



**Training Proposal for:  
Lockheed Martin Aeronautics Company  
Agreement Number: ET10-0266**

Panel Meeting of: **October 23, 2009**

ETP Regional Office: **North Hollywood**

Analyst: N. Weingart

**PROJECT PROFILE**

Contract Type: Priority/Retrainee

Industry Sector(s): Aerospace and Defense

Counties Served: Los Angeles

Repeat Contractor:  Yes  No

Union(s):  Yes  No

Priority Industry:  Yes  No

No. Employees in CA: 12,000

No. Employees Worldwide: 146,000

Turnover Rate	Manager/ Supervisor
5%	20%

**FUNDING DETAIL**

Program Costs	Substantial Contribution	Total ETP Funding	In-Kind Contribution
\$705,510	\$352,755	\$352,755	\$1,665,000

**TRAINING PLAN TABLE**

Job No.	Job Description (by Contract Type)	Type of Training	Estimated No. of Trainees	Range of Hours		Average Cost per Trainee	Post- Retention Wage
				Class / Lab	CBT		
1	Priority/Retrainee	Advanced Technology; Continuous Improvement	585	24-200	0	\$603	\$25.00
				Weighted Avg: 67			

**Minimum Wage by County:** The ETP minimum wage for Los Angeles County is \$14.18 per hour.

**Health Benefits:**  Yes  No This is employer share of cost for healthcare premiums – medical, dental, vision.

**Used to meet the Post-Retention Wage?:**  Yes  No

Although employer provides health benefits, they are not being used to meet post-retention wage.

Wage Range by Occupation	
Occupation Title	Wage Range
Manager	
Engineer	

**INTRODUCTION**

In this proposal, Lockheed Martin Aeronautics Company (LM Aero) seeks funding for retraining as outlined below:

This will be the second Agreement between ETP and LM Aero in Palmdale. LM Aero manufactures military aircraft, and is eligible to contract with the Panel under Title 22, California Code of Regulations (CCR), Section 4416(i)(1).

Lockheed Martin Corporation (LMC) was formed in March 1995 with the merger of two of the world's premier technology companies, Lockheed Corporation and Martin Marietta Corporation. In 1996, LMC completed its strategic combination with the defense electronics and systems integration businesses of Loral. The company traces its roots back to the early days of flight. In 1909, aviation pioneer Glenn L. Martin started a modest airplane construction business and built it into a major airframe supplier to U.S. military and commercial customers. Martin Marietta was established in 1961 when the Glenn L. Martin Company merged with American-Marietta Corp., a leading supplier of building and road construction materials. In 1913, Allan and Malcolm Loughead (later changed to Lockheed) flew the first Lockheed plane over San Francisco Bay. The modern Lockheed Corporation was formed in 1932 after the fledgling airplane company was reorganized.

LMC operates 1,000 facilities in 500 cities and 46 states throughout the U.S.; internationally, it has business locations in 75 nations and territories. The company's core capabilities are in the design, development, systems integration, production, and sustainment of advanced military aircraft and related technologies: current aircraft programs include the F-35, F-22, and F-16

combat aircraft; C-130 and C-5 airlifters; P-3 and U-2 reconnaissance/surveillance aircraft; major participation in the Japan F-2 program, and Korea T-50 Golden Eagle trainer through strategic international business programs.

LM Aeronautics, headquartered in Fort Worth, Texas, is a business segment (i.e., division) of LMC and has nine facilities in the U.S., presence at numerous military bases (including Edwards Air Force Base, CA), and several international offices. U.S. locations include Palmdale, CA; Fort Worth and San Antonio, TX; Marietta, GA; Greenville, SC; Pinellas Park, FL; Meridian, MS; Johnstown, PA; and Clarksburg, WV. An Advanced Development Programs (ADP) group in Palmdale (also known as the Skunk Works®) has principal responsibility for research and development, new products, and defining upgrades to existing products. LM Aero's customers include the military, various U.S. government agencies, and allied countries worldwide.

## **PROJECT DETAILS**

According to the company representative, LM Aero is a project-based business that designs, manufactures, and sustains advanced aircraft; products commonly take 15+ years from introduction into service. The nature of its business requires that LM Aero constantly develop new technologies and processes to ensure employees are well equipped to meet customer demands and anticipate future changes. Accordingly, LM Aero must regularly make significant capital investments both in equipment and technology, and provide ongoing, updated, and revised training to affected employees.

