitrep #112, 20 Mar 1991; *ibid.*, #115, 27 Mar 1991; msg, COMUSARCENT Main, subj: G–4 Log Stat Report #200, 24 Mar 1991.

<sup>59</sup>TAD, “Operation Desert Storm, Kuwait Emergency Recovery, and Operation Provide Comfort Update,” 8 May 1991, TAD DS/KR Briefing, 8 May 1991.

<sup>60</sup>Wood interv.

<sup>61</sup>Memo, Col. Miller for SAT-DE, subj: “Lessons Learned,” 16 Mar 1991, TAD Incoming Message File #53.

<sup>62</sup>Adams interv, p. 38.

<sup>63</sup>Cargill interv, p. 36.

<sup>64</sup>Cox interv, 21 May 1991, p. 43; AFKE-GC-EN-FE (416th ENCOM), Memorandum for Record, subj: “Desert Shield/Storm Engineer ‘Hotwash,’” 7 Apr 1991, [draft], DSDS: Engineer School Materials.

<sup>65</sup>AFKE-GC-EN, Memorandum for Record, 7 Apr 1991, p. 4; Task Force 43 After Action Report; Van Sickle interv, pp. 34, 46.

<sup>66</sup>416th ENCOM, “DSDS Lessons Learned,” DSDS: 416th ENCOM, OACE Reference Files.

## Chapter 6. Supply Contracts

<sup>1</sup>*Engineer Update*, v. 14, no. 10, Oct 1990, p. 1.

<sup>2</sup>SAD Sitrep #31, 6 Sep 1990.

<sup>3</sup>Adams interv, pp. 11–12; Santucci interv, p. 34; MEAPO(F) Sitrep #39, 17 Oct 1990.

<sup>4</sup>Brooks interv, pp. 20–21; DAO Sitrep #100, 20 Feb 1991; Santucci interv, pp. 34–38.

<sup>5</sup>Brooks interv, p. 22; memo, Col. William Miller for Maj. Shonaify, 13 Jan 1991, JFSU Actions: Miller Files #19A; DAO Sitrep #85, 16 Jan 1991; *ibid.*, #86, 18 Jan 1991.

<sup>6</sup>SAD Sitrep #120, 18 Jan 1991; Pagonis interv, 27 Mar 1991, p. 1.

<sup>7</sup>Santucci interv, p. 38.

<sup>8</sup>Fact Sheet, Michael Shama, 10 Oct 1990, subj: OPA Procurement of Commercial Building Systems, DSDS: Expedient Structures.

<sup>9</sup>Barbara Bryant, “City in the Sand: Building Support for Desert Shield/Storm,” *The Military Engineer*, v. 13, no. 546, Nov–Dec 1991, p. 11.

<sup>10</sup>Memo, Robert B. Oswald for Lt. Gen. Henry J. Hatch, 17 Oct 1990, DSDS: Expedient Structures; Information Paper, Michael Shama, subj: Expedient Construction and Relocatable Structures, 25 Oct 1990, *ibid.*

<sup>11</sup>Memo, Richard Russo for Forces Command Engineer, 24 Aug 1990, DSDS: Expedient Structures; HQDA Letter 420-89-1, Milton H. Hamilton, Admin. Assistant to the Secretary of the Army, 18 Dec 89, *ibid.*; memo, Michael Rea for Matt Thomason, 13 Sep 1991, TAD Outgoing Message File #10.

<sup>12</sup>Memo, Maj. Gen. Pagonis to ASA(ILE), 10 Oct 1990, TAD Incoming Message File #15; memo, [draft], Paul W. Johnson for ARCENT, n.d., DSDS: Expedient Structures.

