Training Proposal for:
Space Systems/Loral, LLC
Agreement Number: ET17-0303

Panel Meeting of: December 16, 2016
ETP Regional Office: San Francisco Bay Area       Analyst: L. Lai

PROJECT PROFILE

<table>
<thead>
<tr>
<th>Contract Attributes:</th>
<th>Retrainees</th>
<th>Priority Rate</th>
<th>Industry Sector(s):</th>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Priority Industry:</td>
<td>Yes □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Counties Served:</th>
<th>Santa Clara</th>
<th>Repeat Contractor:</th>
<th>Yes □ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union(s):</td>
<td>□ Yes □ No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of Employees in:
- CA: 2,518
- U.S.: 2,540
- Worldwide: 4,549

Turnover Rate: 6%
Managers/Supervisors: 6% (% of total trainees)

FUNDING DETAIL

<table>
<thead>
<tr>
<th>Program Costs</th>
<th>(Substantial Contribution)</th>
<th>(High Earner Reduction)</th>
<th>= Total ETP Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>$554,400</td>
<td>$83,600</td>
<td>$0</td>
<td>$470,800</td>
</tr>
</tbody>
</table>

In-Kind Contribution: 100% of Total ETP Funding Required
$1,540,312
# Training Plan Table

<table>
<thead>
<tr>
<th>Job No.</th>
<th>Job Description</th>
<th>Type of Training</th>
<th>Estimated No. of Trainees</th>
<th>Range of Hours</th>
<th>Average Cost per Trainee</th>
<th>Post-Retention Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Class / Lab</td>
<td>CBT</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Retraineepriority rate</td>
<td>Business Skills, Computer Skills, Cont. Improv., Mfg. Skills</td>
<td>1,100</td>
<td>8-200</td>
<td>0-14</td>
<td>$428</td>
</tr>
</tbody>
</table>

*Reflects Substantial Contribution

**Minimum Wage by County:** $17.02 for Santa Clara County.

**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 ☐ Maybe

Although employer provides health benefits, they are not being used to meet Post-Retention Wage.

## Wage Range by Occupation

<table>
<thead>
<tr>
<th>Occupation Titles</th>
<th>Wage Range</th>
<th>Estimated # of Trainees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative I (Designer, Clerk, Purchasing, Contracts, Program Planning, Analyst, Accounting, Buyer)</td>
<td>480</td>
<td>45</td>
</tr>
<tr>
<td>Administrative II (Designer, Clerk, Purchasing, Contracts, Program Planning, Analyst, Accounting, Buyer)</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Engineer I</td>
<td>330</td>
<td>330</td>
</tr>
<tr>
<td>Engineer II</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Technical Support I (Manufacturing Staff, Lab Technician, Assembly Technician, Production &amp; Materials Planner, Machinist, Associate Engineer, Engineer Assistant, Quality Control)</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Technical Support II (Manufacturing Staff, Lab Technician, Assembly Technician, Production &amp; Materials Planner, Machinist, Associate Engineer, Engineer Assistant, Quality Control)</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>
INTRODUCTION

Space Systems/Loral, LLC (SSL) is a subsidiary of SSL MDA Holdings. SSL designs, manufactures, and tests sophisticated communication satellites, payloads, and subsystems at their facility in Palo Alto. SSL also procures insurance and launch services, provides orbital testing; and manages mission operations from its Palo Alto Mission Control Center. SSL’s product line includes satellites UltraHD (TV) and HTS high Throughput (broadband/internet) spacecraft to small Low Earth Orbiting (LEO) satellites and includes advanced robotics and automated solutions for remote operations.

SSL has an international base of commercial and governmental customers whose applications include broadband digital communications, direct broadcast services for television and radio, fixed-satellite and X-band satellite communications, and mobile communications. These applications have a range of uses from environmental monitoring, to air traffic control. SSL also provides satellites to well-known U.S. companies such as DIRECTV, Dish Network and SiriusXM.

PROJECT DETAILS

This will be the third ETP Agreement between ETP and SSL, the second in the last five years. The current Agreement addressed changes in the market. (maintaining current customers and gain new accounts) and product size (customers seeking smaller satellites). While some trainees received training under the prior Agreement, they will not receive duplicate training. Some topics may be similar to those in the prior curriculum but the course contents are either new or have been updated.

SSL plans to continuously improve technical capabilities to expand into new markets, improve processes and reduce costs. Training is designed to broaden employee knowledge to develop the next generation of spacecraft and support a more diversified product line. The Company also plans to train on a new ERP system and Cyber Security Tools to be implemented next year at a cost of $21 million.

Training Plan

Training will be conducted via Class/Lab and Computer-Based Training methodologies. In-house subject matter experts will deliver training. Vendors may be used.