Currently, LM Aero is (1) expanding its Role-Based Training (RBT) initiative; and (2) conducting a company-wide migration to newer versions of a number of advanced software tools. The goal of the RBT initiative is to define, standardize, and broaden job responsibilities for specific occupations and provide training so that affected employees are at the same skill level to adequately carry out their responsibilities. Second, there is a company-wide migration to newer versions of a number of advanced software tools to replace older versions that will no longer be supported by their manufacturers. To realize both initiatives, the proposed ETP program focuses on retraining engineers and managers in Continuous Improvement and Advanced Technology.

**Continuous Improvement** training will include: Antenna Engineering; Advanced Avionics & Aeronautics, including aircraft testing; Capability Maturity Model Integrated (CMMI) to alleviate process failures; Geometric Dimensioning & Tolerancing (GD&T) to meet increasing customer demand for Reduced Dimension Drawings (RDDs) that allow the design process to be more cost efficient and utilize GD&T symbolic language; Software & Systems Engineering Role-Based Initiative for engineers to learn advances in the development, operation, and maintenance of key software tools and specialized topics such as identification and quantification of system goals, technical planning, requirement engineering, configuration management, and post-implementation assessment of system performance; Structural Integrity of New and Aging Metallic Aircraft covering the use of modern fatigue and fracture mechanics technology in the design of durable, damage-tolerant aircraft structures and the extended safe use of aging aircraft.

Other courses include: Effective Field Service Operations for Field Service Representatives to provide efficient customer technical support; Full Spectrum Leadership to assure balanced, focused, and effective leadership in all programs; Program & Project Management for lead and management personnel to improve decision-making skills required in complex subcontracting, project-based environment; and Six Sigma Green & Back Belt courses to establish a cohesive set of principles and behaviors for engineering and production processes, teach a data-driven approach for identifying and removing the causes of defects and errors in manufacturing and

business processes as well as quantifying such financial targets as cost reduction and profit increase.

**Advanced Technology** courses will be delivered to staff responsible for developing, advancing, and redefining products, and implementing production processes. These courses will focus on three dimensional modeling, product simulation, and data analysis involving sophisticated software tools such as CATIA, Spreadsheet Aided Engineering, NASTRAN, PATRAN, FiberSIM, Advanced Knowbell, AutoMet, and HarnesSys essential for aircraft design. Training in these critical software tools will help the company shorten design and manufacturing production cycles and implement a more efficient, concurrent approach to engineering.

CATIA is a primary CAD tool used in aircraft design and heavy volumes of training are necessitated by the migration from v4 to v5. Spreadsheet Aided Engineering course will provide engineers with the tools for advanced programming in Excel, an essential skill for acceleration of the engineering design process. PATRAN and NASTRAN are advanced software tools for simulating complex designs and their behavior under real-world conditions without building costly physical prototypes. FiberSIM software is fully functional with CATIA v5 and is designed to create a specialized CAD-integrated environment for designing and manufacturing composite parts. Knowbell software is utilized in processing and displaying Radar Cross-Section (RCS) measurement data. The AutoMet system is a unique statistical modeling software designed to help with the accurate prediction of project performance. HarnesSys is a concurrent CAD/CAM/CAE tool for electrical wiring necessary for conducting high-level electrical system analysis and establishing logical connections among system components.

According to the LM Aero's spokesperson, this coursework is highly technical and vendor costs reach as high as \$6,500 per day for instructor time, books, equipment, and materials. Because the cost of this training will greatly outpace standard ETP reimbursement, LM Aero is requesting Advanced Technology funding. Classes will adhere to a maximum instructor to trainee ratio of 1:10 to promote efficient learning and allow individual attention to each trainee.

### **Commitment to Training**

LM Aero staff reports that the company conducts a large number of ongoing classes, both general and job-specific. Ongoing initiatives (none of which are incorporated in this proposal) cover communication skills, diversity, time management, sexual harassment prevention, basic leadership, mandatory safety training, and new hire orientation. Additionally, via its prior ETP contract, LM Aero was able to provide a significant amount of critical Advanced Technology, Continuous Improvement, and Manufacturing Skills training to 739 engineering and production staff.

LM Aero's 2009 budget for vendor instruction and materials is approximately \$10 million for all company locations; its training labor budget (which includes trainee attendance plus employees assisting with training development and delivery) is about \$22 million (note: budget is not broken out by location as the needs assessment process is driven by functional organizations and not by specific location). During the budgeting process, the Labor and Development budget request is commonly scaled back by approximately 25%. These budgetary cutbacks drastically reduce training volume and completely exclude certain advanced topics from the array of courses delivered at Palmdale due to their significant cost.