<sup>13</sup>Brinkerhoff, “The 416th Engineer Command,” pp. 37–38; memo, William Rushing for Emergency Operations Center, HQUSACE, 17 Aug 1990, DSDS: Expedient Structures; Information Paper, Shama, 9 Nov 1990, subj: Automatic Building Machines, *ibid.*

<sup>14</sup>Memo, William Rushing, 17 Aug 1990; CINCFOR Sitrep #27, 13 Sep 1990; CINCFOR Sitrep #61, 7 Oct 1990; Fact Paper, CCJ4/7–E Lt. Col. Trelease, subj: “K–Span Machines and Materials,” 17 Nov 1990, DSDS: CENTCOM Engineer, OACE Reference Files; CINCFOR Sitrep, 14 Nov 1990; CINCCENT Sitrep, 26 Nov 1990.

<sup>15</sup>Msg, FORSCOM Engineer to ARCENT Main/Engineer, 20 Dec 1990, DSDS: Expedient Structures. The K–Span machines were considered equipment and could be funded with OPA (Other Procurement, Army). The structures built with the machines, however, had to be funded with MILCON because they usually required a concrete foundation. Clamshell structures could be procured with OPA funds if they were for

unit use and not tied to an installation as real property (Msg, Assistant Chief of Engineers to FORSCOM, 16 Nov 1990).

<sup>16</sup>SAD Sitrep #71, 16 Oct 1990.

<sup>17</sup>Braden, “Macro Lessons Learned;” Memorandum for Record, AFKE-GC-EN-FE, 7 Apr 1991, p. 10; Rushing memo, 17 Aug 1990; “Operation Desert Shield/Storm Recap,” p. 3.

<sup>18</sup>Santucci interv, p. 23; Carroll interv, p. 6; letter, Lt. Col. Carl A. Strock, 27 Dec 1990, DSDS: Engineer Letters.

<sup>19</sup>ARCENT SUPCOM (Provisional) Logsitrep #43, 17 Sep 1990; Braden interv, p. 72; record of phone conversation with Maj. Grebling, 28 Sep 1990, FORSCOM Engineer Files.

<sup>20</sup>Strock letter, 27 Dec 1990.

<sup>21</sup>411th EN BDE, Command Report, Operation Desert Shield/Storm, 22d SUPCOM, DSDS: 411th EN BDE.

<sup>22</sup>Carroll interv, 1 Apr 1991, p. 7; SAD Sitrep #57, 2 Oct 1990; SAD Sitrep #84, 29 Oct 1990.

<sup>23</sup>Memo, Brig. Gen. Richard Storat to Cdr, ARCENT, 25 Feb 1991, Command Report, Operation Desert Shield/Storm, 22d SUPCOM, DSDS: 411th EN BDE.

<sup>24</sup>Memorandum for Record, AFKE-GC-FE, 7 Apr 1991, p. 4; Storat interv, pp. 13, 15–17.

<sup>25</sup>Stevens interv, p. 15; Santucci interv, p. 23.

<sup>26</sup>Carroll interv, 1 Apr 1991, p. 8.

<sup>27</sup>Task Force 43 After Action Report, 22 Apr 1991, DSDS: Engineer School Materials.

<sup>28</sup>Van Sickle interv, pp. 71–75.

<sup>29</sup>“A Look Back: Operation Desert Storm/Kuwait Recovery,” p. 9; “DAO Command Briefing,” n.d., Desert Storm: DAO Command Briefing, TAD Incoming Message File.

## Chapter 7. Leasing Real Estate

<sup>1</sup>Interv, author with Barry Frankel, Washington, D.C., 17 Jun 1991, pp. 7–8.

<sup>2</sup>Interv, author with Al Posner, Atlanta, Georgia, 4 Dec 1990, pp. 1, 4; CERE-ZA (Wilemer), Information Paper, 10 Aug 1990, DSDS: Real Estate, OACE Reference Files.

<sup>3</sup>Santucci interv, p. 14; memo, M. Fountain for SAD-CO-E, 16 Oct 1991, DSDS: CONUS Support.

<sup>4</sup>Frankel interv, pp. 10, 14; SAD Sitrep #26, 1 Sep 1990.

<sup>5</sup>*Engineer Update*, vol. 14, no. 11, Nov 1990, p. 1; “Gulf Peace Fund Work Nears Completion,” p. 4.

