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# FMS Facility Construction Preparation

By

Captain Deven R. Volk, USAF

## INTRODUCTION

Integral to the delivery of many weapon systems to a foreign country through Foreign Military Sales (FMS) is the facility construction program. Monitored and managed by a construction program manager (CPM), a successful construction program ensures the customer will receive facilities which will enhance the operational capability of the weapon system. To accomplish this, the CPM usually will decide upon a construction manager (CM) to manage design and construction activities. Construction management choices include the Corp of Engineers, Naval Facilities Engineering Command, private construction management firms, the weapon supplier, or the foreign country buying the system.

An accurate assessment of the environment in which the CPM will operate is critical. The following information describes areas which the CPM must analyze during the early stages of any FMS program in order to determine initial conditions which will impact the construction that supports the weapon system.

## SITUATION ANALYSIS

Analyzing the following seven areas provides an accurate picture for the CPM.

1. **Customer Assessment.** Customer Assessment includes determining customer requirements as well as conducting a condition survey to determine the physical working environment in which the construction program will operate.

a. ***Customer Requirements:*** Three areas of concern direct the effort to determine customer requirements. The first is the customer's desired degree of involvement in design, construction, and construction management activities. The level of involvement coupled with customer capabilities will impact the construction program. Secondly, an understanding of customer expectations concerning weapon system operating concepts (e.g., redundancy, reliability, and maintainability) is required to guide design efforts. The last area of concern is the level of expected facility construction standards. High standards, such as state-of-the-art mechanical and electrical systems, need to be determined and designed into facilities.

b. ***Condition Survey:*** A condition survey, conducted during the early stages of an FMS program, provides various managers with an evaluation of initial conditions existing within the foreign country. The CPM will investigate the following areas during the condition survey to determine design and construction impacts.

- Visits to proposed construction sites to determine physical conditions such as congested areas requiring elaborate work-arounds, or remote areas, requiring additional coordination to provide labor and materials.

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- Available construction skills in the country determine which skills must be imported for construction activities.
  - Available construction materials in the country determine the type and amount of materials which must be imported.
  - Existing road and utility (electrical, water, and communication) infrastructures determine construction support requirements.
  - Weather and topography determine construction season lengths and types of landscape which impact construction.
  - Requirements for permits to determine the type of approval documents needed to begin and maintain construction activities.
  - Customs and laws unique to the foreign country which need to be considered if they will impact construction activities.

A condition survey gives the CPM an accurate assessment of existing conditions within the foreign country which need to be considered when planning and designing for facilities to support delivery of a weapon system. The condition survey along with determining customer requirements, provides an accurate Customer Assessment.

**2. Weapon System.** The weapon system's state of development plus facility design complexity will impact the construction program.

a. ***Development Stage:*** Facility design criteria (FDC) define design concepts for facilities in terms of functional relationships. An undeveloped system will have undefined FDC which may delay starting the design effort. If facility design and construction activities must begin during FDC development, incorporating updated FDC data into designs and implementing design changes into construction activities may increase change-order costs and delay construction schedules.

b. ***Design Complexity:*** The FDC establishes the baseline for design complexity. Existing site conditions determined from the Customer Assessment, facility hardening requirements, site deception versus camouflage concepts, and contamination threats can increase design complexity above that defined in the FDC. Hardening requirements are typically determined by a bomb threat assessment to determine facility loading conditions produced by a bomb blast at various distance from the facility. Site deception concepts, attempting to make the enemy believe the target is something other than what it is, and camouflage concepts, making the enemy believe there is nothing of value at that location will determine design and construction activities. The more site deception and camouflage requirements there are, the greater the design complexity. Chemical, biological, and nuclear contamination threats will also increase the design complexity if these threats are perceived to exist.

**3. Political Environment.** The CPM may have several choices to perform the role of CM, the technical manager for the design and construction efforts. The options available to the CPM include the Corps of Engineers, Naval Facilities Engineering Command, a private architectural engineering or construction management firms, the weapon supplier, and even the host country. Agencies within the Legislative and Executive offices [Branches] of the U.S. Government (e.g., Congress, the State Department, the Office of the Secretary of Defense, or Military Departments), may desire a particular CM to manage design and construction activities.

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The CPM must determine if the political environment is such that it will direct the use of a particular CM or allows choosing between the particular options.

4. **Program Schedule.** Every FMS case manager prepares a case directive with specific milestones for various aspects of the program. If facilities are required, a construction schedule will be directed. As the program schedule becomes more condensed, so does the construction schedule. A more condensed construction schedule requires moving from more traditional construction approaches to assessing alternative means of accomplishing the work in an expedited manner which may add cost to the construction program.

5. **Staffing.** Two primary functions are required for any FMS construction program, a planning function and an implementation function. The CPM must determine the size of staff required for each function. The planning function determines construction program requirements in terms of schedules, budgets, and manpower. The implementation function monitors, manages, and conducts design and construction activities. The CPM needs to consider its own staff requirements to monitor and manage design and construction activities as well as the abilities of potential CM's to provide adequate staff within the program time constraints.

6. **Contracting Plan.** Every construction program has three phases—planning, design, and construction. A traditional contracting plan completes each phase before commencing with the next phase; the more overlap between the phases, the more innovative the contracting plan. The CPM must decide on a contracting plan that best fits all the program requirements. Generally, the more innovative the plan the greater amount of risk the Government accepts; however, more overlap increase the possibility of saving time. The CPM must decide how much risk to accept to gain the most amount of time.

7. **Responsiveness.** Responding to change during the planning and implementation stages may be crucial depending on the situation. Diplomatic relationships may hinge upon quickly and accurately responding to a foreign country's request for information or responding to change requests. In addition, incorporating construction changes may impact weapon system delivery schedules. The CPM must determine the criticality of responding to requests for information and change-orders from various sources and assess potential CM capabilities to respond, both during planning and implementation stages.

## CONCLUSION

Delivering facilities to support an FMS weapon system sale to a foreign country is not a simple task of defining technical parameters, pulling a facility package off the shelf, and installing it. It is a complicated mixture of assessing purchaser capabilities, weapon system requirements, political realities, and other parameters which will impact and direct how the construction program is managed. The end goal is to deliver a weapon system with support capabilities to effectively operate the weapon system.

## FOR MORE INFORMATION

Headquarters Air Force Logistics Command, Directorate of FMS Construction Engineers (CER), located at Wright-Patterson AFB OH, consists of an engineering staff to plan and implement USAF FMS construction programs. CER currently manages several FMS construction programs in the Middle East and has been involved with FMS programs in many other areas of the world. CER can be reached by calling: DSN: 787-1828; or commercial (513) 257-1828.

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## ABOUT THE AUTHOR

Captain Volk is currently stationed at Cannon AFB, New Mexico. He completed a Masters of Science, Engineering Management degree at the Air Force Institute of Technology, Wright-Patterson AFB OH in September 1991. Prior to commencing his graduate work, he spent two and one half years in Saudi Arabia as a construction program manager for FMS construction programs. Captain Volk received a BS degree in Civil Engineering from the Air Force Academy.