Business Skills (8%): This training will be offered to Administrative Staff, Engineers, Supervisors, and Managers. Topics include Collaboration Tools, Communication and Interpersonal Skills, Management Essentials, Presentation Skills, and Leadership Training. Trainees will learn methods and tools necessary to work together and leverage the talents of everyone in the organization to make changes collectively to improve and diversify business.

Computer Skills (12%): This training will be offered to Administrative Staff and Engineers to implement new business systems software and utilize existing database tools efficiently.

Manufacturing Skills (38%): This training will be offered to Engineers and Technical Support Staff. Topics include various assembly, operations, handling, testing, and repair skills related to satellite manufacturing to ensure the trainees gain certifiable skills.

Continuous Improvement (42%): This training will be offered to all occupations. Training will reduce costs and shorten schedules while continuing to design and manufacture high-quality spacecraft. These improvements will be accomplished through introduction to Lean Tools for Manufacturing, CAPA (Corrective Action and Preventative Action), Practical Problem Solving,
and other analytical or technology courses as shown in Exhibit B. Trainees will learn about current and future engineering methods, and develop advanced skills for statistical analysis. These skills will help the employees in engineering growth and technical expertise needed for current and future satellite business.

Impact/Outcome

- SSL is ISO 9001 and AS9100 Certified but will need to update to the AS9100 Rev D standard early next year. The proposed training will help SSL obtain the new AS9100 Rev D Certification that emphasizes training and mentoring to achieve conformity of products and services; this includes corrective action and continual improvement, organizations knowledge, leadership and management.

- Technical certifications will be provided to affected employees that meet the technical training requirements.

Commitment to Training

SSL’s 2016 training budget was approximately $3.5 million, and was primarily allocated to new-hire orientation, temporary worker training, health & safety, basic computer skills, export control training, and regulatory compliance training. ETP funds will not displace the existing financial commitment to training. Safety training is, and will continue to be, provided in accordance with all pertinent requirements under state and federal law.

- Training Infrastructure

The Quality Systems Manager will oversee the coordination of the ETP Program. A dedicated data entry team will upload trainee and training data into the ETP database. SSL produces a monthly training schedule developed 30 days in advance so that managers can plan accordingly for when employees will be in training. A weekly status update will be published on training completed, and track the number of hours per person.

Substantial Contribution

SSL is a repeat contractor with payment earned in excess of $250,000 at the Palo Alto facility within the past five years. (See Active Project Table) Accordingly, reimbursement for trainees at the Palo Alto facility in Job Number 1 will be reduced by 15% to reflect the Company’s $83,600 Substantial Contribution to the cost of training.

RECOMMENDATION

Staff recommends approval of this proposal.

ACTIVE PROJECTS

The following table summarizes performance by SSL under an active ETP Agreement:

<table>
<thead>
<tr>
<th>Agreement No.</th>
<th>Approved Amount</th>
<th>Term</th>
<th>No. Trainees (Estimated)</th>
<th>No. Completed Training</th>
<th>No. Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET15-0301</td>
<td>$421,200</td>
<td>11/24/14 – 11/23/16</td>
<td>650</td>
<td>1,312</td>
<td>-0-</td>
</tr>
</tbody>
</table>
Based on ETP Systems, 23,400 reimbursable hours have been tracked for potential earnings of $421,200 (100% of approved amount) and the Contractor expects all eligible trainees will meet retention requirements by the term end date.

**DEVELOPMENT SERVICES**

N/A

**ADMINISTRATIVE SERVICES**

N/A

**TRAINING VENDORS**

To Be Determined
Exhibit B: Menu Curriculum

Class/Lab Hours
8 - 200

Trainees may receive any of the following:

BUSINESS SKILLS
- Business Plans
- Collaboration Tools
- Communication and Interpersonal Skills
- Conflict and Collaboration for Multi-Cultural Teams
- Conflict resolution
- Customer Service
- Dealing with Difficult Situations
- Document Control
- Effective Report Writing
- Effective Team Building
- Export Paperwork
- Facilitating Individual, Team and Org Effectiveness
- Internal Lead Auditor Training
- Inventory Control
- Leadership Training/Leadership in Action Training
- Listening Skills
- Management Essentials
- Negotiating Skills
- Presentation Skills
- Situation Leadership

COMPUTER SKILLS
- Accounting/Finance Systems
- AIMS – Manufacturing Execution System
- Communication & Document Management Systems
- Computer Networking / Support systems
- Cyber Security Tools
- Database Entry & Management
- Engineering Design Software /3D Modeling
- ERP System Training
- Excel Macros & VBA/Spreadsheets
- HTR (Hardware Tracking Record)
- Human Resource Database System
- IT Programming / Manufacturing Equipment Support
- PLM (Product Life-cycle Management) Team Center
- Website Development and Maintenance