<sup>6</sup>CINCFOR Sitrep, 25 Aug 1990; ARCENT SUPCOM (Provisional) Log Sitrep #26, 31 Aug 1990; CINCFOR Sitrep #30, 6 Sep 1990.

<sup>7</sup>Miller, Periodic Report #6, 16 Sep 1993; ARCENT SUPCOM (Provisional) Log Sitrep #38, 12 Sep 1990; msg, COMUSARCENT Main/AFRD to CINCCENT Main J3/4/7, 20 Sep 1990; SAD Sitrep #59, 4 Oct 1990.

<sup>8</sup>Brinkerhoff, “The 416th Engineer Command,” p. 27.

<sup>9</sup>Posner interv, p. 6; memo, A.C. Posner for CERE-A, 16 Aug 1990, TAD Incoming Message File #3; memo, Paul W. Johnson, “Delegation of Authority to Execute Leases in Support of Operation Desert Shield,” 20 Aug 1990, TAD Outgoing Message File #3.

<sup>10</sup>Memo, Lt. Col. Charles Cox for Col. William Miller, 21 Aug 1990, TAD Outgoing Message File #3; Flash Sitrep #2, MEAPO EOC to SAD EOC and HQUSACE EOC, 21 Aug 1990, DSDS: Real Estate.

<sup>11</sup>Memo, Paul W. Johnson, 21 Aug 1990, DSDS: Real Estate; fax, Cox to Miller, 21 Aug 1990, TAD Outgoing Message File #3.

<sup>12</sup>Posner interv, p. 7; Frankel interv, pp. 21, 23; memo, M. Fountain for SAD-CO-E, 16 Oct 1991, DSDS: CONUS Support.

<sup>13</sup>William Miller interv, p. 32; Walter interv, p. 20; Cox interv, 21 May 1991, pp. 37–39; memo, Maj. Matchinski to Harry Painton, 26 Aug 1990, TAD Outgoing Message File #4.

<sup>14</sup>William Miller interv, p. 33; SAD Sitrep #49, 24 Sep 1990; Adams interv, p. 24; Walter interv, p. 22.

<sup>15</sup>Cox interv, 21 May 1991, pp. 39–40.

<sup>16</sup>Adams interv, pp. 23–24, 35.

<sup>17</sup>Miller interv, p. 34; interv, author with Robert Dragonette, Dhahran, Saudi Arabia, 25 Mar 1991, pp. 12, 17; memo, James M. Ellis for all Real Estate Divisions and Districts, 18 Dec 1990, TAD Incoming Message File #32; DAO Sitrep #84, 14 Jan 1991; SAD Sitrep #109, 19 Dec 1990.

<sup>18</sup>Adams interv, pp. 21–22, 26–28; Dragonette interv, pp. 6, 22–23, 29–30.

<sup>19</sup>Pagonis interv, 27 Mar 1991, pp. 16–17; Lt. Gen. William G. Pagonis, *Moving Mountains: Lessons in Leadership and Logistics from the Gulf War* (Boston: Harvard Business School Press, 1992), p. 109.

<sup>20</sup>Dragonette interv, pp. 18–21; Braden interv, pp. 50–52.

<sup>21</sup>Memo, Herbert Fahy for Col. Scholl, 31 Aug 1990, DSDS: Real Estate; memo, Barry Frankel for Col. Scholl, 31 Aug 1990, DSDS: Real Estate.

<sup>22</sup>Memo, M. Fountain for SAD-CO-E, 16 Oct 1991, DSDS: CONUS Support.

<sup>23</sup>Maj. Salvatore Cremona, Memorandum for Record, 22 Sep 1990, TAD Incoming Message File #14.

<sup>24</sup>Jerome Liess, Memorandum for Record, 24 Oct 1990, DSDS: Real Estate; Frankel interv, p. 27.

<sup>25</sup>Cox interv, 24 Aug 1991, pp. 38–42.

<sup>26</sup>Fountain memo, 16 Oct 1991; Dragonette interv, p. 34.