ETP's support will help alleviate these pressures. Through ETP assistance, LM Aero will be able to deliver training that has been excluded due to budgetary limitations and expand the scope of its high demand initiatives, thus reaching out to new trainee populations. After completion of the ETP-funded training, the company plans to maintain ongoing initiatives while striving to provide training in advanced technical topics as future budgets permit. LM Aero

represents that ETP funds will not displace its existing financial commitment to training. The company anticipates that the opportunity for enhanced training made possible by ETP funds will encourage an ongoing financial commitment in this area. LM Aero also represents that safety training is, and will continue to be, provided in accordance with all pertinent requirements under state and federal law.

### **Green Business Operations**

LM Aero's "Go Green" program supports its commitment to responsible corporate citizenship and customers' conservation objectives. With a goal to reduce energy use by 25% by year 2012, the company constantly seeks new ways to reduce energy usage and lower greenhouse gas emissions. LM Aero is a member of the EPA's Green Power Partnership and is one of the top green power purchasers in the country.

### **High Unemployment Area**

Trainees in Job Number 1 work at the Palmdale location, a city designated as a High Unemployment Area (HUA). This is a region with unemployment exceeding the state average by at least 25%, using the unemployment rate set by the Labor Market Information Division of the Employment Development Department (Title 22, CCR, Section 4429(b)).

#### Wage Modification

For these trainees, the Panel may reduce the ETP minimum wage by up to 25% if post-retention wages exceed the start-of-training wages by at least 7% (Title 22, CCR, Section 4429(c)).

#### Retention Modification

The Panel may also modify the retention period for these trainees, making it 90 days within 120 consecutive days with up to two employers (Title 22, CCR, Section 4429(d)).

However, Lockheed is not asking for a wage or retention modification.

### **Substantial Contribution**

Lockheed Martin is a repeat contractor with payment earned in excess of \$250,000, and a former substantial contribution at the 50% level at the Palmdale facility within the past five years (see Prior Projects below). Accordingly, reimbursement for trainees at this facility in Job Number 1 will be reduced by 50% to reflect the company's \$352,755 substantial contribution to the cost of training. The Panel's September 25, 2009 action requires that Applicant's be assessed the maximum Substantial Contribution.

### **RECOMMENDATION**

For the reasons set forth above, staff recommends approval of this proposal and Advanced Technology reimbursement.

## **PRIOR PROJECTS**

The following table summarizes performance by the company under an ETP Agreement that was completed within the last five years:

Agreement No.	Location	Term	Approved Amount	Payment Earned
ET07-0386	Palmdale	06/05/07 - 6/04/09	\$1,261,008	\$755,626 (60%)

The Contractor reported that the original funding amount reflected estimated training needs at the time of application. However, LM Aero experienced many changes in project requirements over the 2-year Agreement term, requiring it to postpone and modify the training. It was also necessary to switch vendors for CATIA instruction. In addition, review of new proposals and re-contracting for CATIA instruction took much longer than expected, causing a two-month delay in training delivery. Since CATIA courses comprised a significant portion of the ETP training, the delay had a major effect on overall performance.

LM Aero staff explained that for the new proposal, they took a conservative approach in estimating future training needs, keeping the new request in line with prior ETP performance.

## **DEVELOPMENT SERVICES**

The company retained The Marquis Group in Volante, Texas to assist with development of this proposal for a flat fee of \$23,637.

## **ADMINISTRATIVE SERVICES**

The company also retained The Marquis Group in Jamul, CA to perform administrative services in connection with this proposal for a fee not to exceed 13% of payment earned.

## **TRAINING VENDORS**

To Be Determined

**Exhibit B: Menu Curriculum****Class/Lab Hours**

24-200

Trainees will receive any of the following:

**ADVANCED TECHNOLOGY**

- AutoMet
- Advanced Knowbell
- CATIA v5
- FiberSIM for CATIA v5
- HarnesSys
- NASTRAN/PATRAN
- Spreadsheet Aided Engineering

**CONTINUOUS IMPROVEMENT**

- Antenna Engineering
- Advanced Avionics & Aeronautics
- Capability Maturity Model Integrated (CMMI)
- Effective Field Service Operations
- Full Spectrum Leadership
  - Selecting Full Spectrum Leaders
  - Leadership Roundtables
  - Team Leadership
  - Tools for Emerging Leaders
- Geometric Dimensioning & Tolerancing (GD&T)
- Program Management
  - Program Management 101, 201, 301
  - Control Account Management
  - Capture Management
  - Subcontract & Supplier Performance Management
- Project Management
- Six Sigma Green Belt/Black Belt
- Software & Systems Engineering Role-Based Initiative
- Structural Integrity of New & Aging Metallic Aircraft

Note: Reimbursement for retraining is capped at 200 total training hours per trainee, regardless of delivery method.