CONTINUOUS IMPROVEMENT
- 5S Training: Sort, Set, Shine, Standardize, Sustain
- Advanced Satellite Systems
- Antennae Sub Systems
- Bus Subsystems
- CAPA Training (Corrective and Preventative Action)
- Creative Problem Solving Skills
• Cycle-time Reduction Techniques
• Engineer Technology for Satellite Emerging Markets
• Engineering Statistical Analysis
• Failure Review Board (FRB)
• Finance & Accounting Operations
• FMEA Failure Mode and Effects Analysis
• Identifying and Assessing Risk
• Interpreting & Analyzing Data
• Intro to Quality
• ISO Audit Principles
• ISO Process Improvement
• Leadership Skills for front line workers
• Lean Tools for Manufacturing
• LEO Satellite Technology
• Low Volume Lean
• Maintenance (TQM)
• Manufacturing Audit Process
• Material Review Board (MRB)
• Materiel & Subcontract Management
• Mission Assurance
• Mission Operations & iTACS (Mission Control Center software)
• NCR Non-Conformance Report System
• New Product Introduction
• Payload Systems
• Planning and Product Control
• Practical Problem Solving
• Process Control
• Process Development
• Process Improvement
• Product Design Review
• Product Design Standards and Processes
• Product Development, Design & Qualification
• Product Reliability
• Production Operations / Workflow
• Production Scheduling
• Program Management
• Project Management
• Quality Engineering Development
• Quality Management System /QMS for Management
• Quality Tools for QC
• RACI Skills (Responsible, Accountable, Consulted, Informed)
• Reliability Analysis
• Repeater Subsystems
• Risk Management
• ROI (Return On Investment) Analysis
• Satellite Technology (Satellite 101)
• Shock Qualification and Specifications for Engineering
• Space Test Operations
• Spacecraft Engineering Tools & Methods
• SSL Customer and Insurance Obligations
• Standard Operating Procedures
• Subcontract Product Design Management
• Subsystem Processes
• Subsystems Design & Engineering
• Systems Engineering
• Thermal Design & Engineering
• Unit and Subsystem Qualification
• Value Stream Mapping
• Visual Management Development

MANUFACTURING SKILLS
• AIT Assembly, Integration & Test procedures
• Assembly Operations -Manufacturing
• Antenna systems
• Bent Leads –Prevention & Best Practices
• Bonding and Staking of Electronic Components
• Bus Electronics
• Chemical Usage and Handling
• Composites Operations
• Conformal Coating
• Contamination Control /FOD
• Electro Static Discharge (ESD)
• Electronic Assembly Workmanship
• Facilities Management
• Flight Adhesive Bonding
• Flight Crimp and Strip
• Flight Hardware Handling
• Flight Harness And Cable
• Forklift Safety / Operations
• Industrial Truck Training
• IFS for Manufacturing Engineering
• Launch Base Training
• MPI Manufacturing Processes
• Mate & De-Mate /Cable Connections
• NASA Hand Solder
• National Aeronautics and Space Administration (NASA) Hand Solder
• Propulsion Systems
• PWB (Printed Wire Board) Rework Repair
• Quality Control
• Quality Engineering
• Set up Reduction
• Shipping / Receiving
• Solder Attach (Hybrid)
• Soldering Skills
• Special Machines/Inspections
• Statistical Skills for Operations
• Surface Mount Technology (SMT) Operation
• Testing Techniques – Spacecraft Hardware
- Thermal & Thermal Compound Bonding
- Torque Certification
- Warehousing Operations/Distribution System
- Xenon Loading
- X-Ray Operator
- X-Ray Reader-Electronics
- X-Ray Reader-Propulsion

**CBT Hours**  
0 - 14

**MANUFACTURING SKILLS**  
- Contamination Control Awareness (2 Hours)  
- ESD Awareness (2 Hours)  
- Flight Hardware Handling (2 Hours)  
- Hardware Tracking Record - HTR (1 Hour)  
- Heat Pipe Safety (1 Hour)  
- Propulsion Awareness Briefing (1 Hour)  
- STO-029 High Bay Rules (.5 Hours)

**CONTINUOUS IMPROVEMENT**  
- NCR Non-Conformance Report System (1 Hour)

**COMPUTER SKILLS**  
- Flexsys Basics-Data Management Software (1 Hour)  
- LIVE Training: PLM-Product Life Cycle Management Software (4 Hours)

**Note:** Reimbursement for retraining is capped at 200 total training hours per trainee, regardless of the method of delivery. CBT is capped at 50% of total training hours, per trainee.