<sup>27</sup>Cox interv, 24 Aug 1991, pp. 32, 35.

<sup>28</sup>SAD Sitrep #89, 5 Nov 1990; memo, Tommy R. Hill for Commander MEAPO(F), 4 Nov 1990, Real Estate: Miller Files #9.

<sup>29</sup>Adams interv, p. 48; Fountain memo, 16 Oct 1991.

<sup>30</sup>SAD Sitrep #94, 13 Nov 1990; Dragonette interv, pp. 24, 28; Adams interv, p. 52.

<sup>31</sup>SAD Sitrep #95, 14 Nov 1990; *ibid.*, #97, 19 Nov 1990; *ibid.*, #99, 21 Nov 1990.

<sup>32</sup>Memo, Maj. Gen. William G. Pagonis for Brig. Gen. Frix, 21 Oct 1990, TAD Incoming Message File #27.

<sup>33</sup>SAD Sitrep #100, 26 Nov 1990.

<sup>34</sup>Miller interv, pp. 36–37; SAD Sitrep #101, 30 Nov 1990; OACE Paper, “Key Real Estate Issues,” n.d., Misc Msg #5: OACE Reference Files; SAD Sitrep #103, 5 Dec 1990.

<sup>35</sup>SAD Sitrep #105, 7 Dec 1990; Frankel interv, pp. 40–43; memo, Brig. Gen. Pat Stevens to Brig. Gen. Al-Hussein, 18 Dec 1990, Real Estate: Miller Files #9; memo, Stevens to Al-Hussein, 5 Jan 1991, *ibid.*; memo, Jim Simpson for Tommy Hill, 13 Jan 1991, *ibid.*; SAD Sitrep #118, 14 Jan 1991.

<sup>36</sup>Memo, Stevens to Al-Hussein, 26 Jan 1991, Real Estate: Miller Files #9; memo, Al-Hussein to Stevens, 1 Feb 1991, *ibid.*; memo, Stevens to Al-Hussein, 4 Feb 1991, *ibid.*; memo, Al-Hussein to Col. K. Al-Shammari, 22 Feb 1991, *ibid.*

<sup>37</sup>SAD Sitrep #133, 22 Feb 1991; *ibid.*, #135, 27 Feb 1991; CESAS Briefing Paper for Al Posner, Mar 1991, TAD Incoming Message File #56; TAD Briefing, 15 Mar 1991, DSDS: TAD Briefing, 15 Mar.

<sup>38</sup>Memo, Tommy Hill for CCJ4/7 (Lt. Col. Walter), 27 Feb 1991, Real Estate: Miller Files #9; DAO Sitrep #100, 20 Feb 1991.

<sup>39</sup>DAO Sitrep #140, 24 May 1991; *ibid.*, #141, 27 May 1991; *ibid.*, #144, 3 Jun 1991; *ibid.*, #145, 5 June 91; *ibid.*, #146, 7 Jun 1991; *ibid.*, #147 10 Jun 1991; fax, Tommy R. Hill to Janet McDonnell, 27 Sep 1995, DSDS: Real Estate.

<sup>40</sup>Memo, Tommy R. Hill for SAS-RE, 8 Feb 1991, Organization and Mission: Miller Files #4.



<sup>41</sup>DAO Sitrep #86, 18 Jan 1991; *ibid.*, #89, 25 Jan 1991; *ibid.*, #90, 28 Jan 1991; *Transatlantic News*, vol. 6, no. 8, Oct 1991, p. 4.

<sup>42</sup>Information Paper, Capt. Christopher J. Schopfer, 416th ENCOM, 29 Jan 1991, Real Estate: Miller Files #9.

<sup>43</sup>Hill fax, 27 Sep 1995.

<sup>44</sup>Memo, Col. William Miller for SAT-DE, subj: “Lessons Learned,” 16 Mar 1991, TAD Incoming Message File #53.

<sup>45</sup>Point Paper, Col. Julian E. Pylant, 22 Mar 1991, SAD EOC, Misc Reading File, Book #6.

<sup>46</sup>Miller comments on a Joint Staff memo dated 1 Apr 1991, 3 Apr 1991, Policy Guidance: Miller Files.

<sup>47</sup>Phone conversation, author with Tommy R. Hill, 1 Aug 1995.

<sup>48</sup>Memo, James M. Ellis for all Real Estate Divisions and Districts, 18 Dec 1990, TAD Incoming Message File #32; Dragonette interv, p. 18; Frankel interv, pp. 49–50.

<sup>49</sup>TAD Briefing, 15 March 1991; *Transatlantic News*, Oct 1991, p. 4. Roughly 40 people from the Corps’ Savannah, Norfolk, Vicksburg, Huntington, Mobile, Omaha, Portland, Seattle, Fort Worth, Little Rock, Albuquerque, Nashville, and Pittsburgh districts, and from the Missouri River and New England divisions supported real estate operations in the theater at one time or another. Brinkerhoff, “The 416th Engineer Command,” p. 27.

## Chapter 8. Laboratory Support

<sup>1</sup>David E. Koegel, Information Paper, 25 Jan 1991, SARDA: OACE Reference Files.

<sup>2</sup>Defense Mapping Agency Brief, “DMA Support to Desert Storm,” Comparative Land Area for Recent U.S. Operations,” n.d., Deputy Cdr and Director: ETL Files; Brinkerhoff, “The 416th Engineer Command,” p. 59; Scales., *Certain Victory*, p. 134.

<sup>3</sup>Much topographic information today is compiled and maintained in digital format so complete maps can be transmitted in the form of computer diskettes for modification and printing. “U.S. Army Corps of Engineers’ Laboratory Support to Operations Desert Shield and Desert Storm and to the Kuwait Recovery Operations,” [draft], pp. 1–3, DSDS: ETL Files; memo, Robert Oswald, 14 Nov 1990, DSDS: R&D.

<sup>4</sup>Memo, Col. David F. Maune for Cdr, USACE, 12 Apr 1991, subj: Letter from Lt. Col. Paul Ray, Deputy Cdr and Director: ETL Files; letter, Ray to Lt. Gen. Henry J. Hatch, 6 Mar 1991, *ibid.*; memo, Ray for CG, 416th ENCOM, 7 Mar 1991, subj: Topographic Engineer Issues, *ibid.*; “U.S. Army Corps of Engineers’ Laboratory Support,” pp.1–3.

<sup>5</sup>Memo, Donald J. Levernez for George Singley, 1 Mar 1991, SARDA: R&D Files; letter, Ray to Hatch, 6 Mar 1991.

<sup>6</sup>30th EN BN (Topographic), Lessons Learned, JULLs #31436-96600 (00010), Maj. Wright, 13 Mar 1991; Robert Hellman, "A History Update of the U.S. Army Engineer Topographic Laboratories, Fort Belvoir, Virginia, 1984–1988," Aug 1994, pp. 35–36.

<sup>7</sup>"U.S. Army Corps of Engineers Lab Support to Operation Desert Shield and Desert Storm," p. 3; Mark K. Ross, "ETL Provides Desert Shield Support," *Engineer Update*, v. 15, no. 1, Jan 1991, p. 3.

<sup>8</sup>Memo, Col. David F. Maune for Headquarters, USACE Emergency Operations Center, 25 Feb 1991, DSDS: ETL Files; msg, CDR XVIII ABN Corps to CDR ETL, 111000Z Oct 1990, *ibid.*; Muneendra Kumar, and Bryn A. Fosburgh, "The Global Positioning System and Operation Desert Shield and Desert Storm," *Abstract*, 29 Aug 1991, Topographic Development Lab: ETL Files.

<sup>9</sup>Memo, Col. Jerome G. Edwards for Maj. Gen. Silvasy, 23 Jan 1991, Deputy Cdr and Director: ETL Files.

<sup>10</sup>Jackie L. Bryant, "ACPs Supply Timely Middle East Data," *Tech-Tran*, v. 16, no. 2, spring 1991, p. 3.

<sup>11</sup>*Ibid.*, p. 4; USACE, "Terrain," *Amy Environmental Sciences*, v. 9, no. 2, winter 1991, p.3; memo, Col. Maune for Chief of Engineers, subj: Commander's Periodic Report, 22 Aug 1990, ETL Files; *Lab Lines*, v. 11, no. 5, p. 2.

<sup>12</sup>Memo, Lt. Col. Ray for Cdr., ETL, 16 Aug 1990, Deputy Cdr and Director: ETL Files.

<sup>13</sup>"Operation Desert Shield/Storm After Action Report, USA Engineer Waterways Experiment Station," May 1991, DSDS: WES After Action Report; memo, Robert B. Oswald for Air Force Engineering Support Command and Commander, U.S. Naval Facilities Engineering Command, DSDS: R&D.

<sup>14</sup>Msg, ARCENT Main/G4 to DAMO-AOC, 311235Z Jan 1991, Deputy Cdr and Director: ETL Files; Michael G. Barwick, Trip Report, 11 Apr 1991, *ibid.*; memo, Robert Knowles for Jackie Bryant, 7 Aug 1995, DSDS: TEC Review Comments.

<sup>15</sup>"Countless Terrain Products," *Tech-Tran*, v. 16, no. 1, winter 1991, pp. 3–4; CEETL, "Operation Desert Shield provides real-life test of Water Resources Data Base," *Digital Data Digest*, v. 1, no. 2, fall 1990, p. 6; Knowles memo, 7 Aug 1995.

<sup>16</sup>Memo, Robert B. Oswald, 14 Nov 1990, DSDS: R&D; *Lab Lines*, vol. 11, no. 5, p. 2; Hellman, "A History Update," p. 59; Knowles memo, 7 Aug 1995.

<sup>17</sup>WES After Action Report; "U.S. Army Corps of Engineers' Laboratory Support," p. 9; memo, John M. Deponai for Resource Management Officer, 12 Dec 1990, Resource Management Directorate Files.

<sup>18</sup>Memo, Robert Oswald, 14 Nov 1990, DSDS: R&D.

<sup>19</sup>"U.S. Army Corps of Engineers' Laboratory Support," p. 7; WES After Action Report.

<sup>20</sup>“U.S. Army Corps of Engineers’ Laboratory Support,” pp. 6, 10; WES After Action Report.

<sup>21</sup>Oswald memo, 14 Nov 1990; USACE, “Soil,” *Amy Battlefield Environment*, v. 9, no. 3, summer 1991, p. 1; John Hansen, “Location of Subsurface Ordnance and Structures,” ETL Lessons Learned, 11 Apr 1991, Deputy Cdr and Director: ETL Files.

<sup>22</sup>“U.S. Army Corps of Engineers’ Laboratory Support,” p. 7.

<sup>23</sup>Memorandum for Record, CERD-ZA, 17 Sep 1990, Fisher Files.

<sup>24</sup>*Lab Lines*, v. 12, no. 2, Mar–Apr 1991, p. 2; Lt. Col. Paul L. Ray to Lt. Gen. Hatch, 6 Mar 1991, Deputy Cdr and Director: ETL Files.

## Powering the Theater

<sup>1</sup>The Army prime power program comes under Army Regulation 700–128; Maj. Kenneth E. Cockerham, “Prime Power on the Battlefield,” *Engineer*, Apr 1992, pp. 30–31.

<sup>2</sup>Msg, CINCFOR to DAMO-AOC/DAEN-ZCM, 101230Z Aug 1990, Prime Power: OACE Reference Files; EHSC Briefing, “Chronological History,” 9 Nov 1990, DSDS: Prime Power; msg, DAEN-ZCM to CEEC-EOC, 112200Z Aug 1990, *ibid*; msg, FORSCOM to Dir USAEHSC, 070130Z Sep 1990, Prime Power: OACE Reference Files; Brinkerhoff, “The 416th Engineer Command,” p. 29; Van Sickle interv, pp. 62–63.

<sup>3</sup>Cockerham, “Prime Power on the Battlefield,” p. 31; msg, FORSCOM to Dir USAEHSC, 070130Z Sep 1990, Prime Power: OACE Reference Files; Van Sickle interv, p. 64; Brinkerhoff, “The 416th Engineer Command,” p. 30.

<sup>4</sup>ARCENT SUPCOM (Provisional) Logsitrep 37, 112300C Sep 1990, Misc Msg #3: OACE Reference Files; msg, COMUSARCENT Main/AFRD, 202359Z Sep 1990, *ibid*; msg, CINCFOR/J–3, 021930Z Oct 1990, Prime Power: OACE Reference Files; EHSC Sitrep #86, 20 Dec 1990.

<sup>5</sup>Memo, Maj. Dale A. Knieriemen for Cdr, 416th ENCOM, 22 Jan 1991, Prime Power: OACE Reference Files.

<sup>6</sup>Cockerham, “Prime Power on the Battlefield,” pp. 32–33; EHSC Sitrep 102, 5 Apr 1991; EHSC Sitrep 111, 7 Jun 1991; Brinkerhoff, “The 416th Engineer Command,” p. 30; MSG Pryor, Information Paper, 23 Sep 1991, DSDS: Prime Power.

<sup>7</sup>Pryor, Information Paper, 23 Sep 1991; “52–Echos Zap Back Kuwait,” *Engineer Update*, v. 15 no. 7, Jul 1991, p. 4; Penelope Schmitt, “Prime Power Soldiers Electrify Saudi Scene,” *DEH Digest*, v. 3, no. 4, Jul 1991, pp. 8–9; Cockerham, “Prime Power on the Battlefield,” p. 33.

## Conclusion

<sup>1</sup>DAO Sitrep #113, 22 Mar 1991.

<sup>2</sup>TAD Briefing to U.S. House of Representatives, n.d., DSDS;

<sup>3</sup>Storat interv, p. 18.

<sup>4</sup>Braden, “Macro Lessons Learned;” Col. Jenkins, “Desert Shield/Storm Joint Engineer History and Lessons Learned,” n.d., DSDS: Lessons Learned.

<sup>5</sup>Pagonis interv, 27 Mar 1991, p. 3.

<sup>6</sup>Storat interv, p. 14; AFKE-GE-EN-FE, Memorandum for Record, 7 Apr 1991.

<sup>7</sup>Bartlett interv, p. 39; Carroll interv, pp. 25–27.

<sup>8</sup>Pagonis interv, 27 Mar 1991, p. 8; Adams interv, p. 39; Cox interv, 21 May 1991, pp. 64, 71.

<sup>9</sup>Braden, “Macro Lessons Learned;” Jenkins, “Desert Shield/Storm Joint Engineer History and Lessons Learned.”

<sup>10</sup>Schwarzkopf, *It Doesn't Take a Hero*, p. 364.

<sup>11</sup>AFKE-GC-EN-FE (416th ENCOM), Memorandum for Record, subj: “Desert Shield/Storm Engineer ‘Hotwash,’” 7 Apr 1991, [draft], DSDS: Engineer School Materials; Storat interv, pp. 18, 21; Braden, “Macro Lessons Learned;”

<sup>12</sup>Col. William Miller interv, pp. 49–54.

<sup>13</sup>Adams interv, p. 74.

<sup>14</sup> Memo, James W. Ray for the Chief of Staff of the Army, 24 Jun 1991, DSDS.

<sup>15</sup>Cox interv, 24 Aug 1991, pp. 51–53, 63. The Total Army concept, which evolved in the 1970s, called for the blending of Active, Reserve, and Army National Guard capabilities.

<sup>16</sup>Braden, “Macro Lessons Learned.”

<sup>17</sup>Jenkins, “Desert Shield/Storm Joint Engineer History and Lessons Learned.”

<sup>18</sup>Hatch handwritten notes, “Desert Storm Special Study Project,” General Officer Steering Committee Desert Storm Special Study Book.